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Developing a Residential Risk Reduction Program for the Wichita Fire Department

Sidney J. Newby

Wichita Fire Department, Wichita, Kansas

CERTIFICATION STATEMENT

I hereby certify that this paper constitutes my own product, that where the language of others is set forth, quotation marks so indicate, and that the appropriate credit is given where I have used the language, ideas, expressions, or writings of another.

Signed: _____

Abstract

The problem investigated was that the City of Wichita has experienced twenty-six residential fire fatalities in the last three years. This current trend of fire fatalities in Wichita is double the national average for the same time period. The purpose of this research was to identify factors that contributed to the fire deaths and develop a residential risk reduction program to reduce the unacceptable number of fire fatalities in Wichita.

Through the use of action research, questions about (a) data analysis, (b) national residential fire fatality statistics, (c) components of a community risk reduction program, and (d) procedures that could be implemented to deliver a residential risk reduction program to the citizens of Wichita, were answered.

The procedures that were followed in this applied research project were carried out through literature review, data analysis, and a situational analysis.

The research study found the fire fatality problem facing the City of Wichita was comparable to the national fire fatality problem. The study found that conducting a home safety visit was an effective method to make residents aware of fire risks in their homes. Also, by providing a smoke alarm inspection at the resident's home would be beneficial. This program would be carried out by community firehouse suppression personnel in order to examine potential fire risks in their assigned response area and to have positive interaction with the residents they protect.

Recommendations were made to implement the Draft Residential Risk Reduction Program to reduce or eliminate the high number of residential fire fatalities in the City of Wichita, and to utilize data analysis to study potential risks to citizens of Wichita and members of the Wichita Fire Department.

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Developing a Residential Risk Reduction Program for the Wichita Fire Department

Introduction

The problem is that the City of Wichita has experienced twenty-six residential fire fatalities in the last three years. This current trend of fire fatalities in Wichita is double the national average for the same time period. The Wichita Fire Department should expand its fire prevention program to address the increase in residential fire fatalities in the community. The purpose of this research is to identify factors that contributed to the fire deaths and develop a residential risk reduction program to reduce the unacceptable number of fire fatalities in the City of Wichita.

This study uses action research methodology. The research questions are: How can data analysis be utilized to collect information on factors that resulted in residential fire fatalities in the City of Wichita? What are the national statistics on residential fire fatalities? What are the components of a community risk reduction program? What procedures could be implemented to deliver a residential risk reduction program to the citizens of the City of Wichita?

Background & Significance

Wichita is located in the south central part of Kansas and is the largest city in the state with 362,000 people. The city is a full service municipality with approximately 3,300 employees and an operating budget of $450 million (City of Wichita, 2007).

The Wichita Fire Department (WFD) was founded in 1886 when the growth of the city exceeded the capabilities of the volunteer fire company that was organized in 1872 (Wichita Fire Department, 1992). The Wichita Fire Department, like many others, has evolved from the original purpose of fighting fires to its current task of providing a much broader level of

emergency services to the public. The department has demonstrated exceptional community value by providing emergency medical response, fire suppression, technical rescue, fire prevention, public education, public health services as well as internal and external customer services. The WFD is comprised of 419 members working at 19 community firehouses (Wichita Fire Department, 2006).

The background of the problem for the applied research project comes from the increasing fire fatality rate experienced in Wichita. The city has suffered twenty six fire fatalities in the last three years. All of the fire fatalities have occurred in residences (E. Bricknell, personal communication, May 10, 2008). The United States Fire Administration defines a residence as a one or two story family dwelling, a multifamily apartment building, manufactured housing, residential hotels, motels and hotels, assisted living facilities and dormitories (United States Fire Administration[USFA]/ National Fire Data Center[NFDC], 2007). This upward trend in the rate of fire fatalities has increased in the last three years and should be addressed by the Wichita Fire Department to reduce this serious problem. Residential fire deaths are not only the leading cause of fire deaths locally, but also nationwide. The residential structure fire problem accounted for approximately eighty-one percent of all fire fatalities in 2006 (United States Fire Administration[USFA], 2008). Four out of five United States fire deaths in 2005 occurred in residences (Karter, 2007).

In the past, the Wichita Fire Department had a home safety visit program that utilized fire suppression members. Fire companies would walk the neighborhoods in their response areas and offer to inspect residences for potential fire hazards with the occupant’s consent. The program was discontinued in the 1980s.

The current significance to the Wichita Fire Department is the safety of residents and firefighters of Wichita. The number of residential fire fatalities has exceeded the national average for the last several years (G. Kelch, personal communication, July 23, 2008). The fire prevention division has been reduced from five Public Educators to the current staff of three. The Wichita Fire Department is in a position to have a positive impact on the reduction of fire fatalities in the community with the addition of a residential risk reduction program.

The future impact of delivering a residential risk reduction program is to reduce the number of fire fatalities and enhance life safety. By utilizing a residential risk reduction program the Wichita Fire Department demonstrates a proactive commitment to the safety of the citizens of Wichita and its members. This applied research project will provide information to help resolve the identified problem and assist the WFD senior staff administrators to make an evaluation of existing procedures and possible additions to include a residential risk reduction program. Some of the greatest value delivered by the U.S. fire service comes in activities that prevent fires before they occur (USFA, 2006).

This applied research project addresses the Unit 1 process objective of the National Fire Academy's Leading Community Risk Reduction course to "Identify the most common fire and injury risk areas in the United States" (National Fire Academy [NFA], 2007, pp. SM 1-1).

This applied research project applies directly to the United States Fire Administration's fifth stated operational objective to "respond appropriately in a timely manner to emerging issues" (National Fire Academy [NFA], 2008, pp. II-2).

Literature Review

The purpose of this literature review is to summarize information received from other sources that are key elements of the research questions for the applied research project. The key

elements are: (a) data analysis of residential fire fatalities; (b) national statistics of residential fire fatalities; (c) components of a community risk reduction program; (d) procedures for a residential risk reduction program.

Data Analysis

Analyzing fire data is an important initial step in determining what risks the community is facing due to fire. The fire service produces a large amount of data each year. The problem is that it isn't utilized effectively to solve a community's fire problem (USFA, 2004). The key to data analysis is that it produces important information to make logical and informed decisions to reduce fire problems in a community.

Data analysis is a four stage process. Stage one is data collection, stage two is analyzing and summarizing data into information, stage three narrows data collected into whatever issue or fire problem is being studied, and in stage four decisions are made according to information that was analyzed (USFA, 2004).

Each fire department is responsible for delivering the safest and most effective use of resources towards prevention and mitigation activities. Using information from data analysis is essential to coordinate these activities. Patterns that are discovered from the data can be used for current problems, possible future problems and evaluating the success of current programs (USFA, 2004).

The two data analysis techniques that fire departments most often use to interpret information are charts and tables. Barnard (1921) stated "A picture is worth a thousand words" is a good description of what a chart does to assist in understanding fire data (p. 93). People tend to comprehend pictures better than words and numbers. A chart is a graph that illustrates data in

columns to show descriptive information. The values can be shown as numeric or non-numeric to provide an organized display of fire data (USFA, 2004).

Types of charts to consider are isograms, bar charts, line charts, pie charts, dot charts and pictograms. Two questions to consider when you are working through this process: (a) What conclusions come from your analysis? (b) How to display the conclusions? Tables are used to analyze data from categorical (qualitative) research (USFA, 2004).

National Statistics of Residential Fire Fatalities

The literature discovered that citizens dying in residential fires are not only a problem facing the city of Wichita, but that it is also a national problem. Residential fires account for the overwhelming majority of civilian fire fatalities in the United States. Estimates from the National Fire Protection Association (NFPA) show that 83 percent of fire deaths in the United States occur in residential structures (Karter, 2005).

Citizens in the United States died almost nine times more from residential fires than from all other natural disasters combined. Natural disasters are defined as hurricanes, tornadoes, floods and lighting (USFA/NFDC, 2007).

The residential fire problem in the United States is a major concern. Over a ten year period (1995 to 2004) residential fires produced an average of 3,300 civilian deaths, 16,500 injuries, and 5.8 billion in dollar loss (USFA/ NFDC, 2007). Statistics from the United States Census Bureau revealed that seventy-five percent of the people in the United States live in one and two family residences (U.S. Census Bureau, 2004).

In 2006, fire departments responded to 412,500 residential fires in the United States that killed 2,580 people and injured another 12, 925, excluding firefighters (Karter, 2007). The majority of fire fatalities die from smoke or toxic fumes and not from burns (Hall, 2001).

Residential fires are the second leading cause of accidental deaths in the United States. Research conducted worldwide revealed that the United States has one of the worst fire fatality and injury rates for industrialized nations (U.S. Consumer Product Safety Commision, 2007).

The two major causes of residential fire fatalities in the United States, where the majority of fire deaths occur, are incendiary or suspicious fires (arson), at 28 percent, and smoking, at 18 percent (USFA/ NFDC, 2007). Incendiary is defined as "one who or that which starts destructive fires" (Morehead, 1972, p. 239).

In the United States, cooking fires in residences are the leading cause of fires and injuries. Most of these fires are a result of human error rather than equipment malfunction. The majority of cooking fires were caused by ignition of common household items such as pot holders, grease, cabinets, and paper products (Nicholson, 2006).

The fire problem in the United States continues to be fire fatalities in the home at 82 percent; 81 percent of those fatalities occurred in single family homes and duplexes (National Fire Academy [NFA], 2007, pp. SM1-11). When fatalities are broken down into types of properties, structure fires make up 30 percent of all fires, yet they account for 79 percent of fire fatalities, injuries, and property loss. According to the USFA report: Fires in the U.S. 1995-2004: "More fire prevention efforts should be focused on this part of the overall fire problem" (2007, p. 39).

The fifth most common cause of unintentional death in the United States is from fires and burns (Centers for Disease Control and Prevention [CDC], 2005). Fatal home injuries from fires and burns are one of the leading causes. The number of fatalities caused by residential fires has steadily declined over the years, but many residential fire fatalities are preventable and continue to be a major public health problem (Centers for Disease Control and Prevention [CDC], 2007).

Components of a Community Risk Reduction Program

In the last fifteen years the mission of most fire service organizations has changed significantly. Fire departments that only provide fire suppression are uncommon in the United States today. Technical Rescue, Hazardous Materials, Incident Management Teams, and Disaster Management have been included into the mission of fire departments. This is due to changes in society and historical events such as Hurricane Katrina, 9/11, and the Oklahoma City Bombing (Kirtley, 2008, p. 309). These events have also changed the scope of prevention efforts by the fire service. Prevention efforts in the past were only directed to fires. Today with the increased all risk responsibilities of the fire service; prevention has developed a broader view to include a variety of risks faced by the community. This broader view to address all risks is called community risk reduction. It is defined as steps taken by a community to lessen the impact of risks in the community. Risk reduction involves implementing community based strategies that either reduce or eliminate hazards in the community, or lessen the community's vulnerability to the hazard. The bottom line for community risk reduction outcomes in relation to fires is to reduce fires, have fewer injuries and deaths, and reduce property loss (National Fire Academy [NFA], 2007, pp. SM 0-17).

The key components of a community risk reduction program are community involvement and utilizing a planning process that uses the five "E" as mitigation strategies (Kirtley, 2008).

The first component of community risk reduction is having fire departments more involved in the communities they serve. This can be accomplished by becoming involved in community organizations and establishing community based programs. A good example of community involvement is to have fire suppression crews in community firehouses providing a positive contact with the residents before an emergency occurs. Fire department personnel

should view community involvement as a daily opportunity to engage the community in a constructive manner. Law enforcement agencies have been very effective with this community engagement technique called community policing (Kirtley, 2008, p. 312).

Progressive fire departments today utilize a community risk reduction strategy that is community based to address the highest priority risks in their communities and then attempt to reduce those risks (Kirtley, 2008, p. 310). Public Health Agencies have employed the community risk reduction approach for decades using mitigation strategies known as the three "E"s: Education, Enforcement, and Engineering. President Harry Truman first introduced the original three "E"s at the 1947 President's Conference on Fire Prevention. The United States Fire Administration adopted two more "E"s that include: Emergency Response, and Economic Incentives (Kirtley, 2008, p. 309). The mitigation strategies that are termed the five "E"s are summarized as follows:

Education: This is a commonly used strategy utilized by most fire departments. The objective is making the public aware of fire risks, and change risk behaviors about fires. By changing their behavior about fire it reduces fire incidents that can cause injuries and fatalities. Education used by itself is the least successful of the five mitigation strategies, but it is a key component when utilized in enforcement and engineering mitigation strategies (Kirtley, 2008, p. 311).

Engineering: The objective of engineering is to develop products with safety measures built into the product that eradicates or lessens the risk. Products that have been developed to save lives include: Smoke Alarms, Fire Sprinkler Systems, and Fire Resistant Sheetrock (LCRR, 2007).

Enforcement: The use of codes and standards to lessen fire risk is the objective of an enforcement strategy. A key component of enforcement strategy is to utilize advancements in engineering. Fire departments must have the capability to enforce adopted codes and standards (National Fire Academy [NFA], 2007, pp. SM 4-33).

Economic Incentives: The goal of this strategy is to use financial incentives or deterrents to encourage personal or corporate behavior. For example, when smoke alarms are provided free of charge by the local fire department, economic incentives are being utilized (Kirtley, 2008, p. 311).

Emergency Response: There are risks that cannot be prevented or reduced through other strategies. When that is the case, only a sufficient emergency response intervention can be used to mitigate the situation. For example, even though 94 percent of residences in the United States have smoke alarms, thousands of homes have fires in them each year. Only a properly trained and equipped fire suppression force can be used to mitigate the situation (Kirtley, 2008, p. 311).

The United States Centers for Disease Control conducted studies that determined only applying one mitigation strategy usually resulted in no change at all (Centers for Disease Control and Prevention, 2003).

A community risk reduction model was developed by the United States Fire Administration to be used by fire service organizations to incorporate a planning process to determine the leading risks to communities and how to reduce them. The process of developing a comprehensive multi-hazard risk reduction model consists of a framework with five important steps to be followed in order. Each step has activities to be followed to complete the step. At the conclusion of each step a desired outcome is achieved. For example, when Step One – Getting Ready- is completed the planner(s) should be champions of community risk reduction (NFA,

2007, pp. SM1-88). Listed below are the components of the USFA (2007)community risk reduction model:

Step 1 Getting Ready

Activities: (a) Understand Risk Reduction

(b) Accept Personal Responsibility

(c) Develop Personal Vision

(d) Evaluate Authority and Politics

(e) Develop Project Plan

Outcome: Champion or Advocate of Risk Reduction

Step 2 Assessing Community Risk

Activities: (a) Analyze community

(b) Identify hazards and causal factors

(c) Assess vulnerability

(d) Establish priorities

(e) Define acceptable risk

(f) Create risk reduction objective

Outcome: Risk Reduction Objective

Step 3 Intervention Strategies

Activities: (a) Identify Potential Strategies

(b) Analyze Cost versus Benefit

(c) Select Risk Reduction Strategy

(d) Develop an Evaluation Strategy

Outcome: Risk Reduction Strategy

Step 4 Action

Activities: (a) Identify Needed Resources

(b) Develop Implementation Strategy

(c) Assign Responsibility

(d) Gain Policy Approval

Outcome: Program Implementation

Step 5 Evaluating

Activities: (a) Evaluate Results

(b) Report Results

(c) Modify Risk Reduction Initiatives

Outcome: Ongoing Review

When Step 5 is complete the process returns to Step 2.

An equally important section of the USFA community risk reduction model is:

Building Support

Activities: (a) Creating Organizational Culture

(b) Identify Community Stakeholders

(c) Engage the Community

(d) Build Community Equity

Procedures for a Residential Risk Reduction Program

Most adults do not like the idea of being educated on various issues, but will accept being made aware of risks. It is important to make adults aware of the risks associated with residential fires. The fire service must develop programs to educate the public. There is a difference between education and awareness. Adults may believe they are becoming aware of fire related

risks, but they are actually learning important information (Lacey & Valentine, 2005). Of the two major causes of U.S. residential fatalities, smoking and cooking, both require behavioral changes in their perception to the problem. Using engineering, by having working smoke alarms, in conjunction with a home fire safety inspection, could reduce the problem significantly (Lacey & Valentine, 2005).

The National Fire Protection Agency (NFPA) agrees with the British Fire Service and recommends that Fire Prevention should be included as a line service that is mission driven and incorporates risk reduction involving: (a) public education programs, (b) emergency response, and (c) emergency (disaster) management (Kirtley, 2008, p. 314). Many departments in the United States view Fire Prevention as a support service to the emergency response system. Community Risk Reduction is a line service because it is delivered to customers outside the fire department. It is a system approach to effectively deliver the mission of the fire department (Kirtley, 2008, p. 314).

The United States civilian fire fatality rate has been reduced by 40 percent in the last 15 years. That has brought the United States to what the British fire fatality rate was 15 years ago. Now the United Kingdom has reduced their fire fatalities by another 40 percent (Schaenman, 2007). This figure is extraordinary considering the lower the overall fire fatality number becomes, the more difficult it is to decrease (Schaenman, 2007). In the United Kingdom a majority of the fire prevention duties are performed by line firefighters working in community firehouses. The British Fire Service stresses fire prevention much more than it did in past years. Fire Prevention is considered a line service, not a support service. A local risk analysis is used to target specific prevention activities (Schaenman, 2007). Researchers from the National Center for Injury and Prevention along with United States Department of Homeland Security's

Assistance to Firefighters Grant Program staff found that home visit programs were the most important fire prevention practice they discovered (Schaenman, 2007). It is a voluntary program, but most agree to the visit. The British Fire Service and local fire authorities' feel that the home visit is a key to their success in reducing fire deaths over the past decade (Schaenman, 2007). The fire companies schedule home visits in selected morning, afternoon, and evening time periods. The times are chosen during low call volume periods and when residents are more likely to be home. Each home visit takes approximately one hour. A check list is used for inspecting and mitigating visible hazards, along with testing and installing smoke alarms. During the visits, the interaction with the residents encourages safety related behaviors. Data is collected during the visit on risks found in the household. Based on the risks found after the initial visit, the home will be revisited from one week to eight years. The home safety visits by the British Fire Service have involved hundreds of thousand residences. Risk analysis software is used to operate resources efficiently. The software ties fire data with socioeconomic data to estimate areas of high risk. Risk models have been developed on a national level and sent to all fire departments in the United Kingdom (Schaenman, 2007).

To reduce fires in the home, experts agree that an important first step is to have a greater awareness of how to prevent accidents from occurring. By recognizing hazards in the home and taking proactive steps, many fires and fire related injuries can be prevented (U.S. Consumer Product Safety Commision, 2007).

Face to face contact is the most effective public safety education strategy (Home Safety Council, 2006). Using a direct approach by visiting a home provides an opportunity to enhance the public image of the fire department. Since the majority of fire fatalities occur in homes having the opportunity to visit a residence is beneficial (Home Safety Council, 2006). While

conducting the home safety visit, an obvious life safety hazards could be found that could be the difference between life and death. This is a true proactive approach by the fire service that is immeasurable.

Chief Brian Crawford (2005) recommends implementing an aggressive home inspection program that places firefighters into home before a fire can occur. He adds by using a checklist to find possible fire safety problems is a good first step to reducing the risk of fires in the home.

Home safety visits also assist firefighters with learning their response areas, street familiarization, hydrant locations, and building construction. These are all important pre-incident aspects to be aware of. Knowing this important information before the incident occurs assists in the mitigation of an emergency response in the community by the neighborhood emergency responder (Carr, 2006).

Fire prevention education, testing and installing smoke alarms, and having an escape plan prove to be the most effective methods to reduce risks in residential fires (Gottuk, 2008). Residential fire fatalities have been reduced dramatically by the introduction of smoke alarms in the home by alerting the occupants quickly and providing them with sufficient time to escape. The strategy is to have effective and reliable early warning smoke alarms in all homes (Public/ Private Fire Safety Council, 2006, p. 7)

Smoke alarms are in 96 percent of the homes in the United States. The four percent of the homes that do not have a working smoke alarm account for 39 percent of reported residential fires and approximately 50 percent of reported fire fatalities (Public/ Private Fire Safety Council, 2006, p. 25).

The most successful smoke alarm campaigns combine direct installation, along with safety education talks, and scheduled follow up to check the operability of the smoke alarm after

a determined amount of time (Douglas, 1998, pp. 28-32). Out of four methods evaluated to distribute smoke alarms, door to door canvassing was the most effective. Other programs that were tested distributed smoke alarm vouchers at public places; fliers were placed on doors of homes, or by mail notification (Douglas, 1998).

A study conducted in 2004 consisted of four states in comparable communities that provided smoke alarms either by voucher or installation. Results in 6 to 12 months following the installation revealed that 90 percent of the homes with an installed smoke alarm were still operable compared to 65 percent of the voucher homes (Harvey, et al., 2004).

Studies have shown that 90 percent of installed smoke alarms after one year were still functioning, but only 64 percent after three years. This suggests that installed smoke alarms are effective initially but after two to three years the positive effects start to decline. Data shows this is due to batteries being disconnected or quit working (Thompson, Jones, Davis, & Caplan, 2004).

Research by Ballesteros (2005) identifies key elements that provide for effective life safety initiatives including smoke alarms:

1.) Targeting communities at greatest risk

2.) Develop strong relationships with community organizations.

3.) Develop pre-intervention awareness by media.

4.) Door to door canvassing

5.) Combining Fire Safety education with smoke alarm installation.

6.) Providing incentives and recognition for Program staff.

7.) Evaluation of program

Fire fatalities in the United States are dominated by fires in residential structures. If every residence had a working smoke alarm, residential fire fatalities would be reduced by an estimated 36 percent and approximately 1100 lives saved per year (Ahrens, 2004). Preventing a fire before it happens is always a better option than detecting it once it has happened. Therefore, by minimizing the hazard through public fire education and interaction with fire protection advocates is the first key element to prevention and/or mitigation (Gottuk, 2008, p. 81).

The last key element for procedures to reduce residential fire fatalities is the development of a home escape plan. Smoke alarms can only warn occupants of a fire; the alarm cannot put the fire out. Therefore a home escape plan is essential, (a) by having a plan to quickly escape, (b) having two ways out of every room, and (c) having a meeting place established outside the home (Gottuk, 2008, p. 81).

Summary

In summary, residential fire fatalities continue to be the United States primary fire problem. Incorporating multiple mitigation strategies into one program is the most effective method for reducing fires. Utilizing fire suppression members to deliver fire safety messages to the community is cost effective and efficient. U.S. fire data indicates smoking, arson, and cooking are leading causes of fire fatalities. This research indicates that providing a door to door residential fire safety visit coupled with a smoke alarm installation program is an effective residential risk program that could reduce the major causes of residential fire fatalities.

Procedures

The research procedures used in preparing this paper consisted of: an initial literature review conducted at the Learning Resource Center at the National Fire Academy in April of 2008 and an additional literature review at the Wichita Public Library in May of 2008; data

analysis collected at the Wichita Fire Department Fire Prevention Division through the National Fire Incident Reporting System (NFIRS) to develop descriptive statistics for fire fatalities in residential structures in the City of Wichita; and a situational analysis to determine what factors are causing or contributing to residential fire fatalities in Wichita.

The objective of the literature review, data analysis, and the situational analysis were to collect and establish data to answer the research questions of this paper.

Data Analysis was carried out at the Wichita Fire Department (WFD) Administrative Offices in June 2008. Data was recovered by physically retrieving files from storage and from WFD Firehouse computer software incident reporting system. The queried data was then utilized to provide information on fire fatalities in Wichita from 1997 through 2007. This information was used to answer the author's research questions, specifically research question one.

The research method was action in nature to attempt to solve an existing problem and applying new methodologies (procedures) by the Wichita Fire Department to reduce residential fire fatalities.

Action research involves six procedural steps:

The first step in action research is to evaluate the problem statement. Is the problem statement clear and comprehensive in detail to fully explain the problem?

After reviewing the data of the problem and the preferred result to resolve it made the problem statement clear and comprehensive: The problem is that the City of Wichita has experienced twenty six residential fire fatalities in the last three years. Action research was utilized to develop and implement a program to address this situation.

Step two in the process required establishing a broad goal. The purpose statement clearly defined the goal: The purpose of this research is to identify factors that contributed to the fire

deaths and develop a residential risk reduction program to reduce the unacceptable number of fire fatalities in Wichita.

The third step was to conduct a situational analysis to determine (a) causal and contributing factors; (b) existing situational forces likely to assist or impede reaching the goal.

Causal and contributing factors were the lack of awareness and education by residents to the risk of a fire occurring in their home. Successful programs by other fire service organizations were given in the literature review.

Existing situational forces were examined that could assist the researcher reach the goal. By utilizing the community firehouse personnel to deliver a residential risk reduction program to the neighborhoods in their assigned areas would be a huge asset to the WFD in reducing fire fatalities. Data analysis (question 1) informed the researcher to what the leading causes of the fatal residential fires were in Wichita. The literature review revealed what the residential fire fatalities were on a national level (question 2). With that information, using mitigation strategies (question 3) from the international fire service community, a program was developed that utilizes education, engineering, emergency response, and economic incentives.

Using components of a community risk reduction model, the researcher determined what procedures (question 4) the WFD could successfully implement to reduce residential fire fatalities (NFA, 2007).

Impeding situational forces that exist that could keep the goal from being reached also had to be investigated. Residents often have a false sense of security believing that they will not have a fire. Having the community receive information in their own homes from the fire service on a voluntary basis can be challenging. Training fire department suppression staff to adequately present information and conduct a home visit can be an impediment. To minimize this

impending force a guide for suppression staff should be established. Organizational shift of the fire department to be proactive to reduce the risk of residential fires can be a reason for not reaching the goal.

By defining and prioritizing residential risk reduction strategies causal factors were addressed and could be eliminated with the implementation of a Wichita Fire Department Residential Risk Reduction Program to reduce or eliminate residential fire fatalities. Training community firehouse suppression members to deliver residential fire risk awareness to residents to make them aware of risks in their homes that can endanger their lives. Addressing the importance of a proactive approach to risk reduction that could save both resident's and firefighter's lives.

Helpful forces that could be capitalized to assist with the prioritized strategies include: providing information to residents about the leading causes of residential fires in Wichita and the importance of a working smoke alarm in the home.

In action research objectives must be realistic, achievable and measurable. The objectives of this research paper are to determine through research the factors that contributed to the fire deaths, and develop a Residential Risk Reduction Program for the Wichita Fire Department by January 1, 2009.

An action plan was developed to accomplish the objective stated previously. The action plan consists of five elements: who, what, when, where and how. While maintaining the focus of the goal and objective, all five action plan elements were considered, and a program was developed in a manageable time frame (National Fire Academy [NFA], 2007, pp. SM 5-27).

The Five Elements of the Action Plan:

Who: External stakeholders would be residents of the City of Wichita. Internal stakeholders would be all members of the Wichita Fire Department.

What: Determine the factors that contributed to the fire deaths. Research the components of a community risk reduction program. Develop procedures for a residential risk reduction program that should be approved and implemented.

When: Developed by August 1, 2008
Approved by December 1, 2008
Implemented by January 1, 2009

Where: The specific targeted area for the objective is residential structures in the City of Wichita.

How: The most cost effective way to implement the action plan is to utilize WFD fire suppression members in community firehouses located throughout the City of Wichita to conduct home fire safety visits in their assigned areas.

To benchmark this procedure for evaluation is an essential step in this procedural process. Using data analysis to review the causes and number of fire fatalities each year and then review the Residential Risk Reduction Program for possible revisions and/or modifications (NFA, 2007, pp. SM 5-29).

Using components of a community risk reduction model, the researcher determined what procedures (question 4) the WFD could successfully implement to reduce residential fire fatalities (National Fire Academy [NFA], 2007).

Researching and utilizing the components of a Community Risk Reduction Model assisted the researcher in developing this action research procedures section (NFA, 2007, pp.SM 1-93).

Limitations

The literature reviewed for this research was assumed to be factual, objective, and unbiased. One limitation was the development of a residential risk reduction program by the researcher alone. Ideally, a planning team would be created to develop a program, but the limited time to produce the research paper was a factor.

Results

A Draft Residential Risk Reduction Program for the Wichita Fire Department is shown in Appendix A and represents the result of this action research.

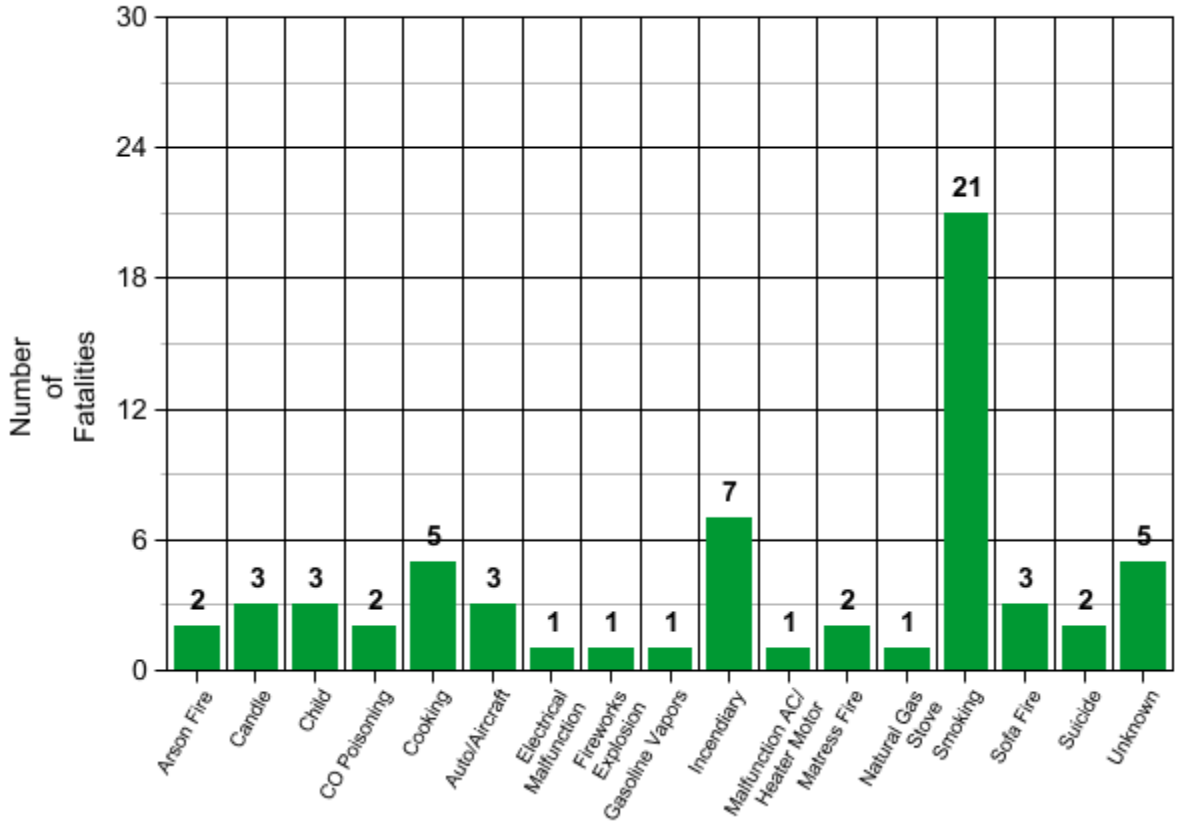
Research Question 1. How can data analysis be utilized to collect information on factors that resulted in residential fire fatalities in the City of Wichita?

Analyzing fire data is an important initial step in determining what risks the community is facing due to fire. The Wichita Fire Department produces a large amount of data each year. The key to data analysis is that it produces important information to make logical and informed decisions to reduce fire problems in a community (USFA, 2004).

Data analysis is a four stage process. Stage one is data collection, stage two is analyzing and summarizing data into information, stage three narrows data collected into whatever issue or fire problem is being studied, and stage four decisions that are made according to information that was analyzed (USFA, 2004).

Using information from data analysis is essential to coordinate a residential risk reduction program. Patterns that are discovered from the data can be used for current problems, possible future problems, and evaluating the success of current programs (USFA, 2004).

Figure 1 - Causes of Fire Deaths in Wichita 1997 - 2007

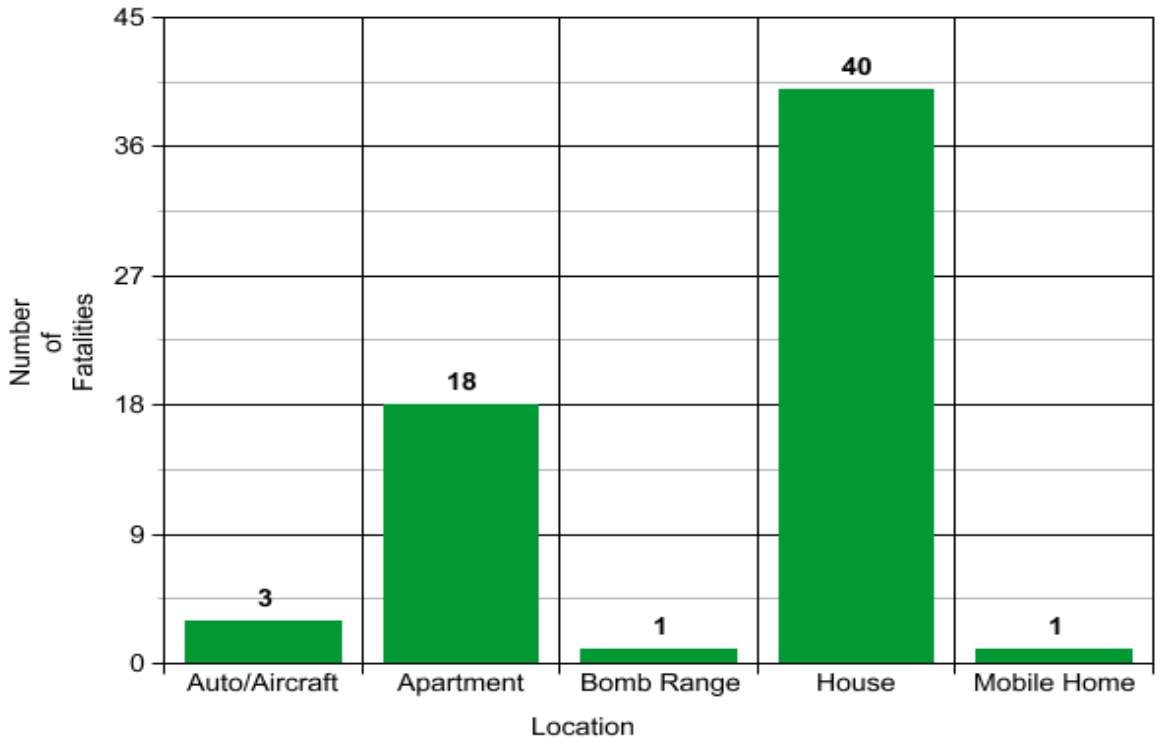


The National Fire Death rate in 2005 was 12.3 deaths per million populations. In the State of Kansas the fire death rate was 11.7 per million populations. In Wichita, the fire death rate was 22.5 per million populations. Wichita has almost double the number of fire fatalities than the national fire fatality rate in the last three years. Fire data for fire fatalities in the last three years in Wichita found: 2005: 22.5 deaths per million, 2006: 22.4 deaths per million, 2007: 24.9 deaths per million populations (Gayle Kelch, private communication, July 23, 2008).

The median value for 2005, 2006, and 2007 would be 22.5. The median value is the middle value when the measurement is arranged from smallest to largest. To determine other fire death rates (per million populations) you can use the following formula: number of deaths/population multiplied by 1,000,000 (Gayle Kelch, private communication, July 23, 2008). The leading causes of fire fatalities in residential structures in Wichita from 1997 to 2007 are: (a) Smoking, (b) Incendiary fires, and (c) Cooking.

In the years 2005, 2006, 2007 all twenty six fire fatalities were in residences and thirteen out of twenty-six residential fire fatalities had either no smoke alarm or a non-working smoke alarm. In a ten year data analysis conducted by the author, from 1997 to 2007, 92.06 percent of the fire fatalities were in residences. In five out of the last seven years (2000 to 2007) the City of Wichita was above the national average for fire fatalities. Figure 2 indicates the causes of fire deaths from 1997 to 2007.

Figure 2 - City of Wichita Fire Deaths 1997 - 2007



Research Question 2. What are the national statistics on residential fire fatalities?

Residential fires continue to be where the overwhelming majority of fire fatalities occur. National Fire Protection Association estimates indicate that 83 percent of fire fatalities in 2004 occurred in residential structures (Karter, 2005). Fire fatalities in single family homes and duplexes accounted for 81 percent of the fire fatalities (NFA, 2007). Over a ten year period from 1995 to 2004 residential fires produced an average of 3,300 civilian deaths per year (USFA/NFDC, 2007).

The second leading cause of accidental death in the United States is from residential fires (U.S. Consumer Product Safety Commision, 2007). The two major causes of residential fire fatalities are incendiary or suspicious fires (arson) at 28 percent, and smoking at 18 percent (USFA/ NFDC, 2007). The majority of the fire fatalities die from smoke or toxic fumes and not from burns (Hall, 2001).

Citizens in the United States died almost nine times more from residential fires than from all other natural disasters combined. Natural disasters are defined as hurricanes, tornadoes, floods and lighting. Fatalities from disasters average 200 to 250 per year, as opposed to greater than 4000 fatalities from fires (USFA/ NFDC, 2007).

Research Question 3. What are the components of a community risk reduction program?

The literature reviewed indicated that the key components of a community risk reduction program are community involvement, and utilizing a planning process that uses the five “E”s as mitigation strategies (Kirtley, 2008).

The fire department can become involved in the community by participating in neighborhood organizations and establishing community based events. Fire suppression members working in community firehouses can demonstrate community involvement by

providing positive contact with the residents before an emergency occurs. The goal is gaining the trust and support of the residents for risk reduction activities. Fire department personnel should view community involvement as a daily opportunity to engage the community in a constructive manner (Schaenman, 2007).

A planning process that utilizes mitigation strategies known as the five “E”s is the second component of a community risk reduction program. The 5 “E”s mitigation strategies are a proven method utilized by organizations for decades. The 5 “E”s mitigation strategies are (a) Education, (b) Engineering, (c) Enforcement, (d) Economic Incentives, and (e) Emergency Response. These mitigation strategies are utilized in a planning process that is developed to prioritize and reduce risks facing a community (NFA, 2007). When used collectively they can reduce community risks by using resources that are available to the organization (Centers for Disease Control and Prevention, 2003).

A community risk reduction model was developed by the United States Fire Administration to be used by fire service organizations to incorporate a planning process to determine the leading risks to communities and how to reduce them (NFA, 2007). The process of developing a comprehensive multi-hazard risk reduction model consists of a framework with five important steps to be followed in order. Each step has activities to be followed to complete the step. At the conclusion of each step a desired outcome is achieved. The five steps are listed in order: (a) Getting Ready; (b) Assessing Community Risk; (c) Intervention Strategies; (d) Action; and (e) Evaluation. An equally important section of the USFA community risk reduction model is building support from internal and external stakeholders (NFA, 2007).

Research Question 4. What procedures could be implemented to deliver a residential risk reduction program to the citizens of Wichita?

This research indicates that providing a door to door residential fire safety visit by fire suppression members located in community firehouses coupled with a smoke alarm check and/ or installation program is an effective residential risk program that could reduce the major contributing factors of residential fire fatalities in the City of Wichita (Schaenman, 2007). A Standard Operating Procedure (SOP) should be implemented to describe the proper procedures in detail to be followed by Wichita Fire Department personnel prior to and during a home fire safety visit. A training guide should be included in the standard operating procedures along with a checklist to be followed by WFD members that can be left with the resident as a reference guide.

Testing smoke alarms during a home safety visit is an important part of the risk reduction program. Over fifty percent of the homes that had a fire fatality in Wichita from 2004 through 2007 had either no smoke alarm or a nonworking smoke alarm.

The objectives is to make the public aware of fire risks and change risk behaviors, to have positive interaction with residents, test their smoke alarm and replace it if necessary, and provide a checklist of home fire hazards. These objectives can be met in a cost effective manner by utilizing fire suppression personnel to deliver home safety visits in their assigned fire district.

Discussion

Through the review of literature, data analysis, and a situational analysis, the author supports what others have found. That developing a proactive approach to residential fire fatalities by implementing a residential risk reduction program utilizing fire suppression personnel is a proven method in reducing home fire deaths. The British Fire Service believes that the Home Visit Program is the key to their success at reducing residential fire fatalities by 40 percent in the last fifteen years (Schaenman, 2007). Residential fires are the second leading cause

of accidental deaths in the United States. Research conducted worldwide revealed that the U.S. has one of the worst fire fatality rates in the industrialized world (U.S. Consumer Product Safety Commision, 2007).

The author agrees with Chief Brian Crawford's recommendation of implementing an aggressive home inspection program that places firefighters into residences before a fire can occur (Crawford, 2005). Visiting a home provides an opportunity to enhance the public image of the fire department. Since the majority of fire fatalities in Wichita occur in residences having the opportunity to visit a resident about fire safety in the home would be beneficial.

The data analysis results as well as the literature reviewed indicate that smoking, incendiary, and cooking fires are leading causes of residential fire fatalities in Wichita and in the United States. Also that properly installed smoke alarms are one of the most cost effective life safety devices (Public/ Private Fire Safety Council, 2006). The author agrees with the literature reviewed that data analysis is an important first step in determining what risks the community is facing (USFA, 2004). By understanding the importance of the factors in reducing residential fire fatalities; resources could be utilized efficiently to have the most impact (USFA/ NFDC, 2007). Many fire fatalities and fire related injuries can be prevented by recognizing fire hazards in the home and taking proactive steps to prevent them from occurring (U.S. Consumer Product Safety Commision, 2007). This is why it is so important for the Wichita Fire Department to interact with the community by establishing procedures for residential risk reduction program that focuses on fire safety.

All of this information has been compiled to produce the most effective and efficient program to reduce the high number of fire fatalities the City of Wichita has experienced in the

last several years. By utilizing fire suppression crews to go out into the neighborhoods to interact with residents to assist them in being more aware of how to prevent fires.

The author concludes that a home fire safety visit coupled with a smoke alarm inspection would be the two primary components to the residential risk reduction program. Numerous sources including researchers from the National Center for Injury and Prevention and the United States Department of Homeland Security's Assistance to Firefighters Grant Program staff found that home visit programs were the most important fire prevention practice they discovered (Schaenman, 2007).

By combining the results of the author's research and the literature reviewed a synthesis of information produced the final product: The Wichita Fire Department Residential Risk Reduction Program (Appendix A). The program would utilize components established by the United States Fire Administration and the British Fire Service (Schaenman, 2007). The key components are community involvement and a planning process that incorporates multiple mitigation strategies called the 5 "E"s (Kirtley, 2008).

A checklist is used for inspecting and mitigating visible hazards, along with testing and installing smoke alarms. During the visits, the interaction with the residents encourages safety related behaviors (Crawford, 2005).

This research study has several organizational implications. First, for the Wichita Fire Department to become an advocate for the communities they protect by reducing fire fatalities in residences by being proactive in the neighborhoods to make residents aware of fire risks in their homes by implementing a residential risk reduction program. Second, to provide a positive interaction with the public in a non-emergency setting. Finally, for the Wichita Fire Department to establish itself as a local government leader in the community risk reduction process.

Recommendations

Based on the results of this research it is recommended that the Wichita Fire Department Administration should implement a residential risk reduction program to reduce or eliminate the high number of residential fire fatalities in the City of Wichita. Appendix A represents a Draft Residential Risk Reduction Program. The author recommends that the risk reduction program be utilized by Wichita Fire Department suppression personnel to engage the community by assisting residents to become more aware of fire risks in their homes. By utilizing procedures in the Draft Residential Risk Reduction Program firefighters will have adequate training and resources to assist the residents in reducing fire risks that could become fatal.

The data collected through the literature review, along with the data analysis and the situational analysis conducted by the author supports the recommendation to implement the Draft Residential Risk Reduction Program found in Appendix A.

The author recommends that data analysis should be studied by the WFD administrative staff to assist in decisions that could reduce risks to the citizens of Wichita and members of the Wichita Fire Department.

In conclusion, the author recommends to readers of this paper to review your department’s fire prevention programs to see if a residential risk reduction program could assist in reducing or eliminating residential fire fatalities in your community.

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Appendix A

RESIDENTIAL RISK REDUCTION PROGRAM

DRAFT HOME FIRE SAFETY VISIT PROGRAM

1. INTRODUCTION

1.1 The intent of this document is to provide fire department fire service personnel with a guide for the establishment of a residential risk reduction program.

1.2 Because the majority of fire deaths occur in residential occupancies, it is essential for the Wichita Fire Department to proactively undertake fire safety visits to better protect the residents of its community.

1.3 To be effective and to adequately identify and deal with local fire problems and fire risks, solutions to identified problems should be developed locally. This document is a basic guide for firefighters carrying out Home Fire Safety Visits. Home Fire Safety Visits will be utilized for single-family as well as multifamily homes, such as apartments, town houses, and condominiums.

1.4 Some of the benefits obtained from carrying out this activity include:

- Increased productivity from greater work effectiveness
- Increased contact with the community and partnership development
- Familiarization with residential properties
- Reduction of the risk of fire within properties
- Increasing the awareness of residents to fire safety issues
- Protective measures to improve the quality of life

2. PURPOSE

2.1 Because we are responsible for the protection of life and property. If the downtrend in national residential fire deaths years is to continue, a community effort toward public fire safety education including fire-safe behaviors and the use of smoke alarms, residential fast-response sprinklers, and a fire escape plan is critical. Home safety visits are a proven method in successfully lowering loss of life, injury, and property damage from fire.

2.2 In addition to reducing loss of life and property damage, an effective Home fire safety visit program can generate positive opportunities, which benefits the department and the community.

2.3 Citizens see how they are getting more for their money in terms of a comprehensive fire service organization.

2.4 Meeting residents of the community on a one-to-one basis and distributing various fire prevention literature; providing a checklist of home fire hazards, and other fire safety information, also answering specific fire protection or fire safety inquires.

2.5 Allowing fire fighters to become better acquainted with street names and layouts, hydrant and water supply and lock box locations, community development, and home construction, as well as pre-fire planning.

2.6 Discuss findings during training sessions to support the professional development of fire fighters engaged in the program's activities.

2.7 Allowing firefighters to become acquainted with construction types, interior designs, avenues of fire spread, and locations of various concealed spaces. For example, the entrance to attics and crawl spaces can be determined prior to an emergency.

2.8 Distribution of fire safety materials.

2.81 Fire safety visits of homes provide the fire department with one of the best means of delivering public fire prevention education through direct contact with residents of the community and distribution of fire prevention literature directed at the local fire problem.

2.82 Officers should consider the use of fire education materials in different languages in order to effectively deliver safety messages in all parts of the community.

2.83 The fire department will look beyond the immediate short-term benefits by continuing to analyze and evaluate the effectiveness of the program and its continued ability to address the current local fire problems.

2.84 The department realizes that the planning, implementation, and evaluation processes needs to be a continuous cycle that reacts to the varying needs of the community.

3. OBJECTIVES AND EVALUATION

3.1 The Wichita Fire Department's goals and objectives for the Home Fire Safety Program include:

- The percentage of homes to be visited
- Areas of operation
- The schedule of visits

3.2 A periodic program evaluation to identify any changes to the program operation in order to increase its effectiveness and track progress will be carried out.

3.3 The officer of each fire company will be responsible for the effective operation of the Home Fire Safety Program for their company. They are responsible for:

- Scheduling
- Evaluation of quality and quality of home visits

- Fire Companies shall receive credit for each living unit visited. Although it is important to visit all living units, the company may not have the opportunity to complete and entire unit.
- Each company officer shall maintain a log of all visits conducted. The log shall include the following information:
- Location
- Officer responsibility
- Status of visit
- Completion date

3.4 Each company officer shall carry out Quarterly reporting to the Fire Marshal's Office on the progress of the program.

3.5 Data entry of visit information in the Firehouse software record management application.

4. PLANNING

4.1 Careful planning and preparation are essential if a home fire safety visit program is to be successful. Every department member is responsible for educating the people of the community that the program is beneficial.

4.2 Homeowners should be fully informed of the value of visits, including how much visits can save lives and protect their homes from fire. Careful planning and widespread community support will increase the overall success of these programs. Departmental customer visits will be utilized by management to determine the quality of personnel visits.

5. VISIT COMPETENCE

5.1 Firefighters must conduct themselves appropriately during visits. Each firefighter should be able to explain:

- Proper methods of introduction and explanation of program rationale for the homeowner
- Understand that securing permission from the homeowner to perform the Home Visit is voluntary. (A homeowner's refusal to allow an inspection must be documented.)
- Common fire hazards that can be expected to be found in a home
- Provisions of the local fire code that are applicable to homes (Inspections generally should be made as a courtesy, not because of fire prevention laws.)

5.2 Size of Visit Team

5.2.1 Home visits should be conducted by a minimum of two firefighters. Because the presence of too many firefighters at a single home could be

perceived as an authoritative force, the recommended inspection team should be two firefighters.

6. PROGRAM DURATION

6.1 Visits of homes will be carried out on an annual basis. The program should contain elements to be emphasized during specific times of the year, such as access to fire hydrants or heating equipment problems during winter months.

6.2 Building to be visited

6.2.1 Every three and above multiple family home units in the fire department's jurisdiction will be included within the program.

6.2.2 Single family residents will also be visited.

6.3 Scheduling of Visits

6.3.1 The scheduling of home visits should take into consideration citizens' receptiveness to the program. The best times to conduct Home visits are midmorning (9a.m. to 11 a.m.) and mid-afternoon (1p.m. to 3:30p.m.), Monday through Friday, except holidays. Line officers should consider scheduling weekends and evenings in order to make contact with residents for visit purposes.

6.3.2 If any evenings are scheduled, no visits should be conducted no later than 8p.m. (20:00 hours).

7. VISIT PROCEDURES

- Before leaving the station, the officer in charge should ensure that all fire fighters are in proper uniform and are properly equipped. A clean work uniform with proper insignia or identification is necessary.

- All firefighters should be familiar with the visit guidelines. These guidelines give guidance on the common type of hazards found in homes, also information on Life safety when giving advice to persons on fire safety.

- Fire apparatus utilized by the visiting firefighters should be kept in proximity to the area being visited to facilitate a quick response to an emergency alarm. Alarm notification can be accomplished through the use of normal and accepted wireless communications.

- A firefighter must stay with the apparatus in the interest of security and to notify the remaining crew members through a pre-designated signal, such as sounding the vehicle siren or air horn or portable communications.

- Firefighters assigned to the vehicle should be aware and cautious of children in the vicinity of the vehicle, particularly during times of vehicle movement.

- Firefighters should also be prepared to answer questions from the public relating to both the apparatus and fire safety in general.

- The officer in charge should assign a team of fire fighters to visit homes. This will mostly be two-person teams. On no account should a single fire fighter be allowed to carry out a home safety visit.

- A residence should be approached by a walkway or path, not by walking across the lawn.

- If the occupant is home, the firefighters should introduce themselves, show proper identification, explain the purpose of the visit, and ask permission to enter.

- If admittance is refused, the firefighters should thank the occupant and leave appropriate fire prevention materials.

- Once inside the home, the visit should begin without delay. Firefighters are to be helpful and courteous at all times.

- Firefighters should take care to avoid unnecessary conversation, because they can overlook a potential fire hazard and slow down the visit.

- Because fires can occur in any room, the entire home should be checked. However, if the occupant objects to visit of certain rooms, the occupant's wishes should be respected. Closets and cabinets should be opened by the homeowner rather than the firefighters.

- Firefighters must remember that a visit is voluntarily accepted by the occupant. The occupant should be asked to accompany the firefighters to see and to hear explanations of any fire hazards. If the occupant is unable to accompany the firefighters, the visit should be rescheduled for a more convenient time.

- Fire hazards identified should be noted on the form. This form is only a list of recommendations, not of violations. However, if a hazardous situation that violates local fire regulations is found, it should be recorded and forwarded to the FMO.

- An example would include: Visiting firefighters find a home where smoke alarms are not present, the resident should be advised to obtain one and a notation of the recommendation should be made. During the visit, the firefighters must not argue any point, but merely make suggestions. The purpose of the visit is to eliminate hazards to life and property, and all conversations should be directed toward this goal.

8. HOME FIRE SAFETY VISIT FORMS

8.1 The Home Fire Safety Visit Checklist should be filled out completely. A Home Fire Safety Factsheet should be left with the resident.

8.2 If no hazards are found during the visit, the occupant should be complimented for his or her efforts.

8.3 Questions asked about the department should be answered. Questions regarding policy matters should be referred to the company officer and should not be answered by firefighters. If the answer to any question is not known, firefighters should research the matter and advise the resident as soon as possible. Firefighters should realize that many persons will base their opinion of the entire fire department on this one contact; therefore, a professional attitude and demeanor must be maintained at all times.

8.4 Prior to leaving the premises, the firefighters should make sure the occupant understands any fire hazards that have been found and what corrective actions should be taken. Literature should be provided, and an invitation should be issued to the occupant to stop by the fire station any time he or she has a question relating to fire safety or is interested in learning more about services offered by the fire department. Last, but not least, the occupant should be thanked for allowing the visit to be conducted.

Policy adapted from NFPA 1452; Guide for Training Fire Service Personnel to Conduct Home Fire Safety Visits; 2005 Edition. National Fire Protection Association; 2005; Common Hazards Found in Homes.

MULTIFAMILY RESIDENTIAL VISIT

1. INTRODUCTION

1.1 The intent of this policy is to provide fire service personnel with a guide to implement a multifamily residence fire safety program for the community.

2. PURPOSE

2.1 This Official Notice establishes the procedure for Fire Company Visits.

3. SCOPE

3.1 To all Fire Fighting Companies

4. POLICY

4.1 Fire Company Visits serve three purposes. The first function of these visits is to familiarize company personnel with the buildings they will be responding to for fire and emergency calls. This shall include the building construction and fire fighting systems.

4.2 The Second function is the identification of fire hazards. Easily correctable hazards shall be dealt with at the company level. When a Company Visit reveals a serious hazard that presents an immediate threat to life or public safety the appropriate enforcement agency shall be immediately notified.

4.3 The third function is educating the public in fire safety. Public fire education and an increased level of safety awareness have a direct correlation to the number of accidental fires and resulting injuries within the community.

5. PROCEDURE

5.1 Fire Company Visits will be conducted each Saturday and will be coordinated by the Company Officer in their assigned district. The Company Officer, and at minimum one other firefighter should make contact with the properties occupants and secure permission to perform a fire safety visit. This will be limited to the areas that this occupant has legal control over, i.e. their apartment and the common public areas.

6. VISIT METHOD

6.1 The department's Home Fire Safety Visit Checklist shall be used for multifamily residential occupancies.
6.2 Also please find the Safety Visit Factsheet as a memory aid for some common hazards and a Smoke Alarm placement sheet. These forms should be filled out completely during your visit. The first part of the form is gathering information that is to be inputted, upon return to quarters, into the occupancy module of the Firehouse software.
6.3 The second part of the form is a check off of commonly encountered hazards. The Safety Visit Factsheet can be of assistance during this phase. Finally the company members should conduct pertinent fire education to the audience encountered. A diverse array of educational materials will be made available for distribution.
6.4 The Company Captain will work in conjunction with the Fire Marshal's office in respect to types of occupancies, and problems encountered during these visits.

DRAFT SMOKE ALARM INSPECTION AND INSTALLATION PROCEDURES

1. INTRODUCTION

1.1 It has been proven that the installation of domestic smoke alarms gives occupants early warning of fire, allowing a greater chance of escape; hence reducing the likelihood of injury or death.

1.2 Community Fire Education and Safety is a core function of the Wichita Fire Department and of its employees. The installation of domestic smoke alarms supports this function and designated employees are therefore required to undertake this activity.

1.3 This policy document provides the framework for such activity, and outlines the procedures to be followed by the department's firefighters. This includes methods for installing smoke alarms according to manufacturers' installation instructions.

2. OBTAINING SMOKE ALARMS

2.1 Domestic smoke alarms can be obtained by station personnel from the Fire Marshal's Office or smoke alarms to the Division Chiefs (Shift Commanders).

2.2 Only smoke alarms, which meet or exceed U.L. Standard 217 shall be supplied or installed.

3. PROVISION OF SMOKE ALARMS

3.1 As a general rule, smoke alarms should only be installed in homes where owners/occupiers are unable to do so for themselves or unable to get another person to do so on their behalf. Other community groups or organizations may already be available and willing to carry out the installation of smoke alarms, as part of an agreed plan of action in partnership as part of your initiative/program.

3.2 In rental property where the Fire Department is asked to install a smoke alarm on the tenant's behalf, it shall be determined that the tenant has permission from the owner of the property. Cases where the absence of smoke alarm conflicts with NFPA or City smoke alarm installation guidance must be brought to the attention of the Fire Marshal's Office.

3.3 It should also be remembered that normally only one smoke alarm should be installed/supplied free of charge per household. When it is considered the property would benefit from more than one smoke alarm, the occupier should be advised accordingly. However if a justified case can be made to install more than one smoke alarm this should be done.

3.4 In each case the owner/occupier should be given information relating to the installation, operation and maintenance of the smoke alarm along with information on general fire safety in the home.

3.5 Firefighters should specifically make sure that the occupant has been made aware of the features of the alarm and how each of its functions operates.

4. INDEMNITY/LIABILITY

4.1 Before supplying or installing a smoke alarm, the recipient should be read, have explained and sign the indemnity form. The recipient should be made aware that a smoke alarm is not a substitute for insurance, and neither the supplier, manufacturer, or installer would be held liable for injury/death to persons, or damage to property as a result of any subsequent fire.

4.2 This message although important, should be given in a positive manner, emphasizing the benefits of smoke alarms over the likelihood of any product malfunction.

4.3 The indemnity form should be offered to the owner/occupier for signature. This will serve a number of purposes:
Pass the responsibility for maintenance of the alarm to the owner/occupier.
Provide statistical data for future community safety and education.
Act as a receipt for the smoke alarm.

4.4 The owner/occupier should be given a copy of the signed form, along with the smoke alarm. One copy of the indemnity should be sent to the Fire Marshal's Office on return to the station. One copy should be retained at the fire station for records.

4.5 If the occupier refuses to sign the indemnity form, the smoke alarm much not be installed, but supplied only.

4.6 The indemnity form should be completed by the line officer, and clearly marked "supply only" and note the circumstances, and refusal to sign, in the comments section of the form.

5. GUIDANCE FOR PERSONNEL INSTALLING DOMESTIC SMOKE ALARMS

5.1 Statistics suggest that people whose homes do not have a working smoke alarm are four times more likely to die should a fire occur in their home, than those who do have a working smoke alarm.

5.2 A smoke alarm can give those precious few minutes of warning, which could enable the occupants to escape safely.

5.3 A minimum of two members per Fire Company shall be used to install smoke alarms. In all circumstances, the following instructions shall be observed:

- No one member of staff is to take any undue risk in trying to achieve the task.
- Should the use of a ladder be required, then it is to be used correctly and safely.

6. INSTALLATION OF SMOKE ALARMS

6.1 Smoke alarms should be installed according to the provided manufacturers' installation instructions.

6.2 Installation of smoke alarms should take into account any control measures, for the protection of personnel from identified hazards, in accordance with the task Risk Assessment.

6.3 Smoke alarms should always be sited in accordance with the guidance literature provided.

6.4 Prior to installing, a thorough check must be made of the surface to which the smoke alarm is being installed.

6.5 If in doubt do not attempt to install, explain to the owner/occupier that there is a possibility of damage, and refer to the line officer.

6.6 Instruction should always be given to the occupier on every occasion on:
- Testing of the smoke alarm
- Frequency of test
- Replacing the battery

6.7 The smoke alarm must be tested in the presence of the occupier and left in working order.

6.8 If firefighters feel that installing a smoke alarm is outside their ability, then under no circumstances should attempts be made. The case should be referred back to the Fire Marshal who can then seek to make further arrangements.

6.9 A fire department step ladder and drill kit should be utilized to install the smoke alarms.

7. PLACING OF SMOKE ALARMS

7.1 The most dangerous time to have a fire is during the night or when people are asleep in bed. The purpose of a smoke alarm is to alert the occupants in case of fire.

7.2 A smoke alarm should always be placed between the cooking and living area and the bedrooms. Ideally there should be at least one smoke alarm on each level of the home.

7.3 The smoke alarm should be placed centrally on the ceiling (at least 12 inches from the walls), away from lights which may impair the effective operation of the smoke alarm.

7.4 Remember the occupier/owner will need to test the smoke alarm and change the batteries so do not place it directly over stairwells or other hazards.

7.5 If it is not possible to mount the smoke alarm on the ceiling, then it may be placed on the wall 6 to 12 inches below the ceiling and well away from room corners.

7.6 Some properties have sloped ceilings; if so, the smoke alarm should be placed along the slope of the ceiling at least three feet from the highest point.

7.7 Before you install the smoke alarm, test it in the presence of the occupant. Always demonstrate that it is in full working order before leaving.

7.8 Smoke alarms are not designed to work in extreme heat or cold, or in areas where smoke and dust are common. They should not be installed in unheated attics or similar places.

7.9 Do not position smoke alarms too close to the kitchen where cooking fumes may cause frequent smoke alarm actuation. The same principle applies to smoke alarms positioning by the bathroom where steam may cause frequent smoke alarm actuation.

8. MAINTENANCE OF SMOKE ALARMS

8.1 To keep the smoke alarm in good working order, the owner/occupier should be instructed to:

- Test the smoke alarm weekly to ensure smoke alarm circuitry and battery power source are operating correctly.
- Change the battery according to manufacturers' recommendations. Fire Department supplied smoke alarms have a standard battery. They are to be changed when the low warning "beep" sounds.
- Vacuum the inside of the smoke alarm when changing the battery to remove any dust from the sensor chamber that may impair the efficiency of the unit.
- Under no circumstances remove the battery to use in other devices such as remote controls, children's toys, etc. If they do so the smoke alarm cannot work when it is needed.

8.2 In the event that an existing smoke alarm is in a low battery alert (chirping) or the battery is missing, a battery may be installed if the owner does not have one readily available. The smoke alarm disclaimer form shall still be used with a note in the comment section that only a battery was supplied.

Policy adapted from New Britain Fire Department policy and procedures

Appendix B
Smoke Alarm Installation Disclaimer

Members of the Wichita Fire Department (WFD) have offered to provide you with; or /and install a smoke alarm in your home. Our aim is to make our community a safer place for all.

You will need to sign this disclaimer form which confirms that the WFD and the City of Wichita, are not to be held liable for the costs, expenses, loss, claims or proceedings resulting from any damage or any claim resulting from carrying out the home fire safety provision and / or installation of a smoke alarm or failure of the smoke alarm to operate. We hope you are happy with your free smoke alarm.

Please read this form and ensure you understand it before you sign it.

In consideration of the Wichita Fire Department sending personnel to my home to provide and/or install a smoke alarm I agree to the following:

1. I agree to the installation and/or provision of the smoke alarm.
2. I agree that once the smoke alarm is provided/ installed, it becomes my property.
3. I agree that a member of the Wichita Fire Department has checked the smoke alarm and has shown me that is works properly.
4. I agree that is my responsibility to maintain the smoke alarm according to the manufacturer's recommendations. I understand that it is not the responsibility of the Wichita Fire Department, the city of Wichita or the person who installed the smoke alarm.
5. I agree that I have been shown a copy of the leaflet about smoke alarms and how to maintain them.
6. I understand and agree that I will not make any claim against the Wichita Fire Department or the City of Wichita for any expense, cost, liability, loss, claim or proceedings which related to the providing of or installation of, or the operation of the smoke alarm in my home. In addition, I agree to hold harmless and indemnify the Wichita Fire Department and City of Wichita from any and all claims, costs, expenses or liabilities incurred in connection thereto. In the case of a claim or lawsuit brought against the Wichita Fire Department or City of Wichita, the undersigned, upon notice, shall resist and defend such claim or lawsuit.

Name of Occupant: _____

Address: _____

Signature of Occupant: _____ Date: _____

Fire Company: _____

Number of Smoke Alarms: Installed: _____ Supplied: _____

Comments: _____

Appendix C

HOME FIRE SAFETY VISIT CHECKLIST

Wichita Fire Department

Home Fire Safety Visit Checklist

___ Baseboard and portable heaters are away from anything that can burn; furniture, curtains, papers, clothing, etc.

___ The fireplace is equipped with a sturdy metal screen. The chimney is checked before each heating season and repairs are made as necessary.

___ Extension cords and multi-plug adapters are used as little as possible. Extension cords are not tacked to walls, under rugs or through doorways.

___ Cooking food is never left unattended while on the stove or in the oven. If you have to leave the kitchen for a short time while cooking, set a timer or take something with you to remind you that the stove or oven is on.

___ The stove and oven are kept clean of grease and spilt food. In the event of a fire, you know that the best response is to put a lid over the flames.

___ Matches, lighters and other smoking materials are kept out of the reach of children, preferably in a locked cabinet.

___ Always place candles in non-tip candleholders before you light them. Keep them out of the reach of children. Extinguish candles before you leave a room or go to bed, as unattended candles start many fires each year.

___ Be sure smoke alarms are installed on a ceiling or high on a wall outside of the bedroom(s) on each level of your home.

___ No smoking in bed is a rule in your home. Drowsy or medicated people may forget lit materials and start a fire.

___ Once a year you install new batteries in your smoke alarms and you test them once each month.

___ Be sure your family knows what to do if there is a fire. Prepare an Escape Plan and have a Home Fire Drill so your family can practice their escape.

Discussing how to respond to an emergency can help reduce fear. It is critical that everyone recognizes the sound of the smoke alarms and knows two safe ways out of each room. When the smoke alarm sounds, every second counts.

Appendix D

HOME FIRE SAFETY FACTSHEET FOR RESIDENTS

Wichita Fire Department

Home Fire Facts

Fires and burns continue to be a major cause of unintentional injury and death at home. Particularly at risk are the very young and the very old.

Facts

- Nearly 4000 Americans die each year in house fires and over 2000 are severely injured.
- In only 3 1/2 minutes, the heat from a house fire can reach over 1100 degrees Fahrenheit.
- About 80% of all civilian deaths from fire occur in the home.
- In rooms that are not even on fire the temperature can reach over 300 degrees; this is hot enough to melt plastic and kill the people in those rooms.
- Adults 65 and older are more than twice as likely to die in fires as the overall population.
- The leading cause of fire deaths is careless smoking.
- Having a working smoke alarm more than doubles one’s chances of surviving a fire.
- In 2005, 106 firefighters died in the line of duty in the United States.

The Factors Contributing to Fatalities

- Fire produces gases and fumes that can make you sleepy, weak, and confused. You can't smell these fumes, so if you are asleep the smell won't wake you — but a smoke alarm will.
- Unlike fires in the movies, the smoke from a house fire can be so thick that your house would be completely dark in 4 minutes, even with all the lights on!

The Causes of House Fires

- Faulty appliances/wiring cause the greatest number of house fires.
- Heating devices such as heaters, wood stoves, and fireplaces, are another leading cause. Most often the fires start when something like furniture, boxes, or clothing placed too near the heat source overheats and ignites.
- Cigarettes are another leading cause of house fires. Most often the fires start when a cigarette was dropped on to furniture like beds, sofas, or chairs before bed.
- Children playing with fire cause many injuries and house fires every year.
- Two out of three people who die in house fires were asleep when the fire began.
- Smoke alarms increase the chances of surviving a house fire by 2 to 3 times.
- Always install a smoke alarm just outside the sleeping areas.

- Change the smoke alarm's battery once a year or when the alarm chirps. Never remove the battery from the smoke alarm without replacing it.

Eight (8) Things You MUST Teach Your Children

1. What a smoke alarm sounds like: Some children run and hide when an alarm sounds a house-fire warning. Making and practicing a house fire escape plan helps them respond appropriately to the alarm.
2. What a firefighter looks like *at a fire*: Acquaint your children with the equipment a firefighter may be wearing and/or carrying. Air masks, the heavy breathing sounds they produce, and axes can be frightening to children who may hide instead of responding to their calls.
3. Escape routes: Always teach children two ways out of every room (i.e., window and door).
4. Stay low during escape: Crawl as close to the floor as possible under smoke to a safe exit.
5. Test the safety of their exit route: Use the back of the hand to test if a closed door is hot. If it is hot, use another way out.
6. Where to meet after escape: Everyone must meet at a previously designated meeting place outside the home so that firefighters know that all persons are out of the house.
7. How to call for help: Call 911 from a neighbor's home.
8. Stay out: *Never* go back inside a burning home to get anything such as toys, clothes or pets.

Follow the Safety Tips Listed Below to Protect Yourself and Your Family.

Smoke Alarms

- One is definitely NOT enough! Every home should be equipped with smoke alarms on every level, particularly outside of sleeping areas.
- Ensure that your smoke alarms are tested monthly and batteries are replaced twice a year. Change batteries when you change your clocks.
- Encourage children to help test the smoke detectors. Familiarize them with the sounds of the alarm(s).

Fire Extinguishers

- Keep an all-purpose fire extinguisher in your kitchen (one rated for grease fires and electrical fires.)
- It's a good idea to keep fire extinguishers near the furnace, garage, and anywhere else a fire may start. These extinguishers are affordable, life-saving equipment for your home.
- Make sure every able-bodied member of the family is trained and familiar with the proper way to use the fire extinguishers.
- If you must use an extinguisher, make sure you have a clear way out in the event you can't put out the fire.

Flammables

- Keep matches, lighters and candles out of reach and out of sight of children!
- Smoking is dangerous! No one should ever smoke in bed. Make sure that cigarettes/cigars are extinguished properly before dumping ashes.
- Avoid grease build-up in the kitchen and on appliances. Cooking fires are common. Don't leave food cooking on stovetops unattended.
- If a fire should occur, suffocate it with a pot/pan lid or a cookie sheet, or close the oven door.
- Around the holidays, Christmas trees are a primary concern. Consider using an artificial tree that is labeled "flame resistant." If you do use an evergreen, water it daily to keep it from drying out. Make sure to inspect stringed lights and window ornaments annually for deterioration.
- Dispose of materials from fireplaces and grills in non-flammable containers.
- Never put children to sleep in "day" clothes. Fire-retardant sleepwear can make a difference in burn outcomes.

Electrical Safety and Heat Sources

- Make sure your electrical system is not being over-taxed. This can cause a fire. Do your lights dim or flicker when extra appliances are plugged in? If you have questions or concerns, consult a certified electrician.
- Inspect wires. If you find any worn or exposed wiring from appliances, discontinue their use immediately! A fire is imminent!
- Space heaters can be dangerous if not used correctly. Make sure yours will automatically shut off if tipped over. Consult the operating instructions to make sure you are using space heaters, gas fire places, and other heat sources as intended by the manufacturer. Keep all flammable materials away from heat sources! If there are young children in the house, make sure space heaters and hot water heaters are inaccessible.
- Chimney fires are common. Have your chimney inspected and cleaned annually.
- Keep appliances unplugged when not in use.

Escaping a Fire

- Keep bedroom doors shut while sleeping. If you think there is a fire, feel the door and knob for heat before opening.
- Have an escape route for each area of the home and a designated meeting place outside.
- Draw a map—one that's easy for all members of the family and visitors to understand.
- When planning for a family with young children, be sure to teach them not to hide from fire or smoke and to go to firefighters who are there to help them.
- All children should be familiar with the ideas of "crawling underneath the smoke" to escape a fire. "Stop, drop and roll" is another safety principle that must be ingrained into children's minds.
- Multi-storied buildings are of special concern. Ensure that everyone is familiar with how to use an escape ladder if necessary.
- Make sure every sleeping room has two means of escape in the event of a fire. Windows provide a secondary means of escape. Ensure they are in proper working order, are not

painted shut, and guards are able to be disengaged in case of fire and escape is necessary through that window.

- Everyone must understand that once you escape, you must never reenter a burning building—no matter what you might have left behind.
- Call emergency responders (911) from a neighbor's house.
- Make sure to practice your escape plan periodically. It will be easier to remember in case of an emergency.
- Young children should know their street address and last name (and, of course, how to dial 911).
- After you've planned for the family, don't forget the pets. Alert firefighters about your pets. Don't rely on window or door decals to alert firefighters—such decals are often found to be outdated. In the event your pet suffers from smoke inhalation, rush the animal to the vet.

Call 911 for emergencies

Call the Fire Department if you fire safety questions at 268-4441