Effectiveness of Fire Prevention Education Messages and Perception of Fire Risk

Research Presented in Partial Fulfillment

of the Requirements for the

Executive Fire Officer Program

by

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Abstract

Fire fatalities have been trending up in Minnesota, particularly in adults aged fifty-five or older, despite efforts of fire prevention professionals to educate residents about the risks of fire. This study is aimed to evaluate the perception of fire risk and fire safety knowledge of Minnesota adults aged fifty-five or older. A qualitative research study used a survey to determine risk perception, understanding of fire prevention messages, fire escape planning, and preferred methods for receiving fire prevention messaging. A literature review was conducted to assist with survey design and question development and provide background on risk perception and fire safety education research. After the literature review, a survey tool was developed and field-tested with adults in the target demographic and fire prevention practitioners. The population and sample size were reviewed to ensure the purpose and intent of the research could be met through the survey process. The survey was refined and reviewed for potential bias. An informed consent form was developed for the participants to complete before conducting research. The research aimed to gather information from adults aged fifty-five or older across Minnesota, including participants from various communities. The researcher connected with stakeholders working with older adults to collect responses. With collected responses, the researcher coded data to analyze responses and evaluate for trends. Upon conclusion of data collection and coding, conclusions were reviewed along with the limitations of the data. Survey data revealed that most older adults had working smoke alarms and had fire interventions in mind but failed to mention true prevention strategies. Recommendations for future fire prevention education were developed, which focused on additional research and behavior change to prevent fires from ever happening.

Acknowledgments

My affiliation with the Minnesota Department of Public Safety Fire Marshal (SFM) division is provided as biographical information. No official sponsorship or endorsement of this capstone research paper by the SFM was provided or should be inferred.

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Contents

CHAPTER 1: INTRODUCTION

The position of Minnesota state fire marshal was established in 1905, and the Fire Marshal Office came into existence in 1913 (Minnesota Department of Public Safety, 2024). Created by the Minnesota State Legislature, the office's original purpose was to investigate fire incidents around the state. The original state fire marshal reported to the insurance commissioner and was charged with enforcing the laws for suspicious fires, arson, and fire prevention. In 1969, the office became a division of the Minnesota Department of Public Safety, where it remains housed today. Since its inception, there have been many changes, and the State Fire Marshal (SFM) division continues to evolve to meet fire safety and prevention needs statewide. Along with investigations, other areas of responsibility have been added since 1905. They include legislatively mandated inspections of hotels, motels, foster care, daycare facilities, public and, charter schools, and healthcare facilities. Staff also review sprinkler plans and support fire departments through state emergency response teams, public education, and data.

The data team works directly with the more than 700 fire departments across the state to ensure compliance and reporting through the National Fire Incident Reporting System (NFIRS). Each year, more than 95 percent of fire departments participate in reporting fire incidents (Minnesota State Fire Marshal , 2021). That incident data helps the SFM track trends in fire incidents, injuries, and deaths. Data from local fire departments is only one piece of the puzzle regarding fire fatalities, which is why the data team also partners with the Minnesota Department of Health (MDH) to ensure fire deaths are accurately counted each year.

Minnesota statute requires fire departments to report to SFM when there is a fire-related fatality. SFM investigators are called to assist many local agencies, and this cooperation with the local agencies gives one view of fire fatalities. Unfortunately, however, some fatalities occur

months after an incident. In other cases, someone dies in a fire incident in which a fire department never responded. These are the fire fatalities that the SFM leans about through MDH.

MDH provides the SFM with a list of fatalities pulled from its database based on keywords. The keywords include flame, fire, burn, gasoline, smoke inhalation, explosion, and others. Upon receipt of the MDH list, SFM staff review each fatality, including any autopsy or other death records, to determine if it is fire-related or due to other causes.

Each year, the careful review of fire fatalities yields the final list of deaths attributed to fire across the state. The number of fire fatalities has increased each of the past four years. Even when considering the number of fire deaths compared to the state's population, the fire death rate trend indicates that deaths are increasing. As these numbers increase, leadership in the fire service must consider whether the fire prevention messages reach key audiences. The number of fatalities is increasing, and community leaders must find ways to drive those numbers down.

Background

Fire fatalities in Minnesota reached a 27-year high in 2022 when 70 Minnesotans died (Minnesota State Fire Marshal, 2024). These lives were cut short due to fire, the youngest being a six-year-old victim who perished along with his grandparents. A space heater was suspected to have started the fire. There were victims of careless smoking, gas leaks, outdoor burning, and a variety of other fire causes that fire prevention and safety messages seek to eliminate.

The ages of these victims spanned a wide range, but the average age in 2022 was surprisingly young: 55. The average victim was also male and lived in rural Minnesota. The SFM continues to look at data to learn more about the fire victims. There are still many questions, but knowing more about the perception of fire risk could help guide future efforts.

While fire death data shows the fatality trend increasing, the data indicates fire incidents have plateaued. Fire deaths and incidents have a linear correlation, but that does not appear to be true in Minnesota. Fires seem to be increasingly fatal. According to the National Fire Protection Association, fire injury and death rates have increased since 1980. Fire prevention education programs and efforts to educate on preparedness are critical for communities (McKelvey, 2023). Additional data from the National Fire Data Center of the U.S. Fire Administration in the publication *Fire in the United States 2008-2017* (United States Fire Administration, 2019), show that during the ten years identified in the report the trend in fire-related deaths increased by 10 percent (Hall, 2023).

The SFM aims to strengthen Minnesota fire-safe environments by providing statewide leadership and guidance in support of fire and life safety policy, enforcement, prevention, and education. While much of the work in fire and life safety education at the SFM is not direct delivery to the public, the office does work closely with fire departments across the state to share fire prevention messages.

Significance of the Study

Fire and life safety education has been a staple of fire department activities for decades. Every fire department allocates its time and resources differently to support fire prevention education, but most fire departments conduct activities, especially around Fire Prevention Week in October. NFPA and USFA often generate foundational information for these fire prevention messages. These two entities provide trusted, research-based, data-driven messages to help support local communities. The SFM also closely follows the NFPA and USFA messaging. The SFM has also worked with incident data from the state of Minnesota to help guide departments

on messages and prevention programs. Using incident data and demographic data, SFM has coordinated the creation of tools for local community leaders to analyze risks specific to the community. The data and messages from the national perspective and state data provide a broad picture of the fire problem in Minnesota. Communities can use these broad tools with local data to ensure the right messages and interventions are used at a local level.

Data and research are increasingly important to the work that is done in the fire service and in fire prevention education. Historic data, as well as predictive modeling, provide important context to protect communities. There is a need to use outcome-based data for the functions of an organization, and public education should not be excluded from data-driven solutions (Center for Public Safety Excellence & International City/County Management Association, 2020).

Fire prevention and safety messages are widely available for use in media, social media, and local programming. While fire prevention messages, such as the Fire Prevention Week theme, change annually, they are often based on the same foundational messages that have been available for years. The problem is that messages are no longer reaching or resonating with the target population.

In the *Fire Loss in the United States During 2022* report, the fire death rate nationally in 1980 was 7.1 deaths per 1,000 reported house fires (National Fire Protection Association, 2023). That number rose to 7.5 deaths in 2022. Another interesting point from that report is that there is still not knowledge of the full impacts on fire incidents and deaths due to the COVID-19 pandemic and resulting changes in societal habits (Hall, 2023). The report also mentions ongoing changes in behaviors across the county, such as restaurant visits. While restaurants are not a location seeing a large number of fire-fatalities, it speaks to the broader societal changes since the COVID-19 pandemic.

Minnesota State Fire Marshal Division (2023) exists so that the fire service is prepared, communities are supported, and Minnesotans are safer from fire, an increase in fire deaths is a concern (Minnesota State Fire Marshal Division, 2023). Fire fatalities are a concern not only within the Minnesota State Fire Marshal's office but also for the Minnesota Department of Public Safety. Leadership is keenly aware of the impact fatal fires have on the families, community, firefighters, and first responders. Having lower fire fatalities supports more vibrant and healthy communities. To drive down those numbers, the right message must reach the right person at the right time and result in action or a change in behavior.

Problem Statement

The problem is Minnesota fire deaths continue to rise despite efforts statewide to educate the public on fire prevention. The SFM works with local fire departments to support prevention messaging and provide educational programming resources. The fire departments then deliver the messages to the local community through school programs, local media, social media, and various other methods. To understand why fire deaths continue to trend up in Minnesota, fire safety professionals need to learn if safety messages are reaching the target audience, if the delivery method is effective, and if residents feel at risk of a fire incident.

In 2022, the average fire fatality in Minnesota was white males over age 55 living in rural Minnesota. Focusing on education and ways to connect with this population will be important in driving down fire fatalities in the state. Using the data to better define the target population and those at the most risk of fire death will be necessary to refine the scope of prevention programs.

Purpose Statement

The purpose of this qualitative research is to determine if fire prevention education messages are reaching the target audience, investigate whether residents are concerned about fire safety, and determine whether they understand appropriate interventions. The research will use a focus group to sample the questions and prepare for a larger research project later.

Research Questions

The qualitative research questions that will be used in a focus group survey include the following:

1. Are fire prevention messages and programs resonating with community members?
2. Does the public perceive that they are at risk of a fire incident, injury, or death?
3. What mediums for presenting fire prevention messages are most effective?

Summary

Chapter 1 has provided the foundation and background on the SFM and explained the increase in fire-related fatalities Minnesota has experienced. This chapter has covered the background, the significance of the research, and the methods that will be used to research the fire death problem through fire prevention messaging gaps. A literature review is included in chapter 2 of this research. The review will include literature survey design, survey questions, risk perception, and fire safety education. The third chapter includes methodology and information on the research design used to complete this project. Chapter 4 will bring together the survey results through the research and take a deeper look at the information provided by respondents. Finally, chapter 5 culminates with the research's conclusions and recommendations to help Minnesota fire departments and residents be more fire-safe.

CHAPTER 2: LITERATURE REVIEW

Introduction

The following study will research the perception of fire safety, fire loss, and fire death risk among Minnesota residents. The fire service has continued to conduct community outreach across the state; this research will seek to learn if the messages resonate with the residents. The programs offered by fire departments often range from social media to in-person educational events. This research will also evaluate the merit of different mediums to reach the highest-risk populations and how those mediums resonate with different populations. The research will focus on determining what risks residents associate with fire or if there is a perception of risk.

To determine the best route to research, the researcher must know the history of the topic and what research exists on the topic. Reviewing the literature on the topic will also inform the researcher of the importance and refine the scope of the research (Creswell & Creswell, 2018). Topics of literature to inform the research include those related to the survey process. Survey-related topics include survey design, survey questions, focus groups, and survey results. The available literature on creating a quality survey through a focus group will help guide the development of the research questions and process. Along with literature on the survey design and process, knowing the foundation of research related to risk perception will provide a platform for the research. Risk perception within fire safety is just one facet of risk perception and consideration of other safety arenas could provide additional context for the research. Since this is research on fire safety and fire risk, it is also important to review the work done in the field of fire prevention, fire safety and the data around fire fatalities.

Existing Literature

Survey Design and Questions

While technology has made the distribution of surveys extremely easy, there is still a need to ensure the design meets the survey's goal. Reviewing some best practices for survey design can be one way to ensure good data collection. A few best practices in survey design include ensuring that the survey is not too long and has a noticeably clear goal (Regional Educational Laboratory West, 2021). Another crucial factor to consider when designing a survey is to stay focused on brevity while maintaining specificity.

Survey design takes planning to ascertain the information necessary for quality research. Careful and thoughtful preparation is critical. There are different tools while planning to help work toward the collection of sufficient and necessary data. Like a literature review, an investigation of the existing survey data related to the research is useful. Pretest items also verify that respondents interpret the questions as the researcher intended (American Institutes for Research, 2017). When conducting a survey, the researcher should be mindful of the sampling process, how respondents may be selected, and how they receive the survey.

There are multiple approaches to designing survey questions, but the research should focus on the end goal. As the goal is contemplated, the scales used should also be a consideration. Many surveys include Likert scales. Research has shown how people perceive the relation to the scales in the Likert scales (Worcester & Burns, 1975). When survey respondents read the scale terms of disagree and strongly disagree, they find them to be closely related. When the term slightly is added to disagree, respondents consider that to be more closely related to the midpoint. This information is helpful to inform where on the scale people perceive their own

answers to be associated. When creating scales in a survey, the traditional Likert is often used for statistical analysis. Variations are used to modify these scales, including words such as moderately or somewhat. Some may view these as intervals, but that may not always be the case or viewed as such by participants (Hutchinson & Chyung, 2023). In more recent research, including online surveys, different modifiers to the traditional Likert have been evaluated to determine if they are more effective. The goal is to have modifiers that create equal interval scales (Casper et al., 2020).

Risk Perception

History, experience, and judgment all influence the human experience and perception of risks. Many factors play into each person's perception of whether they will be likely to experience a risk. One of the leading theories on risk perception is the protective action decision model (PADM), which is based on people's responses to hazards (Lindell & Perry, 2012). The PADM has been used to consider the risks associated with wildland fires and how people decide to either evacuate, shelter in place, or if they need to defend against the danger. This model has been used in the United States, but other countries also look at wildfire risks, especially considering climate change. The PADM model considers environmental and social cues alongside information sources and channels, as well as warning messages. All this information comes together to create the pre-decision process as part of the personal characteristics (Strahan & Watson, 2019).

Risk perception and the risk perception model are not only used to analyze the risk of fire or wildland fires. During the COVID-19 pandemic, perception of risk was a crucial factor for leaders and researchers around the globe. There was a relationship between the perception of risk

and the measures the public took to reduce their risk of contracting the disease. In one such study, surveys were completed based on socio-demographic information and perceived perceptions around illness, death, or contracting the disease (M-Amen et al., 2023). This type of study can help to inform additional studies and processes to review for risk perception.

Risk perception has not been as widely studied across different regions as much as it has been studied for different risks. The perception of risk does have variations across different regions around the world. In a study reviewing risks in different regions, several risks were included, such as crime, water security, workplace safety, mental health, and weather events. As compared to others in the study, individuals residing in developing countries have increased concerns about perceived risks (Kieu & Senanayake, 2023).

Fire Safety Education

Fire and life safety education has been an important part of many fire departments across the country for decades. Educating residents to drive down the risk of fire injury or death is a vital role that many fire departments take very seriously. Unfortunately, the global pandemic that started in 2020 caused many departments to change or adapt to different practices in fire prevention education (Eller, 2023). Many fire departments have worked tirelessly to reinvigorate programs that were in existence prior to the pandemic or start entirely new programs. Programs to reduce youth-set fires include those offered at the local schools, visits to families' homes, and having the fire service present at local events.

Older adults, including people over the age of 65, have been at a much higher risk of dying in a fire in recent years. Risks for fire death and injury continue to climb as these older adults age, and the risk of mortality increases up to more than three times when adults are over

the age of 85. Many factors are stacked against the oldest members of communities, including changes to physical health due to aging, decline in mental capacity, decrease in mobility, lack of social engagement, and some behavioral factors. Many studies on fire-safe behavior are quantitative and focus on observational data. In a recent study looking at the fire risk perspectives of older adults, respondents had mixed responses on personal responsibility related to fires (Karemaker et al., 2021).

Synthesis of the Existing Literature

While researchers and educators have considered the impacts of fire prevention education on communities, individual communities, and fire service professionals all too often have not linked the knowledge of risk perception, fire risk data, and fire prevention education. When combining fire safety education information and risk perception models through quality survey techniques, the programs can be better informed for more significant impact.

A high-quality survey needs to take into consideration many factors. The survey should have a positive tone. The way that the questions are written and the goals of the survey should be considered early in the research process. The survey questions should focus on the research goal before completing the survey writing process. Knowing what the overall goal of the research is at the onset will help ensure that the survey is designed in a way that meets the research intent.

The research on fire prevention education for older adults is of note. The fire death and injury data in Minnesota shows a particular risk to older adults, or even extending into adults starting at age 55. The research around the risk perception and personal responsibility in fire prevention for older adults will be foundational for continued research.

Summary

Survey design and formulation of quality survey questions take time and careful consideration. To create a quality survey, the researcher must look first at the overarching goals of the research and be strategic about the questions that are asked. Asking survey respondents to answer every conceivable question on a topic or questions that would be good to know will not add to the overall quality of the research. The researcher must be concise, deliberate, and direct when creating a survey.

The PADM will be an important consideration compared to the risk perception of research participants. Prior research on risk perception and the impacts of prevention education will inform the research.

CHAPTER 3: METHODOLOGY

Introduction

To gain insight on the current fire risk perception by older adults residing in Minnesota, the researcher will need a survey to be employed to collect and analyze data. Employing the correct process to collect data will provide the context to evaluate the state of fire prevention work and the context needed to inform the process in the future. In fire prevention work, there is often an assumption that residents lack the knowledge of fire prevention to keep them safe. Most people may have basic fire prevention knowledge but do not perceive that they are at risk of death or injury in a fire. The survey conducted as part of this research will ask residents about their perception of safety and risk and how they think about fire prevention.

The data collected through the Minnesota Fire Incident Reporting System (MFIRS) from fire departments across Minnesota and submitted to the SFM indicates which population is at the highest risk of fire death and injury. The MFIRS data set is based on USFA NFIRS data standards. Recent data collected through MFIRS indicates that the residents most at risk of fire death and injury are residents over age 55 who live in a rural county outside of the seven-county Twin Cities metro area.

To collect data on individuals' perceptions of fire risk, a sample survey of rural residents will be used. The survey design will include open-ended questions to gather qualitative data. This survey will have a small sample size and will be used as a focus group to evaluate the survey process and refine the questions. The intention of the survey is that once the data is collected, a larger survey will be conducted with additional participants and additional communities.

Research Design

The research conducted as part of this project will be qualitative to gather information on individuals' perceptions of risk to extrapolate perceptions of the larger community. The research will use generic qualitative methods to allow for a flexible approach. Allowing individuals to give personal thoughts and perceptions is critical to gathering the data necessary to gauge perspective.

The survey will include several open-ended questions. The overall design of the survey will be a key factor in collecting the information needed to gain a broad perspective of residents' perceptions. While many research questions will need to be open-ended, allowing residents to express views in their own words, there will also be several scale-based questions to gain a broader understanding of risk perception. The scale-based questions will determine how fire safety ranks with other risks and safety concerns for residents.

Questions for the survey will be field-tested before being used in the survey. The field test will be conducted with SFM colleagues within fire prevention and safety as well as survey participants' peers. Survey feedback on the survey questions from both survey peers and fire prevention professionals will give different perspectives to evaluate for any blind spots or additional opportunities in the survey. During the review period, the survey length will also be evaluated. The length of time needed to complete the survey will be recorded. The survey needs sufficient questions to meet the research need and ensure extraneous information is not gathered. If the survey is too long and takes the participant too long to complete, the response rate will be lower, and the quality of responses may also be diminished.

Population and Sample Size

The sample population, as indicated through MFIRS data, is the greatest risk population - Minnesotans over the age of 55 and living independently. The research will focus on participants within this age group and living arrangements. Residents in Minnesota in care facilities are at lower risk, but those living independently, particularly in one and two-family homes, are at the greatest risk. While seniors living independently are more challenging to connect with, communication with those outside of long-term healthcare and nursing homes is important to collect the necessary data.

The greatest risk population is older adults in rural communities outside the seven-county Twin Cities metro area (Ramsey, Hennepin, Anoka, Carver, Washington, Dakota, and Scott counties). The sample participants will come from both rural and suburban communities to see if there is any variation in risk perception between the two different communities.

Some requested participants will not complete the survey. A 20 percent response rate is expected for the survey. To have sufficient data for the research, between 15 and 20 surveys must be completed. Collecting 15 to 20 surveys will require requesting around 75 to 80 participants. Each location, rural and suburban, will need enough responses to ensure a variety of backgrounds and locations of participants.

To request participants, I will work with organizations geared toward older adults within my community and county. The community I reside in is rural and outside of the seven-county metro area. Several organizations work with older adults and can be resources to connect with participants. Connecting with suburban older adults will be accomplished by connecting with fire departments with strong fire prevention programs for older adults. These departments are interested in gaining further insight to support their residents and create safer communities.

Instrument

The instrument used in this research is a survey (see Appendix A). The survey will be based on open-ended questions to gain insights on participants' perceptions of fire safety and fire risk. The first step in the development of the survey will be to compile potential preliminary questions. While compiling potential survey questions, there may be more content than what ends up in the final survey. Having more content will allow the researcher to evaluate questions and review for fit and survey goals.

During the compilation of survey questions, they will be reviewed for scope. The research questions will need to tie back to the problem statement, the purpose of the research, and the ability to answer the research questions posed in Chapter 1. Each question will need review and scrutiny to ensure it is relevant and necessary for the project. In the development stage, there may be far more questions created than necessary. As development continues, the questions will be individually and collectively reviewed prior to final inclusion.

The researcher will also check for understanding of survey questions. This phase in the survey review will also review if the survey is valid. The validity of the research is the degree to which the survey collects the data intended for the research. Along with validity, the instrument needs to be reliable. To gauge reliability, the results should be able to be replicated. At this phase, the researcher must also make another check to ensure that the research goal is being met through the questions included in the survey.

The researcher will conduct professional field testing of the survey. The field test will include staff from the SFM. The staff reviewing the survey will include fire and life safety professionals and staff from the Minnesota Department of Public Safety Office of

Communications. The staff will be asked to review the survey for length, comprehension, and relation to research objectives.

The survey will need to be piloted with sample participants. The survey will be piloted with two or three older adults. The pilot participants will be asked how long it took to complete the survey. The researcher will also review with the pilot participants if there were any questions they did not understand or had issues with any questions. This will inform the final decision for any further refinement to the number of survey questions included. Once these steps are completed, there will be a final review of the survey. The information from the prior steps will all be evaluated to finalize the survey.

Research Process

Data collection through the survey will begin with working with local fire chiefs and senior groups to solicit participants. Each request will outline the type of participants desired for the study to ensure the target population is reached. Educating the points of contact on the purpose and outcomes of the research will be critical to encouraging participation. The fire chief's contacts in other communities will be critical in making connections to targeted community partners to reach older adults.

Once connections with community partners are made, the researcher will work to connect with older adults in the target area. Once connected with participants, the researcher will obtain informed consent before completing the survey (see Appendix B). With informed consent, the researcher can survey the identified participant.

Upon completion of the survey response, the data will be consolidated to remove personal data and review for any themes within the responses. The data will be reviewed to

ensure adequate information is collected to complete the research process. When processing the results, if there are no themes, it may be necessary to collect further responses until themes emerge. Finally, the survey responses will be synthesized to inform the research. The themes and responses will be reviewed to determine if the research questions can be answered.

Ethical Considerations

In the collection of the data, all personal information will be removed before consolidation and presentation of the research. Confidentiality of the participants is imperative for conducting quality ethical research. Participants should trust that they are protected to the greatest extent possible during the research process. Personal information that will be removed will include any names, location data, or information linking data to an individual.

Another consideration in survey development is personal bias. The researcher should eliminate any personal bias in the survey questions. Field testing the survey will be one way to control personal bias. The review of the questions by the Department of Public Safety Office of Communications staff will be another opportunity to eliminate personal bias in survey design.

Summary

In summary, a survey will be developed to deliver to older adults in two different communities in Minnesota to evaluate the risk perceptions of those who live independently. The survey will be refined to meet the research purpose. Prior to being implemented, the survey will go through a professional review as well as a review by sample residents who meet the

participant demographics. The research data will be synthesized to reveal themes and trends in the responses. These trends will be used to evaluate if the research theory can be proven.

CHAPTER 4: STUDY RESULTS

This study included thirty-seven participants. These participants were selected through communications sent by the Central Minnesota Council on Aging (CMCOA). The organization's mission is to help older adults maintain independence by coordinating community care, reducing isolation, and improving access to services (CMCOA, 2024). This mission of working with independent older adults aligns with the population selected to participate in this research. The research was coordinated with a community development supervisor at CMCOA through a SurveyMonkey link. The researcher exported the data into Excel and cleansed the data to remove any personally identifiable information. The research was hand-coded to identify themes throughout the data and common responses (see Appendix C).

Introduction – Demographics of the Participants

The participants' demographics were asked in questions one and two during the survey.

Survey Question 1

What is your age?

Response options:

54 or under

55 or older

Summary of Results

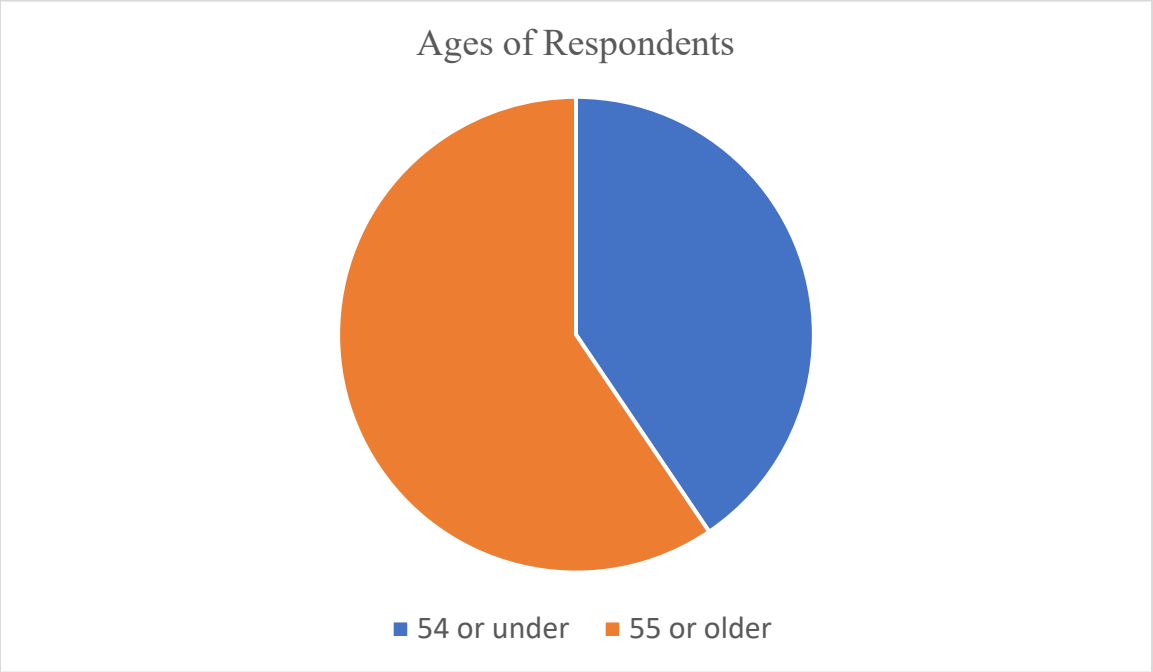
Each respondent was required to select the age category that they currently fit into. Since the survey was being distributed by staff at CMCOA, participants outside of the target age group

would likely participate. The target group was those aged fifty-five or older. The data from participants under the age of fifty-five lend an opportunity to compare survey results.

Of the thirty-seven participants in the survey, twenty-two were age fifty-five or older. The remaining fifteen participants selected the fifty-four or under response.

Figure 4.1

Ages of Research Participants



Survey Question 2:

What type of community do you reside in?

Response options:

Rural (population less than 2,499)

Small town (population 2,500 to 9,999)

Large town (population 10,000 to 49,999)

Urban (population over 50,000)

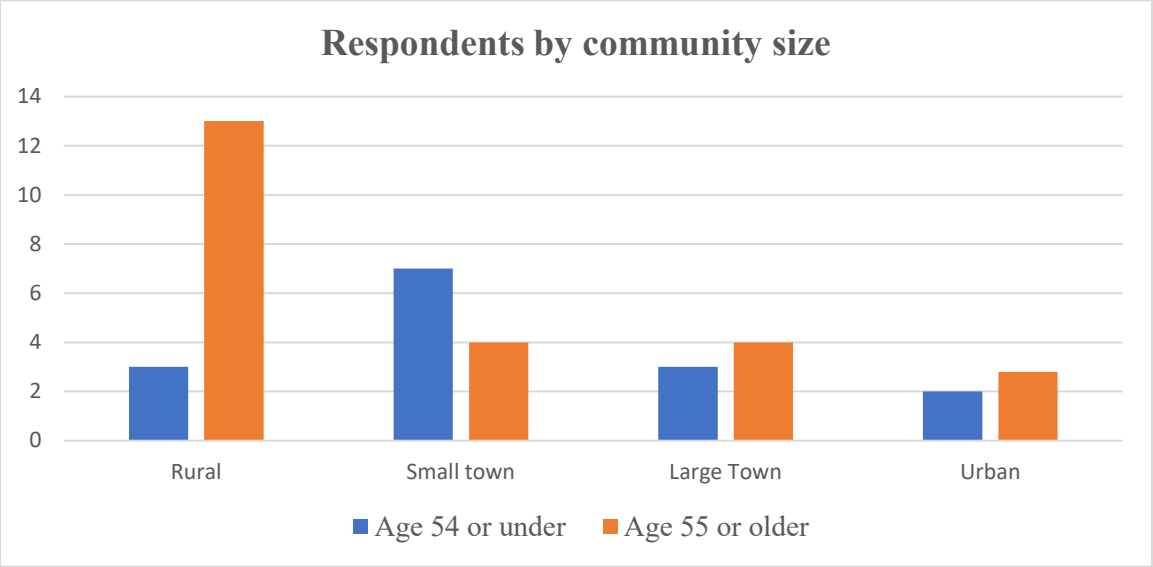
Summary of results

Minnesota's highest risk for death in a fire incident is outside of the seven-county metro area (Anoka, Carver, Dakota, Hennepin, Ramsey, Scott, and Washington Counties) as defined by the Metropolitan Council (Metropolitan Council, 2024). To determine the type of community the survey participant resided in, the researcher used the city sizes as defined by the Minnesota State Demographer, which used a four-tiered definition for the character of an area (Egbert & Brower, 2017).

Within the responses of those fifty-five and older, there were thirteen from rural communities, four residing in small towns, four living in a large town, and one respondent from an urban community. Of the fifteen responses in the age group fifty-four and under, there were three rural communities, seven small towns, three large towns, and two urban communities.

Figure 4.2

Respondents by Community Size



Research Results

The survey contained eleven additional questions to determine respondents' perceptions of risk and knowledge of fire safety messages. The survey questions were intended to evaluate the fire prevention messages and programs that most resonate with community members, the perceived risk of fire, and what delivery methods that work best for fire prevention to older adults.

Survey Question 3

What do you consider to be the most significant risks to your safety in general?

Summary of results

Several different responses emerged from the safety question. Vehicle safety was the most often mentioned safety concern among research participants. In the survey, there were fourteen mentions of vehicle safety, and eight of those mentions were from participants over fifty-five. Within the theme of vehicle safety, there were several different sub-topics covered. These safety concerns included drunk drivers, inattentive drivers, and crashes.

Survey participants mentioned crime six times, with four responses from the target demographic. Of the respondents over fifty-five, the mentions of crime included carjackings, robbery, home invasion, and crime in general.

Fire as a safety concern was reported five times during the survey, with three of the responses related to fire safety coming from those in the fifty-five-plus demographic. The mentions of fire in the target demographic include “fire (lots of trees)” and “Concerns about fire and people storing too much junk in their yards.” Another item related to fire safety was a mention of limited sheriffs, paramedics, and fire responders. In the fifty-four and under group,

there was also a mention of response times and "not understanding how fires grow and spread inside a home."

Overall, there were five mentions of safety in health-related topics, but all respondents who mentioned health were in the fifty-four and under category. These mentions listed various health conditions, including high blood pressure, viral infections, obesity, and general health. Other safety concerns included falls (which were mentioned twice in the fifty-five and over group), farming, "not having services that are needed as we age," and firearms.

Survey Question 4

When thinking about fire safety, what do you feel are your biggest risks?

Summary of results

Moving from general safety to focusing on fire safety, there was less variation in the responses to the survey. The number one concern related to fire safety was getting out of a burning building. There were five mentions of escape, three of which were submitted by participants in the fifty-five and older group. The mentions in this group included "jumping out a 2nd story bedroom", "getting out of whatever building is burning," and "getting out of the house if there is a fire."

In the target research group, fifty-five and older, there were three mentions of forest fires as the top fire safety concern. There were no mentions of forest fires in the younger survey participants. One survey participant wrote, "we have a lot of trees, and with the water table drying out many are dying." Another participant directly mentioned forest fires; a third mentioned "lots of trees, areas that are hard to access."

In the survey data, there were two mentions of older homes being a risk to fire safety. One survey answer related to the mention of risk in an older home was, “We have a new home, so not as large of a risk. The older home we use to live in I felt a bigger risk for potential fires.”

Respondents in the target research group mentioned response times and factors within the fire department. Response times were explicitly mentioned twice. While separate from response times, one respondent answered with a “lack of firefighters,” and another had concerns with “trained firefighters.” On the opposite end of that spectrum, one respondent replied, “We have a very good fire department in our town. I feel relatively comfortable.”

Other items mentioned around fire safety included smoke alarms, CO poisoning, and if the neighbors would call for help. Another response included heating with wood.

Survey Question 5

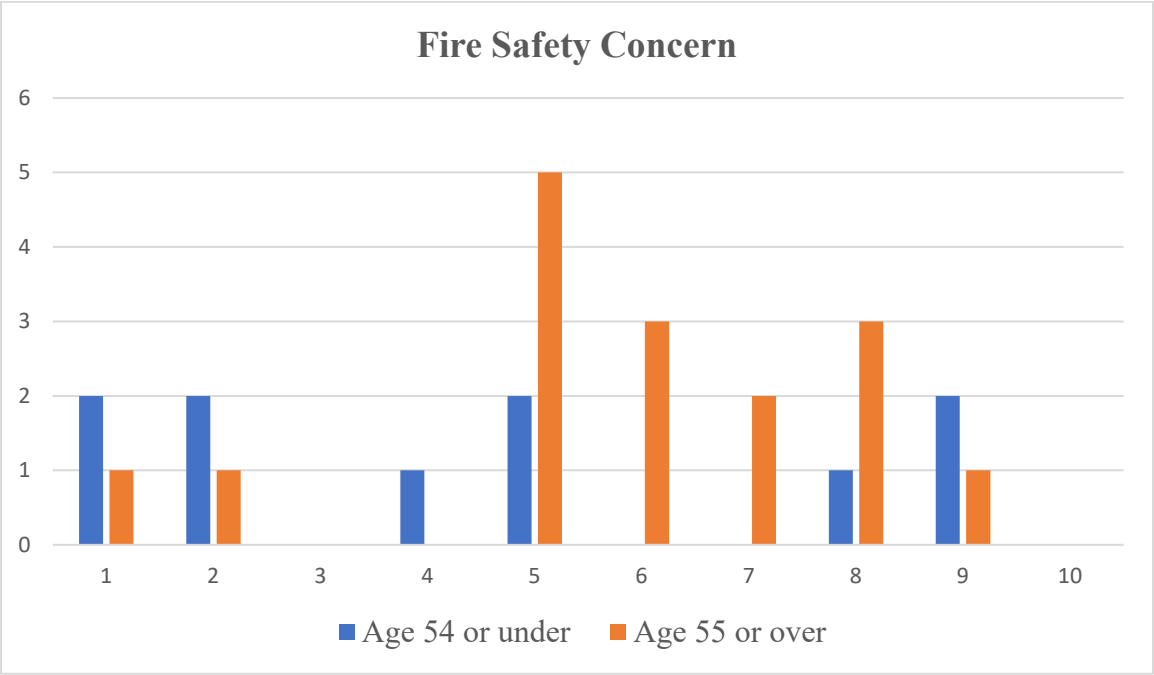
On a scale of 1 to 10, how concerned are you with fire safety?

Summary of results

Participants fifty-five or over	Participants fifty-four or under
Mode: 5	Mode: 1, 2, 5, 9
Median: 6	Median: 4.5
Mean: 5.8	Mean: 4.6
Rage: 1-9	Range: 1 – 9

Figure 4.3

Participants Level of Concern for Fire Safety



Survey Question 6

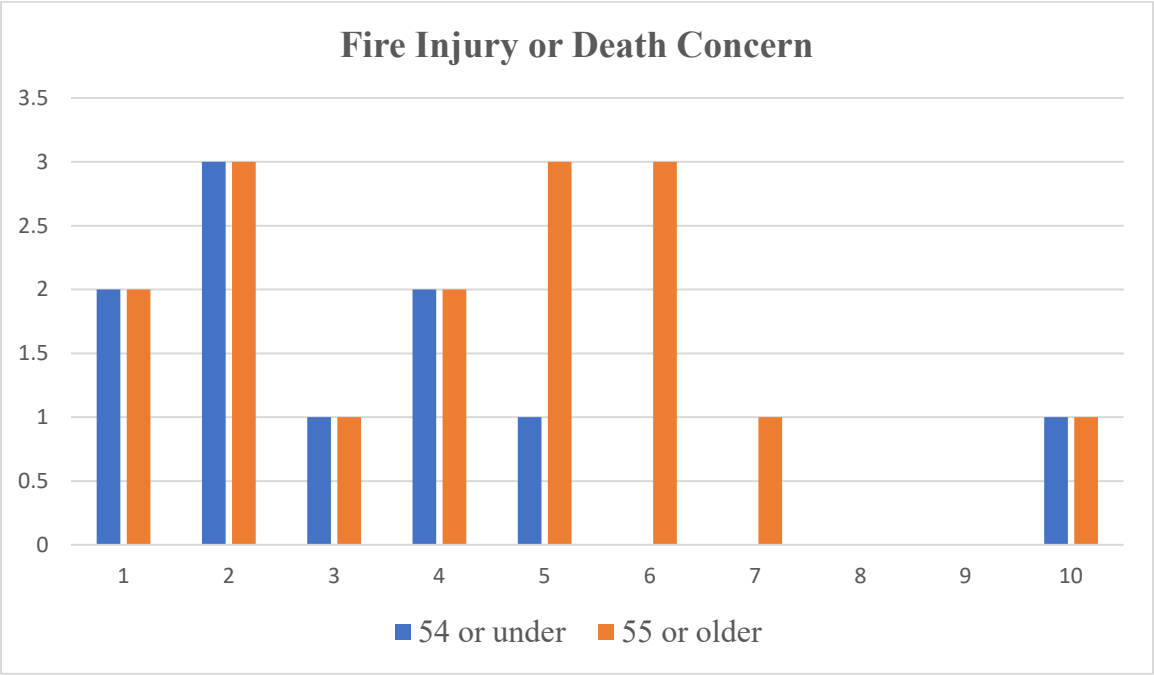
On a scale of 1 to 10, how concerned are you about being injured or dying in a fire?

Summary of results

Participants fifty-five or older	Participants fifty-four or under
Mode: 2, 5, 6	Mode: 2
Median: 4.5	Median: 2.5
Mean: 4.3	Mean: 3.4
Range: 1 – 10	Range: 1 – 10

Figure 4.4

Participants Level of Concern for Fire Injury or Death



Survey Question 7

What have you done in your own home to reduce your risk of fire?

Summary of results

Of the twenty-two participants aged fifty-five or older, seventeen mentioned smoke alarms as an intervention taken in their homes. Of the total survey participants, 72% of respondents mentioned smoke alarms. The percentage when only looking at the target demographic is 77%. Generally, in fire codes and fire prevention education, the in-home device is called a smoke alarm. In the survey, this device was referred to as a smoke detector, smoke alarm, and fire alarm.

The second most frequent response was for the addition of fire extinguishers. All responses for fire extinguishers came from the fifty-five or older group. A total of seven responses, or 32% of the responses, were for fire extinguishers. One respondent commented, "I have three fire extinguishers (1 in basement utility room, 1 in kitchen, 1 in garage)."

Survey takers also reported the removal of a fireplace or woodstove twice in the target demographic, as well as one respondent from the fifty-four or under category referring to the removal of a wood-burning stove. Along with removing this ignition source, respondents mentioned turning off things in the home, not having space heaters, checking wiring, and furnace maintenance.

Survey Question 8

Do you have working smoke alarms?

Summary of results

An overwhelming response was yes to whether the respondent has working smoke alarms. Two respondents mentioned that they were unsure if they had working smoke alarms, and both survey takers were in the fifty-five and above age group. There were no respondents who said that they did not have working smoke alarms.

Respondents could also add comments on the topic of working smoke alarms. Four survey respondents provided additional comments; all of these respondents were in the age bracket fifty-five or older.

Comments:

"Batteries changed Spring and Fall."

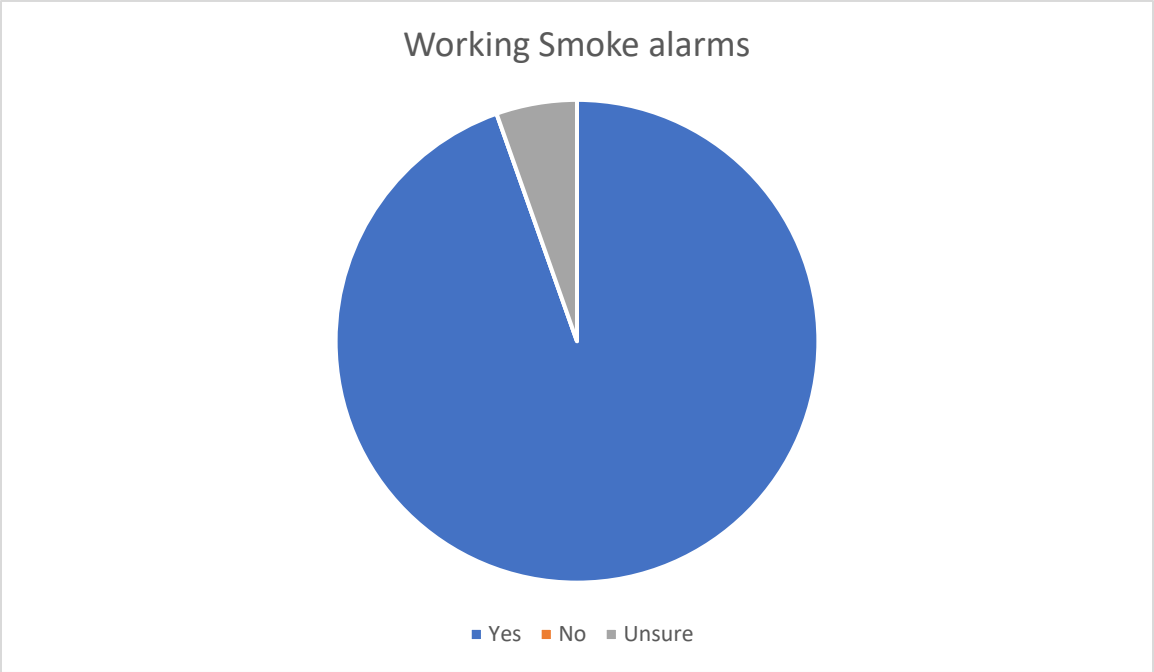
"We ensure that ours are dated and replaced every 7 years AND have fresh batteries."

"Fire smoke & CO detectors test replace batteries annually."

"Due to this survey I am looking when I get home…"

Figure 4.5

Participants with Working Smoke Alarms



Survey Question 9

What do you think are the biggest fire safety risks in Minnesota?

Summary of results

Four significant themes came out in the question related to the biggest fire safety risks in the state of Minnesota: heating, wildfire, smoking, and electrical. The survey's top response for the older adults was wildfire, including grass fires, forest fires, and forest management. One survey taker commented, "Lots of dead trees and dry shrubs that would catch fire easily." The second most common response was related to heating; while three responses were from fifty-five

or older, there were six additional mentions of heating from the younger survey participants. The final two themes that were mentioned the most were electrical and smoking. With the mentions of smoking, both mentions in the target group were related to smoking in bed or falling asleep while smoking.

Additional risks to fire safety in Minnesota included poverty, rental units, lack of smoke alarms, being in rural Minnesota, and lack of firefighters and funding.

Survey Question 10

Describe your plan if there was a fire in your home.

Summary of results

The top response for the plan if there was a fire in the home was for the respondent to get out or exit. In the target demographic, 95% of respondents answered that they would get out of the home. The response to exit the home came in a few different ways, such as, “Get out ASAP” and “Run like hell.” When including all survey participants, 86% of respondents included getting out as part of the plan for a home fire.

Calling 911 was included as part of the plan for five of the respondents over the age of fifty-five. These five mentions make it part of 23% of respondents' plans. Overall, there were seven mentions of calling 911, or it is a part of the plan for 19% of the survey participants.

The other theme that emerged from the data was for participants to attempt to put out the fire or use an extinguisher. There were five total mentions of putting out the fire, with three of them in the target group. In the responses, one mention was to “use extinguisher on small fire” and “use our fire extinguisher.”

The remaining responses included information specific to individual fire escape plans. One respondent included information that their windows lift in, to remove them. Another response, “Get everyone out quickly and go to end of driveway to flag down fire trucks. (GPS brings everyone to wrong location).” Another response was to “leave the house. Meet at the mailbox in the cul-de-sac.”

Survey Question 11

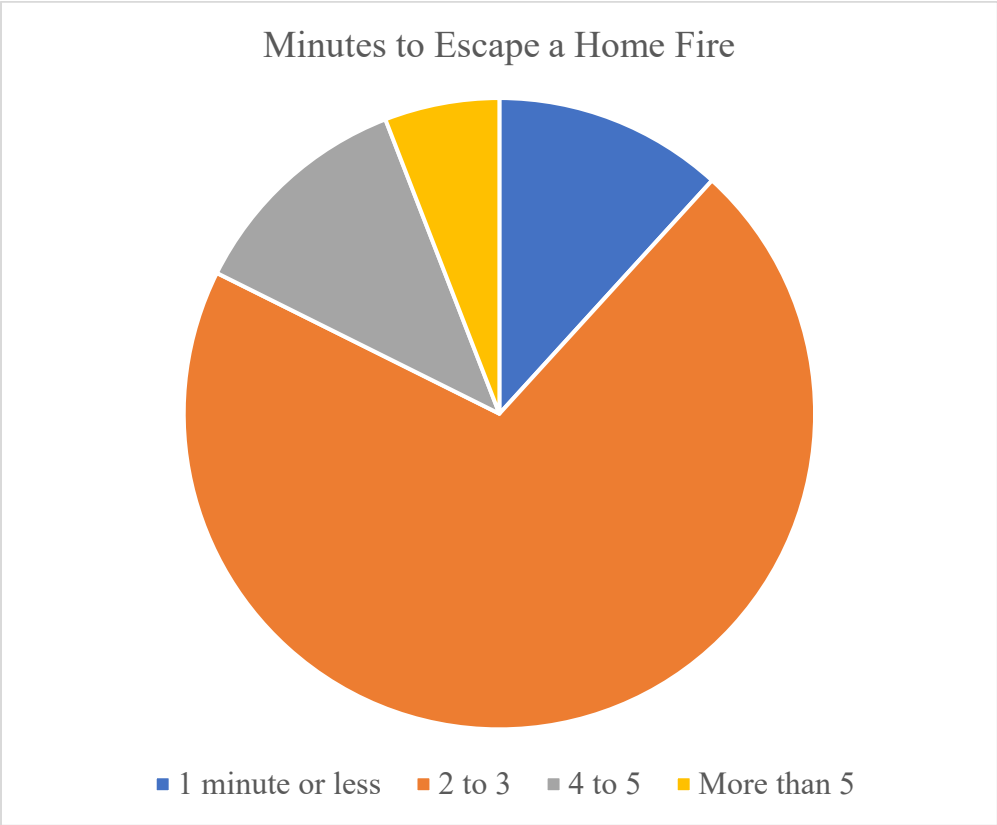
How long do you think you must escape a house fire, in minutes?

Summary of results

The most common response for people was either two minutes or two to three minutes to escape a home fire. Thirteen respondents answered between two and three minutes. One of the respondents added a bit more information stating, “depending on the type of fire and location. Two minutes would be the average length of time to escape a house fire.” Two respondents stated that they thought it was a minute or less than a minute to escape a fire, and the longest time frame mentioned was ten minutes.

Figure 4.6

Minutes to Escape a Home Fire



Survey Question 12

How do you prefer to receive fire prevention messages?

Summary of results

Results from respondents fifty-five or older

Facebook – 17

TV – 13

Pamphlet or Printed Materials – 11

Radio – 11

Other social media – 9

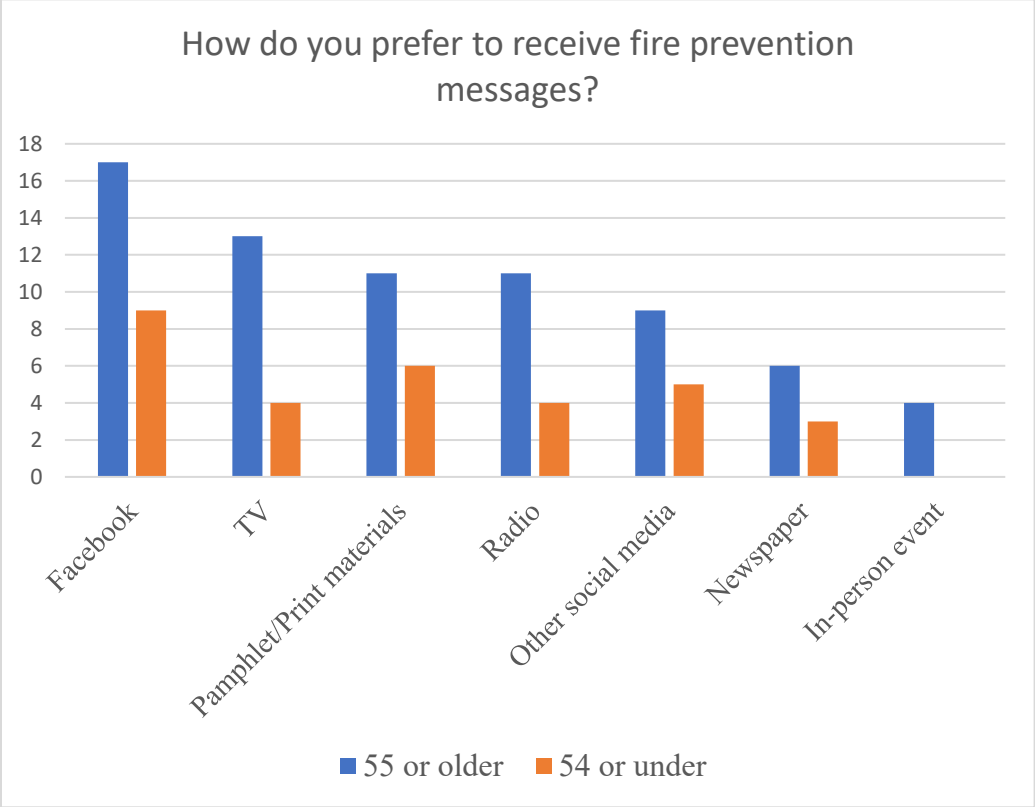
Newspaper – 6

In-person event – 4

Other – Alerts through phone messaging, community website, Media reaching immigrant populations, and a comprehensive approach.

Figure 4.7

Preferred Method to Receive Fire Prevention Messages



Survey Question 13

What are three fire safety messages?

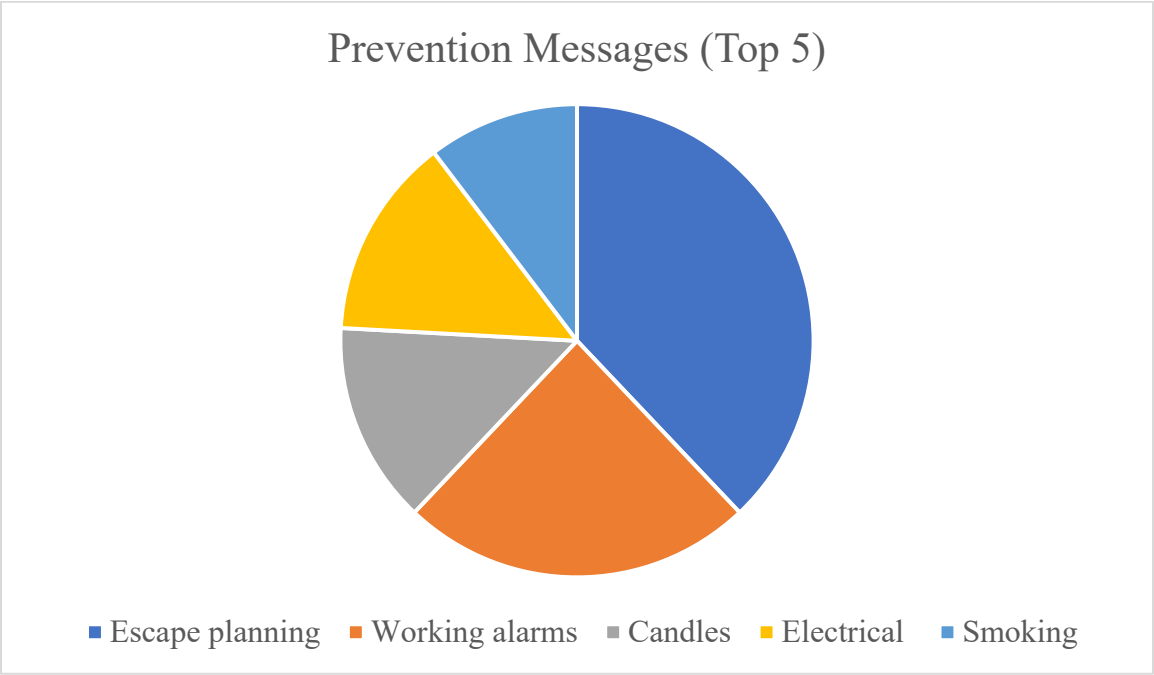
Summary of results

The top three safety messages that people mentioned were escape planning, smoke alarms, and extinguishers. In the target group, escape planning was mentioned the most, with ten mentions. The second most common response for the fifty-five or older group was smoke alarms, which again included fire alarms, smoke alarms, and smoke detectors; these terms were mentioned seven times. The third most common response in the target group was a tie between fire extinguishers, electrical safety, and candle safety; each mentioned four times. The only other safety message to receive multiple mentions from the target group was to quit smoking or to not smoke in bed.

The other safety messages ranged from “Smokey the Bear” to “Provide clear signage to your home.” In all, there were twelve different safety messages that each had one mention during the survey. Another response reported, “Time. Time. Time. (I have lived through an apartment fire in the middle of the night, by the time I was alerted there was very little time to get out).”

Figure 4.8

Top Five Prevention Messages Provided by Participants Fifty-Five or Over



Summary

A qualitative research survey was conducted with the support of the CMCOA with thirty-seven survey participants. The target population for the survey was adults who were fifty-five years or older. The survey aimed to gather information about risk perception, particularly their views of fire safety risk. Questions were designed to determine if the public perceives they are at risk of a fire incident, injury, or death. The survey also asked questions to understand better the sources of fire prevention messaging that the target population prefers. Finally, a third goal of the survey questions was to determine what fire prevention messages or programs resonate with community members.

Within the survey, several themes have emerged, including the prevalence of people knowing the need for an escape plan. When asked what to do in the case of a home fire, several respondents reported parts of a plan. Many participants also noted the importance of an escape plan when answering the question of reporting a safety message. Another theme that emerged during the survey was the importance of smoke alarms. Nearly every survey participant reported having working smoke alarms and pointed to them as an essential safety message, something they have done to increase their own fire safety and part of the state's most significant risk to fire safety. Lastly, another item that was cited several times through the survey was the importance of fire extinguishers. There was mention of using extinguishers to fight fires, ensuring that residents have them, and knowing the P.A.S.S (pull pin, aim, squeeze trigger and sweep) acronym.

CHAPTER 5: CONCLUSIONS AND RECOMMENDATIONS

The problem identified for this research is that Minnesota fire deaths continue to rise despite efforts statewide to educate the public on fire prevention. To make the most significant impact on fire and life safety across the state, educators must understand the base knowledge of residents and how they perceive risk. Historically, interventions have been developed by analyzing fire loss data, cause and origin determination, and fire injury and death data. SFM works with local fire departments to support prevention messaging and provide educational programming materials. To understand why fire deaths continue to trend upward in Minnesota, research must be conducted to reveal the effectiveness of fire safety messages and the delivery method for the target audience and evaluate if residents feel at risk of a fire incident, injury, or death.

Summary of the Results

The literature review in this qualitative research study provided foundational information to inform the process and background of this qualitative research. Existing literature establishes a knowledge base on survey design and questions to develop a tool that helps collect the data needed for this research. The literature review also provides background on previous research on the protective action decision model, fire prevention education, and older adults' perception of personal responsibility in risk. The information gathered during the literature review is critical in developing the survey used in the research.

Responses from survey participants provide information on the current views of risk and fire prevention messages received by residents in Minnesota. The respondents’ survey answers

provided data that was used to identify themes (see Appendix C). Themes from the response data included the following:

- Fire safety is not the number one safety concern for survey respondents but does rank in the top three. The top safety concern was vehicle safety, followed by safety related to crime. The third most common response was fire safety.
- Concerning fire safety, the top concern of the participants was escaping from a burning structure.
- Responses show that the concern for fire safety increases with age. The fifty-five or older group was, on average, more concerned about fire safety and fire injury or death when compared to the fifty-four or under group.
- Methods to improve safety in respondents' homes included smoke alarms and fire extinguishers.
- Nearly all respondents report having working smoke alarms in their homes.
- The most significant fire risks within Minnesota, as reported by survey participants, include heating, wildfire, smoking, and electrical.
- When asked about the plan for a fire in the home, respondents reported they would exit and call 911.
- When reporting safety messages, the top responses included escape planning, alarms, and extinguishers.

Conclusions Based Upon Results

The data collected in this research aimed to answer three overarching research questions. The topics for the research questions at the foundation of this study included learning what fire

prevention programs and messages resonate with community members, whether there is a perception of risk related to fire, and what mediums are preferred for receiving fire prevention messaging. Overall, people are not overly concerned with the dangers of fire, and other risks are of higher concern. The data shows that the concern for fire safety is higher in the fifty-five or older group compared to the participants in the fifty-four or under category.

The top messages reported by participants included escape planning, alarms, and extinguishers. When comparing the messages reported by survey participants to the past five Fire Prevention Week (FPW) themes, there are some overlapping overarching themes. The themes for the past five years of FPW include (National Fire Protection Association [NFPA], 2024):

2023 – Cooking Safety starts with YOU. Pay attention to fire prevention. ™

2022 – Fire won't wait. Plan your escape. ™

2021 – Learn the sounds of fire safety. ™

2020 – Serve up fire safety in the kitchen! ™

2019 – Not every hero wears a cape. Plan and practice your escape! ™

The above themes are developed and disseminated by the National Fire Protection Association (2024), which has sponsored Fire Prevention Week since 1922. There are two themes related to escape planning, and the 2021 theme is related to the sounds of various alarms.

Smoke alarms have been required in Minnesota residential homes for nearly half a century. The survey responses show that most residents believe they have working smoke alarms in their homes. Only two respondents were unsure if their homes were equipped with working smoke alarms. The survey also showed that respondents felt smoke alarms were a critical safety feature in their homes. When questioned about fire prevention interventions, smoke alarms were cited as one of the top interventions.

Participants mentioned escape planning in several different ways during the survey. Participants mentioned escape planning, or elements of escape planning, in response to the biggest risk for fire safety. Some respondents reported being concerned about not being able to exit the home during a fire. In looking at ways participants reduced the risk of fires in the home, another answer was that there was a plan in place for a fire. Finally, escape planning was one of the top answers in response to the question asking for safety messages. Escape planning is an important message used by fire safety experts. There are many resources from state and national safety sources to help residents plan for a fire incident.

The third most cited fire safety message was about being equipped and using a portable fire extinguisher. Extinguishers have been a part of fire prevention education for years, and many fire prevention educators use various tools to provide training on extinguishers. This is one area in which national prevention experts express some caution. According to the United States Fire Administration (USFA, 2024), people should determine if they are physically able to use a fire extinguisher. USFA cautions that young children and older adults should not use fire extinguishers.

Recently, cooking or kitchen fire safety has appeared twice in Fire Prevention Week messages. Data from the Minnesota State Fire Marshal shows that cooking is Minnesota's leading cause of structure fires (Minnesota State Fire Marshal, 2021). The importance of this message is not only reflected in the data from Minnesota, but according to the United States Fire Administration, cooking was the leading cause of residential building fires in 2021, accounting for 48.1% of fires (USFA, 2024). In the survey data, there is no mention of cooking or stovetop fires in responses from participants in the fifty-five or over group. In the participants aged fifty-four or under, two mentions related to cooking fires exist. One of these mentions includes using a

fire blanket, which is often not a message used by fire prevention professionals. The research did not investigate whether participants remember where they learned about interventions or safety messages. In the sample group, cooking safety appears to not resonate with the target demographic. This may be an area to consider additional focus to ensure the target population knows the risks of cooking fires.

The research asked participants to list an intervention taken in their home to reduce fire risk. Overwhelmingly, the responses related to reactionary solutions to fire events. Of the fifty-two total interventions listed by adults fifty-five or over, only eighteen prevent fires from happening in the home. The top responses included smoke alarms and fire extinguishers. Other reactionary responses included carbon monoxide alarms, a fire escape plan, and a fire-resistant document box. Prevention messages included unplugging the toaster, removing a fireplace, and updating the furnace and electrical inspections.

Alarms, fire extinguishers, and escape plans are all important fire safety elements. Each of these elements plays an important role, such as early warning in the event of a fire or helping to extinguish a small fire, and finally, the preparedness to escape when there is a fire event. Unfortunately, these three elements do not stop the fire from ever happening. It appears that too often, residents are not aware that most fires are caused by human behavior. Fires may seem unpredictable and unpreventable, but the opposite is frequently the case. To reduce the incidence of fires, fire injuries, and fire deaths, residents should know the most likely causes of fires and the ways to mitigate those fire risks.

Limitations

According to Minnesota Compass (2024), a project led by Wilder Research during the years 2017-2021, Minnesota had 1,663,976 residents aged fifty-five or older. The survey was

completed by twenty-two adults in the fifty-five or older age range. The number of participants is not even a fraction of one percent of the adults over fifty-five population in the state. This sample size is likely not representative of the population of adults in this age range across the state, although the research did not determine representation.

The survey was delivered through CMCOA, so all participants had a connection to CMCOA. Using only one organization for the survey delivery likely also limited the scope of participants within the research. The organization also serves Minnesotans in fourteen counties in Central Minnesota. Since the survey only included residents from fourteen counties, residents from an additional seventy-three counties are unrepresented within the survey responses. More broad dissemination of the survey would be warranted to understand adults' perceptions and knowledge of fire safety fully.

While the survey was field-tested by fire safety professionals and adults in the target demographic, a few participants responded that they were unsure of what the survey was asking, particularly the question asking for three fire safety messages. An additional review of questions would be beneficial before further research. Refinement of questions to ensure the intent of the questions and alignment with research needs is important for successful research.

Implications and Recommendations to the Field

Since data shows older adults are at greater risk of fire injury and death, greater focus should be placed on ensuring that they are receiving the messages and information needed for them to take appropriate actions to keep themselves safe from fire. Increased fire prevention education for older adults in Minnesota is necessary to ensure that messages reach the target audience. While the research shows that many older adults know the need for working smoke

alarms and have a plan in the case of a fire, they may need additional tools to understand how to prevent a fire from ever happening. A comprehensive program includes information for maintenance and care of devices to ensure continued building of knowledge and information on interventions to prevent fires in the home. Due to the number of possible safety messages, care should be given to what messages will impact older adults most.

One recommendation based on the research is the need for continued research. Additional research should be conducted across the state to learn more about older adults' perceptions of fire risk and knowledge of interventions. Further research should include a review of this research and continued review for modifications to the survey tool to learn more about fire safety intervention knowledge. The State Fire Marshal division should consider bringing together a group of staff to review survey results and evaluate survey changes to refine data results. There may be a need for additional survey questions or refinement of current questions.

Coupled with continued research on the knowledge and risk perception of older adults in Minnesota, there should be reviews and updates on the training and educational programming offered to older adults. Leveraging fire reporting data and research data from older adults, as well as reviewing and updating educational training and materials, will have a more significant impact on fire safety for older adults in Minnesota. Continual review of fire incident data, along with perceptions and knowledge data from older adults, creates an opportunity for more applicable educational programming. Data-driven solutions to issues faced by the fire service and the residents of the state are vital.

The delivery of the message is another important consideration for fire safety education. According to the study results, older adults prefer television and printed materials, followed by Facebook and radio. Several methods should be implemented with these survey results to have

the most significant reach. As one participant mentioned, a comprehensive and multi-faceted approach is most effective in reaching the target population. As different distribution methods are considered by the State Fire Marshal division, the demographic reach of each technique is an important consideration in the determination of the best distribution methods. Different television, radio, and social media platforms will reach different people, so having a blend of resources will expand the reach.

Recommendations for Future Research

As fire loss, injury, and death continue an upward trend in Minnesota, this research should help provide additional information for fire safety professionals. Since this research does not give a global perspective of risk perception and fire safety knowledge among Minnesota's older adults, further research is needed to gain additional perspective. Additional research should include participants from communities across the state.

Future research could also include data related to fire safety educational programming with older adults in Minnesota. Research about knowledge before fire safety programming, post-program knowledge, and long-term knowledge change about fire safety due to fire prevention education. While individual programs may collect some of this evaluation data, the researcher is unaware of any collective fire safety programming evaluation repository. Bringing together information from fire service and fire safety partners would enhance the knowledge base for developing future fire safety interventions.

Additionally, future research could be conducted to extract responses focusing on prevention interventions. Future consideration should be taken in the survey design to elicit responses from participants to provide active interventions they have taken in fire prevention. Of

course, the researcher might also consider that participants are less aware of active interventions when considering how to form questions around active prevention measures. Moreover, careful consideration should be given to future research questions and formulating questions to best reach conclusions for those questions during research.

Finally, future research could include personal responsibility related to fire prevention. While this survey asked participants about their concern for fire safety, it did not elicit information about their confidence level in preventing a fire from occurring in their homes. The researcher cannot determine if the participants feel they play an active role in preventing a fire, particularly in their own homes.

Conclusion

A qualitative survey was conducted as part of this study to answer three research questions related to fire prevention for Minnesota residents aged fifty-five or older. The research included a literature review to find foundational information on fire safety for older adults, survey design, and risk perception. The survey used to conduct the qualitative research was based on information gathered during the literature review and was field-tested before implementation. The survey participants were coordinated with a community group working as a stakeholder. This coordinated effort helped in getting the survey to reach the target demographic.

Continued focus on fire and life safety education programs and messaging to older adults, particularly in rural Minnesota, will hopefully help drive down fire deaths and injuries in Minnesota. The approach to fire prevention education must include both prevention and reactionary messages. Messages related to preventing fires include reminders of cooking, smoking, and heating safety, which, based on research, are common fire causes or factors contributing to fire deaths. The study shows that the target demographic knows the importance of

working smoke alarms, but this should not diminish the need for this population to continue paying attention to these reactionary tools.

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FIGURES

Appendix A

Survey Questionnaire

What is your age?

- 54 or under
- 55 or older

What type of community do you reside?

- Urban (population over 50,000)
- Large town (population 10,000 to 49,999)
- Small town (population 2,500 to 9,999)
- Rural (population less than 2,499)

What do you consider to be the biggest risks to your safety in general?

_____

_____

_____

When thinking about fire safety, what do you feel are your biggest risks?

_____

_____

_____

On a scale of 1 – 10, how concerned are you about fire safety? (circle one)

1 2 3 4 5 6 7 8 9 10

not concerned *very concerned*

On a scale of 1 – 10, how concerned are you about being injured or dying in a fire? (circle one)

1 2 3 4 5 6 7 8 9 10

Not concerned *very concerned*

What have you done in your own home to reduce your risk of fire?

_____

_____

_____

Do you have working smoke alarms? ☐ Yes ☐ No ☐ I don't know

What do you think are the biggest fire safety risks in Minnesota?

_____

_____

_____

Describe your plan if there was a fire in your home.

_____

_____

_____

How long do you think you have to escape a house fire, in minutes? _____

How would you prefer to receive fire prevention messages?
(check all that apply)

- ☐ Facebook
- ☐ Other social media
- ☐ Pamphlet/printed materials
- ☐ newspaper
- ☐ In person event
- ☐ TV
- ☐ Radio
- ☐ other

What are three fire safety messages?

_____

_____

_____

Appendix B

Informed Consent Form for Survey Participants

Survey Consent Form

Identification of Investigators & Purpose of Study

You are being asked to participate in a research study conducted by Amanda Swenson from the National Fire Academy (NFA) and Columbia Southern University. The purpose of this study is to develop a better understanding of a critical issue in the fire and emergency services. This study will contribute to the researcher's completion of their final project for the Executive Fire Officer program.

Research Procedures

Should you decide to participate in this research study, you will be asked to sign this consent form once all of your questions about the study have been answered to your satisfaction. The study consists of an survey that will be administered to individual participants. You will be asked to provide answers to a series of questions related to your experience within your community.

Time Required

Participation in this study will require approximately 15 minutes of your time.

Risks

The investigator does not perceive more than minimal risks from your involvement in this study (that is, no risks beyond the risks associated with everyday life).

The NFA, Columbia Southern University, and its contractors take no responsibility for the actions or outcomes of the research study.

Benefits

There are no direct benefits to the participant; however, information from this study may benefit your, and other communities, in the future.

Incentives

There are no incentives (financial or otherwise) associated with participation in this study.

Confidentiality

The results of this research will be presented to NFA and Columbia Southern University program faculty and students. The results of this project will be coded in such a way that the respondent's identity will not be attached to the final form of this study. The researcher retains the right to use and publish non-identifiable data. While individual responses are confidential, aggregate data will be presented representing averages or generalizations about the responses as a whole. All data will be stored in a secure location accessible only to the researcher. Upon completion of the study, all information that matches up individual respondents with their answers will be destroyed. Final aggregate results will be made available to participants upon request.

Participation & Withdrawal

Your participation is entirely voluntary. You are free to choose not to participate. Should you choose to participate, you can withdraw at any time without consequences of any kind.

Questions about the Study

If you have questions or concerns during the time of your participation in this study, or after its completion, or you would like to receive a copy of the final aggregate results of this study, please contact:

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Giving of Consent

I have read this consent form, and I understand what is being requested of me as a participant in this study. I freely consent to participate. I have received satisfactory answers to my questions. The investigator provided me with a copy of this form. I certify that I am at least 18-years of age.

Interviewee Signature		**Date:**	

Appendix C

Coded Data Themes from Survey Reponses

In total 37 people participated in the survey

- 22 participants were age 55 or older
    - 13 Live in a rural community (population less than 2,499)
    - 4 Live in a small town (population between 2,500 and 9,999)
    - 4 Live in a large town (population between 10,000 and 49,999)
    - 1 lives in an urban community (population over 50,000)

Biggest safety risk?

- Vehicle Safety (14 mentions) (8 for 55+)
    - Inattentive/distracted drivers
    - MVA
    - Traffic
    - Car accident
    - Drunk Drivers
    - Deer on road hitting the vehicle
- Health (5 mentions) (zero mentions by 55+)
    - Health
    - Obesity
    - High Blood pressure
    - Viral infections
- Crime (6 mentions) (4 for 55+)
    - Crime
    - Home invasion
    - Robbery
    - Carjacking
- Falls (3 mentions) (2 for 55+)
- Fire (5 mentions) (3 for 55+)
    - How fires grow and spread
    - Concerns about fire
    - Home fire
- Other safety concerns
    - Power outage
    - Firearms (2)
    - Response times
    - Radon
    - People storing too much junk in the yard
    - Not having services as we age
    - Limited sheriff, paramedics, and fire responders

    - Unsure
    - Farming

When you think about fire safety, what do you feel are your biggest risks?

- Getting out (5) (3 for 55+)
    - Being on the top level
    - Jumping from a 2nd story
    - Getting out if there were a fire
- Response time (4) (2 for 55+)
    - Fire department speed
    - The fire department finding our home in a short amount of time
    - Not getting out quick enough
- Older home (3) (2 for 55+)
- Forest Fires (3) (3 for 55+)
- Smoke alarms (3) (2 for 55+)
- Other
    - Would the neighbors call for help
    - CO poisoning
    - Lack of firefighters
    - Trained firefighters
    - Heating with wood
    - Living in new home so not as large or risk
    - We have a very good fire department in our town. I feel relatively comfortable

What have you done in your own home to reduce your risk of fire?

- Smoke alarms (27) (17 for 55+)
    - Smoke detectors
    - Smoke alarms
    - Fire alarms
- Extinguisher (7) (7 for 55+)
- Take out fireplace/wood stove (3) (2 for 55+)
- Other
    - Turning things off
    - No space heaters
    - Furnace
    - Wiring
    - CO alarms

Do you have working smoke alarms?

- All respondents except two responded in the affirmative
- 2 responded they were unsure (both of these were in the 55+ group)

Biggest risks to fire safety in Minnesota?

- Heating (9) (3 for 55+)
    - Space heaters
    - Furnace
    - Heating with oven
    - Fireplace
- Wildfire (6) (5 for 55+)
    - Lots of dead trees
    - Forest management
    - Grass fires
- Smoking (6) (2 for 55+)
    - Smoking in bed
    - Falling asleep while smoking
- Electric (5) (2 for 55+)
    - Electrical
    - Faulty wiring
- Other
    - Lack of firefighters and funding
    - Lack of education
    - Unsure/unknown
    - Rental units
    - Poverty
    - Dryer vents
    - Lack of smoke alarms
    - Being in rural Minnesota

Describe your plan if there was a fire in your home.

- Get out or exit (32) (21 for 55+)
    - Run like hell
    - Exit
    - Run out
    - Get out ASAP
- Call 911 (2) (5 for 55+)
- Use an extinguisher/try to put out fire (5) (3 for 55+)
- Other
    - Crawl on hands and knees
    - Get children
    - Grab animals
    - Get keys

How long do you have to escape a home fire?

- Answers from 2 minutes to 10 minutes
- Depends on the type of fire and location

How would you like to receive fire prevention messages?

- Facebook (17)
- TV (13)
- Pamphlet/printed materials (11)
- Radio (11)
- Other social media (9)
- Newspaper (6)
- In person event (4)
- Other
    - Comprehensive approach
    - Alerts through phone messaging
    - Media reaching immigrant populations
    - Community website

Name three safety messages.

- Escape planning (12)
    - Have an escape route
    - Have a plan
    - Create a fire evacuation plan
- Smoke Alarms (11)
    - Working fire alarms
    - Smoke alarms
    - Working smoke detectors
    - Have working smoke alarms
- Extinguishers (6)
    - Fire extinguisher
    - PASS
    - Proper extinguisher for fire
- Stop, drop and roll (4)
- Stay low (3)
- Candles (2)
- Other messages
    - Don’t use gas to start fire
    - Don’t go back into the dwelling
    - Call 911 after you are safe from the fire
    - Clean dryer lint
    - Water the Christmas tree

How concerned are you about fire safety?

- Mode 5
- Median 6
- Mean 5.8
- Range 1 -9

How concerned are you about being injured or killed in a fire?

- Mode 2,5,6
- Median 4.5
- Mean 4.3
- Range 1 -10

Time to escape a home fire

Range from less than a minute to 10 minutes