

**Hazard Analysis of Persons Sixty-Five and Older
Residing Within The Stillwater Fire Department Response District**

Leading Community Risk Reduction

By: Stuart W. Glaser
Stillwater Fire Department
Stillwater, Minnesota

An applied research project submitted to the National Fire Academy
as part of the Executive Fire Officer Program

December 2003

Abstract

It has been well documented by numerous agencies, and statistics prove, that specific age groups are more susceptible to fire related deaths and injury than others. One age group identified as vulnerable to fire related deaths and injuries are those individuals who are sixty-five years old and older.

The problem is the Stillwater Fire Department (SFD) does not have a risk reduction program in place for the more vulnerable population of persons sixty-five years old and older. The purpose of this applied research project was to study the current demographics of the Stillwater Fire Department response district, conduct a hazard analysis and to outline an appropriate risk reduction program designed to meet the needs of the sixty-five and older population being served.

Descriptive research methodology was utilized to answer the following questions:

1. What percent of the population served is sixty-five years old or above?
2. What type of housing does this population live in?
3. What are the challenges affecting this age group that makes them more vulnerable or at risk to hazards?
4. What type of risk reduction program needs to be implemented?

Population data was analyzed to determine what percentage of the population SFD serves is sixty-five years older or above. Housing distribution was reviewed to determine where these individuals live. Personal interviews and Internet research was conducted to obtain the most current data available.

An extensive literature review and hazard analysis was conducted to determine the issues affecting this age group that makes them susceptible to injury. Current programs were researched to identify what types of programs are in place and what type of a program should be implemented.

The results of the research indicate that currently no risk reduction program specifically related to fire injury is in place for the senior community in the Stillwater area. Several other injury reduction programs are in place such as fall prevention and driver education programs but not one specific to fire.

Based on these findings, the recommendations of this research would include working cooperatively with other agencies to include a fire safety component to ensure the most comprehensive risk reduction program available.

Table of Contents

Abstract.....	2
Table of Contents	4
Introduction.....	5
Background and Significance	6
Literature Review	8
Procedures	11
Results	14
Discussion.....	18
Recommendations	21
Reference List.....	24
Appendix A - Client Interview Question Responses.....	27
Appendix B - Client Data Responses.....	29

Introduction

Community risk reduction is not limited to public health agencies and hospitals. The importance of injury prevention and education cannot be overstated and the ever-increasing request for emergency response has brought risk reduction initiatives to the forefront of the fire service. With the realization that most injuries are preventable it has become increasingly evident that risk reduction and prevention programs need to be developed and implemented at the local first responder level where the responses and resources are being committed.

It has been well documented by numerous agencies, and statistics prove, that specific age groups are more susceptible to fire related deaths and injury than others. One age group identified as vulnerable to fire related deaths and injuries are those individuals who are sixty-five years old and older. Statistics reveal that people in this age range are at an ever-increasing risk of death or injury from fire as well as injury or death from other mechanisms including but not limited to falls and motor vehicle crashes.

The Stillwater Fire Department (SFD) responds to numerous emergency calls and requests for assistance annually. As a first responder Emergency Medical Services (EMS) provider, as well as a fire suppression agency, it has become increasingly evident that medical calls have become more prominent and currently account for over 61% of all emergency responses (Stillwater Fire Department, 2002, p. 10). Logically, call volume increases as the population protected increases, but is this due to the sheer increase in numbers or is it due to other factors such as the age distribution of the population protected?

The problem is the Stillwater Fire Department does not have a risk reduction program in place for the more vulnerable population of persons sixty-five years old and older. The purpose of this applied research project is to study the current demographics of the Stillwater Fire Department

response district, conduct a hazard analysis and to outline an appropriate risk reduction program designed to meet the needs of the sixty-five and older population being served. Using descriptive research methodology the following questions will be answered:

1. What percent of the population served is sixty-five years old or above?
2. What type of housing does this population live in?
3. What are the challenges affecting this age group that makes them more vulnerable or at risk to hazards?
4. What type of risk reduction program needs to be implemented?

Background and Significance

The City of Stillwater is located in the scenic St. Croix River valley approximately 20 miles east of the Capitol City of St. Paul, Minnesota. Stillwater is considered the birthplace of Minnesota and is rich with history of our State. The Stillwater Fire Department (SFD) was organized in 1872 by the City Forefathers based on the need of providing protection to the community from the ravages of fire and to save from harm the economic interests of the region.

Today, like many fire departments across the nation, the Stillwater Fire Department's role in the community is much larger than providing fire suppression services alone. Along with fire suppression the Stillwater Fire Department provides: heavy rescue, fire prevention/education, code enforcement, and first responder emergency medical services. SFD provides these services within a 61 square mile area of Washington County, Minnesota. Currently SFD responds from a single station and serves the communities of the City of Stillwater, Stillwater Township, and portions of May Township and the City of Grant. The total population protected by SFD according to the 2000 Census data is 22,532.

The City of Stillwater, like numerous municipalities in and around the twin cities metropolitan area, has seen continued growth and expansion. Based on City records, in the past four years, 1998 – 2001, Stillwater has experienced a 234% increase in all areas of development, including: multi-family, single family, twin homes, condominiums, and commercial structures.

In addition to this continued physical growth, it will be extremely important for SFD to monitor the population trends as they continue to change. Demographic monitoring is important so that appropriate risk reduction programs are developed and implemented to meet the changing needs and desires of the community. The demographic data of Stillwater and the surrounding area reveal an ever increasing population of mature residents who have or will soon attain the age of sixty-five. Currently over 10% of the Stillwater Fire Departments response district is sixty-five years old or older (2000 Census). This specific age group is predicted to increase over the next several years, 10% by the year 2010 and as much as 22% by 2020. The more mature the population becomes, the more likely it will be the SFD will experience an increase in injury and morbidity due to the increasing number of individuals within this age group.

In addition to the ever increasing senior population, Stillwater also carries several high risk and relatively high density facilities of seniors and or individuals who would need a great deal of assistance in the event of a fire within its response area. Facilities such as nursing homes, hospitals, senior apartment complexes and treatment centers currently comprise a population in excess of 614 persons. Again, with the predicted increase in the older population and individuals with special needs the more likely it will be to see additional housing units built specifically targeted for this population.

This applied research project was completed for the Leading Community Risk Reduction course of the National Fire Academy's Executive Fire Officer Program. The results of this research

are an application of Unit 2 “Assessing Community Risk” and the United States Fire Administration’s Operational Objective of reducing the loss of life from fire in the age group sixty-five years and above. In Unit 2, the need to conduct a community risk assessment and identify vulnerable populations within your response area is a critical first step in developing a proactive and progressive community risk reduction program.

In order for the SFD to be successful in its risk reduction efforts, it must first identify and examine the hazards affecting the more vulnerable population of those sixty-five and older residing within SFD’s response district. This applied research project will examine the current population base and future projections identify the hazards, and what type of risk reduction program may be appropriate for implementation.

Literature Review

In what is known as the “Graying of America,” the United States is fast becoming a nation of the elderly (United States Fire Administration [USFA], 1999). In fact, the U.S. Census Bureau predicts the elderly population in the United States will more than double by the year 2050 (Padula, 1999). As “baby boomers” turn into “senior boomers” significant changes will take place and the needs and wants of seniors will need to be addressed (Backman, 2001). Providing emergency services to this generation will become a major priority, as this age group will be the dominant population and customer of the current emergency response system.

As we age, we have to deal with more and more health related issues and concerns. Physical ailments began to appear such as diminished ability to hear and increasingly stiff joints, which impede mobility (Padula, 1999). In addition, other sensory impairments including diminished vision, depth perception, sense of smell and balance all contribute to the increased vulnerability of this age group to fire and injury (USFA, 1999).

Mental health issues also play a factor in injury risk. According to the USFA, *Fire Risks for Older Adults* (1999), impaired memory and behavior diseases including dementia, Alzheimer's disease and other age-related neurologic disorders increase injury risk to this age group. Individuals with diminished mental health status may not be able to appropriately respond or even recognize the danger they face due to a fire situation.

Generally, seniors are more prone to a variety of injuries due to the aging process itself. Among injuries older adults are at an increased risk for is dying or being injured by fire. The United States Fire Administration (USFA) states the elderly population has the highest risk of dying in a residential fire-where the majority of civilian casualties (fatalities and injuries) occur (as cited in *Fire Risks for Older Adults*, 1999, p. 10). According to Hall (2001, p. 2) home fire death rates for individuals sixty-five and older are more than twice the national average, three times higher for people seventy-five and older and four-and-half times greater for adults aged eighty-five and older.

Older adults are also at an increase risk for non-fatal fire injuries as well. Statistics show that fire deaths and injuries do not follow the same pattern and civilians are 5.2 times more likely to be injured by a home fire than die in one (Hall, 2001, p. 49). The leading cause of fire injury for individuals sixty-five and older are as follows; smoke-inhalation 50.1%, burns 20.2%, burns and smoke inhalation 17.5%, other causes 12.2% (Hall, 2001, p. 54). Knowing how and where this vulnerable age group is being killed and/or injured is very important in determining the type of risk reduction programs needing to be implemented.

With this knowledge and a host of statistical data to support this public safety concern, what are the mechanisms of injury or behavior contributing to this public health problem? Nationally, the leading cause of fire injury for the sixty-five and older population is cooking related (27.8%)

followed by smoking (18.1%), with heating and electrical distribution equipment at 9.6% and 9.2% respectively, followed by several other various causes (Hall, 2001, p. 59). The leading cause of death on the other hand is smoking (30.1%), heating (16.9%), cooking (11.1%) and electrical distribution equipment (10.8%), followed by several other mechanisms (Hall, 2001, p. 21).

How does the national statistics compare to our local statistics? Does Minnesota mirror the national data or not? According to the Minnesota Department of Public Safety (MDPS), *Fire in Minnesota (2002)* the leading cause of fire was cooking, 38%, by a relatively large margin. The second leading cause was heating at 12% followed by incendiary at 11% (p. 10). Surprisingly, smoking was a relatively distant eighth on the list accounting for only three percent of fires in our state (MDPS, 2002, p. 10). If we look at statistics for 2001, again we see cooking as the leading cause at 27%, followed by heating, 10% and incendiary at nine percent (MDPS, 2001, p. 10). In 2000 heating was the leading cause at 17% followed closely by cooking at 16% and open flame, 16% (MDPS, 2000, p. 10). It appears Minnesota is representative of the national statistics for the most part; cooking is a major fire cause.

How does Minnesota compare to national averages for fire related injury? Injury statistics over the last three years is relatively consistent for the age group of sixty or older. In 2002, 25 injuries reported, 15 in 2001 and 23 in 2000 (MDPS, 2002, 2001, 2000, p. 32). When we look at where these individuals are injured it becomes very clear that our fire death and injury risk is at home, in our residential occupancies that we have a significant concern. 78% of all civilian injuries occurred in the home during 2002, 74% in 2001 and 69% during 2000 (MDPS, 2002, 2001, 2000, p. 33). Statistics reveal we are at the greatest risk to injury from fire in our homes, ironically the place we feel we are the safest.

According to MDPS, Fire in Minnesota, over the last three years there has been 4,224 total civilian fire related injuries, of these 449 or 11% occurred to individuals who were fifty-five years old or older. If we isolate the senior age group, we find even though they currently represent only 11% of total injuries their injury numbers are on a continual increase. Over the past three years from 2000 to 2002 fire related injuries have increased by 25% in this age demographic (MDPS, 2000, 2001, 2002, p. 34).

Similar to national statistics, careless smoking was the number one cause of fire related death in Minnesota during 2002, followed by vehicle fires and electrical malfunction fires (MDPS, 2002, p. 29).

Based on the statistics and information revealed during this literature review, opportunities for risk reduction for the senior population is evident. According to Appy (2003, p. 80) any good injury prevention program must include the input and active participation of first responders. In addition to putting out fires most fire departments are also responding to poisonings, falls, drownings, pedestrian and motor vehicle injuries and every other community emergency they may be called to (Appy, 2003, July). Appy (2003, p. 80) states; "I believe that armed with adequate resources, there's no public safety advocate more powerful than firefighters."

Procedures

Using descriptive research methodology a hazard analysis of persons sixty-five years old and older was conducted. This applied research project began with an extensive literature review of the subject matter. Research material was obtained from the National Fire Academy's Learning Resource Center (LRC), personal interviews, the Internet and the utilization of an informal survey instrument.

The author investigated various articles and previous data regarding this topic area and used the information found as a basis for this research paper. Demographic information was collected from the most current census data available. Conducting personal interviews, analyzing public health data and personal observation resulted in the additional subject matter statistics obtained.

The process of determining the percent of the population currently sixty-five or older was based on 2000 United States Census Bureau statistics. By reviewing the current census data and investigating the future population projections the demographic make up of the Stillwater Fire Department response district was determined.

Several personal interviews were conducted with several different agencies regarding fire prevention/education and other risk reduction programs currently in place. The author conducted personal interviews with staff from the Washington County Department of Public Health and Environment regarding risk reduction programs currently in place at the County level.

In addition to interviewing County level agencies, the author contacted and interviewed a private healthcare provider regarding this subject as well. Lakeview Hospital is the primary care hospital for the majority of residents who reside within SFD's response district. Lakeview Hospital provides many informational, educational, and assistance programs for Stillwater area residents. One of these programs is home healthcare and hospice assistance. The Director of Homecare/Hospice services met with the author to discuss what programs Lakeview Hospital currently has in place regarding risk reduction and personal safety issues for seniors.

Upon completion of the personal interviews with both Washington County Public Health and Environment and Lakeview Hospital's Homecare/Hospice program, the author developed a simple survey instrument to collect data specifically targeted at fire prevention/education knowledge and behaviors in the age group of persons sixty-five and older (See Appendix A). Once