Fire Deaths Among Older Adults:

A Study of San Antonio Life Loss and the San Antonio Fire Department's Fire and Life Safety Public Education Programs

David Coatney

San Antonio Fire Department, San Antonio, Texas

November 2011

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

An analysis of recent fatal fires occurring within the City of San Antonio indicated that one area of the city may have suffered disproportionately higher numbers of fire fatalities than other areas of the city. Prior to this research, limited analysis had been conducted to compare and evaluate which areas of the city were experiencing residential fire fatalities and what populations in the community might be at highest risk of suffering a fatal injury from fire. The purpose of the research is to identify the demographics of the population being impacted; determine the leading causes of the fires; create a targeted public education program aimed at reducing the number of fatality fires; and educate the community in general fire safety practices. Examination of the following research questions was conducted. 1) What are the demographics of the population being affected? 2) What are the three leading causes of fatality fires in the San Antonio area? 3) What variances exist between the area impacted and other areas of the city? 4) What types of public fire education programs are available and currently exist in the city? 5) What current methods are used to deliver the public fire education programs to the community? 6) Are the existing public education programs and delivery methods adequate or do they need to be adjusted to the target audience? 7) What other community action groups can assist in the education of the target audience? The descriptive method of research was used. A combination of data analysis, meetings with city officials, fire department officials, and public interest groups was conducted and compared to available literature on the topic. The findings reflected that although the department had conducted limited public education programs to older adults in the past, a consistent program was not currently in place.

Table of Contents

Certification Statement……... 2

Abstract……3

Table of Contents……....4

Introduction……6

Background and Significance…… 8

Literature Review……13

Procedures……...22

Results……27

Discussion……... 35

Recommendations……...…44

References……...…47

Appendices

Appendix A – Table A1: Fire Fatalities per District…….....50

Appendix B – Table B1: Percent Age 65 and Older by City Council District……..… 51

Appendix B – Figure B1: City of San Antonio Map of Adults Ages 65 and Older……..… 52

Appendix C – Table C1: Diversity by City Council Districts……..…. 53

Appendix C – Figure C1: City of San Antonio Race and Ethnicity Map……..…54

Appendix D– Table D1: Poverty and Percent Fire Death by Council District……..…55

Appendix D – Figure D1: City of San Antonio Map of Percent of People in Poverty……..……56

Appendix E – Table E1: Causes of Fire Deaths - City of San Antonio Jan. 2007-Aug. 2011….. 57

Appendix F – Survey of Fire and Life Safety Education for Older Adults……..... 58

Appendix G – Results of Survey of Fire and Life Safety Education for Older Adults…….…. 60

Appendix H – Table H1: Council District and Average Age of Fire Residence……...… 67

Appendix I – Table I1: Percent Home Vacancy and Percent Fire Deaths……..…….. 68

Appendix J – Table J1: Percent with Bachelor Degree and Percent Fire Deaths……..…… 69

Appendix K – Table K1: Percent of Fire Deaths by Council District……..…. 70

Appendix L – Figure L1: SAFD Fire Safety Brochure (Front)…….…… 71

Appendix L – Figure L2: SAFD Fire Safety Brochure (Back)…….….72

Appendix M – Figure M1: SAFD Fire Safety Door Hanger……. 73

Appendix N – Table N1: Percent of Residential Fires Attributed by Council District……. 74

Fire Deaths Among Older Adults:
A Study of San Antonio Life Loss and the San Antonio Fire Department's Fire and Life Safety Public Education Programs

Introduction

The population of the United States has gradually changed over the past several decades. With improvements in health care, availability of new medications, and greater access to information about exercise and nutrition, many people are living much longer than their ancestors. Although this is good news for everyone, an aging population is more vulnerable to particular safety threats. One of those threats is an increased risk of injury or death due to fire. According to a 1999 Federal Emergency Management Agency (FEMA) report, older adults have one of the highest risks for injury and death from fire (FEMA, 1999). The report identifies older adults as those persons 65 years of age and older, and notes that this demographic represents the "fastest growing segment of the American population" (FEMA, 1999, p. 3). Over 1,200 older adults die from fires and fire related injuries in the United States each year. This number represents over 25 percent of fire deaths for all age groups and 30 percent of fire deaths that occur in the home (FEMA, 1999, p 3).

In 2008, FEMA released a report that stated "while admirable strides have been made in lowering the overall U.S. fire death rate in the last decade, fewer gains have been realized among the oldest age groups" (FEMA, 2008, p. 1). There are a variety of hypotheses as to what has caused this dilemma. Some speculate that the majority of public education programs in the American Fire Service (AFS) focus more on educating children about the risks of fire, while others believe that the older audience is more resistant to the current education programs targeted toward them.

In late 2010 and early 2011, members of the San Antonio Fire Department identified a trend in fire deaths among older adults that was occurring in one geographic area of the city. Officials began to conduct an analysis of the data regarding the recent deaths, as well as a comparative analysis of fire deaths that had occurred throughout the City of San Antonio over the last decade. The initial analysis of the data reflected that residents living in City Council District 2 had a disproportionately higher probability of suffering a fatal injury from fire than other residents throughout the city. It was decided by senior fire department leaders that further analysis of this problem was required to identify the causative factors and determine if this was a long term problem, a developing trend, or a one-time anomaly.

The purpose of this research is to identify the demographics of the population being impacted, determine what the primary causes of the fires are in San Antonio, and evaluate all public safety education programs currently being used by the San Antonio Fire Department that are focused on the reducing the number of fires, fire related fatalities or injuries, and property loss. The ultimate goal of this research is to identify methods and techniques to better inform and educate those at greatest risk of suffering a fatal injury from fire in those areas of the city that have been identified as having the highest risk and to eventually expand the program to include the education of all members of the community in general fire safety practices. Examination of the following research questions was conducted: 1) What are the demographics of the population being affected? 2) What are the three leading causes of fatality fires in the San Antonio area? 3) What variances exist between the area impacted and other areas of the city? 4) What types of public fire education programs are available and currently exist in the city? 5) What current methods are used to deliver the public fire education programs to the community? 6) Are the existing public education programs and delivery methods adequate or do they need to be adjusted

to the target audience? 7) What other community action groups can assist in the education of the target audience? The descriptive method of research was used in the research and development of this project. A combination of data analysis and meetings with city officials, fire department officials, and public interest groups was conducted, and that information was then compared to the available literature regarding the topic of fire and life safety education targeted to older adults.

Background and Significance

On January 14, 2011, an 87-year-old female became the first person to die in a residential structure fire in San Antonio for the year. The victim's home was a single family residence located in City Council District 2 in east San Antonio. Her death was the second to occur in the district within the past two months and the fourth to occur in the district within the past year. Further analysis of San Antonio Fire Department's death statistics revealed that over the past twelve-month period, a total of nine people had lost their lives to fires in the city. This finding indicated that of the ten City Council Districts in San Antonio, the death rate in City Council District 2 represented 44% of the overall fire-related deaths in the city during this time period. This seemed an unusually high number of deaths for one city council district, especially since the four deaths in District 2 all involved older adults. Fire department leadership decided to investigate this trend further.

Over the past several decades, the overall population within the United States has continued to steadily increase, and one of the population groups experiencing tremendous growth is among adults 65 years and older. According to a 2003 CDC report, the median age of today's world's population has increased because of a decline in fertility and a sizable 20-year increase in the average life span during the second half of the 20th century. The same report notes that when these factors are combined with the increased birthrate during the two decades following World War II, it becomes much easier to understand why the number of people 65 years or older has dramatically

increased. As members of this generation have begun to reach retirement age, they are more active and healthy than generations before them. Worldwide, the average life span is expected to increase by 10 years by the year 2050 and with this increase will come greater demands on the public health system, medical services, and emergency services (CDC, 2003).

Like other major metropolitan communities in the United States, San Antonio, Texas, has experienced significant growth in all aspects of the population over the last several decades. Ayala (2011) wrote the population of Texas grew 20.6% to 25.1 million over the past decade, with the major urban centers experiencing the greatest growth while rural areas had an overall decline in population. Ayala further related that San Antonio grew by 16% since the 2000 census, while Bexar County's overall population (an area which includes San Antonio) increased by 23.1%. This growth has been attributed to a variety of factors. Two of the major factors spurring Texas' rapid growth include the state's higher-than-average birthrate and the continued increase in the number of people migrating to the state. Recent reasons people are citing for moving to Texas include the robust economy and a favorable business climate. The overall population of Texas is aging, just as the population across the United States is. Adults aged 65 years and older represent one of the largest segments of Texas' population (Petersen and Assanie, 2005). The older adult population of San Antonio has also grown as a result of numerous people retiring to the Southwest geographic region of the United States and the advent of improved healthcare available in the immediate area. "Healthcare and biosciences is San Antonio's largest industry, with an annual economic impact of nearly $24 billion" (Bailey, 2011). The large bioscience community has brought with it extensive amounts of medical research and medical facilities. Older adults often want to live in a place that has ready access to local and community health care. The availability of advanced medical care in

San Antonio, as well as the area's warm, dry climate, are appealing to many older adults, and these factors have contributed to population growth in the area.

The elderly are a population at risk of injury for many reasons, including health problems and limited mobility. Numerous research reports reflect that the older adult population is the segment at greatest risk for fire-related injuries and fire-related fatalities. As reported in the report *A qualitative evaluation of fire safety and education programs*, older adults (i.e., those 65 years of age and up) are 2.5 times more likely to die in a residential fire than other population groups. The risk becomes even higher for elderly adults who are 85 years of age and older. This age group has 5 times the risk of dying in a residential fire (Diekman, Stewart, Leesia, and Ballesteros, p. 1, 2008).

The risk is not only associated with age; however, as other factors also increase the risk of becoming a victim of fire. The U.S. Fire Administration/National Fire Data Center (2006) has identified five key fire risk factors. These five factors include age, gender, race, region, and economics. The risk by age places children under the age of 5 and those adults over the age of 54 at highest risk of death in fires. Gender risk reflects that men are 1.6 times more likely to die in a fire than women are. By race, African Americans and American Indians are at higher risk than that of the general population for suffering a fatal injury from fire. Regionally, people who live in the South are at higher risk than people who live in other areas of the United States. Finally, people who have lower incomes tend to be at higher risk to fire related deaths than those who have higher incomes. Many older Americans live at or below the poverty level. A number of older adults often live on fixed incomes, thus limiting their ability to care for themselves and also limiting their ability to repair items in their home that could increase their potential risk to becoming a victim. A 2004 FEMA report affirmed this stating that "old people who live alone live in poverty more

frequently than those who live with a spouse or other persons" (p. 4). The report further related that "housing for the poor is often substandard. Typically, such housing has not been well maintained. Building structures can be compromised, and building systems such as electrical and mechanical are often outdated, inadequate, or not operational" (p. 4). The research will reflect that a number of these factors were present in people who suffered a fatal injury from fire in the City of San Antonio, Texas over recent months.

San Antonio, Texas, is the seventh largest city in the United States with a 2010 U.S. Census population of 1,327,407. It is the second largest city in Texas by population and has a geographical response area of over 467 square miles (U.S. Census Bureau, 2009). According to the 2010 U.S. Census, the Metropolitan Statistical Area (MSA) for San Antonio, which combines the population of Atascosa, Bandera, Bexar, Comal, Guadalupe, Kendall, Medina, and Wilson counties, places the estimated combined population at 2,142,508. This places the area as the third largest MSA in the State of Texas. Although a complete data breakdown by the U.S. Census Bureau was not available at the time this research was written, data from the 2000 U.S. Census reflected that 10.4% of San Antonio's population was 65 years of age or older and the city's population had a poverty rate of 17.3% (U.S. Census Bureau 2000).

The San Antonio Fire Department (SAFD) is a full service metropolitan fire department that provides fire suppression, emergency medical services, fire prevention and investigation, public education, and numerous community support and outreach services to the citizens of San Antonio. The SAFD employs 1,648 authorized uniformed employee positions that are supported by approximately 120 civilian employee positions, bringing the total number of positions to approximately 1,768. The Fire Suppression Division is the largest division within the SAFD, with nearly 1,100 personnel assigned to it. The division includes 51 fire stations with a variety of

equipment assigned to each station, based on the needs of the response area covered and the geographic location of the station within the city. The department maintains a total of 51 engine companies, 21 ladder companies, two technical rescue teams, two hazardous materials response teams, and one aircraft rescue firefighting station, which is assigned to the San Antonio International Airport. The Fire Suppression Division is supervised by one fire shift commander and eight battalion chiefs per shift. Personnel assigned to the Fire Suppression Division work one 24-hour shift on duty, followed by 48 hours off duty.

The next largest division in the department is the Emergency Medical Services (EMS) Division, which has approximately 380 uniformed employees. The EMS Division maintains 32 full-time EMS units and up to 10 peak-period staffed units. All EMS units in San Antonio are dedicated Advanced Life Support (ALS) units staffed by two paramedics. The EMS Division is supervised by one medical shift commander and four EMS district supervisors per shift. Personnel assigned to the EMS Division work one 24-hour shift on duty, followed by 72 hours off duty.

The Fire Marshal's Office is divided between Fire Inspection, Special Events, Community Safety and Education, and the Arson Bureau. The Fire Inspection section examines the fire protection systems of commercial establishments, businesses, and places of entertainment. Inspectors are involved in new construction and renovations. The Special Events section focuses on conducting safety inspections at different public assembly events and convention activities in the city. The Community Safety and Education section is tasked with educating residents of the city with information required to both prevent fires and protect them during a fire.

In 2010, there were several fire fatalities of elderly residents in southeast San Antonio, and senior fire service leaders of the SAFD recognized that it was necessary to identify different fire threats within the community and to develop and deliver targeted fire education programs to

prevent additional fire fatalities throughout the community, particularly in the area where the fire deaths occurred. Senior fire department leaders of the SAFD recognized that identification of the different threats to members of the community and the development and delivery of targeted fire education programs were needed to address the aforementioned concern regarding the number of fire deaths occurring in the city. This action follows recommendations and models from the National Fire Academy's *Executive Analysis of Community Risk Reduction (EACRR) Student Manual*, which provides guidance and recommendations in Unit 2 – Assessing Community Risk and Unit 3 – Intervention, Program Design, and Evaluation within the manual (National Fire Academy, 2011) for the design and implementation of these programs. The research also follows recommendations from the United States Fire Administration (USFA), in its updated 2010–2014 Strategic Plan, which addresses the concern about Fire Prevention and Life Safety in Goal #1, to "Reduce Risk at the Local Level through Prevention and Mitigation." This research report has been developed to address the safety of the citizens of San Antonio and directed toward the goals outlined by the USFA and the EACRR course.

Literature Review

Fire prevention and education have been part of the U.S. Fire Service for decades. When the National Council for Fire Prevention and Control published its groundbreaking report *America Burning* in 1973, the report included significant discoveries related to the various causes of fires and the number of preventable deaths related to fires in the United States. The report noted that a high percentage of fire deaths occurred in private residences, among people living in rural areas, and in inner cities. Individuals who had a higher probability of dying in a fire included those who were poor, very young, and elderly. The report also stated that not enough fire prevention education was being provided to the average U.S. citizen. The *America Burning* report stated that

"there needs to be more emphasis on fire prevention" (p. X, 1973) and that "the death from fire among children under 5 and the elderly over 65 is three times that of the rest of the population" (p. 4, 1973). A report written in 2001 supported the original *America Burning* report. This report stated that "the death rate from fires and burns of children 5 years old and younger is twice the rate of the population at large, as is the death rate of adults 65 and older" (Gamache, 2001, p. 199).

Three years following Gamache's report, FEMA published an update to their *Fire Risk to Older Adults* series indicating that "a disproportionate number of mature adults, aged 65 years and older, die in fires each year" (FEMA, 2004, p. 2) and that their relative risk of dying in a fire is 2.5 times higher than that of the average population. The FEMA report added that "to be old is in itself a disadvantage in terms of fire risk" (FEMA, 2004, p. 2). Although the rate of risk has varied throughout the years, it is clear that the increased risk of suffering an injury from fire remains higher for this same demographic of the population today.

Fire departments throughout the U.S. have been actively working to help reduce the risk of fire injury, particularly among those populations at greatest risk—i.e, young children and older adults. These fire departments are involved in public education programs and fire prevention activities. Many of these programs, however, tend to be targeted toward the other end of the age spectrum. These programs are designed to educate young children about fire prevention in an environment where the children are already gathered in groups, such as school systems or daycare centers. In fact, fire prevention education efforts for children are now so well-organized that a large number of fire departments conduct annual fire prevention and education programs during the month of October in school systems throughout the United States. The programs include coloring books, handouts, plastic fire helmets, and other fire-themed items designed to gain the child's interest in the subject. Fire departments also gain access to the younger audience through

visits and demonstrations at daycare centers and scheduled student field trips to fire stations. These programs have proven to be invaluable in helping educate children about the risk of fire. In contrast, many fire departments have not directly targeted the elderly population as aggressively as the younger population, yet the relative risk to the elderly population is very real and continues to be an area of significant concern to fire departments across the country.

Despite the aforementioned fluctuations and variances over the last several decades relating to the relative risk of older adults being injured by fire, the fact that people are living longer in the United States has, and will continue to have, a profound impact on the way fire departments do business throughout this country. The combination of higher risk of injury from fire and substantial growth of the older adult population will potentially lead to an overall increase in the number of older adults suffering significant injury or death from fire and a greater need to help educate this population about their relative risk and methods to protect themselves. "Older adults represent one of the highest fire risk groups in the United States, in large part because they are the fastest growing segment of the U.S. population" (FEMA, 1999, p. 1). In what is commonly referred to as the "graying" of America, Americans are fast becoming a nation of the elderly. The number of persons over the age of 65 has tripled in the last century. By the year 2050, the elderly population is expected to double, reaching nearly 80 million, or 20% of the American population (FEMA, 1999, p. 7). The report further reported that "Older adults comprise over 25 percent of fire deaths of all ages, and 30 percent of fire deaths that occur in the home; Fires and burns are a leading cause of deaths from unintentional injuries among older adults" (FEMA, 1999, p. 3).

Even though the increased risk of suffering a devastating injury from fire for older adults has been identified for nearly 40 years, the fire service is still struggling to reach the older audience and make a significant impact toward reducing their relative risk and increasing their safety. A

2008 report related that mature adults (those 65 years or older) have a relative risk of dying in a fire that is 2.6 times higher than the overall population. The report further broke down the relative risk into age brackets, indicating that those adults aged 65 to 74 are 1.7 times more likely to suffer fire-related deaths, while the oldest of the old, people who were 85 years old or older, are 4.7 times more likely to die in a fire than the general population (FEMA, 2008, p. 2). When looking at the risk statistics, one other piece of information that is frequently identified is that in the majority of incidents, the elderly suffering an injury from fire tend to be in their own residence at the time of the event.

The issue of fire injury or death among older Americans may not appear to be a significant issue in terms of the number of individuals impacted, but it is actually quite significant, particularly if the person who is injured or killed is a relative and/or the death was preventable. Fire departments across the United States responded to approximately 380,000 home structure fires per year between 2003 and 2007, and the relative risk becomes clearly evident. A report released in 2010, entitled *Home Structure Fires*, related that "these fires caused an annual average of 2,840 civilian fire deaths, 13,160 civilian fire injuries, and $6.4 billion in direct damage" (Ahrens, 2010, p. xi). Ahrens (2010) further indicated that approximately 92% of all fire deaths were a result of residential structure fires. This means that on average, approximately eight people died in home fires in the United States every day in the 5-year span covered by the study.

Age is only one of the five factors identified by the United States Fire Administration as leading to increased risk of suffering an injury from fire. The remaining four factors include gender, race, economics, and region of the country. On average, men have a higher probability of being a victim of a fire than women do. The problem continues to grow as people age. Men who are 65 years old and older have a 3.1 times greater likelihood of dying in a fire than that of the

general population, while older women in the same age group have a relative risk of 2.1 times the average population. The relative risk for women over 65 years of age increases to 3.7 times higher than that of the average population, while men over 65 have a relative risk that is 6.7 times higher than that of the average population (USFA, 2006, p. 43).

Race is another factor that contributes to increased risk of suffering an injury from fire. Older African Americans tend to have the highest relative risk of being the victims of fire than all other races, with an overall relative risk of suffering a fatal injury from fire that is 6.9 times higher than the overall population. The risk continues to decline with older American Indians having a relative risk 3.7 times that of the average population, older Anglos having a risk of 2.2 times, and older Asian/Pacific islanders having a relative risk of only 1.3 times that of the overall population. (U.S. Fire Administration/National Fire Data Center, 2006, p. 38).

"Poverty has long been associated with an increase in fire risk. Housing available to low-income tenants may be less likely to have smoke alarms, and tenants or landlords are less likely to maintain those that are present" (USFA, 2001, p. 3). Statistics indicate that areas with higher than average poverty rates typically have high fire death rates. "When poverty and infirmity accompany old age, the fire risk is compounded. Elderly persons often live on fixed incomes. Old people who live alone live in poverty more frequently than those who live with a spouse or other persons" (FEMA, 2004, p. 3). There are a variety of reasons cited for this, but many relate to the condition of the homes that the elderly live in. Those older Americans living at or below the poverty line tend not to have the available discretionary funds required to make repairs of their home, thus increasing their susceptibility to fire. Also, often times the elderly living at or below the poverty line will not install or repair smoke detectors in their homes and some have placed bars over their windows in an effort to prevent crime. These actions often reduce the potential of the

resident detecting the fire early and can limit their ability to escape from their own home during a fire (Gamache, 2001, p. 201).

The state of Texas is a popular retirement location, a fact supported by a variety of statistics. Geographically, larger populations of older Americans tend to reside in one of five states: California, Florida, New York, Texas, and Pennsylvania. Additionally, the Southern and Midwestern regions of the United States tend to have the greatest number of elderly residents as a percentage of the overall population in those areas (U.S. Fire Administration/National Fire Data Center, 2006, p. 1). Since a large number of older Americans chose to live in the South and Midwest, fire departments in these regions must be cognizant of the risks associated with an aging population and need to work with local senior organizations and other special interest groups in an effort to identify the best methods of delivering fire prevention and safety education to this audience.

Along with the five risk factors identified above, there are a number of other environmental, manufacturing, and mechanical issues that increase the risk of fire. Over the past few decades, a number of strategies have been developed to reduce the number of fire deaths related to these problems. Manufacturing standards have been revised to reduce the flammability of upholstered furniture, bedding, and other similar products. Other safety features that have been introduced include automatic shut-off switches for portable heaters if they are tipped over, automatic shut-off features for appliances that are left on beyond a defined operating period, and circuit interrupters to prevent electrical fires. Of course no discussion about fire prevention programs can take place without referencing automatic sprinkler systems, which have been credited with saving many lives and properties throughout the years in the United States. (Ahrens, 2010, p. 20).

Although great strides have been made in addressing the various environmental, manufacturing, and mechanical issues related to fire prevention and risk reduction, there is still room for improvement regarding the development and delivery of fire safety programs directed to the older adult population. When reviewing the fire loss statistics for the City of San Antonio, several of the five factors identified by the U.S. Fire Administration were found to be present in fatality fires that occurred in one area of the city (Council District 2), including age, race, and economic status. After these deaths occurred, it became evident that the City of San Antonio and the San Antonio Fire Department would need to evaluate programs that have been used in the past to reach older adult audiences and take a proactive approach to protecting those citizens who are at greatest risk from suffering an injury or death from fire.

A key component of reducing the risk of fire injury or death is educating people about what risks they are most susceptible to and what they can do to reduce these threats. There are a number of approaches that different fire departments take in educating the communities they serve. Some departments create education programs specific to their service area, while other departments use programs that have already been developed for this need. A number of fire departments use hybrid programs that include national program information along with local data and information related directly to the culture of the community. Regardless of which method is used, it should address the needs of the local audience.

As previously stated, the data will reflect that several of the five risk components were present in a number of recent fatality fires in the City of San Antonio, Texas. The San Antonio Fire Department, through focused public fire prevention and safety education programs, has set a goal to reduce the number of preventable fire deaths from occurring in the city. Before going into further program development, however, it is helpful to pinpoint specifics about the causes of fires

involving older adults throughout the U.S. This information can then be used to perform a comparative analysis of the national fire statistics to the fires that have occurred within the City of San Antonio. It is also important to identify other successful fire prevention and safety education programs currently being delivered by other agencies.

Data from the U.S. Fire Administration/National Fire Data Center reflected that 39% of older adults who were killed in residential structure fires were asleep at the time of the fire. Thirty-two percent of older adults who died in residential fires were trying to escape, and eight percent were attempting to control or extinguish the fire. The information is similar for older adults who were injured in a residential structure fire. Twelve percent were asleep at the time of the fire, 32% were trying to escape from the residence, and 28% were attempting to control the fire (U.S. Fire Administration/National Fire Data Center, 2005, p. 2).

Analysis of the data also provided an overview of the top three leading causes of civilian fire fatalities in residential structure fires, which occurred between the years 2003 and 2007. The three leading causes were smoking (25%), heating equipment (22%), and cooking equipment (17%). Fires caused by smoking materials continued to be the leading cause of reported residential fire deaths during this time period. Although smoking materials were only listed as the cause of residential structure fires 5% of the time, they resulted in 25% of the reported fire deaths. Thirty percent of reported residential structure fires occurred between the months of December, January, and February, which would be consistent with fires caused by faulty heating equipment. During this three month period, 49% of home heating equipment fires were reported, and approximately 58% of the home heating equipment fire deaths occurred during the same time period. While cooking equipment was listed as the leading cause of home structure fires (40%), it also presented

with the lowest percentage of civilian fire deaths (17%) of the top three causes of residential fire deaths (Ahrens, 2010, pp. 5–8).

When reviewing the data related to smoking, heating equipment, and cooking, it should be noted that "in one of every five fire deaths, the fire started when something that could catch fire was too close to a heat source" (Ahrens, 2010, p. 15). These heat sources can include smoking materials, cooking equipment, heating equipment, candles, lamps, or other products that are capable of producing heat. These types of fires and fire injuries are totally preventable and programs designed to educate the public about these risks are crucial to reducing the number of fire injuries and fire fatalities that occur in any region of the country.

There have been a number of fire education programs developed for reaching out to older adults and different approaches are recommended to deliver fire prevention education to the this demographic. The United States Fire Administration (USFA), the National Fire Protection Association (NFPA), and the Centers for Disease Control and Prevention (CDC) have been instrumental in the development of several of these programs. These agencies, along with other agencies and fire departments across the country, have designed programs focused on educating and preventing harm to older adults in the United States. Some of the programs are specific to fire prevention education, while others approach risk reduction from a holistic perspective and include information about the risk of falls and general health topics.

The NFPA and the CDC combined resources and developed a program targeted specifically at older adults. The program is entitled *Remembering When*, and it is a comprehensive education and prevention program focused on threats related to fire and fall injuries. A number of fire departments throughout the United States have now adopted this program. "*REMEMBERING WHEN* provides detailed instructions to fire departments and other entities about the best methods

to reach the senior population, including publicity, meetings, and presentations" (U.S. Fire Administration/National Fire Data Center, 2006, p. 54).

Following years of research and analyzing trends, the United States Fire Administration (USFA) has also developed a program focused on reducing the loss of life from fire for those 65 years and older. The program, which is entitled *A Fire Safety Campaign for People 50 – Plus,* follows a multifaceted approach to reaching the audience, which includes the use of TV, radio, and print Public Safety Announcements (PSAs), as well as fact sheets, fliers, brochures, and other materials through the media, the USFA's Web site, and partner organizations. The U.S. Fire Administration (USFA) launched a nationwide campaign to promote this program in August of 2004. The campaign was the USFA's first major public step toward a recently set goal of reducing the loss of life by 50% over 10 years in the "65 years and older" age group. The material contained in the campaign provides fire departments with a step-by-step program to educating older audiences, and it includes information about how to use different media venues to deliver safety messages to greater numbers of people and access to a variety of program materials (FEMA, 2004). The U.S. Fire Administration (USFA) launched their new nationwide campaign in August of 2004. The campaign is the USFA's first major public step toward a recently set goal of reducing the loss of life by 50 percent over 10 years in the 65 years and above age group. The material contained in the campaign provides fire departments with a step-by-step program to educate older audiences, guidelines for how to use different media venues to deliver safety messages to greater numbers of people, and a variety of programs materials (Burris, 2001, p. 117).

Procedures

On January 14, 2011, an 87-year-old female became the first fire fatality in San Antonio for the year 2011. The victim's home was a single-family residence located in east San Antonio,

specifically the area that encompasses City Council District #2. Her death was the second to occur in the district within the previous two months and the fourth to occur in the district over the past year. Further analysis of the San Antonio Fire Department's death statistics revealed that during the past twelve months, a total of nine people had lost their lives to fire in the ten City Council districts in San Antonio. Of the ten districts in San Antonio, the death rate in City Council District 2 represented 44% of the overall fire-related deaths in the city during this time period.

Initially, it was unclear if residents of Council District 2 were suffering a disproportionate number of fire deaths compared to other residents in the city, or if the area was experiencing an abnormality that was short-term. Regardless, it was enough of a concern that the writer met with Charles Hood, Chief of the San Antonio Fire Department and Assistant Chief Earl Crayton, SAFD Fire Marshal, to discuss what was happening in this area of the city. A strategy was crafted to determine the potential causes for these fire deaths and actions that could be taken to help reduce the number of deaths in the area.

During that initial meeting, Chief Crayton advised that he would direct his staff to conduct an initial analysis of data for the area and also to review the programs currently being offered by the Community Safety and Education department of SAFD's Fire Prevention Division. Following that initial meeting, a series of meetings were held with ranking members of the San Antonio Fire Department, outside agencies, and representatives from Council District 2. The first meeting took place at City Hall during the week of January 24, 2011. Participants included Councilwoman Ivy Taylor, representing Council District 2, Fire Chief Charles Hood, Assistant Chief Earl Crayton (Fire Marshal), and Councilwoman Taylor's Executive Assistant, Mr. Kamal Fulani. This group formed a steering committee to address the issue of fire safety in Council District 2, and to devise an introductory program focused on city-wide dissemination of fire safety and education.

Information covered in the meeting included an overview of the initial statistical analysis conducted by the writer regarding fire deaths in the city, discussion of the different challenges to reaching those at greatest risk in the council district, and what the next steps would be to move a targeted outreach program forward. At the conclusion of the meeting, the group decided to evaluate different methods available to reach out to the residents of Council District 2, to identify other internal and external agencies that could assist in the delivery of the education program, and to determine the best method for wider dissemination of this fire safety and education program to other residents throughout the city of San Antonio.

The next meeting took place on January 28, 2011, at the City of San Antonio's Emergency Operations Center (EOC). Participants in this meeting included Captain Mark Witherell, San Antonio Police Department (SAPD), Lorenzo Sanchez, Senior Emergency Management Specialist, Battalion Chief Chris Monestier, SAFD Community Education Division Chief, Captain Robert Westbrook, SAFD Community Education Coordinator, and Captain Chris Casals, SAFD Arson Bureau Commander. The topics of discussion at this meeting included an overview of the initial findings related to fire deaths in Council District 2 and a synopsis of the first meeting held with Councilwoman Taylor, et al. The overview included a report by Captain Westbrook on City Council District 2, and he indicated that the district contained approximately 50,000 households and had a population of approximately 140,000 residents. The meeting then focused on what was currently being done to educate the elderly population within San Antonio about fire safety, how to develop a targeted community education program directed to older adults, and how to reach out to older adults in the community through fire education brochures and pamphlets, public service announcements, home safety checks, and the installation of smoke detectors. The group discussed the use of a community policing model, which had been used in the District 2 before to educate

constituents about different threats in their community and to assist with the identification of structures that were vacant and needed to be boarded up by Code Compliance, to reduce the risk of fires set by transients in the vacant properties. Captain Witherell noted that over one hundred such structures were boarded up in Council District 2 in 2010.

The next step in the program development required the analysis of data related to the different areas of the city, as well as a comparative analysis of national fire death data. Initial data was gathered from the U.S. Census Bureau's website to determine specific population information about the City of San Antonio and City Council District 2. The SAFD Management Information Systems (MIS) Division was contacted next to further identify the specific demographics of those who had suffered fatal injuries caused by fire, what the primary causes of these fires were, and where and when the fires had occurred within the City of San Antonio. The MIS Division created a variety of data using information from the U.S. Census Bureau, local data maintained in the National Fire Information Reporting System (NFIRS), and investigation information from the San Antonio Fire Department's Arson Bureau. Portions of this information were compared to national statistics to determine if the City of San Antonio was trending with the rest of the nation or was experiencing an anomaly unique to the city.

On February 18, 2011, the steering committee met again, this time with representatives from the American Red Cross, local church groups, and City Public Service (a public utility company in San Antonio) in attendance. The discussion centered on techniques for reaching out to the older adult population in Council District 2. Areas addressed included identifying the days of the week and meeting times that resulted in the greatest participation from the target audience, identifying other agencies that might have access to the target audience and could become involved

to assist with delivery of information, and determining how best to distribute brochures, pamphlets, and other educational information to this group.

A significant amount of research was conducted by the writer at the United States Fire Administration's National Fire Academy Learning Resource Center, while the writer attended year two of the Executive Fire Officer Program, during the Community Risk Reduction course. Information related to older adult risk factors, typical causes of residential structure fires, and actions that increased the risk of suffering a fatal injury from fire were reviewed. Research specific to the City of San Antonio and the San Antonio Fire Department was obtained by reviewing data either maintained or generated for this research by the San Antonio Fire Department's MIS Division. A combination of books, journals, periodicals, Internet sources, published papers, and internal reports were reviewed. Multiple sources had relevant information regarding the topic and were documented in the literature review section of this paper.

A number of discussions took place with personnel involved in the delivery of fire safety education programs to the public. These discussions revolved around the best approaches to use in communities when delivering the classes, the use of national or local program materials, and the type of feedback typically received from the public about the program. Based on feedback from these discussions, a survey was created to determine what other fire departments were doing related to the topic of older adult fire safety and education. Ten questions were developed and reviewed by personnel familiar with fire safety and education programs. After making recommended modifications to the survey, it was posted on surveymonkey.com beginning October 13, 2011. The survey remained on the site for a period of two weeks.

The survey was mailed out to approximately forty individuals associated with the Executive Fire Officer Program and other chief officers in the Central Texas region. The survey closed on

October 27, 2011 with a total of 18 respondents. The data was summarized into a view summary created by surveymonkey.com and that information is discussed further in the results section of this project.

Results

The City of San Antonio has continued to see growth in its overall population over the last ten years, as indicated by the 2010 census. Over the last decade, the city has grown by approximately 16%, and the older adult population of the city has remained fairly constant, reflecting only a slight variance between the 2000 census and the 2010 census. In the 2000 census, 9.6% of the population was age 65 years and older, while in the 2010 census, 10.4% of the city's overall population fell into this same category (U.S. Census Bureau, 2011). For the purposes of this research, the following research questions were proposed. 1) What are the demographics of the population being affected? 2) What are the three leading causes of fatality fires in the San Antonio area? 3) What variances exist between the area impacted and other areas of the city? 4) What types of public fire education programs are available and currently exist in the city? 5) What current methods are used to deliver the public fire education programs to the community? 6) Are the existing public education programs and delivery methods adequate or do they need to be adjusted to the target audience? 7) What other community action groups can assist in the education of the target audience?

Between January 1, 2000 and August 31, 2011, the City of San Antonio witnessed a total of eighty-four deaths related to residential structure fires. For classification of this research, these deaths included people who succumbed to a fatal fire injury in a single-family or multi-family residence, mobile home, or motel/hotel fire. Although initial data analysis indicated that those residents living in City Council District 2 were suffering a disproportionately higher percentage of

residential fire deaths than other people living within the city, a more detailed analysis of additional data reflected that people residing in Council District 2 had only a slightly higher number of fire deaths for that area of the city over the analysis period. During the 11-year analysis period, Council District 2 had a total of seventeen residential fire-related deaths, Council District 5 had a total of fourteen residential fire-related deaths, and Council District 4 had thirteen residential fire-related deaths (refer to Appendix A, Table A1). Although only slightly higher than the other districts, these findings confirmed that City Council District 2 did have the highest incident of life loss from fire of all of the City Council Districts.

As was previously mentioned, the United States Fire Administration has identified five factors that can lead to an increased risk of suffering a fatal injury from fire. These five factors include age, gender, race, economics, and region of the country. Age is another factor that can lead to an increased risk of dying from fire. The three City Council Districts having the highest percentage of residents age 65 years old or over were Council District 1 with approximately 14%, Council District 5 with approximately 13%, and Council District 2 with approximately 12% (refer to Appendix B, Table B1 and Figure B1).

Research question #1 asked “What are the demographics of the population being affected?” The following data was obtained from the City of San Antonio Planning and Development Services Department website and an internal San Antonio Fire Department Home Evaluation Program report (Jenkins and Westbrook, 2011). The ethnicity breakdown of City Council District 2 is 54.3% Hispanic, 25% African American, and 17.1% Caucasian. This breakdown demonstrates that Council District 2 has the highest population of African Americans residing in the city. City Council District 5 has the highest percentage of Hispanics, with approximately 93.4%, and City

Council District 9 has the highest percentage of Caucasians, with approximately 53.9% respectively (refer to Appendix C, Table C1 and Figure C1).

Finally, the last factor that was evaluated for this report was the economic level of the residents residing in the different City Council Districts. Data reflects that City Council District 5 had the highest percentage of people living below the poverty line with an overall percentage of approximately 29.6%. The percent of residents living below the poverty line in the other City Council Districts was as follows: District 4 at 22.1%, District 3 at 21.9%, District 1 at 21.6%, District 2 at 21%, District 6 at 15%, District 7 at 12.9%, District 8 at 10.6%, District 10 at 6.8%, and District 9 with 5.9% (refer to Appendix D, Table D1 and Figure D1).

Research question #2 focused on determining and analyzing the three leading causes of fatality fires in the San Antonio area. The analysis period of fire cause occurred between January 2007 and August 2011. Fires caused by electrical issues accounted for the highest percentage of fatal fires within the City of San Antonio, listed at approximately 31.8%. Electrical issues included misused, overused or damaged extension cords, worn electrical wiring, or faulty electrical installations. The next three leading causes all reflected approximately 13.6% for each of the categories. These causes were smoking materials (13.6%), which included cigarettes and cigars that were left unattended, or had been dropped or discarded in a manner that allowed them to come into contact with other combustible materials; cooking fires (13.6%), which tended to occur when food was left unattended on a stove or inside of an oven and ignited; and undetermined (13.6%), where the cause of fire could not be readily determined by the investigating officer (refer to Appendix E, Table E1).

Research question #3 asked “What variances exist between the area impacted and other areas of the city?” This question has a number of components that can be attributed to age, race or

ethnicity, poverty level, and education level. The general information that is contained in the different appendices reflects that residents in City Council District 2 have an increased risk of suffering a fatal injury from fire that is consistent with the national trends and prior research conducted by the United States Fire Administration. This information will be outlined in greater detail in the discussion section of this research.

Research question #4 asked "What types of public fire education programs are available and currently exist in the city?" Based on data provided by the SAFD Fire Prevention Division's Community Safety and Education Department, the following programs are currently being provided to citizens of San Antonio: 1) Fire drills for schools and businesses/organizations, 2) Fire extinguisher classes for adults, 3) San Antonio Fire Education (S.A.F.E.) House, a mobile fire safety program that allows hands-on demonstrations, for all age groups, 4) Media requests for fire safety and education, 5) Juvenile fire setter intervention program for youth, 6) Sparky the fire dog, the official SAFD mascot, for all age groups, 7) Career days for youth, 8) Fire prevention safety talks for all age groups, 9) Smoke detector installation program for adults, 10) Fire truck demonstrations for all age groups, and 11) Fire prevention week poster contest for youth.

Research question #5 asked "What current methods are used to deliver the public fire education programs to the community"? A combination of data from the SAFD 2009 and 2010 Annual Reports and internal reports from the Community Safety and Education section was analyzed to determine this information. The reports indicated that the SAFD used a combination of delivery methods to reach out to the public and educate them about the risks of fire. These methods included formal program delivery by the SAFD Fire Prevention's Community Safety and Education Department to audiences in schools and community safety fairs as well as more informal delivery methods, such as demonstrations conducted by fire companies throughout the city during

fire station visits by different groups (e.g., Boy Scouts, Girl Scouts, students on field trips, etc.) and on-site delivery during Fire Prevention Week.

Research question #6 asked, "Are the existing public education programs and delivery methods adequate or do they need to be adjusted to the target audience?" Based on information provided by the SAFD Fire Prevention's Community Safety and Education Department, the department has provided limited programs to the target audiences, and those have been primarily based on the NFPA's *Remembering When* program. Statistics were not retained on the number of programs provided, the number of facilities visited, or the number of attendees for each class. Overall, the department has not maintained a defined program that was focused on educating this demographic of San Antonio's community or establishing a set agenda of annual events.

Research question #7 asked "What other community action groups can assist in the education of the target audience?" It was determined that a number of agencies could assist with the delivery of fire safety and education to the target audience. These groups included City Council District 2 representatives, Meals on Wheels, the American Association of Retired Persons (AARP), senior citizen centers, faith-based organizations, churches, schools, utility companies, and cultural and ethnic groups.

As previously mentioned in the procedures section of this research, a survey was sent out to a limited number of participants to determine what their respective departments were doing in regards to fire and life safety education of older adults. The survey, which can be found in Appendix F, consisted of a total of ten questions. The questions were 1) What size of community does your department serve? 2) How would you describe your fire department? 3) Do you have a dedicated Fire Prevention or Fire Marshal's Division? 4) Do you offer Fire Safety and Education classes to the public? 5) How does your department deliver Fire Safety and Education classes? 6)

Does your department have a specific Fire Safety and Education program targeted towards older adults (age 60+)? 7) What type of program targeted toward educating older adults about fire safety does your department currently use? 8) What agencies does your department collaborate with in delivering a Fire Safety and Education program to older adults? 9) If your department offers a Fire Safety and Education program to older adults, do you provide the opportunity for the audience to provide feedback on the program for Quality Improvement (QI) purposes? 10) How long has your department been conducting Fire Safety and Education programs targeted toward the older adult population?

The percentage of responses to the survey yielded a return rate of 45% (18 out of 40 surveys). The responses to the survey, which are located in Appendix G, were as follows. Question 1 asked each respondent to note the size of the community served by his/her department? The responses to this question revealed that 38.9% of the respondents worked for agencies that serve communities with populations between 10,000 and 50,000, 27.8% of the respondents worked for agencies serve communities with populations between 50,000 and 100,000, 27.8% of the respondents worked for agencies that serve communities with a population of more than 100,000, and 5.6% of the respondents serve communities with less than 10,000 residents.

Question 2 asked respondents to describe their department by selecting one of the following options: all career, all volunteer, combination (paid and volunteer), or paid on-call. The responses received to this question reflected that the majority of respondents (77.8%) were from all career fire departments and 22.2% were from combination departments. There were no respondents who indicated that they represented either an all-volunteer or paid on-call department.

Question 3 asked if the departments represented in the survey had a dedicated Fire Prevention Division or Fire Marshal's Division. The majority of respondents (94.1%) did have

either a Fire Prevention Division or a Fire Marshal's Division, while only 5.9% of those surveyed related that they did not have either a Fire Prevention or Fire Marshal's Division.

Question 4 asked respondents if their department offered fire safety and education classes to the public. The majority of respondents (89.9%) related that they did provide these programs, while only 11.1% of the respondents indicated that they did not provide these education classes to the public.

Question 5 asked how the surveyed departments delivered fire safety and education classes, and then provided the following options: by a community education division, by a Fire Marshal's office or Fire Prevention Division, by on-duty fire companies, or by some combination of the above choices. The results of this question indicated that the majority of departments (50%) who responded provided the safety and education classes through some combination of the aforementioned choices. The next highest response to the question reflected that 33.3% of the responding departments delivered these courses through either a Fire Marshal's office or Fire Prevention Division, and 27.8% of the respondents related that the program was delivered by on-duty fire companies. Of the departments that responded, none indicated that they used a dedicated Community Safety and Education Division.

Question 6 focused on fire safety and education specifically delivered to older adults (age 60+). The majority of respondents indicated that they did not provide education targeted towards this demographic (77.8%), while only 22.2% of those responding related that they had such a program.

For questions 7 & 8, there were mathematical errors discovered in the automatic survey calculation sheet provided by surveymonkey ^{TM}. Question seven asked what type of program targeted toward educating older adults about fire safety does your department currently use? The

response choices included use of a national program, such as NFPA's *Remembering When* or USFA's *A Fire Safety Campaign for People 50-Plus*, use of a locally developed program, or other. Of the departments that provided targeted education for older adults, 50% of the respondents indicated that they used a nationally developed program while the other 50% of the respondents indicated that they used a locally developed program.

Question 8 asked the responding departments what agencies they collaborated with in the delivery of fire safety and education classes. The choices included: local churches, Meals on Wheels, senior centers, neighborhood associations, a local health department, or an agency that was not listed in the choices. The majority of the respondents (66.7%) indicated that they collaborated with senior centers in program delivery, while 33.3% of those responding related that they collaborated with an agency that was not included in the selection.

Question 9 asked the responding departments that provided fire safety and education classes to older adults if they allowed the audience to provide feedback on the classes through a Quality Improvement process. The majority of respondents (66.7%) indicated that no feedback was obtained on the classes given while 33.3% of the respondents related that they did allow for audience feedback to improve their program.

Finally, question 10 asked the departments with programs for older adults how long they had been conducting fire safety and education programs for this targeted audience. Most departments (50%) indicated that they have been providing targeted programs for more than 10 years. A total of 33.3% of the agencies who responded to the survey related that they have been providing programs targeted to older adults for less than one year, and 16.7% of the respondents indicated their programs had been in place between one and five years.

Discussion

As the country's population continues to grow, the number of older Americans also will continue to grow. Recent projections indicate that the current population of those who are age 65 and older will increase substantially in the United States over the next four decades. "In 2050, the number of Americans aged 65 and older is projected to be 88.5 million, more than double its projected population of 40.2 million in 2010" (Vincent and Velkoff, 2010, p. 1). Since the elderly tend to have one of the highest risks of dying in a residential fire, projected growth in this population segment will lead to a greater need for fire departments to deliver fire safety education to older adults to help reduce their risk (FEMA, 1999, pp. 7–12). Statistics for the City of San Antonio, Texas, show that the number of residents age 65 and over living in the city has increased slightly over the last decade, from 9.6% to 10.4% (U. S. Census Bureau, 2011). The growth pattern is consistent with other areas of the country and represents an increase of nearly 10,000 additional older adults living in the city.

In the past, the San Antonio Fire Department has delivered a limited number of safety and education classes to older adults living within the city. The majority of these programs followed the NFPA's *Remembering When* outline for the classes. The number of classes given, the locations of these classes, and the number of attendees were not consistently tracked; therefore, the San Antonio Fire Department does not have accurate data on how many residents actually benefitted from these programs.

The United States Fire Administration (USFA) has identified five aspects that increase the risk of the public's susceptibility to becoming a fire victim. These five areas include age, gender, race, economics, and region of the country where the victims live. To better understand how San Antonio compares to other cities in the United States, each of these five areas was evaluated and

compared against national data and research. The City of San Antonio is located within the South Central region of the State of Texas. The State of Texas is located in the South Central region of the United States. There are a variety of reasons given for the increased risk to people residing in a particular region; however, the majority of research indicates that the moderate climate and lower cost of living tend to attract older adults who are often on fixed incomes. Since older adults have a higher risk factor associated with becoming a fire victim, .the fact that more of them live in in these particular regions of the country increases the reported number of occurrences. "Geographically, the largest population groups of older Americans reside in California, Florida, New York, Texas, and Pennsylvania" (U.S. Fire Administration, p. 1, 2006). This particular risk factor cannot be changed, and Texas, like the other states listed, will continue to be a location where older Americans prefer to live out their later years in life. What can be addressed and where changes can be made is in the education provided to older residents of these areas and the availability of programs designed to help limit their exposure to becoming fire victims.

The same information can be true of where people choose to live in a particular community. When considering three of the other four aspects that increase risk, as identified by the USFA, age, race, and economics certainly tend to play a role in where people elect to live in individual communities. People will often live in an area that is economically feasible for them to afford, people of the same race or ethnicity will sometimes tend to cluster together in certain areas of cities or regions, and people in similar age groups will often live in areas where there are gathering areas for them, where their families remain in the immediate area, or where social services are readily accessible. The last of the five risk factors, gender, reflects that men will often have a higher risk of becoming a victim of fire than women do. USFA's Topical Fire Report Series related that 2007 data analysis concluded that "the risk of fire is not uniform across gender. For the population as a

whole, men are approximately 50% more likely than women to be victims of fires (USFA, 2011, p. 6).

Age has long been a factor that is considered to increase the risk of becoming a victim of fire. In their Topic Fire Research Series of the USFA related that "older adults represent one of the highest fire risk populations in the United States" (USFA, 2001, p. 1). A number of reasons are identified for increasing this population's risk, including disabilities and limited mobility that are often present in the demographic, medications and alcohol use, and poverty. Older adults often have diminished sensation, so sensing pain, smelling smoke, or hearing warning alarms (smoke detectors) can often be challenging for this group. The same USFA report related that findings revealed that approximately 40% of this age group are asleep at the time a fire is ignited and as many of 20% of older adults who have suffered some form of injury related to fire were bedridden when fire ignited. Many older adults take some form of prescription medication; in fact, data have shown that as many as 35% of older adults take at least one prescription medication, while many in that group have multiple medications prescribed to them. Some of these medications have side effects that cause increase drowsiness or impair judgment (U.S. Fire Administration/National Fire Data Center, 2006, p. 21). Both of these potential effects can certainly increase the likelihood of becoming a fire victim. As pointed out in the results section of this research, the three City Council Districts having the highest percentage of residents age 65 years old or over were Council District 1 with approximately 14%, Council District 5 with approximately 13%, and Council District 2 with approximately 12% (refer to Appendix B, Table B1 and Figure B1).

Race has also been identified as one factor that can increase a person's risk of being a victim of fire. As a group, older African Americans tend to have the highest relative risk of being the victims of fire than any other racial group, with an overall relative risk that is 6.9 times higher

than the overall population. The risk continues to decline with older American Indians having a relative risk 3.7 times that of the average population, older Anglos having a risk of 2.2 times, and older Asian/Pacific islanders having the lowest relative risk of only 1.3 times that of the overall population (U.S. Fire Administration/National Fire Data Center, 2006, p. 38). When evaluating the race distribution for each of the ten Council Districts in the City of San Antonio, the City Council Districts that had the highest percentages of the three primary races represented in the city (i.e., Hispanic, Caucasian, and African American) were as follows: City Council District 5 had the highest percentage of Hispanics living in the district, with Hispanics representing approximately 93.4% of the district's overall population; City Council District 9 reported the highest percentage of Caucasians living in that district, with approximately 53.9% of the district's overall population; and City Council District 2 reported the highest percentage of African Americans living in that district, with approximately 25% of the district's overall population (refer to Appendix C, Table C1 and Figure C1). USFA's Topical Fire Report Series indicated that "although it is not likely that race itself predetermines a person's fire risk, poverty, access to adequate health care, and subsequent deteriorating health are recognized factors" (USFA, 2011, p. 6).

As mentioned in the literature review section of this paper, poverty also tends to increase a person's potential risk of becoming a victim of fire. One of the main reasons for this is because people who are living in poverty will often chose items they deem as necessary for survival (food, shelter, medications) over improvements in their residence. A number of older adults who live alone have a greater probability of living at or near the poverty level than the average American under the age of 65. Many individuals in this group do not have the disposable income required to fix heating systems, place early warning devices (i.e., smoke detectors or carbon monoxide detectors) in their residences, or the ability to leave their homes to attend fire safety and education

presentations. Additionally, people who often live in lower income areas of the community often find themselves at increased risk of becoming a victim of crime when compared to other areas within the same community. Residents in these areas will resort to a number of ways to protect themselves from crime, sometimes not recognizing that the same devices that can protect them from one threat can also be potentially harmful in other circumstances. Of the many different devices made to protect people, one of the devices that exemplifies this dichotomy is burglar bars residents place over the windows and doors of their homes. Although these devices can limit unwanted intruders from coming into a structure, they also limit the ability of the occupant to exit that same structure. This problem can become exacerbated when the occupant is exposed to heat, smoke, and other products of combustion that often inhibit rational thought and limit mechanical skills.

In San Antonio, the available data reflects that City Council District 5 had the highest percentage of people living below the poverty line with an overall percentage of approximately 29.6%. The other nine City Council Districts had the following percentages of people living below the poverty line: District 4 at 22.1%, District 3 at 21.9%, District 1 at 21.6%, District 2 at 21%, District 6 at 15%, District 7 at 12.9%, District 8 at 10.6%, District 10 at 6.8%, and finally District 9 with 5.9% (refer to Appendix D, Table D1 and Figure D1).

It is clear that each of the five areas identified by the USFA can increase an individual's risk of becoming a victim of fire injury or death. These risk factors have been identified in a number of other literature sources as well. Although any of the residents of the City of San Antonio can become a victim of fire, a resident's age, race, gender, and economic status can all contribute to that risk. One aspect that can be evaluated is the significant increase in risk that results when two or more of the five risk elements are combined together. When combining the

available data (refer to Appendices A, B, C, and D), it is evident that City Council District 2 has the highest number of African Americans residing in it, is the third most populous district for older adults living in it, and is the fifth poorest district in the city. It can be hypothesized that these three combined elements may have increased the risk of fire injury or death for residents living in the district.

The fire-related death of an 87-year-old women in Council District 2 in January 2011 acted as the catalyst for further analysis of a perceived fire danger in that area of the City of San Antonio. This woman's death resulted in a concerted effort by members of the San Antonio Fire Department, City Council District 2's elected official and her staff, and other community interest groups and stakeholders to make City Council District 2 and all people within the City of San Antonio safer from the risk of dying in a structure fire. Analysis of available data reflected that San Antonio had experienced eighty-four residential fire deaths between the period from January 1, 2000 to August 31, 2011. It was evident that residents of City Council District 2 had experienced a higher number of reported fire deaths during the most recent months of this data analysis.

The San Antonio Fire Marshal's office initiated a home evaluation program in City Council District 2, called *Home Check.* The intent of the program was to use City Council 2 as the development model for a citywide initiative. Fire Prevention's Community Safety and Education section was tasked with home evaluations, smoke and carbon monoxide detector installations, data collection and analysis. The major objectives of the *Home Check* program were to identify the factors most responsible for residential fire deaths and fire incidents in San Antonio, increase community awareness of the programs provided by the San Antonio Fire Prevention Division, initiate efforts to reduce the number and severity of residential fires, initiate efforts to reduce the

number of residential fire fatalities, and to evaluate the program's overall effectiveness (Jenkins & Westbrook, 2011, p. 3).

While investigating recent fire deaths, researching literature for this paper, and developing a targeted community fire safety program, the following data were discovered specifically about residents of San Antonio. African Americans and Hispanics had higher death rates in San Antonio than Caucasians. Residents of the San Antonio who were age 65 or older were more vulnerable to fire deaths, families with lower incomes tended to have an increased risk of fire death and injuries, and the majority of fire deaths occurred in homes without a working smoke detector. This information is supported by data maintained by the USFA and other literature resources as indicators of increased risk for suffering a fatal injury from fire that have been cited throughout this document.

Other discoveries that were made during the program development by the Fire Prevention Division of the SAFD included the fact that older homes are more likely to be involved with fire fatalities, neighborhoods with higher home vacancy rates tend to have higher fire death rates, and persons with lower levels of education are more likely to be victims of fire deaths. This data is supported in tables listed in Appendix H, Table H1; Appendix I, Table I1; and Appendix J, Table J1. Finally, the review of local data reflected that the three leading causes of residential fire deaths in the City of San Antonio were electrical, smoking materials, and cooking equipment (refer to Appendix E, Table E1). National data from the USFA lists fire deaths caused by smoking materials as the number one cause (25%), fire deaths caused by heating equipment as the second most common cause (22%), fire deaths caused by cooking equipment as the third cause (17%) and fire deaths as a result of some form of electrical distribution or electrical equipment as the fourth leading cause (12%) (Ahrens, 2010, p. 8). Although the rankings of these leading causes may be

slightly different between the local data and national data, it is clear that there are enough risk commonalities in these areas that further analysis should be conducted by the San Antonio Fire Department's Community Safety and Education section.

A focused analysis over a twelve-month time period (September 1, 2010 to August 31, 2011) was conducted regarding fire deaths in the San Antonio area. The data from the first six months (September 1, 2010 to February 28, 2011) reflected that both City Council District 2 and City Council District 3 tied for the highest percentage of fire deaths in the city, with each district reporting 29% of all reported fire deaths. The second six-month period (March 1, 2011 to August 31, 2011) time period reflected that City Council District 4 suffered the highest life loss due to fire, with 67% of all fire deaths in the city (refer to Appendix K, Table K1). This data would support the idea that the recent increase in fire deaths in Council District 2 may have been a short-term spike or an anomaly that occurs periodically throughout different areas of the city. Overall, life loss related to fire is consistent with past trends. That being said, however, the analysis of the last ten years of data does show a trend indicating that City Council District 2, City Council District 4, and City Council District 5 do experience higher-than-average fire death rates than the other council districts, and for City Council Districts 2 and 5, the fire death rates are more than double the average of the other eight City Council Districts.

After the analysis was conducted, the San Antonio Fire Department's Community Safety and Education section began targeted education of the residents who live in City Council District 2. Between the period of May 2011 and August 2011, the Community Safety and Education section went door-to-door in Council District 2 distributing fire safety brochures (Appendix L, Figures L1 and L2) and fire safety door hangers (Appendix M, Figure M1). The door hangers contained information about general safety habits, cooking, portable heaters, electricity, installation of smoke

alarms, and fire escape plans. The door hangers also had a telephone number residents could call to have a free smoke detector installed. A total of 4,868 door hangers were distributed, representing approximately 15% of all single-family residences in City Council District 2. The particular area identified for the initial distribution of the door hangers in Council District 2 was an area that had the highest percentage of reported fire deaths in it.

Additional activity that was related to bringing the fire and safety education to the community of Council District 2 included meeting with a variety of public interest groups and internal and external city departments. A number of private businesses were contacted about the program, and they assisted the San Antonio Fire Department by purchasing smoke detectors and carbon monoxide detectors and donating them to the program for future installation in homes in the targeted area. The Community Safety and Education section also collaborated with other internal San Antonio Fire Department divisions and external city departments to for the acquisition and distribution of educational materials, delivery of informal neighborhood presentations, management of internal meetings, and analysis of raw data related to the program and risks to the community, review of program development and improvement as it was being implemented, and delivery of a number of public speaking events to members of the community about fire safety (Jenkins and Westbrook, 2011, p. 17).

The results from the program, while too early to measure for any long-term accuracy, have reflected a three percent decrease in the percent of residential fire incidents in City Council District 2 and one less residential fire death in the district when compared to the previous six months of data (Jenkins and Westbrook, 2011, p. 18). Although this information is only preliminary, the members of the fire department, city staff, and community who are continuing to develop this program are hopeful that this trend will continue and the city will be able to observe long-term

reductions in lives lost to fire and the overall number of structure fires occurring throughout the city.

Recommendations

Over the course of the research for this paper a number of programs were considered by the San Antonio Fire Department for implementation of fire and life safety education within the community. The data showed that a program targeted for older adults needed to be designed and implemented to ensure that enough information was being disseminated to this audience to reduce their risk of becoming the victim of a fire. Although there are differences among fire departments in terms of how they address both this topic and this audience, it is indisputable that as the population of the United States ages and grows, more older adults will die in residential structure fires if not properly instructed about how to prevent, or lessen, their risk. In a 2002 report, FEMA related that it is well known that fire prevention and public education programs have proven effective at reducing the number of fires and injuries. In finding #7, the report indicates that public education programs should include two essential elements: "First, the public education must make the target audience aware of the hazards on both an intellectual and emotional level. Second, the target audience must receive and accept the message that the hazard or problem is within its control" (FEMA, 2002, p. 27.

The San Antonio Fire Department's Community Safety and Education section has made significant strides in a short period of time to identify the common causes of fires that have resulted in lives lost in the city, identified where the greatest potential for life loss can occur based on models from the United States Fire Administration and local data, and evaluated past program delivery.

One area that can be improved upon is maintaining accurate records to document who has received fire prevention education. Although some members of the department's Community Safety and Education section recalled using the NFPA's *Remembering When* program to deliver fire and life safety education to older adults in the community, accurate data was not readily available to determine exactly how much training had been conducted, nor how many people had attended the classes. Such information is essential when determining what the next step will be for future program development.

Next, it is recommended that the SAFD develop a program designed specifically to the target audience and that all supplemental information (handouts, brochures, door hangers, etc.) be designed so older adults can easily read the information and know how to follow up with any questions they might have. Further, it is also advised that the SAFD continue to use nationally accepted program models, such as the NFPA's *Remembering When* or the USFA's *A Fire Safety Campaign for People 50–Plus*, as a template when developing the internal program. In researching programs offered by other fire service agencies, it is evident that these agencies have developed successful programs by adopting a local version of the national model. It is highly recommended that any program developed follow FEMA's Five E's model for program design. The Five E's model, which is outlined in the National Fire Academy's *Executive Analysis of Community Risk Reduction (EACRR) Student Manual*, Unit 3, includes Education/Behavior Change Intervention, Enactment/Enforcement Interventions, Engineering/Environmental Modifications Interventions, Economic Incentive Interventions, and Emergency Response Interventions (FEMA, 2011, pp. SM 3-13 to SM 3-18).

Another area that can be addressed is developing relationships with other agencies that have access to older adults who rarely leave their homes. Two of these groups that were discussed

in planning meetings were the cable company and the social service agency Meals on Wheels. Representatives from these groups can be trained to identify potential fire risks, such as portable heaters, items left too close to stoves, etc. When these are observed, or perhaps as part of a routine visit to people within the high risk group, informational brochures can be disseminated that contain information about general fire safety and contact numbers for additional information.

Churches should also be contacted to arrange for fire crews to come out and conduct brief announcements at the end of the church services. This briefing can include handing out safety brochures, similar to the brochure found in Appendix L. Other groups that can aid in the distribution of information or host a fire safety and education classes would be other social service agencies, neighborhood associations, or senior centers.

Finally, it is important to ensure that the individual firefighters working at the stations are trained in identifying different fire threats or behavioral risks of the target population. Just like the utility company and Meals on Wheels have access to isolated older adults, firefighters also have unique access to older adults and may also view risks in areas that could potentially hurt or kill someone. Providing the firefighters with the knowledge about risks to look for and giving them information that can be handed out to the older adults they serve may ultimately make a difference in someone's life.

Reference List

Ahrens, M. (2010). *Home Structure Fires*. Quincy, MA. National Fire Protection Administration (NFPA).

Ayala, E. (2011). *Urban Centers of Texas Keep Packing Them In*. San Antonio Express News. Retrieved from www.mysanantonio.com/.../Texas-cities grow-rural-areas-shrink-1018480.php.

Bailey, W. S. (2011). *British courting San Antonio's biotech community*. San Antonio Business Journal. Retrieved from http://www.dizjournals.com/sanantonio/print-edition/2011/03/25/british-courting-san-antonios-biotech.html.

Burris, K. O., Jr. (June 2001). *Senior Fire Prevention Campaign*. Fire Engineering. Volume 154 No. 6. , p. 117.

Center for Disease Control and Prevention (CDC). (2003). *Trends in aging – United States and worldwide*. Retrieved from www.ncbi.nim.nih.gov/pubmed/12645839

City of San Antonio Planning and Development Services Website. (2011). Retrieved from http://www.sanantonio.gov/planning/GIS/demo_map_catalog.asp?res=1280&ver=true.

Diekman, S. PhD, MPH; Stewart, T., MPH, CHES; Leesia, T. S.; Ballesteros, M., PhD. (2008). *A Qualitative Evaluation of Fire Safety Education Programs for Older Adults*. Health Promotion Practice.

FEMA. (2011). *Executive Analysis of Community Risk Reduction student manual*. (2nd edition, 1st printing). Emmitsburg, MD. Federal Emergency Management Agency.

FEMA. (2008). *Fire Risks for the Older Adult*. (2008). Volume 7, Issue 7. Emmitsburg, MD. Federal Emergency Management Agency.

FEMA. (2004). Campaign Guide. *A Fire Safety Campaign for People 50-Plus*. FA 288. Emmitsburg, MD. Federal Emergency Management Agency.

FEMA. (2004). *Fire Risk.* Topical Fire Research Series. Volume 4, Issue 7. Retrieved from www.usfa.fema.gov/downloads/pdf/statstics/v4i7.pdf.

FEMA. (2004). *Fire Risk in Older Adults.* Volume 4, Issue 7. Emmitsburg, MD. Federal Emergency Management Agency.

FEMA. (2002). *America At Risk, America Burning Recommissioned*. FA-223. Retrieved from http://www.usfa.fema.gov/downloads/pdf/publiscations/fa-223-508.pdf.

FEMA. (1999). *Fire Risks for the Older Adult*. FA-203. Emmitsburg, MD. Federal Emergency Management Agency.

Gamache, S. (2001). *Reaching those at highest risk to fires and burns: Young children, older adults, and people in low-income communities*. Injury Control and Safety Promotion. Vol. 8, No. 3.

Jenkins, R. and Westbrook, R. (2011). *San Antonio Fire Department Home Evaluation Program Internal Report*. San Antonio, Texas. San Antonio Fire Department.

Jones, L. (1980). *Great Expectations: America and the Baby Boom Generation*. New York, NY: Coward, McCann, and Geoghegan.

National Commission on Fire Prevention and Control. (1973). *America Burning*. Library of Congress Card Number 73-600022. Retrieved from www.usfa.fema.gov/downloads/pdf/publicatons/fa-264.pdf.

Petersen, D. and Assanie, L. (2005). *The Changing Face of Texas: Population Projections and Implications*. Federal Reserve Bank of Dallas. Retrieved from www.dallasfed.org/research/pubs/fotexas/fotexas_petersen.html.

San Antonio Fire Department. (2011). 2010 *San Antonio Fire Department Annual Report*. Retrieved from http://www.sanantonio.gov/safd.

San Antonio Fire Department. (2010). *2009 San Antonio Fire Department Annual Report*. Retrieved from http://www.sanantonio.gov/safd.

U.S. Census Bureau. (2011). San Antonio, Texas *Population Finder Sheet for San Antonio, Texas, 2011 Population Estimates*. Retrieved from http://quickfacts.census.gov/qfd/states/48/4865000.html.

U.S. Census Bureau. (2009). San Antonio, Texas *Population Finder Sheet for San Antonio, Texas, 2009 Population Estimates*. Retrieved from http://factfinder.census.gov.

U.S. Fire Administration. (2011). *Topical Fire Report Series – Fire Risk to Older Adults in 2007.* Volume11, Issue 10. Emmitsburg, MD. Federal Emergency Management Association.

U.S. Fire Administration. (2010). *United States Fire Administration: America's Fire and Emergency Services Leader Strategic plan fiscal years 2010-2014.* Retrieved August 20, 2011 from http://www.usfa.dhs.gov/downloads/pdf/strategic_plan.pdf

U.S. Fire Administration/National Fire Data Center. (2006). *Fire and the Older Adult*. FA-300. Emmitsburg, MD. Federal Emergency Management Agency.

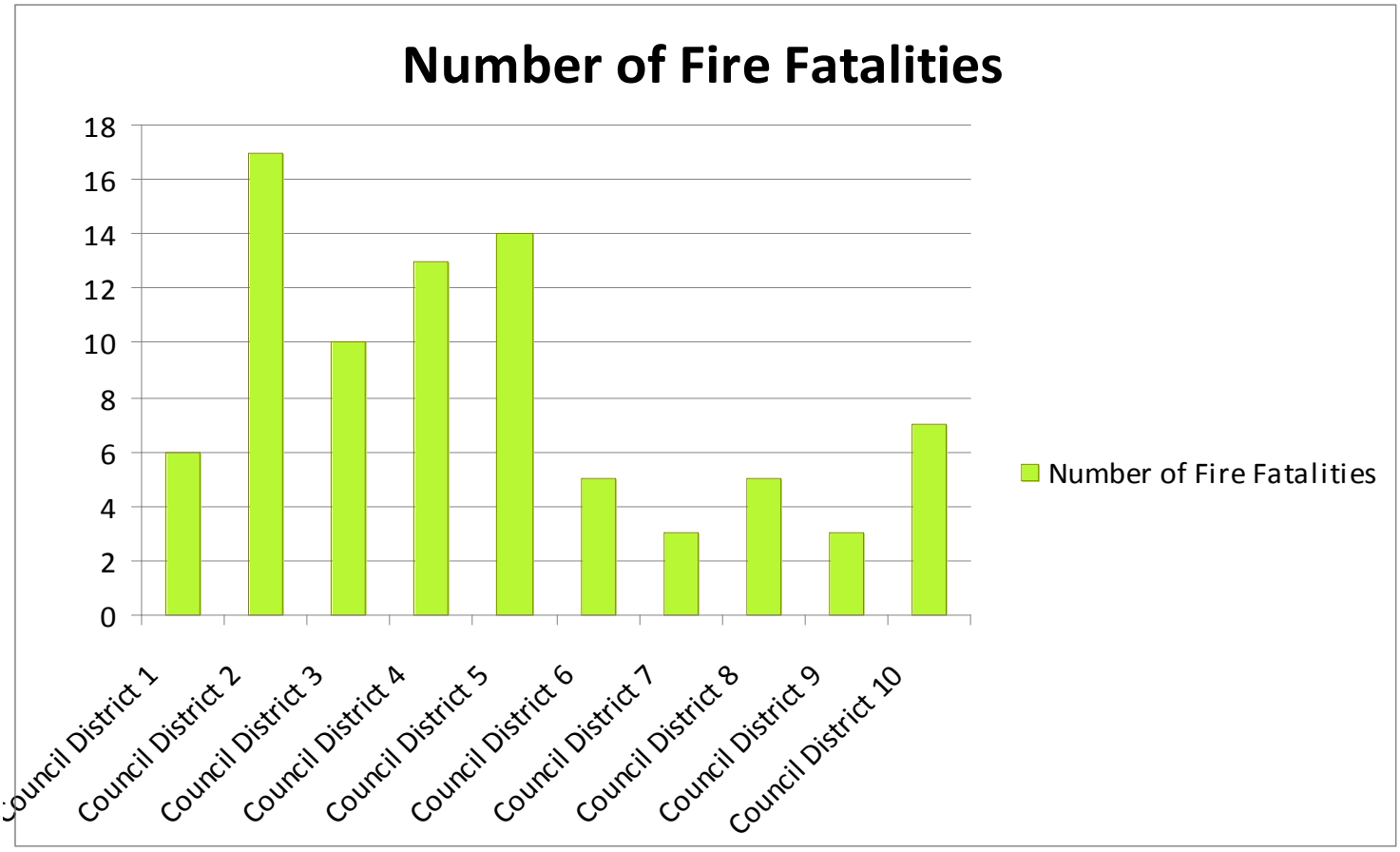
U.S. Fire Administration/National Fire Data Center. (June 2005). *Fire Risks and the Older Adult*. Volume 5, Issue 3. Emmitsburg, MD. Federal Emergency Management Agency.

U.S. Fire Administration. (2001, January 5). *Topical Fire Research Series – Older Adults and Fire*. Volume 1, Issue 5. Emmitsburg, MD. Federal Emergency Management Association.

Vincent, G. and Velkoff, V. (2010). *The Next Four Decades: The Older Population in the United States: 2010 to 2050.* Retrieved from http://www.census.gov/prod/2010pubs/p25-1138.pdf.

Appendix A

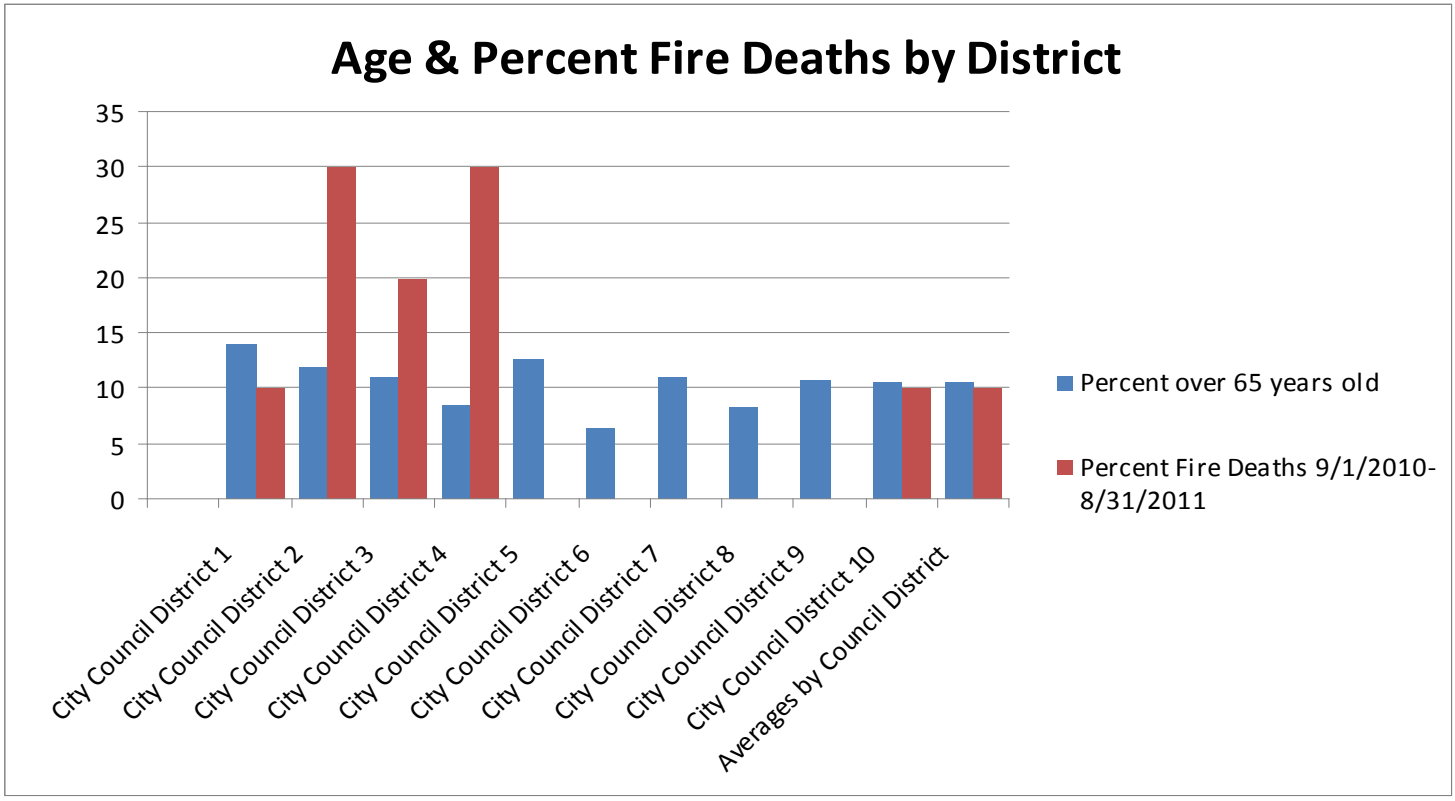
Table A1 – Fire Fatalities per District from January 1, 2000 to August 31, 2011



(Jenkins and Westbrook, 2011, p. 5).

Appendix B

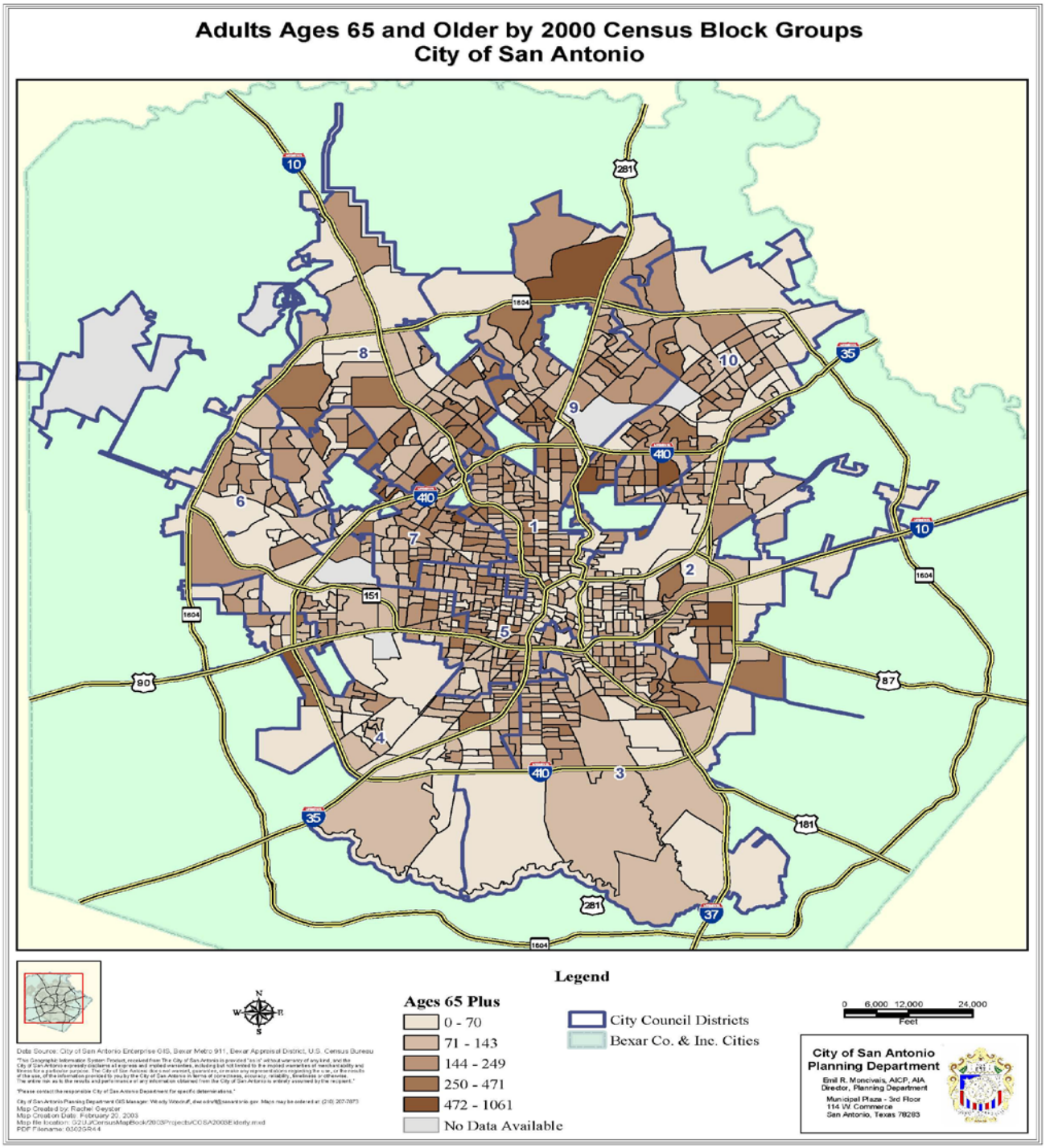
Table B1 – Percent Age 65 and Older and Percent Fire Death by City Council District



(Jenkins and Westbrook, 2011, p. 9).

Appendix B

Figure B1 – City of San Antonio Map of Adults Ages 65 and Older



(City of San Antonio Planning and Development Services Website. 2011).

Appendix C

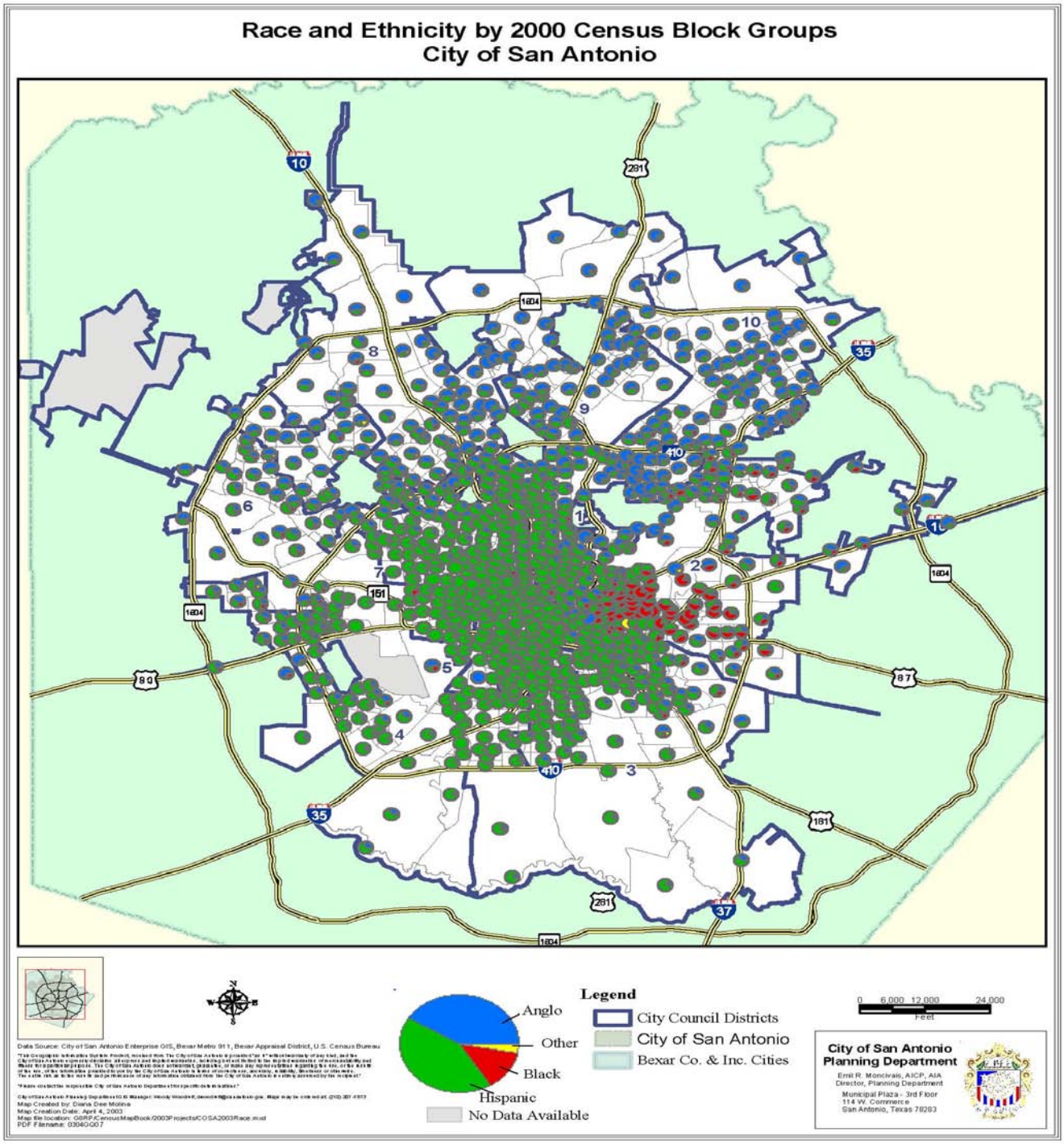
Table C1 – Diversity by City Council Districts

Source 2010 Census				
Ethnicity by Council District	% African American	% Caucasian	% Hispanic	Percent Fire Deaths - 1/1/2000-8/31/2011
City Council District 1	2.3	18.5	77.4	7
City Council District 2	25	17.1	54.3	20
City Council District 3	3	12.3	83.8	12
City Council District 4	3.2	10.6	84.3	15
City Council District 5	1.7	4.4	93.4	17
City Council District 6	6.6	19.8	70	6
City Council District 7	3.7	23.6	69.2	4
City Council District 8	5.5	41.8	43.4	7
City Council District 9	4	53.9	35.9	4
City Council District 10	7.6	47.6	39.9	8
City Averages	6.3	26.6	63.2	10

(Jenkins and Westbrook, 2011, p. 7).

Appendix C

Figure C1 – City of San Antonio Race and Ethnicity Map



(City of San Antonio Planning and Development Services Website 2011).

Appendix D

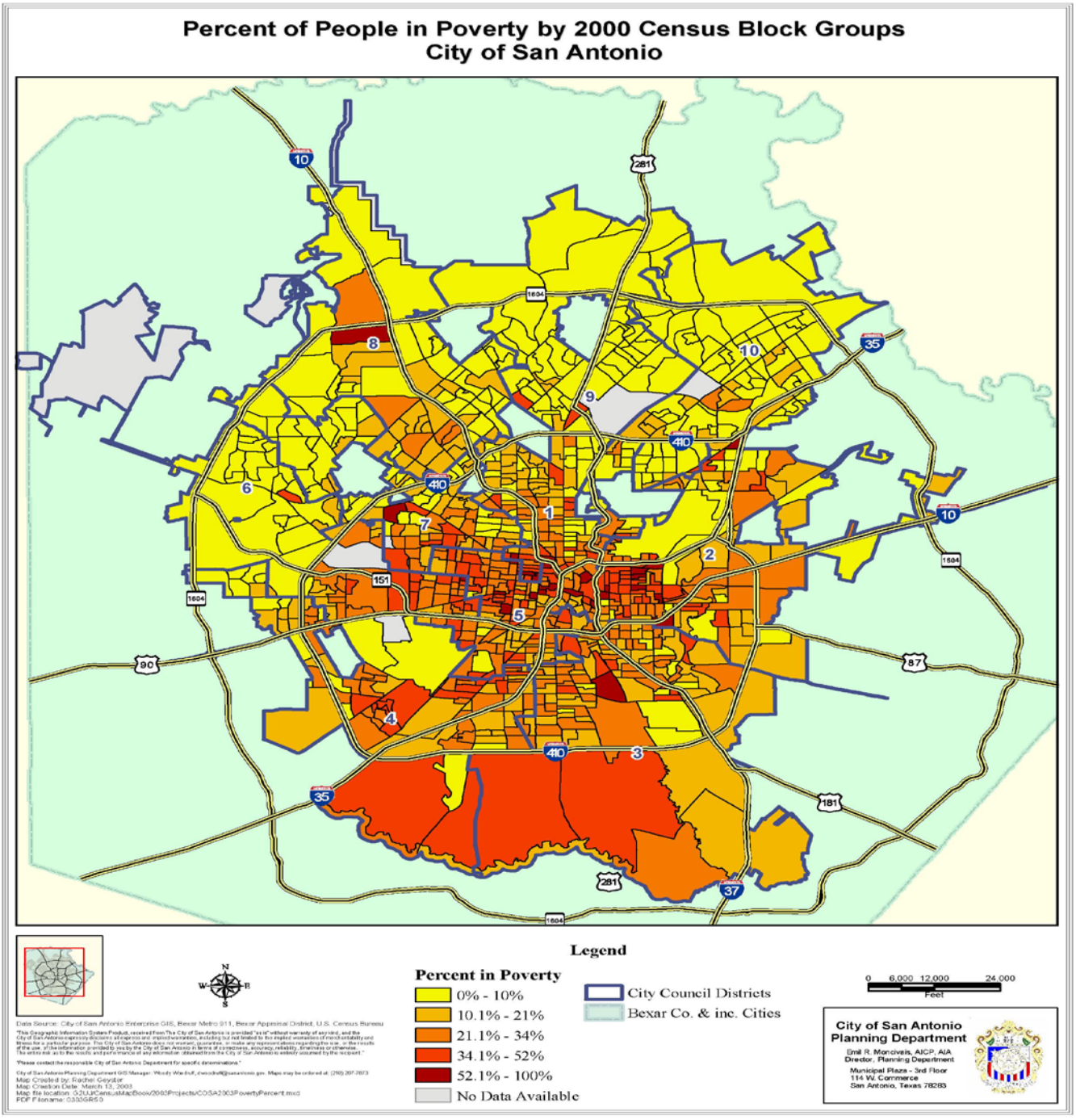
Table D1 – Poverty and Percent Fire Death by Council District

Poverty and Percent Fire Deaths	Percent Below Poverty Level	Percent Fire Deaths 9/1/2010-8/31/2011
City Council District 1	21.6	10
City Council District 2	**21**	**30**
City Council District 3	21.9	20
City Council District 4	22.1	30
City Council District 5	29.6	0
City Council District 6	15	0
City Council District 7	12.9	0
City Council District 8	10.6	0
City Council District 9	5.9	0
City Council District 10	6.8	10
Average by Districts	16.74	10

(Jenkins and Westbrook, 2011, p. 12).

Appendix D

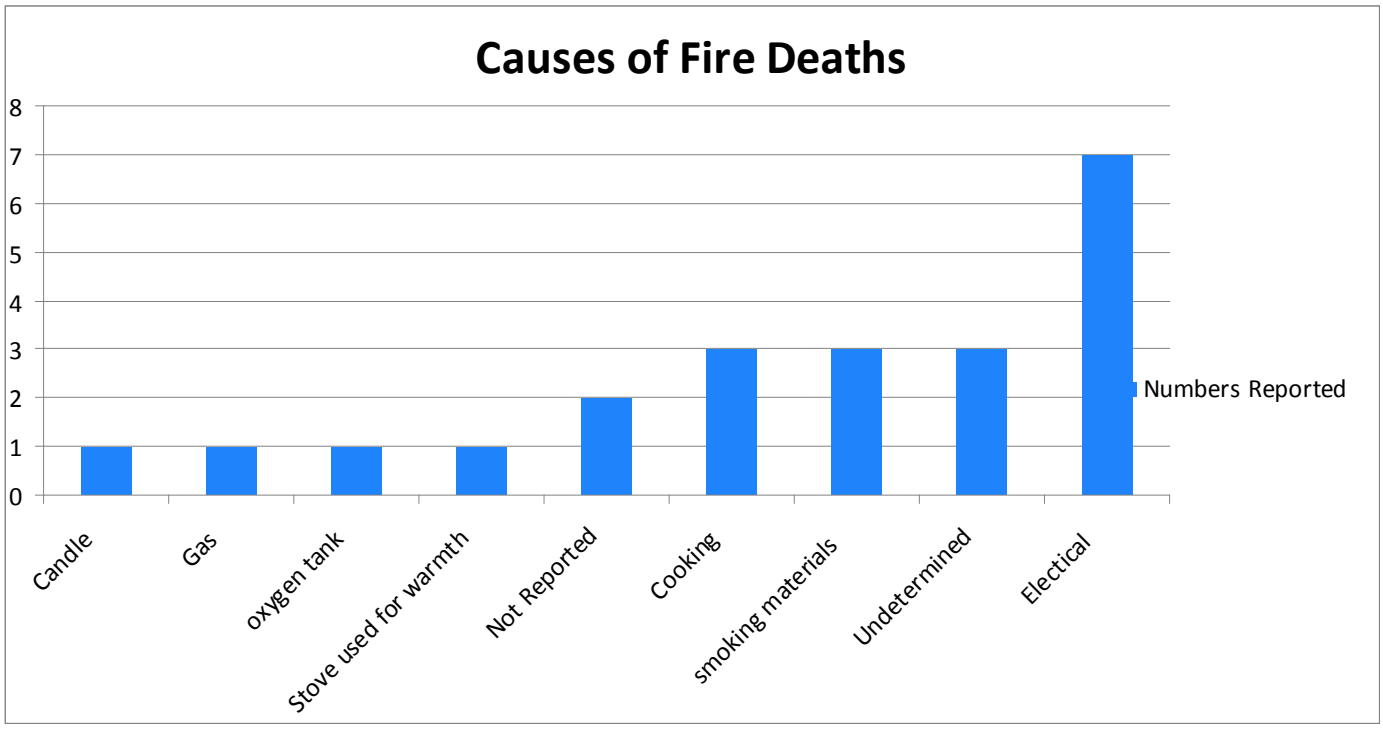
Figure D1 – City of San Antonio Map of Percent of People in Poverty



City of San Antonio Planning and Development Services Website. (2011).

Appendix E

Table E1 – Causes of Fire Deaths for City of San Antonio - January 2007-August 2011



(Jenkins and Westbrook, 2011, p. 6).

Appendix F

Surveymonkey™ Survey of Fire and Life Safety Education for Older Adults

Executive Fire Officer Program

Community Risk Assessment

Survey – Older Adult Fire Safety and Education Programs

Question # 1
What size of community does your department serve?
A. Less than 10,000 population
B. Between 10,000 and 50, 000 population
C. Between 50,000 and 100,000 population
D. Greater than 100,000

Question # 2
How would you describe your fire department?
A. All career
B. All volunteer
C. Combination (paid and volunteer)
D. Paid on call

Question # 3
Do you have a dedicated Fire Prevention or Fire Marshal's Division?
A. Yes
B. No

Question # 4
Do you offer Fire Safety and Education classes to the public?
A. Yes
B. No

If your response to question #4 was "no", your survey is complete. If your response was "yes", please complete the remainder of the survey.

Question # 5
How does your department deliver Fire Safety and Education classes?
A. By a Community Education Division
B. Fire Marshal's Office/Fire Prevention Division
C. By on-duty fire companies
D. Some combination of the above

Question # 6

Does your department have a specific Fire Safety and Education program targeted towards older adults (age 60+)?

A. Yes
B. No

If your response to question #6 was "no", your survey is complete. If your response was "yes", please complete the remainder of the survey.

Question # 7

What type of program, targeted toward educating older adults about fire safety, does your department currently use? (Check all that apply)

A. Nation program, such as NFPA's Remembering When or USFA's "A Fire Safety Campaign for People 50 – Plus"?
B. Locally developed program
C. Other

Question # 8

What agencies does your department collaborate with in delivering a Fire Safety and Education program to older adults? (Check all that apply)

A. Local Churches
B. Meals on Wheels
C. Senior Centers
D. Neighborhood Association Groups
E. Health Department
F. Other agency not listed

Question # 9

If your department offers a Fire Safety and Education program to older adults, do you provide the opportunity for the audience to provide feedback on the program for Quality Improvement (QI) purposes?

A. Yes
B. No

Question #10

How long has your department been conducting Fire Safety and Education programs targeted toward the older adult population?

A. 1 year or less
B. 1 to 5 years
C. 6 to 10 years
D. More than 10 years

Thank you for completing the survey

Appendix G

Surveymonkey™ Results of Survey of Fire and Life Safety Education for Older Adults

View Summary

Filter Responses | Download Responses | Browse Responses »

PAGE:

1. What size of community does your department serve?

answered question	**18**
skipped question	**0**

	Response Percent	Response Count
Less than 10,000 population	5.6%	1
Between 10,000 and 50,000 population	**38.9%**	**7**
Between 50,000 and 100,000 population	27.8%	5
Greater than 100,000	27.8%	5

2. How would you describe your fire department?

answered question	**18**

2. How would you describe your fire department?

skipped question	**0**

	Response Percent	Response Count
All career	**77.8%**	**14**
All volunteer	0.0%	0
Combination (paid and volunteer)	22.2%	4
Paid on call	0.0%	0

3. Do you have a dedicated Fire Prevention or Fire Marshal's Division?

answered question	**17**
skipped question	**1**

	Response Percent	Response Count
Yes	**94.1%**	**16**
No	5.9%	1

4. Do you offer Fire Safety and Education classes to the public?

answered question	**18**
skipped question	**0**

	Response Percent	Response Count
Yes	**88.9%**	**16**
No	11.1%	2

5. How does your department deliver Fire Safety and Education Classes?

answered question	**18**
skipped question	**0**

	Response Percent	Response Count
By a Community Education Division	0.0%	0
FireMarshal's Office/Fire Prevention Division	33.3%	6

5. How does your department deliver Fire Safety and Education Classes?

By on-duty fire companies	27.8%	5
Some combination of the above	**50.0%**	**9**

6. Does your department have a specific Fire Safety and Education program targeted towards older adults (age 60+)

answered question	**18**
skipped question	**0**

	Response Percent	Response Count
Yes	22.2%	4
No	**77.8%**	**14**

7. What type of program, targeted toward educating older adults about fire safety, does your department currently use? (Check all that apply)

answered question	**6**
skipped question	**12**

7. What type of program, targeted toward educating older adults about fire safety, does your department currently use? (Check all that apply)

	Response Percent	Response Count
Nation program, such as NFPA's Remembering When or USFA's "A Fire Safety Campaign for People 50 – Plus"?	**50.0%**	**3**
Locally developed program	**50.0%**	**3**
Other	16.7%	1

8. What agencies does your department collaborate with in delivering a Fire Safety and Education program to older adults? (Check all that apply)

answered question	**6**
skipped question	**12**

	Response Percent	Response Count
A. Local Churches	16.7%	1
Meals on Wheels	16.7%	1
Senior Centers	**66.7%**	**4**

8. What agencies does your department collaborate with in delivering a Fire Safety and Education program to older adults? (Check all that apply)

Neighborhood Association Groups	50.0%	3
Health Department	0.0%	0
Other agency not listed	33.3%	2

9. If your department offers a Fire Safety and Education program to older adults, do you provide the opportunity for the audience to provide feedback on the program for Quality Improvement (QI) purposes?

	answered question	**6**
	skipped question	**12**
	Response Percent	**Response Count**
Yes	33.3%	2
No	**66.7%**	**4**

10. How long has your department been conducting Fire Safety and Education programs targeted toward the older adult population?

10. How long has your department been conducting Fire Safety and Education programs targeted toward the older adult population?

answered question	**6**
skipped question	**12**

	Response Percent	Response Count
1 year or less	33.3%	2
1 to 5 years	16.7%	1
6 to 10 years	0.0%	0
More than 10 years	**50.0%**	**3**

Appendix H

Table H1 – Council District and Average Age of Fire Death Residence

Council District	Average Age of Fire Death Residence
Council District 1	90
Council District 2	63
Council District 3	68
Council District 4	45
Council District 5	65
Council District 6	47
Council District 7	77
Council District 8	33
Council District 9	42
Council District 10	29
City of San Antonio	55.9

(Jenkins and Westbrook, 2011, p. 10).

Appendix I

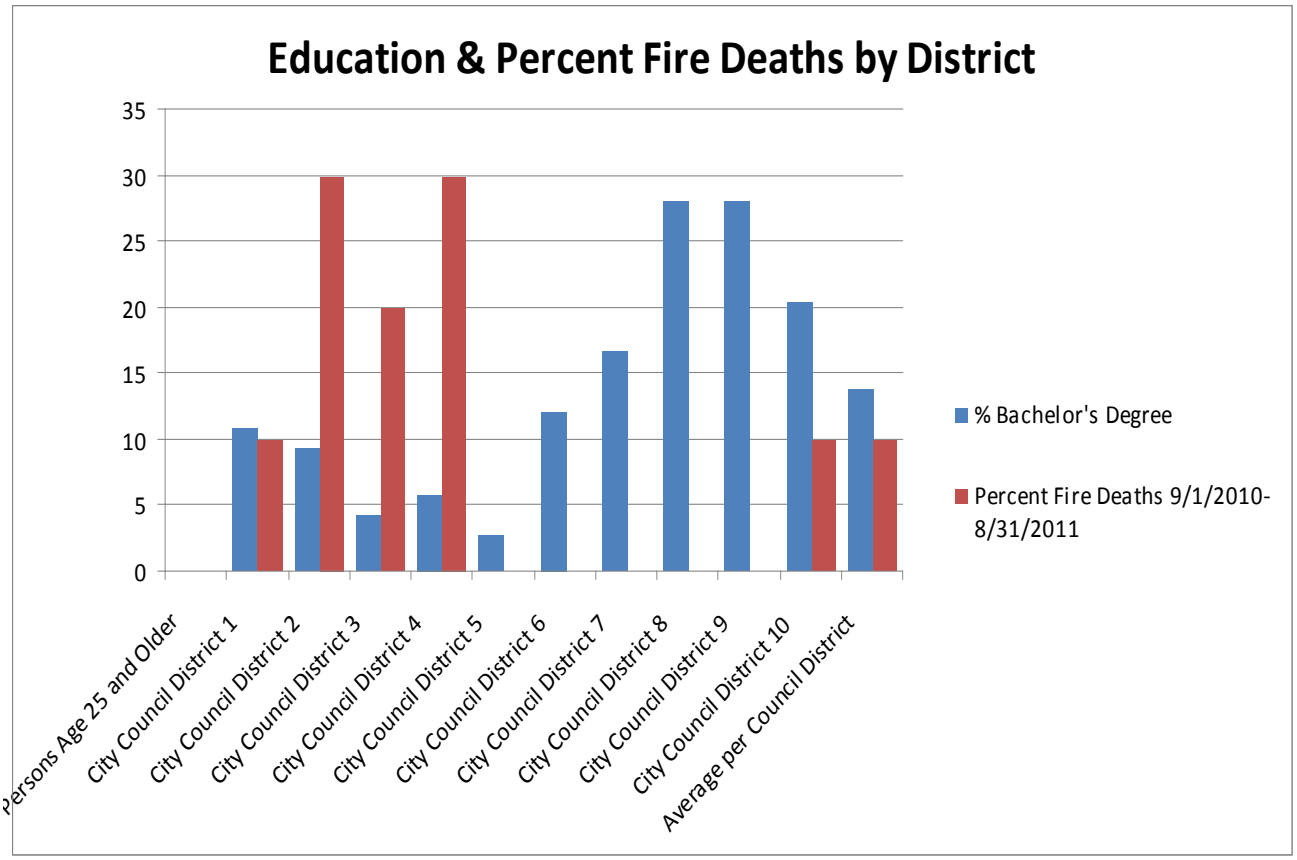
Figure I1 – Percent Home Vacancy and Percent Fire Deaths

Percent Vacant Homes and Fire Deaths By Council District	% Vacancy	Percent Fire Deaths 9/1/2010- 8/31/2011
City Council District 1	7.9	10
City Council District 2	**8.1**	**30**
City Council District 3	6.9	20
City Council District 4	5.4	30
City Council District 5	6.1	0
City Council District 6	4.1	0
City Council District 7	5	0
City Council District 8	6.7	0
City Council District 9	6.3	0
City Council District 10	5.8	10
Averages by Council Districts	6.23	10

(Jenkins and Westbrook, 2011, p. 14).

Appendix J

Table J1 – Percent with Bachelor Degree and Percent Fire Deaths by Council District



(Jenkins and Westbrook, 2011, p. 13).

Appendix K

Table K1 – Percentage of Fire Deaths by Council District

Percent Residential Fire Deaths by Council District	9/1/2010-2/28/2011	3/1/2011-8/31/2011
City Council District 1	14	0
City Council District 2	29	33
City Council District 3	29	0
City Council District 4	14	67
City Council District 5	0	0
City Council District 6	0	0
City Council District 7	0	0
City Council District 8	0	0
City Council District 9	0	0
City Council District 10	14	0
Average	10	10

(Jenkins and Westbrook, 2011, p. 6).

Appendix L

Figure L1 – Fire Safety Brochure – Front

E.D.I.T.H. Tips

- Know the Plan and escape routes
- Practice your plan at least twice a year
- Use different exits for your drills
- Learn to crawl low under smoke
- Stay next to a wall when attempting to escape a building. This is where firefighters will be located when coming in to find you.
- Check all doors for heat before opening them to escape
- Close doors behind you, to contain fire and smoke
- Designate a meeting place outside your home to account for everyone
- The meeting place should be a stationary object that will always be available, and is located at a safe distance away from the home
- Call 911 from a neighbor's home
- Once out, stay out!

If you are unable to escape:

- Close window and door openings where smoke could enter
- Use a towel or cloth to cover your mouth and nose while breathing
- Call 911, let them know exactly where you are at, and stay on the line
- Stay by a window for rescue, wave a light colored cloth or flashlight to get the attention of the firefighters
- If absolutely necessary, create a small opening in a window to breath while waiting for rescue

Home Fire Prevention Checklist

You can prevent fires before they happen. Use this check-list to conduct your own in home fire hazard safety check.

- Keep matches locked in high cabinet, away from children
- Use correct wattage light bulbs
- Replace frayed, cracked or broken electrical cords
- Use electrical outlets safely, do not use multi-plug outlets or extension cords
- Do not use electrical appliances or cords around or near water
- Store cleaning products and aerosol cans away from heat
- Keep stove and oven clean, do not store papers, rags, or potholders near
- No curtains above stove
- Keep pot handles turned toward back of stovetop
- Install GFCIs in bathroom, kitchen, and other areas where moisture is present
- Disconnect hair dryers and curling irons after use
- Store gasoline in approved container
- Do not store anything in water heater or A/C closet

San Antonio Fire Department
Community Safety & Education Division

Home Fire Safety

SAFD

OUR FAMILY

PROTECTING

YOUR FAMILY

SAN ANTONIO FIRE DEPT.

Appendix L

Figure L2 – Fire Safety Brochure – Back

SMOKE ALARMS

The majority of fatal home fires happen at night between the hours of 10 pm and 6 am, while people are sleeping.

In the event of a fire, a smoke alarm can save your life and those of your loved ones. Smoke Detectors are very important means of preventing residential fire fatalities by providing an early warning signal -- so you and your family can escape.

Smoke alarms are one of the best safety devices you can buy and install to protect yourself, your family, and your home. Smoke alarms are considered the first line of defense in a fire and have been credited for saving many lives.

At a minimum, you should have a smoke alarm installed in the hallway outside each sleeping area. For extra protection, install a detector in each bedroom.

Hard-wired detectors, with battery back-up, offer the best protection. Hard-wired detectors alert everyone to the presence of smoke at the same time. Install a smoke detector on every level of your home, including your basement.

Smoke detectors are not recommended for kitchens, utility rooms, attics, or garages-where cooking fumes, steam, high amounts of moisture, or exhaust fumes could set off false alarms. Install a heat detector instead. Do not install smoke alarms closer than three feet from the kitchen, bathroom, or an air supply vent.

Test and clean your smoke detector monthly. You may use a vacuum to clean, but do not spray with any cleaning chemicals or water.

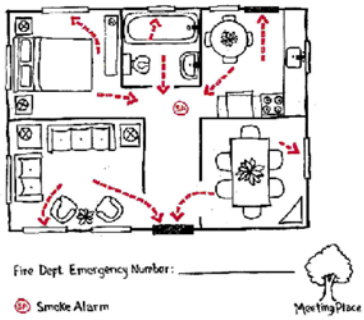
Replace batteries at least once a year or when the alarm begins to chirp. To provide longer battery life, consider buying a Lithium battery, since these batteries will not require replacement for 10 years. Smoke detectors should be replaced every 8-10 years.

PLANNING YOUR ESCAPE

Each year our nation suffers from needless fire deaths. Many of these deaths can be attributed to occupants becoming disoriented and trapped in their own homes. This is why it is so important to have a Plan of Escape in the event of Fire. A home fire escape plan is call E.D.I.T.H. (Exit Drills In The Home).

Practicing your escape plan at least twice a year will increase your chances of surviving a fire.

An escape plan begins with drawing a floor plan of your home. Escape routes are then drawn into this floor plan. Each room should have two ways of escape. The primary escape route is always a doorway, with windows being considered a secondary exit. Windows with security bars should be equipped with a quick-release mechanism that is operated from the inside.



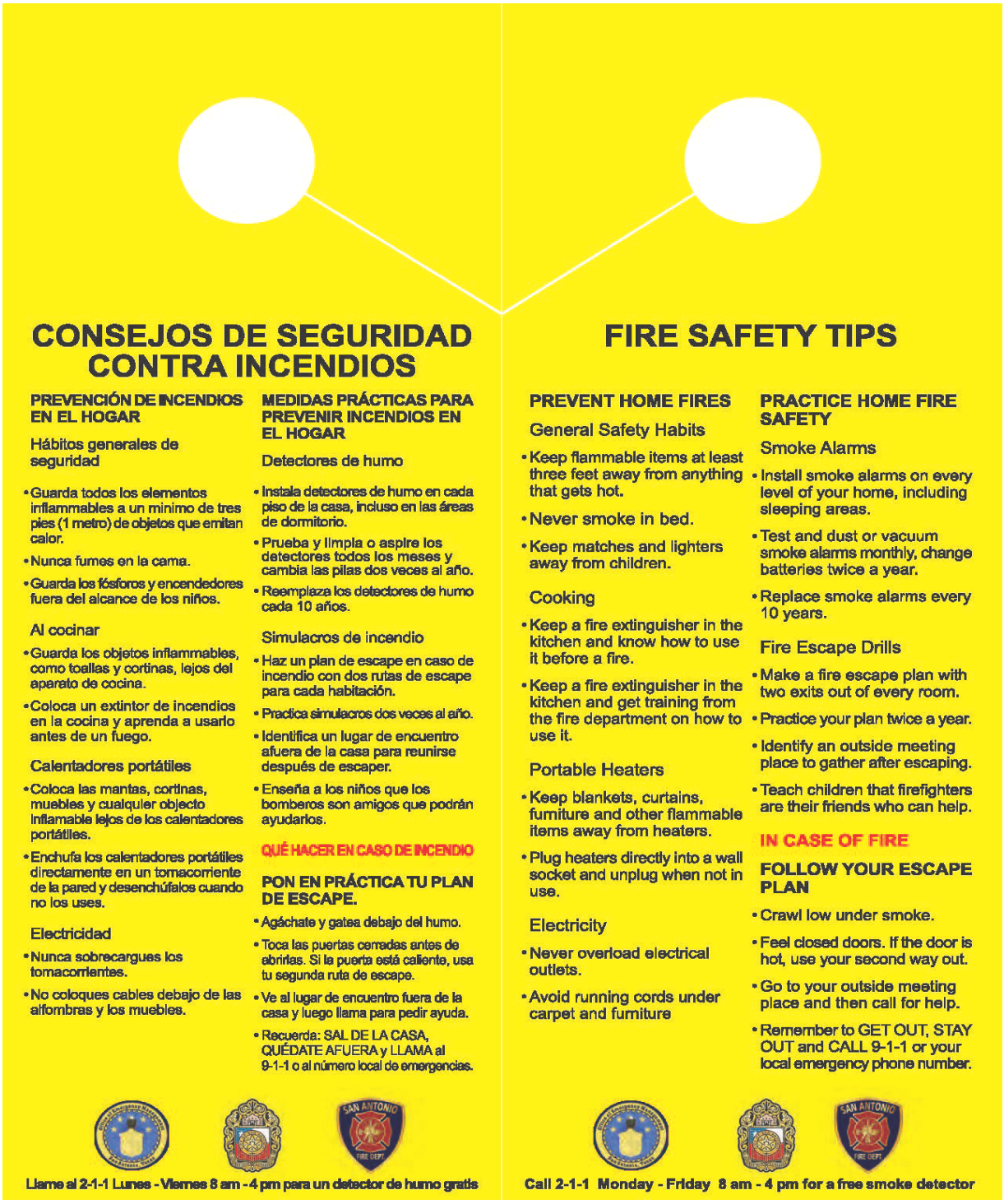
Once everyone knows how to get out and stay out, choose a place to meet outside, preferably in a neighbor's front yard. Never go back into a burning building to attempt to rescue people or pets or to retrieve any possessions.

During your fire drills, make sure everyone can hear and recognize the sound of the smoke alarm. In addition, during these drills you can make sure that stairways and all exits are cleat and free from clutter.

If you have a disability, designate a family member to assist you in exiting, sleep near an exit, and install a telephone in your room.

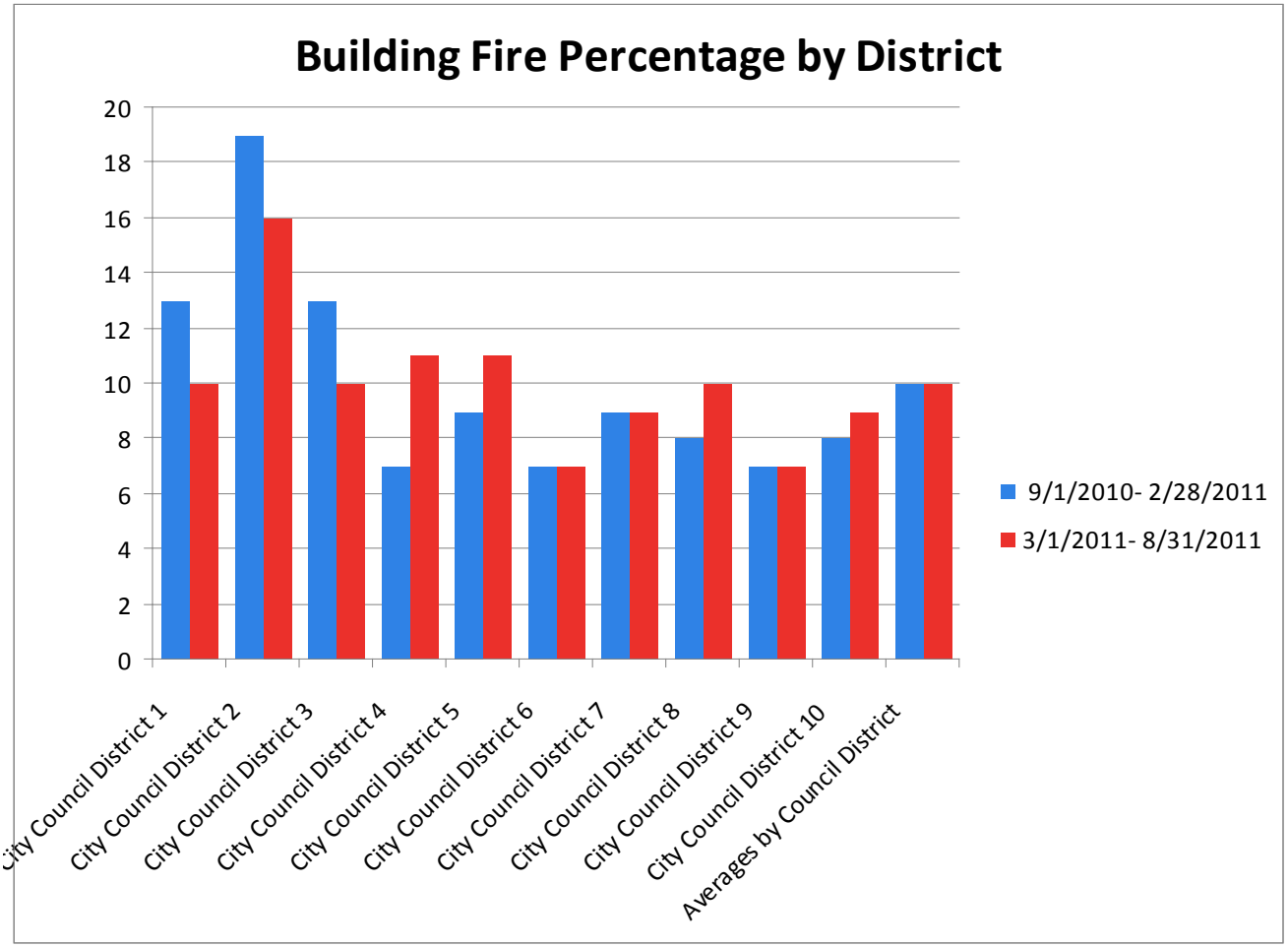
Appendix M

Figure M1 – Fire Safety Door Hanger



Appendix N

Table N1 – Percentage of Residential Fires Attributed by City Council District



(Jenkins and Westbrook, 2011, p. 18).