



Creating a Campaign Supporting Residential Fire Sprinkler Uptake in Australia

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Creating a Campaign Supporting the Uptake of Residential Fire Sprinklers

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Abstract

Residential fires are a significant but underestimated risk which can be effectively mitigated with home sprinkler systems. The project goal was to develop a campaign strategy for the Home Fire Sprinkler Coalition in Australia. Effective campaigns were researched, leaders of public safety campaigns were interviewed, Australian homeowners were surveyed, and our findings led to campaign messages targeted to developers, Authorities Having Jurisdiction, and homeowners. We developed an overall strategy and resources for HFSC Australia to use in the campaign.

Executive Summary

The risks of home fires are underestimated by most homeowners, and the safety features required to reduce this risk are not present in most homes. Unsuppressed residential fires can grow out of control in less than two minutes and become deadly in less than five (*Home Fire Sprinkler Coalition, 2019*). Melbourne has the fastest growing population in Australia, growing at a rate of 2.5 percent each year, and is expected to reach 6 million by the year 2025. This population increase along with people moving to the suburbs has created a high demand for new single-family homes (Window into Housing, 2020). Unfortunately, the current building codes in Australia do not require sprinklers in one and two-family homes and most homeowners do not consider installing them or were never given the option. While the building codes remain the same, new homes are being built with lighter materials that burn hotter and faster. To reduce the risk of personal injury and property damages in house fires, the Australasian Fire and Emergency Service Authorities Council (AFAC), along with the Fire Protection Association Australia (FPA Australia), have formed the Home Fire Sprinkler Coalition (HFSC). While the coalition has pushed for some changes to building codes and worked with some industry stakeholders, there has not yet been a home fire sprinkler campaign focused on homeowners and community outreach in Australia.

Our goal was to address this lack of community-focused sprinkler education by developing a residential sprinkler campaign strategy for the Home Fire Sprinkler Coalition, based on other successful public safety campaigns. We achieved this through research of public safety campaigns in Australia, a survey of Australian homeowners, and interviews with campaign organizers from Fire and Rescue New South Wales and the Home Fire Sprinkler Coalition in the United States. This allowed us to outline the key elements of a social marketing campaign, understand our target audience, and develop key messages and actions for a home fire sprinkler campaign in Australia. The social marketing process is shown in Figure 1.

A first step in our project was to create a framework for the Australian sprinkler campaign. Social marketing campaigns commonly have a cycle of development, which involves developing goals, identifying a target audience, developing messages, identifying channels, taking action, and evaluating the results. Once an evaluation is complete, the information can be used to reassess the campaign approach, and improvements can be made as the campaign continues (Grier and Bryant, 2005).

Understanding the target audience is the most important element in creating a campaign. This was a priority in both campaigns we interviewed. In the United States, surveys were conducted for homeowners to understand their priorities in homes and any misconceptions they had about sprinklers. Fire and Rescue NSW analyzed fire incident data to identify higher-risk populations as well. While there has been a large focus on homeowners in these campaigns, there are other important audiences to consider for a successful sprinkler campaign. Residential community developers, builders, and authorities having jurisdictions (AHJs) have a large impact on the home building process, and they can be targeted by sprinkler campaigns as well. Figure 2 outlines



Figure 1: Social Marketing Process

the home buying process and helps to identify the main pathways through which sprinklers can be introduced into residential homes. An effective campaign must target home buyers to increase demand for sprinklered homes, while also pushing for sprinklers to become more of an option that developers can offer. This can be achieved through messages targeted towards the developers creating residential community plans and the AHJs approving them.



Figure 2: Outline of Home Buying Process

We determined that some of the most impactful campaign messages address how sprinklers work and target any misconceptions the public may have. Our interviews with campaign organizers shed light on these common misconceptions, and the survey with homeowners confirmed some of these findings. We have found that many do not understand how sprinklers work, so basic messages explaining the activation and general functions of sprinklers are still important. Some other messages relate to the fact that sprinklers can be hidden behind wall coverings, and the water damages will almost always be less than the potential fire damages in an unsprinklered home. Around 30% to 50% of Australian homeowners surveyed were not aware of these facts, which shows how important sprinkler education still is. Discussions with campaign organizers also gave insights into other audiences. For industry stakeholders, information about developer incentives should be the main message, as this can have the largest impact on getting sprinklers into homes. HFSC US has found that these companies are mainly motivated by saving money, so messages relating to ways for developers to save money while having sprinklers in homes would be very important as well.

We have identified a few key channels to distribute these messages for the campaign. Online resources such as a campaign website and social media have worked very well in the campaigns we interviewed. The HFSC AU website could be expanded to provide important messages to all key target audiences. Networking with local fire departments will also be important to connect with communities more effectively. Fire departments voices carry a lot of weight in their communities because they are generally very well respected. These departments can be provided with digital and physical campaign materials to distribute them more effectively to their communities. Finally, virtual and in-person conferences with industry stakeholders have been proven to be effective in the US to inform the audience about developer incentives. The campaign strategy map is shown in Figure 3.

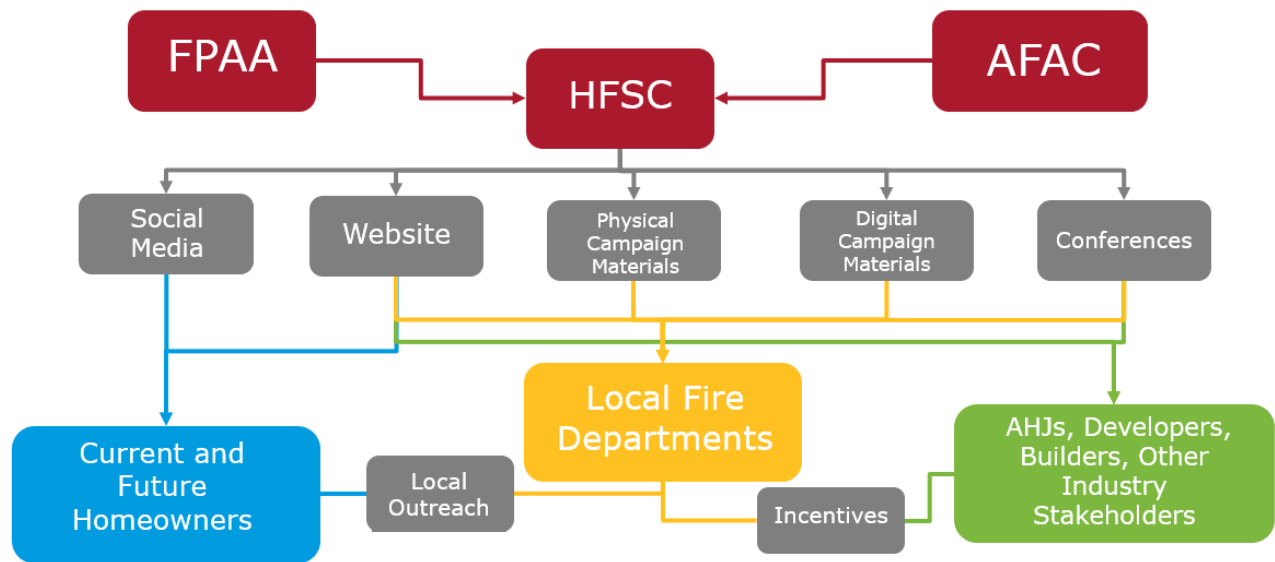


Figure 3: Campaign Strategy Map

As part of the project, we developed some campaign materials to assist with the initial rollout of the campaign for HFSC Australia. The strategy for development of these materials followed the social marketing process described above, however no evaluation of effectiveness could be completed, as the materials have not been distributed.

Sixteen social media posts have been drafted and can be posted at any time, and we have included two examples to the left in Figure 4. These messages aim to educate homeowners on how sprinklers work, what options they have in their home to install them, and how important they are to install. The tweets we have created generally aim to alter the perception of fire risks, target misconceptions about home fire sprinklers, or provide general information about sprinklers to keep the audience well informed.



Figure 4: Example Social Media Posts

We have created an example video for short-form content that can be published and promoted on social media. This is the first step to distributing online video content about sprinklers and their benefits, which can be adapted and used throughout the duration of the campaign. These videos can include general information about sprinklers, developer incentives, or home fire risks and they can be linked on the HFSC website, included on the HFSC YouTube channel, and sent out on any other social media.

In order to aid outreach to the community through the fire department, we recommend that HFSC Australia helps to plan community events such as a cookout hosted by fire services. We have created promotional material for this event, which could be used by any local fire departments in Australia. We

also developed a home fire sprinkler education prop, adapted from one used by HFSC US. The prop includes an expanded section on sprinkler misconceptions and home fire safety, which can be handed out to community members. These props should be distributed to fire services, so whenever the opportunity arises, a member of the fire service can present the facts about home fire risk, home fire safety practices, and important information about sprinkler systems. This is a potential alternative to side-by-side burns that fire departments have carried out in the past. The contents of the updated education prop are included below in Figure 5.



Figure 5: Sprinkler Education Prop for HFSC Australia

We identified multiple approaches for campaign evaluation, which we feel would all be relevant to the Australian HFSC campaign. Based on the approach of Fire and Rescue NSW, we recommend three “evaluation periods” for the campaign. Surveying the audience before viewing campaign materials, directly after viewing the materials, and a long time after initially viewing the campaign allows organizers to see what information sticks with the audience and if the messages have a lasting impact. Long-term trends and incident data can be used as a yearly analysis to see if homes are getting safer as a result of the campaign’s efforts. We also recommend an ongoing evaluation of any online resources through website analytics, social media interaction, and YouTube data. This approach is based on our findings from the HFSC campaign in the United States. The campaign evaluation strategy is shown in Figure 6.

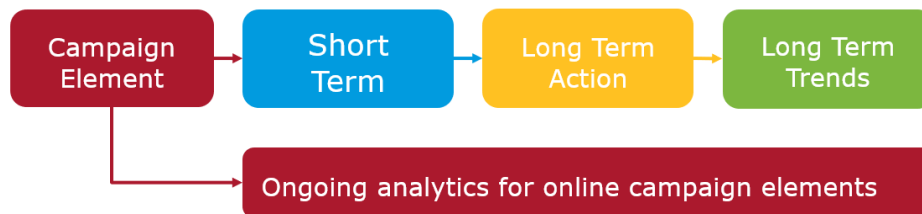


Figure 6: Campaign Evaluation Strategy

Further action must be taken to fully implement this campaign plan effectively. Some next steps we recommend is creating the framework for an annual fire incident report for Australia, similar to the National Fire Protection Association annual reports on fire data in the US. We also recommend expanding the website to include information for homeowners, fire services, developers, and AHJs. Finally, we recommend pushing for a section in the National Construction Codes that makes developer incentives more explicitly stated, similarly to the section in the NFPA 101 life safety code in the United States. We believe that implementing the campaign plan we have created will be a strong start to a campaign that can continue to push for home fire safety in Australia for years to come.

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Appendix C: Methodology Interview Questions and Consent Scripts	Ethan Davis	Michael Arbore
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Chapter 1: Introduction

People underestimate the risks of fires. Unsuppressed residential fires can grow out of control in less than two minutes and become deadly in less than five (*Home Fire Sprinkler Coalition, 2019*). Home fires in Australia account for an average of 64 deaths per year and that number does not seem to be decreasing year after year (*Coates et al., 2019*). According to the National Fire Protection Association (NFPA) data, it is more likely for a death to occur as a result of a home fire than it was in 1980, as building materials become lighter and synthetic furniture becomes more common.

While actions have been taken through legislation and building code changes to reduce the risks of building fires, residential buildings often have fewer requirements for fire safety systems. One of the main differences in legislation is the sprinkler requirements. Building codes do not require sprinklers in one and two-family homes, and most homeowners do not consider installing them or opt not to.

To reduce the risk of personal injury and property damages in house fires, the Australasian Fire and Emergency Service Authorities Council (AFAC) along with the Fire Protection Association

Australia (FPA Australia) have formed the Home Fire Sprinkler Coalition (HFSC). FPA Australia is the national body for fire safety services, providing information, and education to the fire protection industry (FPA Australia | Home, n.d.), while AFAC focuses on uniting emergency management sectors (AFAC | Home, n.d.). More information about these organizations can be found under Appendix A. HFSC Australia is a newer non-profit organization which was founded in 2018 and has had some success in promoting fire sprinklers and changing legislation in Australia.

Our goal is to address the lack of effective campaigns in Australia for home fire sprinklers by developing a campaign strategy based on other successful public safety campaigns. Our first objective was to research important elements needed to design an effective campaign. The second objective was to identify effective practices used in public safety campaigns for effectiveness and planning. We then aimed to identify potential obstacles to adopting home fire sprinklers in Australian homeowners. Our final objective was to use the effective characteristics of public safety campaigns as well as the principles of social marketing to plan a campaign that can educate the Australian people about home fires and the benefits of sprinklers.

Chapter 2: Background

Our focus for this project was to address Australian home fire risk through a sprinkler campaign. The purpose was to directly understand any barriers to adoption and address them by planning and beginning development for a successful campaign, promoting the uptake of sprinklers in the residential environment. This chapter presents some of the key factors that shape the context for a sprinkler campaign in Australia. The topics include residential fire risk, how people view that risk, some research into other barriers to adoption of sprinklers, social marketing techniques, and a review of other public safety campaigns in Australia along with HFSC campaigns in the United States and Canada.

2.1 The Role of Sprinklers in Reducing Residential Fire Risk

The fire problem is best defined as the existence of fires having the potential to damage property, environments, animals, or humans. Fire problems exist universally but can be addressed in different regions or locations based on the environment and fire risks of the area. Our focus for the project was to address aspects of the fire problem in Australian homes.

Home fires are not always controlled quickly and become dangerous to occupants within minutes,

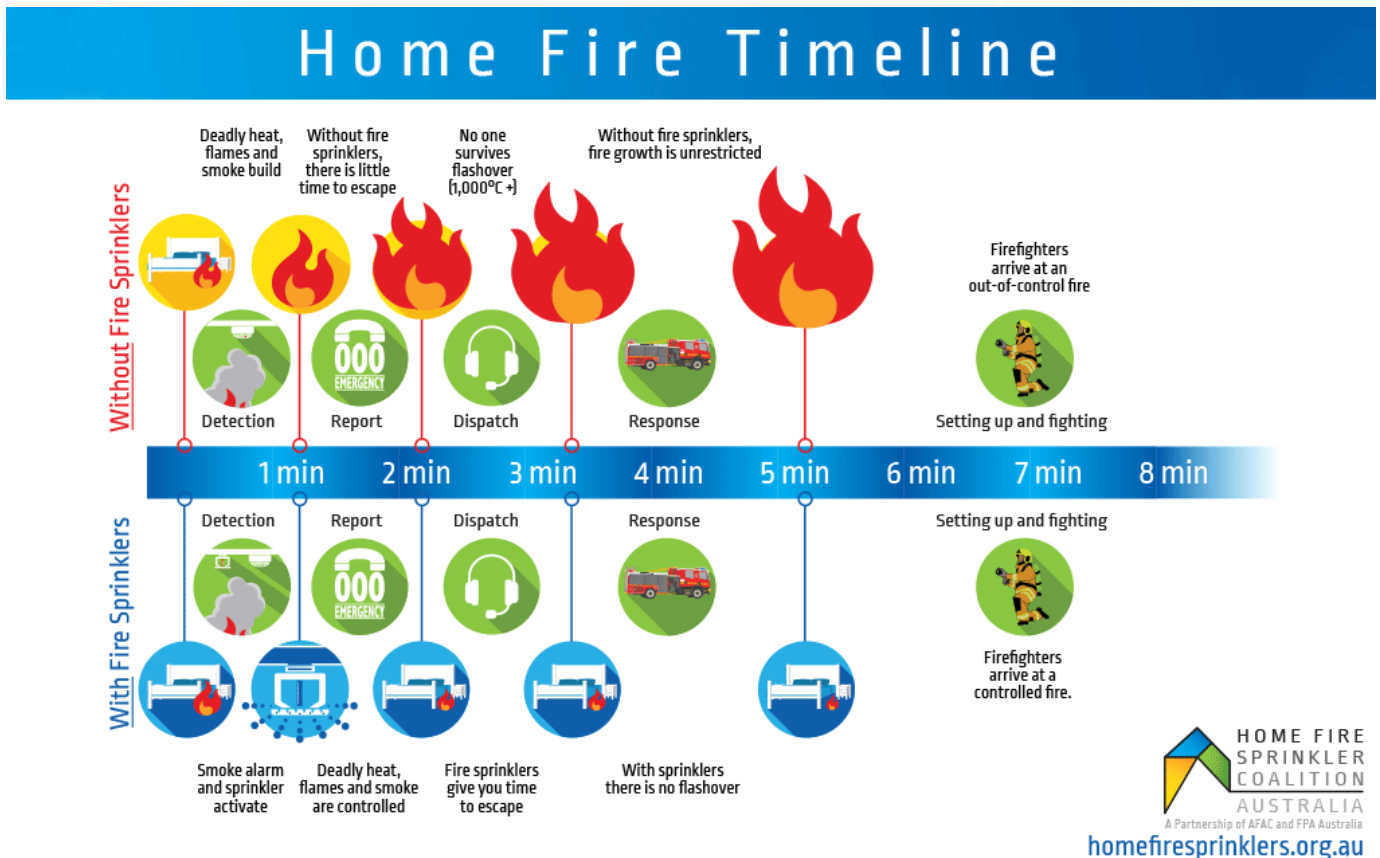


Figure 7: Home Fire Timeline

as seen in Figure 7. Fires in a room generally occur in three main stages: The growth period, the fully developed stage, and the decay period. After ignition, the fire will grow and spread as long as there is enough heat, oxygen, and fuel. In less than two minutes, a toxic layer of smoke will build on the ceiling and start to descend (Home Fire Sprinkler Coalition, 2019). This will activate the fire alarms, but the uncontrolled fire will continue to grow, leaving minimal time to escape. In three to five minutes, the smoke layer on the ceiling will heat up, radiate energy back onto the room, and everything ignitable will ignite (Home Fire Sprinkler Coalition, 2019). This ‘flashover’ as it is called, makes the room and surrounding areas uninhabitable. No one will survive if they remain in the room of origin. All oxygen in the area will be pulled to feed the fire, making it even more dangerous for any remaining occupants in the building.

While flashover occurs when the upper smoke layer on the ceiling is 600 degrees Celsius, sprinklers will typically activate at around 60 degrees (Home Fire Sprinkler Coalition, 2019). This activation point is high enough to avoid any false alarms but low enough to respond to a fire before it grows out of control. At this point, the fire is fully developed and will continue to burn until the local fire department arrives and intervenes. They will often not arrive until around eight to ten minutes after initial ignition (Home Fire Sprinkler Coalition, 2019).

Sprinklers in homes can significantly reduce the risks of fires by adding a suppressing agent (usually water) to the area before the fire grows to be too dangerous and uncontrollable. A 2017 NFPA report based on data collected in the United States has shown the death rates in home fires where sprinkler systems are present are 81% lower than in fire events where there are no automatic extinguishing systems. The average costs of damages from the fires were less than half when sprinklers were present in the building, and the fire was confined to the room of origin in 97% of cases with sprinklers (Ahrens, 2017). There are plenty of other statistics that demonstrate the impacts home fire sprinklers can have on the safety of the occupants, the preservation of property, as well as many other risks caused by residential fires, but some quick

statistics from the NFPA are shown below in Figure 8.

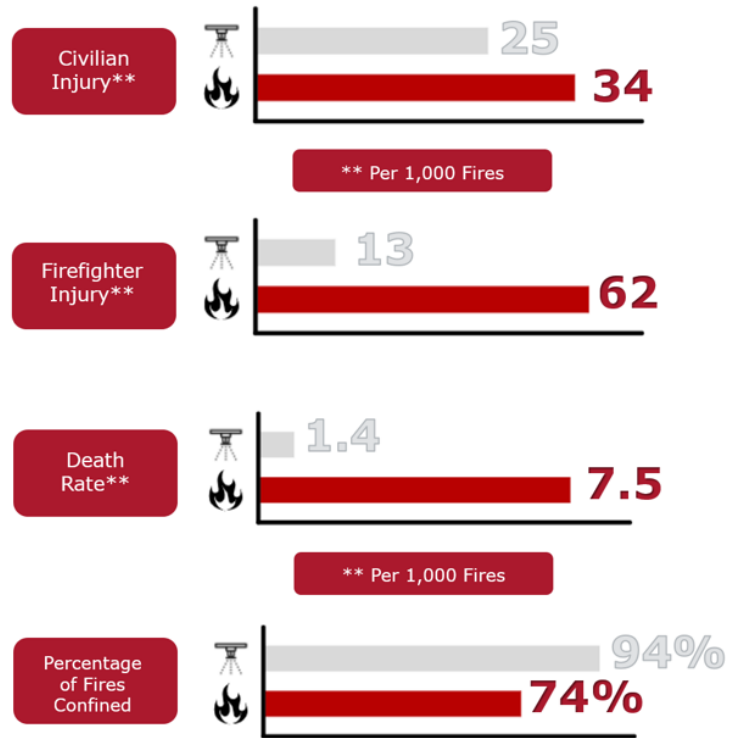


Figure 8: NFPA Statistics Comparing the Effectiveness of Home Fire Sprinklers V.S. Smoke Detectors (Ahrens, 2017)

If sprinklers are so effective in controlling fires, decreasing fatalities, and making buildings safer, it may not initially be clear as to why everyone does not have sprinklers. Matt Klaus, a member of the NFPA, discussed some common reasons people give why they are hesitant to install sprinklers. These include concerns over the installation costs, maintenance requirements, appearance of the systems, and the damages if they activate. The reality is that these systems are very affordable in most cases, they can be hidden well in buildings, and if they do activate, it is almost certain that the damages caused by the water will be less than any damages caused by an uncontrolled fire (Klaus, 2015). According to the Fire and Rescue Services in NSW, installing sprinklers in a new home is about .5% to 1.5% of the total cost of the home construction (Home Sprinkler Fact Sheet, 2015). Outside of individual barriers, there is a lack of sprinkler legislation in single-family homes. The larger focus for our project will address some other barriers, such as lack of education about home fire sprinklers, and a poor perception of the actual risks of fires in a home. Understanding all barriers will be important

for an effective campaign, and risk perception is one of the main topics most campaigns address.

Addressing the problems caused by residential fires in a region can be difficult without concrete statistics identifying the issues and trends. A report released by the Bushfire and Natural Hazards CRC in 2019 compiled data from 2003 to 2017 to gain an understanding of the residential fire losses in Australia. This study found over 14 years there was an average of 64 residential fire deaths per year, with smokers, young children, elderly, and disabled people being the most affected. These losses usually occur in isolated incidents, which are independent of one another. The report unfortunately did not find the presence of any decline in the rates of losses in home fires (Coates et al., 2019). This data points to a need for action within Australia to make homes safer in the event of a fire, especially to protect those who are less able to help themselves.

While centralized national bodies in Australia have not compiled data concerning fire events and fire losses annually across Australia, the National Fire Protection Association in the United States has been collecting and publishing this data for decades, and some trends may be analyzed and applied in the context of the Australian fire problem. It has been previously recommended for a similar report to be created annually for Australia (Coates et al., 2019).

2.2 Homeowners Perceptions of Risk and Fires

One of the main goals of public safety campaigns is to address and influence the public's perception of risk on an issue. In the case of this campaign, it is important to target how people view the risks of fire in homes. There are many factors that contribute to this perception, and many ways that campaigns will be able to address poor risk perception.

Humans perceive and evaluate risks both emotionally and logically (Peters & Slovic, 2006). Based on evolutionary differences in the brain, risks are perceived differently based on the context (Bruce Schneier, 2007). This leads to some risks being poorly perceived and the potential for irrational

decisions to be made. Poor risk perception can be taken into account to ensure people understand the risks of a fire more accurately in a low-stress environment where they are simply viewing campaign materials, but also in a higher-stress environment where a fire might be occurring in their own home. Creating campaigns that involve both risk perception systems will help to change the way people view the risks of home fires. There are plenty of factors influencing the perception of risk, which must be considered when building a campaign. Multiple studies have been conducted to identify these factors, which will then be applied to fire situations in order to understand some potential reasons people feel there is no need for sprinklers in homes.

Trust is an important factor when the general public is being informed (Ropeik, 2002). Generally, risk information would be better received by a trusted organization. The origin of the risk will also affect how risks are perceived ("The Psychology of Risk Perception," 2011). Fire departments are a good example of a generally trusted local organization that could relay useful information to their local jurisdiction.

People are less afraid of any risks they create personally but more afraid of any risks created by humans other than them. This is in line with another factor, control. If people perceive themselves to have control over a situation, they may be less afraid of the risks associated with it ("The Psychology of Risk Perception," 2011). Problems may arise where people have a perception of control but overestimate the actual control they have in a situation. People may believe they have a sense of control over the outcome of the fire in their own home, even without a sprinkler (Wolski et al., 2000). A recent study investigated these perceptions of risk and willingness to fight a home fire, finding there was a very high willingness to fight fires that were not able to be well controlled. While the willingness to fight the fire did drop off a bit as the intensity of the fire increased, the overall risks were not perceived effectively, and attempts to fight some larger fires would likely result in significant injuries (Hulse et al., 2020). The difference in the fires is shown in Figure 9. This underestimation of risk paired with the sense of control over other safety elements in the home

contributes to a general lack of sprinklers in smaller residential buildings (Wolski et al., 2000).



Figure 9: Different Stages of a Fire from Study

Familiar risks are usually viewed as less dangerous when compared with newer risks, even if they are equivalent (Ropeik, 2002). Fire is an example of a more familiar risk, as it is something that everyone experiences in some form, even if most have not seen a home fire for themselves.

Risks presented as catastrophic with the ability to impact many in a short time will have a stronger impact than a more widespread chronic issue. These factors have been observed in many forms through studies in many different fields. Professor Nicholas Dembsey (WPI), along with others investigated this in the scope of prescriptive codes and performance-based design decisions in buildings. When considering fire losses, it is perceived as less acceptable to have a single fire result in ten deaths once a year than to have ten fires each result in one death over a year (Wolski et al., 2000). This means residential fires where deaths and property damage occur in isolated instances often get overlooked more frequently.

The patterns of behavior when determining risks involving people's lives may follow similar patterns. While it may be difficult to hear of the passing of a single individual, the effect of hearing about hundreds or thousands of deaths is not hundreds or thousands of times more impactful than the single one (Fetherstibhaugh et al., 1997). When one person dies it is a tragedy, when millions die it is a statistic. Rather than only using numerical sprinkler statistics which can be more disconnected, hearing from individuals about how sprinklers saved their life can have a larger impact on homeowners. The NFPA has done podcasts and interviews with survivors of fires and the families of burn victims which create a personal connection, having a larger impact.

Statistics to communicate risk and motivate preventative action are based on the assumption people will look at the facts and use logic to act. However, as we have previously noted, emotional reactions can be stronger and quicker motivators. The way the data is presented may influence a person's perspective on risk. Numerical data points rather than percentages may have a stronger effect on people. For example, one study on risk perception found that some medical professionals, when asked whether they would release an unstable patient, considered a statistic presented as 20 out of 100 similar patients returning after an outburst to be riskier than releasing the patient when the statistic is instead presented as 20% (Peters & Slovic, 2006). This clearly shows that there are problems in presenting statistics in certain ways to communicate risks. When presenting statistics on the dangers of home fires, it is important to present them in the most impactful way possible. These numerical statistics can be beneficial at showing how sprinklers affect fires but not elicit a behavioral change. An example of this concept is how the public would agree to eat a healthy diet and exercising improves health but not everybody's behaviors will support this. An effective way to increase the likelihood of the action can be to make it easy or fun (Linsay Juarez, 2018).

2.3 Sprinkler Legislation in Residential Buildings in Australia

Perceptions of the fires and risks have shaped the way building codes have been made, which in turn affects the public's perception of safety in a building. The NFPA handbook notes modern prescriptive building codes come as a result of large disasters exceeding the tolerances of what is considered an "acceptable risk". The only way to reduce the fire risk in buildings is to increase the safety requirements (NFPA, 2008). These building codes, however, only provide the minimum level of protection, which does not always mean that the risks of fire are eliminated. Something like this can be put

in the National Construction Code (NCC) guidelines shown in Figure 10.



Figure 10: Cover of National Construction Codes (NCC), which are the building codes for Australia

This project is meant to target single-family homeowners in Australia. One factor that may explain why owners don't install sprinkler systems is that they are not legally required to do so. Australia assigns sprinkler regulations based on a class system for its buildings. The Australian classes go from 1 to 10 and cover a range of different buildings. The main classes this project focuses on are class 1 buildings, which are standalone dwellings, including single-family homes. According to the Australian Bureau of Statistics, 84.5% of Australians lived in class 1 buildings at the time of the 2016 census (*2016 Census QuickStats*, 2016). There is no building sprinkler legislation for class 1 buildings.

Ivan West, the secretary of the HFSC Australia steering committee, notes most first-time homeowners, home buyers, and even builders, do not consider installing sprinklers (West, pers. Comm.). The standards for proper installation of sprinklers do not exist for class 1 buildings yet, so there is little direct guidance on the matter, and other standards must be adapted to apply to these residential buildings. Furthermore, the certifications required to install most sprinkler systems are expensive and extensive. According to Ivan West, the builders do not deem it necessary for their business to get the fire sprinkler installation certification as the cost of getting the certification is not worth the effort. Furthermore, the amount of people asking for sprinkler systems is negligible to their business. HFSC Australia created a new sprinkler system a plumber can get a certification for, however. Having

a plumber do the job would bring down the price of the certification and make it more cost and time efficient.

According to Ivan West, the HFSC is working to advocate for tougher sprinkler requirements in residential buildings, changes are unlikely in the near future. Increasing awareness and addressing any barriers to adoption will be crucial during this time to ensure that homeowners are as safe as possible. This can be done by taking this understanding of risk perception and applying it to a fire sprinkler campaign.

These Australian codes still only provide the minimum requirements for safety in a building, and individuals may not be satisfied with the level of safety prescribed by the codes. If they perceive a high risk of fire, they may be more inclined to have a performance-based model, where their safety expectations can be met. This change in perception can be achieved through a campaign that addresses any concerns and changes homeowner's perspectives on home fire sprinklers.

2.4 Incentives for Developers and Builders in the US

The building and fire safety codes can also be used to the advantage of building developers in order to cut costs in larger residential developments. If there are alternatives to the prescriptive codes that meet the general minimum safety measures in a different way, they can be approved through a process outlined in the code documents. These are generally called developer incentives or trade-ups. An example of some of these incentives is shown in Figure 11.



Figure 11: Example Map of Developer Incentives (HFSC US)

The United States Home Fire Sprinkler Campaign has been pushing the idea of incentives or trade-ups for developers of residential communities in order to have sprinklers in more homes across the country. While major codes such as the NFPA 101 Life Safety Code require sprinklers installed in all new residential buildings, local amendments have pushed that out of the requirements in many places. This makes the situation in the United States comparable to the situation in Australia, where sprinklers are not required according to the National Construction Code (NCC). Both codes have similar frameworks for outlining a performance-based solution to buildings and developments, which will be very important for managing costs and making sprinklers more viable to include in homes. While buildings can be developed following the minimum code requirements and be considered deemed-to-satisfy, a performance solution can be used where some codes are not followed exactly. In order to be approved for the performance solution, it must be established to the authority having jurisdiction (AHJ) that the alternative is equivalent or superior to the prescribed codes. The NCC outlines the process in Volume 2, Part A2.2, which includes a design brief establishing elements that do not comply with the deemed to satisfy provisions and acceptance criteria and assessment methods for these elements. Analysis of the proposed alternative should be completed and included in a report to submit to the AHJ, which will either approve or reject the proposal.

Sprinklers are a common addition to make a performance solution more acceptable due to their effectiveness and the fact that they are not initially required, meaning that the level of safety in the deemed-to-satisfy provisions is relatively low initially. The NFPA 101 makes a clear statement of the incentives of a fully sprinklered residential development in section A.24.3.5 stating, “Automatic sprinklers are recognized as an excellent addition to homes to enhance life safety and property protection. Automatic sprinklers can be part of a comprehensive package of fire protection and can assist in the overall master planning of a community. Where all of the buildings within an area are sprinklered, including the single-family dwellings, the response times and personnel of local fire departments can be established at different levels than if the buildings were not sprinklered, saving considerable amounts of

tax dollars. When whole developments are sprinklered, water mains, hydrant spacing, road widths, and building density can be altered to help alleviate the economic impact of the sprinklers”. Similar logic can be applied to the NCC, which explains some of the requirements for fire hydrants. Part E1 of NCC Volume 1 states that hydrants must be able to provide sufficient resources to fight the fire, which means that if the fire risk is lower, less resources would be needed to fight it. The presence of sprinklers will reduce the fire risk, therefore smaller pipes and more space between the hydrants would be more acceptable. These changes can save significant amounts of money and may be enough to offset the cost of installing sprinklers in all homes. While there were no clear examples of this happening in Australia yet, there are some case studies that have been conducted in the United States to show how effective these incentives can be for developers.

HFSC US has done several case studies on developer incentives and the ways developers can save money by installing sprinklers. One notable example is a case study done by HFSC US on a development in Huntsville, Ontario. The development was being built on a granite and the developer would need to do costly road grading in order to meet the requirements for the size of the roads. By installing home fire sprinklers, the developer was able to decrease the costs necessary for the roads. Because of the fire sprinklers the developer did not have to blast through the granite. They also were able to keep roads narrower, create a single-access point, and set homes further back. Allowing developers to save money by installing home fire sprinklers is essential to installing home fire sprinklers. The developers are one of the most efficient audiences to educate because of the amount of money that is saved by installing sprinklers before the house is built.

2.5 Social Marketing and Campaign Components

Social marketing is the act of using commercial marketing techniques to convince people to adjust their mindsets to something safer or more ethical. Social marketing is simply a subset of

marketing “evolved from other disciplines including (but not limited to) economics, psychology, communications studies, sociology, anthropology, and management science” (Rundle-Thiele, David, Willmott, Pang, Eagle, and Hay, 2019). In the case of our project, this involved targeting homeowners’ perceptions about home fire risks and the use of sprinklers so they will change their perceptions. Successful marketing starts by identifying people's wants, needs, and aspirations (Lefebvre, 2011).

Social marketing involves the use of several techniques aimed at slowly convincing people change is not a bad thing. One key focus is to stress how the audience directly benefits from the desired change. Social marketers will use audience research to help understand determinants and consequences of one's behavior then fashion products or services to meet the specific needs of the audience (Lefebvre, 2011).

The second technique used to begin the process of social marketing is incentives. Incentives are a very effective way to elicit a voluntary change of mindsets. Three steps related to incentives can improve the chance the social marketing attempt is successful on the targeted group of individuals. First, offer benefits that the consumer truly values. Secondly, recognize that consumers often pay intangible costs, such as ripping out walls and the time to find an installer. Finally, acknowledging that everyone involved in the exchange must receive valued benefits in return for their efforts (Grier and Bryant, 2005). These steps can then be applied to the development of a campaign to help promote residential house sprinklers. The campaign would then point out the intangible cost of life and the psychological effects of fires and how sprinklers solve these issues.

Another aspect of social marketing referenced above is the audience. It is almost impossible to appeal to everyone with a single campaign or campaign elements (Grier and Bryant, 2005). It is easier to change the mindsets of people that have things in common. When using social marketing keeping similarities for a group of people allows the audience to feel more connected to the campaign. Subgroups of a population can be established based on some characteristics, which include “needs, wants, lifestyles, behavior, and

values that make them likely to respond similarly to public health interventions.” (Grier and Bryant, 2005). Splitting people into groups with certain similarities, and then applying social marketing techniques has a higher chance of success. In this project's case, the common ground for these people is they are homeowners dealing with fire damaging their property. The social marketing process is shown in Figure 12 to clearly outline the cycle of social marketing.



Figure 12: Social Marketing Process

Social marketers must consider aspects when planning a campaign. While in other kinds of marketing, competition refers to products and companies trying to satisfy wants and needs as the product is promoted (Grier and Bryant, 2005). In the social market, it is meant as an assessment of the competing ideas, to better explain the benefits of change. The main question most social marketers ask is what ideas and behaviors compete with those they are promoting. For this project, an example of competing ideas would be, some believe they can control a fire so they don’t see the need fire sprinklers however, fire is uncontrollable so homeowners need the extra protection that sprinkler systems can provide to stop fires.

2.5.1 What Makes Campaigns Successful

According to Anastasia Babatzikis, a writer for Qualifio, there are a few key components to creating a successful marketing campaign. Qualifio is a data collection service used by many different media sources. The first thing to be defined is the

target audience (Babatzikis, 2018). This can be done by focusing on the purpose of the public safety initiative. By seeing which problems the safety campaigns are trying to solve you can start to get a sense of who it will benefit. The goal is to find the ideal customer or client on which the campaign can be focused around.

Goals and expectations for the campaign must then be established. By having goals in place, the campaign can keep in mind the message which it is trying to convey to the target audience. To help keep the campaign accomplish its goals, a tool called Key Performance Indicators (KPIs) can be used (*What Is a Key Performance Indicator (KPI), n.d.*). A KPI is simply a micro-goal which is easier to complete and assess. As more micro-goals (KPIs) are completed, the end goal becomes closer and more realistic. These smaller units of measure can be looked back on to help evaluate the success of a campaign after its completion. A quick example of a KPI is if a person's goal is to lose weight the KPI would be the smaller goal of only consuming 1,700 calories (calorie deficit) a day. As these KPIs are completed the end goal of losing weight seems more attainable. Implementing KPIs into the fire sprinkler campaign could help to guide the campaign to the end goal of educating people on the life-saving value of these systems. A few examples of KPIs would be: explaining how sprinklers function, what the installation process entails, and why sprinklers are effective at fighting fires. If the campaign addresses those smaller micro-goals, then the campaign will be closer to the end goal.

Once the audience and goals have been defined, targeted content for the campaign can be developed. The targeted content can be anywhere from live demonstrations to infographics. As soon as the campaign has been created, it must be distributed and promoted. If the campaign is easy to share, it can be shared on various social media platforms. The more people that see the campaign the more successful it will be at educating the target audience. After each campaign, it is important to assess its effectiveness after the fact. The results should be tracked since this will help to optimize future campaigns. After the campaign is over it is important to look back at what was done well and what can be done better for future campaigns. In the end, you

want to make sure the effort put in for the event was worth it and the event had some sort of payoff such as educating homeowners of the life-saving capabilities of sprinkler systems (Babatzikis, 2018). By looking at successful public safety campaigns and sprinkler campaigns specifically, we can identify the best practices used, noting the goals, audiences, channels, messages, rhetorical appeals, etc. that are used. This then can be applied to the creation of the campaign materials.

2.6 Review of Public Safety Campaigns in Australia

To understand how others have applied social marketing techniques and risk psychology, we analyzed a collection of Australian health and safety campaigns (Road Safety Victoria, Road Safety NSW, National Tobacco Campaign, “Quit” Australian Smoking Campaign, Smoke Alarms Victoria, Smoke Alarms NSW, Workplace Safety Victoria, and Workplace Safety NSW) for common features, which are described further in Appendix B. Here we discuss key insights from that analysis. The main topics reviewed from each campaign were the problem, solution, goals of the campaign, and actionable information (detailed steps for how to implement these changes) for the audience. Some important “attention grabbers” were noted as well if they were present in the campaign.

Most campaigns opened up with a fact-based problem statement. For some campaigns, like the Towards Zero road safety campaign, this included death rates on the road annually averaged or to date this year. The National Tobacco campaign also included annual death rates, adding that smoking is the leading cause of preventable deaths in Australia. The goal of the campaign was usually quite clear within less than a minute of viewing the campaign site. Solutions are then introduced, which is usually closely linked with actionable information. This information helps to tell the target audience exactly what to do to help make behavioral change easier. An example of a campaign that did this well is the “Quit” campaign in Victoria. On their front page, seen in Figure 13, the quitting support hotline is almost always in sight, and they invite people to reach out no matter where they are in the process of trying to

quit smoking. The first thing visitors will read on the site is “Quit will help you succeed, wherever you’re at”, followed by the hotline. This is the perfect combination of goal statement and actionable information. Other sites, such as the smoke detector campaigns have modules with information for most general situations, leading to instructions on how to clean their systems and when they should replace them.

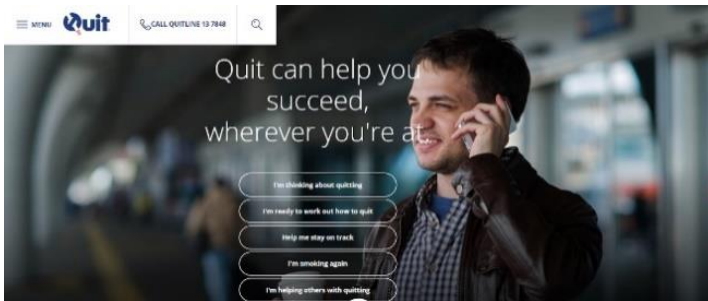


Figure 13: "Quit" Campaign Homepage (<https://www.quit.org.au/>)

Another recurring theme across the campaigns is the statement of human vulnerability. This directly challenges the risk perception trend discussed above concerning the illusion of control in dangerous situations. These campaigns reiterate humans do not always have as much control as they think. When texting and driving you are blinding yourself from seeing the roads according to the road safety campaigns. When you sleep your sense of smell does not work as stated in the smoke detector campaigns. These statements aim to inform the public about how little control they have in these dangerous situations, therefore causing them to perceive a higher risk.

The road safety and smoke detector campaigns have a heightened focus on increasing the perceived risks of dangerous situations such as unsafe driving and faulty fire safety equipment. In addition to generally pointing out human vulnerabilities, these campaigns make the risks as personal as possible. The smoke alarm campaign from Victoria includes personal statements such as “Without a smoke alarm a fire is more likely to damage or destroy your property”. This makes the claim the reader’s personal property is at risk. The NSW road safety campaign is a bit more direct with their statement, saying “The NSW road toll isn’t simply a number. It is people. Sadly, it’s closer to home than you think. It’s people like you. Grandparents, mothers, fathers, children. And it’s a

number that's unacceptable...”. It is an incredibly personal statement highlighting the fact there was a life behind each number in the death toll. Figure 14 shows a graphic from Road safe Victoria that shows lives lost on the roads.

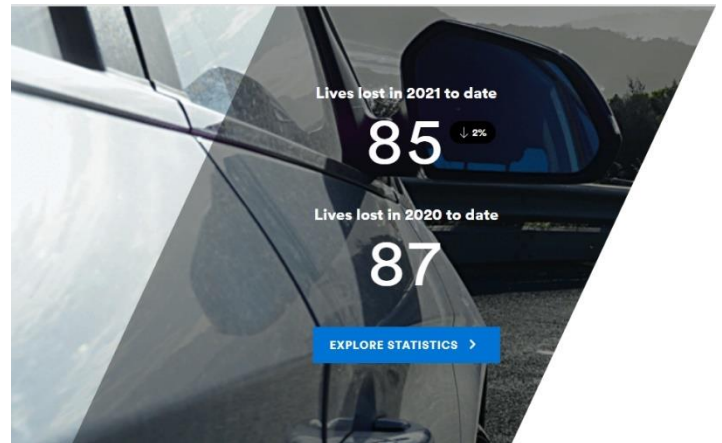


Figure 14: Road Safe Victoria Statistic

The workplace safety campaigns focus on getting workplaces to be safer for the employees and better workplace culture. The OHS essentials program was designed by WorkSafe Victoria to give small businesses access to information and consultants inexpensively. When designing the sprinkler campaign, we can use the model by OHS as a reminder to keep things simple, informative, and personal. OHS directly targets small business owners and does not overextend. Setting one specific demographic allows OHS to be more personable in the eyes of its clients. Furthermore, WorkSafe NSW is simple and provides a ton of information to all businesses in New South Wales. They use a roadmap for their six-year plan to carefully lay out the goals, progress, and strategies for workplace safety as well as the future endeavors of their workplace safety campaigns. The simple layout and efficient system for the WorkSafe NSW campaign allows for easy access and straightforward thinking. Having a meticulously thought-out plan will be massively beneficial to the creation of the sprinkler campaign. More techniques and trends will be discussed in the context of sprinkler campaigns in the United States and Canada, for better context into the specific subject of our project rather than the target audience. Both can be considered to provide an effective campaign for home fire sprinklers in Australia.

2.7 Review of Fire Campaigns in the US and Canada

Since 1922, the National Fire Protection Association has sponsored Fire Prevention Week. Fire Prevention Week was proclaimed a national observance by President Calvin Coolidge in 1925 (*Fire Prevention Week, n.d.*). This week intends to provide a lifesaving public education for people to decrease casualties caused by fires. The Home Fire Sprinkler Coalition US (HFSC US) and NFPA have recently launched a virtual campaign as a result of Covid. During the COVID-19 crisis, there has been an increase in home cooking fires due to the stay-at-home mandates. Because of this the NFPA and HFSC are trying to educate people living in homes. In previous years, there were public demonstrations showing the speed of home fires along with how effective sprinklers were at fighting these fires however these were in-person events and Covid has now made this event almost impossible(*NFPA, HFSC Launch Virtual Campaign to Address Home Fire Risk, n.d.*). As a result of this, the Fire Sprinkler Initiative will be co-hosting a virtual Home Fire Sprinkler Week. Throughout this week, the NFPA and HFSC will be distributing fire sprinkler videos, graphics, and other information on social media platforms and to local news outlets. They will also host a Facebook live event featuring a live demonstration of two houses, one with and one without sprinklers. There will also be important political figures giving speeches on their live stream (*NFPA, HFSC Launch Virtual Campaign to Address Home Fire Risk, n.d.*). To help learn more about how to create a successful campaign, we have developed some objectives as well as some methods.

Chapter 3: Methods

Our goal was to address the lack of effective campaigns in Australia for home fire sprinklers by developing a campaign strategy based on other successful public safety campaigns. To work towards accomplishing this goal, we used four key objectives to guide us along the way toward an effective set of deliverables. The first key objective was to research important elements needed to design an effective campaign. The second key objective was to identify practices used in public safety campaigns for effectiveness and planning. The third objective was to identify the obstacles of adopting home fire sprinklers in single-family houses. The final objective was to apply what we have learned from the interviews and research to create a campaign plan that will be used to educate the Australian people about the benefits of residential fire sprinkler systems. Figure 15 shows the methodology objectives.

3.1 Objective 1: Elements of a public Safety Campaign

This objective was achieved through extensive research into risk assessment, social marketing techniques along with how to effectively target an audience, and what goes into making an effective campaign. The background section of this project extensively covers our research done on campaign effectiveness as much of the research was done during the beginning phases of the project. We

shown in Appendix B. We conducted systematic literature review to gain necessary information for the background section. Through this research we also started to get an idea of who we wanted to conduct interviews with to expand our knowledge on what makes effective campaigns.

3.2 Objective 2: Effective Practices in Planning a Public Safety Campaign

In order to identify practices used in public safety campaigns as well as evaluation techniques for these campaigns, a few methods were required. Following our initial research, interviews were conducted with some of the leaders of these campaigns. The organizations interviewed were HFSC US and Canada and Fire and Safety NSW. Before conducting these interviews, we requested verbal consent to participate, using the consent script shown in Figure 28 in Appendix C. The interview was recorded after permission was given to do so. We then completed interviews with the members who have worked directly on the campaigns of interest as a follow up to our initial research. Our questions were aimed at understanding the development processes and evaluation methods of these campaigns. This was done to help us identify common practices used to build up and organize campaigns, which we can apply to our work with HFSC Australia.

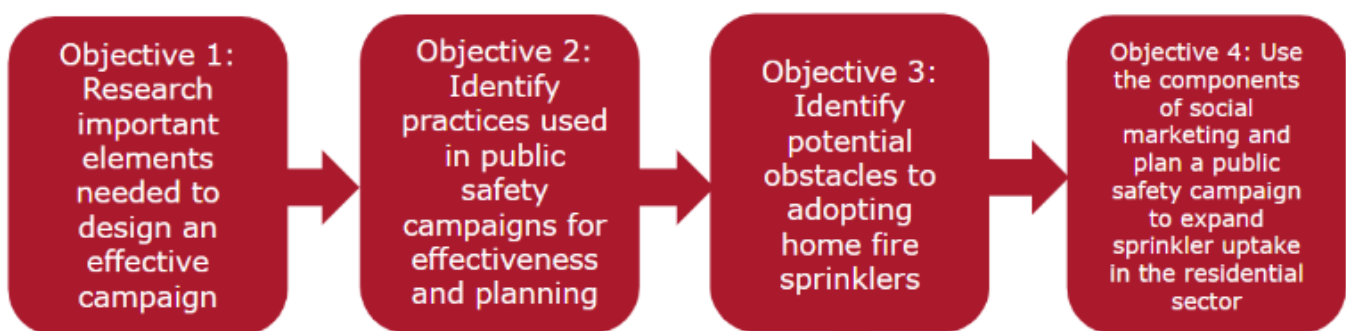


Figure 15: Methodology Objectives

The campaign analysis of other Australian public safety campaigns was a process that involved comparing common themes between the campaigns. A table was created as part of background research that summarized the campaigns, however, more aspects of the campaigns and evaluation methods were added and included in our results section based on our interview findings. The table summarizing the campaigns can be found in Appendix B. Key points of interest from the interviews include problems, actions to be taken, goals of the campaign, attention-grabbing aspects, and the key message. Quantitative analysis on these campaigns have been completed as well to define larger trends.

3.2.1 Interviews of HFSC US Members

Interviews with members of the HFSC in the US were very helpful and informative. We were initially put into contact with Peg Paul and Lorraine Carli as primary contacts for the organization. Lorraine Carli is the Vice President of Outreach and Advocacy for the NFPA. Peg Paul is the Founder and President of Peg Paul and Associates, which works with the HFSC. Through our interviews, Charlie Johnson was identified as an additional contact to gain another perspective on the campaigns at the state and local level. Charlie Johnson works in insurance full time in North Carolina while also being an active Fire Marshal.

Peg Paul has been working with the Home Fire Sprinkler Coalition since around 1996. Since then, she has worked with many public safety campaigns locally and nationally. We reached out very early on and the interview with her was the first interview of the project. Every member of the group attended, with the plan of two interviewers and two members taking minutes. The questions were sent out ahead of time, and the interview loosely followed them as Peg Paul gave us more of an overview of the campaign development process. The interview questions for Peg Paul are included in Figure 29 in Appendix C. After interviewing Peg Paul, we reached out to Lorraine Carli and asked her for an interview.

Lorraine Carli has been working with NFPA and HFSC US for 15 years. She joined the NFPA when they started the fire safe cigarettes campaign and subsequently became the HFSC US President.

We reached out to Lorraine Carli to set up an interview and carried out the interview. The questions were sent out ahead of time and the interview was carried out based on the questions. The interview questions for Lorraine Carli are in Figure 30 in Appendix C. At the end of the interview, Lorraine recommended we reach out to Charlie Johnson to gain an insight into a successful campaign at the state and local level as well.

Charlie Johnson is a fire code consultant for the North Carolina State government. He established the HFSC in North Carolina 6 years ago and has been the head since its establishment. He works full time with North Carolina insurance while still being an active fire marshal. The interview questions for Charlie Johnson are in Figure 31 in Appendix C.

3.2.2 Interviews of Fire and Rescue New South Wales

An interview was completed with two representatives from the Fire and Rescue Services in New South Wales with the objective of gaining insight into how their campaigns have been planned, executed, and evaluated. We looked to gain insight on how the target audiences were identified and what messages worked well with those target audiences. The contacts we interviewed from FRNSW was, Michael Jay and Christopher Fish. Figure 16 shows one of the campaigns we interviewed FRNSW about. The consent script listed in Figure 32 in Appendix C was used for this interview.



Figure 16: Keep Looking When Cooking Campaign

Michael Jay is the manager of the community engagement unit at FRNSW, and his main goal is to reduce community fire risk, especially in vulnerable groups. Christopher Fish is the manager of marketing

and strategic communications, working internally with firefighters as well as externally to educate the community. Their focus is to push fire prevention and education in the community. Most of their campaigns have focused on public awareness of residential fires and smoke alarm campaigns. Every member of the group attended, with the plan of two interviewers and two members taking minutes. The questions were sent out ahead of time, and the interview loosely followed them as we gained insight into the planning and campaign development process through our conversations. The interview questions for Fire and Rescue NSW are included below in Figure 33 in Appendix C.

3.3 Objective 3: Potential Obstacles of Home Fire Sprinklers

We conducted a survey of homeowners and prospective homeowners aimed at understanding obstacles and misconceptions preventing Australians from adopting these systems. The survey addressed common myths against sprinklers to gain a perspective on Australians' points of view on these systems. Since we only received 21 responses, we cannot make definitive claims for a large population based on this small sample size, but the responses yielded numerous relevant insights which helped us broaden our perspectives on the issue of home fire safety.

This was done to collect information on the beliefs held by Australian homeowners to compare to US data and to give us a better understanding of key campaign messages to include. The survey was distributed through the Australian Institute for Disaster Resilience in order to reach a large group of people. We received responses from 21 homeowners and prospective homeowners. The consent script included at the top of the survey in Figure 34, as well as the questions can be found in Appendix C, Figures 35-41.

3.4 Objective 4: Planning a Public Safety Campaign

We compiled the knowledge collected through the previous methods and developed a plan for an effective campaign. We took the information from the campaigns and ideas that worked well and put a twist on them. Furthermore, we used the social

marketing process, that we found in our research, in order to structure the campaign strategy for HFSC Australia. We have developed several deliverables from this objective such as tweets, a YouTube ad, educational props, an outline of the home buying process, campaign evaluation periods, and a chart of the outlined findings.

Chapter 4: Findings

Throughout the course of this project, our focus and ideas have developed as we learned more about the fire campaigns as they apply to many stakeholders. Our research, survey, and interviews have addressed key topics for social marketing across many channels and target audiences.

4.1 Target Audiences

The initial research on other campaigns came largely from reviewing the content on their websites. The interviews gave us more insight into the depth of these campaigns, as well as more information about their priorities and focus. Finally, the survey gave us a better understanding of the target audience in Australia.

Understanding the target audience is the most important element to create a campaign. Surveys and conversations with the target audiences helped to show what their beliefs and values are and what misconceptions they may have. This has been central to both the New South Wales Fire and Rescue campaigns and the HFSC US campaigns. NSW Fire and Rescue based this research on fire incident data and identified elderly and disabled people as higher risk populations. Decreasing the risk by adding and maintaining smoke alarms in their homes would have the highest impact on long-term death rates, so they were the main target for the smoke alarm campaigns. The HFSC in the United States has been focused on multiple target audiences, which all have important roles in getting sprinkler systems in homes. First, most home buyers currently belong to the millennial generation, so the HFSC surveyed millennials to understand their priorities in homes and what their thoughts were on sprinklers. These first-time homebuyers would be the largest group of similarly classified individuals to focus on with the campaign.

Homebuyers are not the only important audience for a successful sprinkler campaign. The HFSC also identified home developers as a good target audience, as they are the ones building the most homes, and therefore could have a large impact on sprinkler uptake if all homes they build include sprinklers. Authority Having Jurisdictions (AHJ) also became an important audience due to their ability to negotiate incentives and push for sprinklers when approving developments. An AHJ is “an organization, office, or individual responsible for enforcing the requirements of a code or standard, or for approving equipment, materials, and installation, or a procedure” (Solomon, 2016). The connections between all stakeholders became a key point of interest to understand the full process for how sprinklers get into homes. Incentivizing developers to put sprinklers in homes will be very important. This can be achieved by both increasing demands and lowering the costs of the development through incentives pushed by the AHJs. The incentive of including sprinklers in the developers' homes can allow for a higher quantity of homes to be built in the same space ultimately making the developers more money in the long run as well as saving lives.

The buying process has multiple steps where sprinklers can be introduced. Figure 17 shows a general outline of how the home building and buying process will happen. A buyer has demand for a home from development. The developer will be the one building this home, which must first be approved by the AHJ. If the consumer demand changes (people want sprinklers), the developers may need to shift their supply. This will easily be approved by the AHJ, however, to make sprinklers more cost-effective, AHJs may be able to offer incentives for a fully sprinklered development. This changes the developer's supply, which will then also potentially make their development more desirable for consumers that are informed about the benefits of

sprinklers. From this system, the two main targets will be consumer education on the life-saving capabilities and AHJ education about incentives they can offer to developers for sprinklers. The driving force in adding sprinklers to this cycle will be education.



Figure 17: Outline of the Home Buying Process

4.2 Campaign Messages

The survey we created, along with our subsequent interviews, gave us insight into how Australian homeowners feel about sprinklers. Our interviews with campaign organizers shed light on the common misconceptions which were held by homeowners, and the survey confirmed some of these findings. These findings can be used to shape the messages for the Australian HFSC campaign.

The most common barrier to installing sprinklers is cost. Our survey suggests that the price that people expect sprinklers to be is higher than they would be willing to pay to install them in their homes. People expect retrofits to be very expensive, with the most common guesses being in the range of \$10,000 - \$15,000. None of those surveyed were willing to pay more than \$5,000 for any sprinkler systems, with the average being around \$3,300 to include in new construction, and \$2,900 to retrofit, with many people saying they were not at all willing to do so in their own home. Builders and developers also choose not to install sprinklers due to the cost of the materials and the specialized labor required for proper installation. This has led the HFSC in the United States to search for ways to show how sprinklers can save money through developer incentives.

It is still necessary to educate all audiences on how sprinklers work and how they can be

implemented in homes. The main messages used by the HFSC US are generally quite simple. Sprinklers are safe, effective, and only the one closest to the fire will activate. They also push the fact that fires become dangerous very fast, especially with newer construction, and sprinklers can slow or even stop the spread. More than half of the homeowners we surveyed were not aware of the fact that sprinklers could be hidden behind covers, or that sprinklers contributed to better environmental sustainability. Over 30% of those surveyed incorrectly identified how sprinklers activate in homes, so there is still more work that must be done to educate homeowners on how sprinklers will work in the event of a fire. Some believe all sprinklers would activate if the heat of the fire activates one, while others believe that the sprinklers are activated by the smoke detectors. Additionally, around 40% of those surveyed expect that the water damages of sprinklers would be greater than or equal to the fire damages in an unsprinklered home. Figure 18 shows a graph of the results of the damages question from the survey. The yellow portion is people who believe fire causes more damage, the red represents those who expect equal damage, and the blue accounts for those who expect more water damage. Organizers at a local level working with Fire and Rescue NSW and with the HFSC have identified this as an issue even with fire services. It should be known that sprinklers will make homes safer, but some still question whether it is worth it. General education about sprinklers would be the necessary first step to changing perceptions of fire services and homeowners.

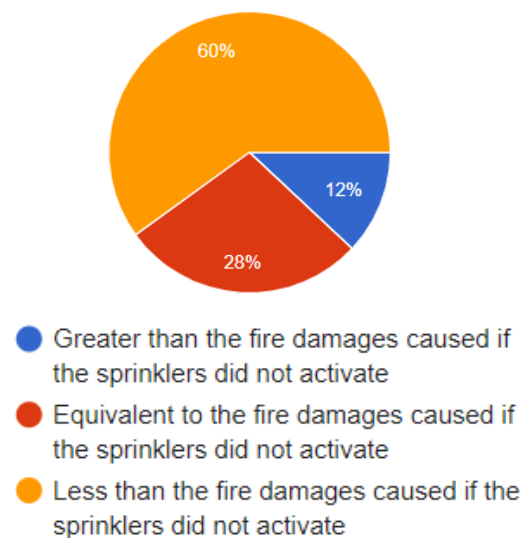


Figure 18: Survey Response to the Question "When a sprinkler activates, do you think that the damages caused by water will be?"

4.3 Campaign Channels

Working with fire services can be a great way to spread campaign messages. One important factor we identified in our research for changing risk perception involves trust in the body that is distributing the data. Firefighters are a widely trusted body in this field, which makes them a good outlet for fire safety information. They also have a better understanding of their communities and how to most effectively reach them. The HFSC in the US has coordinated with fire departments by providing campaign materials and helping to plan community events. The subdivision of the campaign will be important to reach a wider audience more effectively.

The HFSC has taken this cooperation with fire departments a step further with their Built For Life Fire Departments. Any fire department committed to pushing sprinkler education in their communities can be recognized as a Built For Life Department. They will receive campaign materials and resources to help achieve their goal of sprinkler education from the HFSC US. This program has been a great success based on our interviews, and it is something that could be easily adapted for the Australian campaigns.

Websites are a great tool to provide information to multiple stakeholders. Most campaigns we reviewed have a detailed website with key information about their campaigns. Sections of the websites and portions of campaign materials are tailored to specific target audiences to create more impactful messaging.

Social media is used to reach a broad audience, which is constantly expanding. The HFSC in the US has a set of active social media accounts to distribute campaign materials. They also provide materials for local departments and chapters of HFSC to post on their accounts, so the reach of these materials expands continuously.

Conferences with industry stakeholders have been very effective. The HFSC has held in-person and virtual conferences with builders, developers, AHJs, and other stakeholders. Surveys taken at these conferences have shown that most developers and AHJs educated about incentives

would be more willing to apply them to their developments. While less than 50% of attendees (primarily AHJs and fire services) were aware of developer incentives before the conference, 100% of those surveyed said developers in their communities could benefit from them.

4.4 Campaign Action

The home sprinkler education prop is a great tool for fire services to share with their communities whenever they have the chance. While these are a relatively new element to the HFSC US campaign, there has been very high praise from everyone who has used them. They can effectively explain the risks of home fires, how home fire sprinklers work, and address any misconceptions people may have. This prop includes the home fire timeline, general home fire safety tips, and an explanation of how sprinklers work with a real sprinkler head as a reference. They are intended to be produced and distributed to local fire departments for them to use whenever there is an opportunity to discuss home fire sprinklers. Figure 19 shows the design and content of the HFSC US education prop.



Figure 19: HFSC US Home Fire Sprinkler Educational Prop

Useful physical campaign materials have been shown to have a lasting message with the community. Fire and Rescue NSW had a long-running campaign aimed at increasing fire safety practices in the kitchen. They noted their “looking while cooking” spatulas were very effective, as they provide the important message in the kitchen when there is the highest risk. This was a wooden spatula that was handed out to the public and reminded

people to pay attention while in the kitchen since that is the number one place where fires start.

Local outreach and wellness checks from the fire services help to connect with the community and have conversations about safety elements in homes. Community events help to establish a connection with the fire services, while also serving as a great place to have conversations about fire safety. We found that hosting local fire department BBQs can help fire departments network and share ideas. Side-by-side burns have also been used in the past by HFSC US as an eye-catching event to show how effective residential sprinklers can be. While these have been very effective at spreading the intended messages, there have been concerns about these burns' environmental impact. Other examples of community outreach involve the fire department's statements after a fire in the community. They can explain what happened in the fire and stress the importance of fire safety devices that could have changed the outcome, or anything that was done that did help in the fire event. Fire and Rescue NSW also do wellness checks in the community to ensure people have proper fire safety measures as well as educate them on the importance of fire safety.

Case studies are a more personal way to show the impacts a home fire can have on the whole community. People generally do not perceive risks accurately, and they have trouble seeing the importance of some statistics. Through case studies, campaigns by the NFPA and HFSC in the United States have aimed to push more personal messages about fire losses. They can show more personal perspectives, as well as the wider impacts fires may have on a community.

4.5 Campaign Evaluation

Online campaign analytics such as website traffic, YouTube watch time, and social media interactions can be monitored to evaluate the campaign element's effectiveness. HFSC US tracks their website traffic, especially to their more homeowner-focused webpage. This allows them to see the direct impact of their actions if they start to promote the site. Additionally, HFSC US will promote their YouTube videos as ads and get feedback on the amount of time spent watching them.

Social media platforms will also provide analytics to show how follower numbers and post interactions are increasing. This gives a general idea of how many people are seeing their material and what material they are interested in. If certain posts or videos are shown to be more interesting, they could be used to develop similar materials in the future.

Evaluation over time can be summarized into three main categories. These have been observed in similar ways for both the HFSC US and the Fire and Rescue NSW campaigns. First, short-term recall of campaign elements will be conducted by surveying the target audience directly before and after showing them campaign materials. This technique was used by the Fire and Rescue NSW campaign during wellness checks with members of their community, and at HFSC US conferences with building industry stakeholders. The longer-term impact can be evaluated months or years after initially exposing the target audience to campaign elements. This is done by observing actions and conducting further surveys to see what has stuck with the audience after a long time. The campaigns we interviewed also stated that long-term data is an important indicator of how the campaigns are affecting behaviors. Fire data is continuously collected by local and potentially state bodies, and it gives insights into the longer-term effects of the campaigns. Ideally, the rates of injury and death from fires would decrease over time as sprinklers and other safety measures become more common in homes. Detailed data about the fire can also feedback into the campaign to identify how target audiences are responding, and which areas need more focus. These three techniques used together can give a good idea of how much of an impact the campaign has, and which messages stay with the target audience longer.

Chapter 5: Campaign Strategy Overview

We have developed a campaign plan and materials for the Home Fire Sprinkler Coalition in Australia, which addresses all campaign elements outlined through our research. We want to leave the sponsor with all the necessary materials to continue developing a home fire sprinkler campaign. The goal of this project is to address the lack of effective campaigns in Australia for home fire sprinklers by developing a campaign strategy based on other successful public safety campaigns. The target audience of this campaign is the current and future single-family homeowners and home developers of Australia. **Moreover, the key message we wanted the Australian people to take away is sprinklers are an affordable and effective way to decrease the risk of home fires.**

5.1 Goal

The goal of the campaign remains the same: **“to inform the public and industry stakeholders about the life-saving value of home fire sprinkler protection”**. This implies many possible target audiences; however, the scope of our project identifies three main audiences alongside fire services, which will act as a channel as well as an audience for the national campaign.

5.2 Target Audiences

Current and future homeowners, home builders and developers, and the authority having jurisdictions are the primary targets for sprinkler campaigns. We have found that there is a point for campaigns to make a strong impact on consumer decisions by targeting the home buying process at those three points. Consumer demands can be driven through sprinkler education targeted at current and future homeowners, so they know to ask builders and developers for sprinklers in their home. In conversations with potential home buyers,

developers should offer the option of sprinklers in their homes, which will require education about the possibilities of offering sprinklers and how attainable that can be. In order to offer sprinklers more frequently, fully sprinklered developments should become more common, which can be driven by developer incentives offered by the AHJ. Both the developers and the AHJ must be educated on their options and abilities to negotiate incentives when the development is fully sprinklered. If potential buyers are presented with the option to purchase a sprinklered home due to the available inventory provided by the developer, they may pick that over an unsprinklered home, especially if they highly value safety. The mapping of the home buying process is shown in Figure 20.



Figure 20: Outline of the Home Buying Process

5.3 Campaign Messages

We have developed some key messages for each of the audiences, but the most focus for these will be placed on current and future homeowners. For developers and AHJs, messages about developer incentives with fully sprinklered developments will be the most important. Developers want to hear about how sprinklers can be effective at lowering the costs of developments, while AHJs are interested in the safety factor that fully sprinklered developments will provide. The messages towards future homeowners must target the misconceptions that they hold and

inform them about the general benefits of sprinklers. We have found that it is still important to explain how sprinklers are activated only by the heat of the fire, and only the one closest will activate. Additionally, messages informing the public that sprinklers can be unobtrusive, easy to maintain, cost effective, and sustainable will be high priority. Addressing the concerns brought up in the survey we provided as well as any further surveys or research may result in the development of future messages.

5.4 Campaign Channels

We have identified channels for the campaign messages to be distributed through in order to reach each target audience. **Social media, the HFSC website, physical and digital materials, and conferences can be used as channels for this campaign.** Social media and YouTube content will be used primarily to inform current and future homeowners about home fire sprinklers. Social media can be used to create a continuous stream of information that can have an expanding reach over time. The website does have some messages aimed at the homeowners, but we recommend that it be expanded to reach all other stakeholders as well. Sections of the website can be used to inform developers about incentives, builders about more accessible sprinklers, and fire services about community outreach strategies. Digital and physical campaign materials should be further developed and

distributed to fire service, so they can reach their community with residential sprinkler information. We recommend networking with as many fire service organizations as possible and establishing ongoing contact with them, similar to the “Built For Life” program run by the HFSC in the United States. Finally, we recommend the HFSC hold conferences with industry stakeholders to find out what they know about residential sprinklers and inform them about the best ways to get them into homes. Developer incentives will be an important topic for these conferences. Firefighters must also be informed on how they can discuss the addition of life safety systems in homes going forward. Figure 21 below visualizes the stakeholder mapping to identify which channels will be used on each target audience.

5.5 Campaign Action

The action that must be taken to implement the campaign plan must consider everything previously established in the social marketing process and combine them in creative ways to best achieve the intended goal. The simplest example for action would be posting something on social media. The way the message is presented and any additional visuals should be considered and the effects they could have on the target audience should be evaluated before posting. Based on our findings, action for current and future homeowners could involve some useful or effective

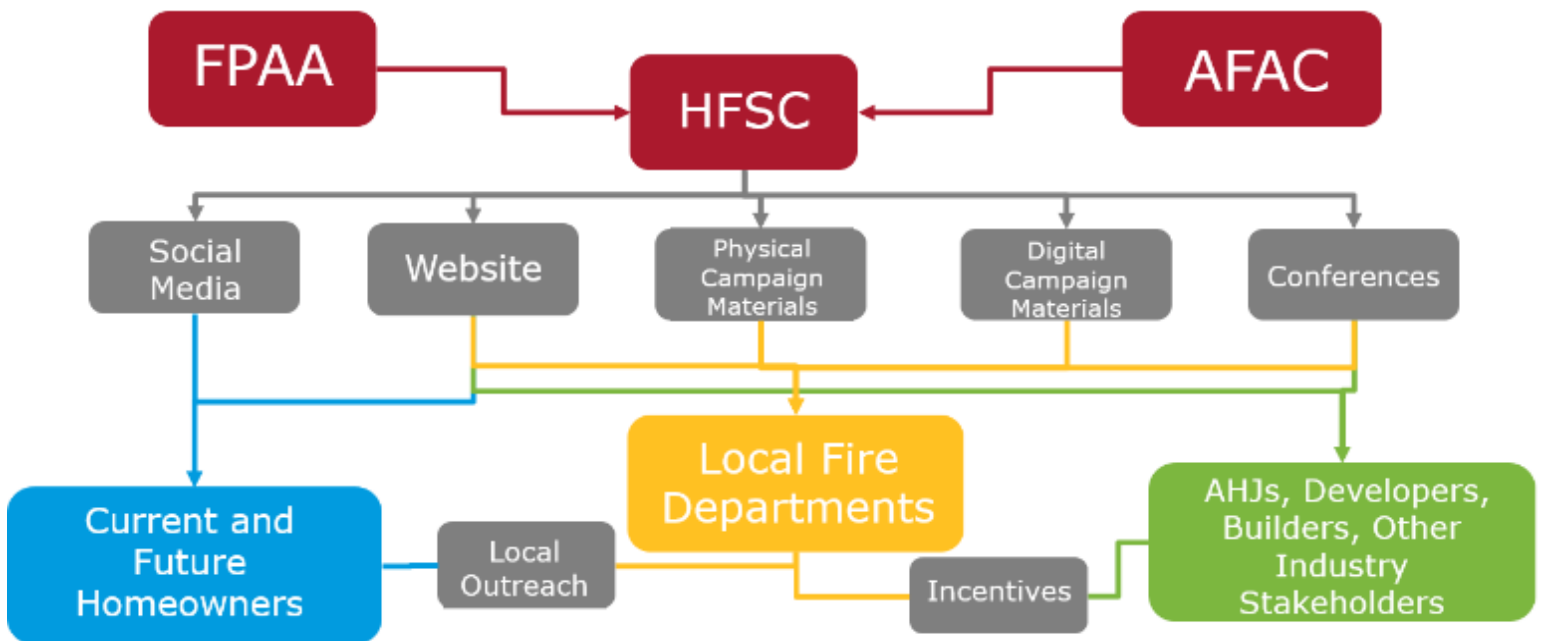


Figure 21: Stakeholder and Campaign Channel Mapping

physical campaign element similar to the “looking when cooking” cooking utensils from Fire and Rescue NSW. Other actions may involve expanding the HFSC’s online presence through social media and an expansion of the website to push out more campaign messages. Finally, actions can be taken to support the way local fire departments can support the uptake of home fire sprinklers in their communities. We have developed campaign actions for HFSC Australia in the form of social media posts, a short video advertisement, a sprinkler education prop, and an outline for a community event. The design processes for the campaign materials we have created for this project can be found below in section 5.7.

5.6 Campaign Evaluation Strategy

Finally, we have outlined a strategy for evaluating the campaign, as seen in Figure 22. Based on the approach of Fire and Rescue NSW, **we recommend three “evaluation periods” for the campaign.** Surveying the audience before viewing campaign materials, directly after viewing the materials, and a long time after initially viewing the campaign allows any organizers to see what sticks out initially to the audience, and if the messages have a lasting impact. Long term trends and incident data can be used as a yearly analytic to see if homes are getting safer as a result of the campaign’s efforts. We also recommend an ongoing evaluation of any online resources through website analytics, social media interaction, and YouTube data. This approach is based on our findings from the HFSC campaign in the United States.

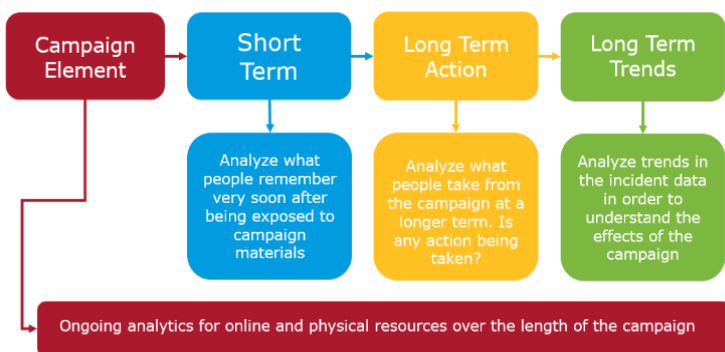


Figure 22: Campaign Evaluation Strategy

5.7 Campaign Materials

We have developed campaign materials that can be used as initial action to distribute the campaign messages. We decided to prioritize these deliverables for current and future homeowners, as they are the primary focus for this project. We created a collection of example tweets to post on twitter, a YouTube video or advertisement, a modified version of the education prop used in the United States, and some handouts and brochures based on the HFSC US materials. The design process for these campaign elements followed the social marketing map that we had found during our research. This map consists of these 6 steps shown in Figure 23, goals, target audience, messages, channels, action, and evaluation.



Figure 23: Social Marketing Process

5.7.1 Twitter Campaign

We recommend creating a Twitter account (@HFSC-AUS or something similar) to post weekly or more frequent tweets about home fire safety. This can also be used to inform the public about events or highlight news articles relating to how sprinklers helped save lives in homes. **Social media was identified as an effective channel to use due to its ability to instantly reach a wide group of people with many important messages.** The target audience for social media is current and future homeowners, as they will be the ones most likely to view any posts on social media. The use of social media will be effective now, as people of all ages have accounts already, but soon enough, almost every potential home buyer will be using social media so the potential reach of this account will

continue to grow as the younger generations start to look to buy homes.

We generated a list of potential tweets that can be pushed out at any point. Infographics, videos, and other materials can be included in these tweets to enhance the messages. HFSC US has a lot of great graphics that they have offered to HFSC Australia for any purposes and adding them to tweets would be an effective use of their resources. These graphics help to visualize the key messages and simplify them with less words. The complete list of tweets can be found in Appendix E, but we highlighted a few examples of tweets we have created in Figure 24. The first one addresses the issue that about 50% of homeowners we surveyed were unaware that sprinklers can be hidden behind wall/ceiling plates. The goal of the tweet was to inform people about how sprinklers can work in homes while being almost completely hidden. Next, we address a common misconception that newer homes don't burn. This aims to adjust homeowner's perception of control over a fire in their new home, so they will accurately perceive the risks of a rapidly growing fire. The final tweet we wanted to highlight is about how sprinklers work in general. Our surveys have shown that some still do not know how home fire sprinklers work, so a basic overview will be beneficial, and it also reassures the audience that sprinklers will not go off on a false alarm or a bit of smoke. There is also the option to promote these through twitter ads, and interactions with these tweets can be tracked to evaluate their impact and effectiveness. Once the social media accounts have a large following, evaluation and further research of the target audience can be completed by distributing the survey through this channel.

5.7.2 Short Video

Based on all our research and interviews with HFSC US, we have decided that an effective tool for HFSC Australia would be to create a video. We have a short video that acts as an example of the types of videos that could be published on YouTube or twitter. It shows the difference between a fire in a sprinklered and unsprinklered home, and then briefly shows how a sprinkler would contain a fire. A frame from the video can be seen in Figure 25. Throughout our research, we have learned from



Figure 24: Example Tweets

interviewing HFSC US, that videos, whether they be on YouTube or twitter, and whether they are informative videos, or advertisements are very effective. The goal of the videos would be to inform a wider audience of people about the benefits of home fire sprinklers and the dangers of residential fires. The target audience we intend to reach is homeowners. The main messages we wanted the video to utilize is anything that helps show homeowners that residential fire sprinklers are extremely beneficial and worth the cost. The channels we recommend using to distribute this video are YouTube and twitter. Using YouTube and twitter will allow us to reach a younger, wider audience of people. The action would be uploading this video to these social media platforms and then it can be evaluated via analytics, in order to see the effectiveness of the video. The analytics can be used to adjust the video or create new content to be even more effective.

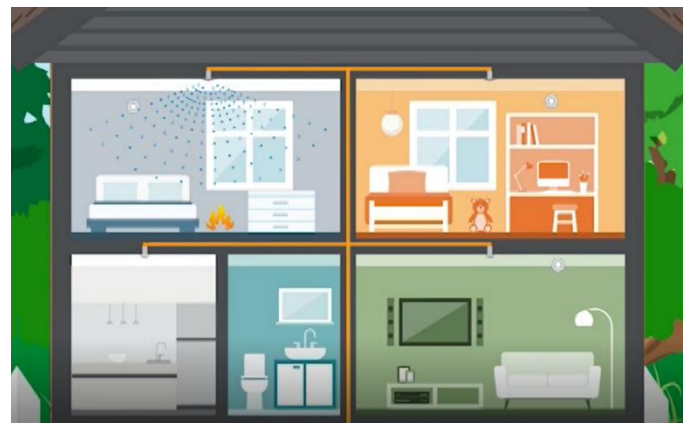


Figure 25: Thumbnail from Video

5.7.3 Educational Prop

The educational prop used by the HFSC US, which can be seen in Figure 19, was developed by Peg Paul and Associates along with HFSC US. **It is an effective tool to help fire services educate the public when there is a fire.** Based on the data we collected from the interviews and surveys, we had decided to create an educational prop for HFSC Australia. We used graphics and resources that were provided to us from HFSC US and HFSC Australia such as the Australian Fire timeline and incorporated them into the design of our educational prop. We first developed what goal we wanted the educational prop to accomplish and that was to work with fire departments to educate homeowners about sprinkler systems. The target audience was then determined to be focused on current and future homeowners. The information from the survey conducted of homeowners was used to develop the messages that are included in the educational prop and can be viewed in Appendix E. The survey oriented the information into an Australian context which helped create more effective messages to address common sprinkler misconceptions. These misconceptions were then compiled into a graphic and included in our educational prop for HFSC Australia, which can be seen in Figure 26. Some of the messages included in our prop are as follows; all sprinklers do not go off at the same time, there are ways to hide the sprinkler systems, and during a fire, the water damages from sprinklers will be less than the fire damage if the sprinklers did not go off. The prop incorporates these messages and starts by walking through a timeline of how a fire can get out of control in under 2 minutes. Different safety measures homeowners can take such as having an escape plan and installing working smoke detectors in your home along with sprinkler misconceptions are also outlined in the prop. Finally, a real sprinkler head is in the prop in order to help people understand how fire sprinklers work. One recommendation that we have regarding the sprinkler head that arose during our research was to change the sprinkler head in the prop to a concealed sprinkler to show people that they can be unobtrusive. The channel for this educational prop is to be distributed through the fire departments to use during public events. This leaves us with the action, which is for the prop to be used to educate homeowners by showing what physical sprinklers

look like and how they operate, ultimately showing the benefits of sprinkler systems. After this prop is distributed an evaluation can be made to determine how effective it was, and changes can be made accordingly.



Figure 26: Sprinkler Education Prop for HFSC Australia

5.7.4 Community Event Planning

To help educate local fire departments about sprinklers we recommend having BBQ's or cook out events where multiple different departments can be invited. **At these events, HFSC Australia can hand out the educational props to the departments as well as explain the information it includes to show the lifesaving capabilities of sprinklers.** HFSC Australia would also state what role these local fire departments play in educating current and future homeowners about sprinklers to help them start the conversation with developers. These events would be in person and would help to put different fire departments in contact with one another and exchange different campaign ideas.

Chapter 6: Conclusion and Recommendations

After interviewing and surveying both campaign leaders and Australian homeowners, respectively, we believe we have learned how to make a successful campaign and how to apply it to fit the scope of HFSC Australia and help them meet their goals. **We recommend that fire incident data be collected and standardized across the country and compiled into an annual report.** This can be used to analyze trends, especially once sprinklers are more widely used to show the data in the Australian context. The trends can also be used to target certain age groups or other audiences who are more frequently affected if that data is collected. **Expanding the online channels of communication will also be an effective tool to push the campaign messages.** Each stakeholder should be addressed on the HFSC website with important information or key facts. This is a great way to supply campaign materials to anyone who is interested in viewing them or distributing them further. Additionally, social media and YouTube could be a great tool to reach a slightly younger audience. **We recommend creating an HFSC Australia Twitter, and potentially a Facebook and Instagram profile as well.** Our deliverables include some example posts and potential graphics to include. These social media platforms can also be used to push events or share relevant news articles and findings. These sites allow for paid promotion of materials, which can be used to reach a wider audience faster. **The most important collaboration throughout the home fire sprinkler campaign will be with local fire departments.** The HFSC can provide materials and even social media posts for the local departments to distribute to their communities. They have a better understanding of how they can reach the community more effectively. The HFSC can also ensure that the local fire departments are educated about sprinklers in order to have informed conversations with both community members and industry stakeholders. **Developers and AHJs must also be educated about incentives for sprinklers.**

The NFPA 101 Life Safety Code includes a section that directly states the opportunities for incentives for sprinklered developments. This is something that should be pushed to be included in the NCC in the next cycle of changes.

Helping the HFSC Australia was an opportunity we never thought we would have gotten to experience. Throughout this project, all the research we have done, and all we have learned, is all going toward a great cause. The work that the HFSC Australia is doing is quite noble and we hope that our research this term, will grow their organization so they can reach new audiences and spread the message that residential fire sprinklers are important.

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Appendix A: Fire Organizations in Australia

This Appendix is on the HFSC in Australia and the structure of the organization as well as the importance of their mission.

The Home Fire Sprinkler Coalition

The Home Fire Sprinkler Coalition (HFSC) has several different organizations in multiple countries. HFSC extends to the US, Canada, and Australia. None of the sections of HFSC have any formal relationship. HFSC Australia is a partnership between the National Council for Fire and Emergency Services, the Australian and New Zealand National Council for Fire (AFAC), and the Fire Protection Association Australia (FPAA) (Home Fire Sprinkler Coalition, 2020). Ivan West is the main point of contact for this project. He is a manager of AFAC and the Secretary of the Steering Committee of HFSC. According to Ivan, the organization has two co-chairs heading it. One head is the CEO of AFAC and the other is the CEO of FPAA. However, HFSC Australia is currently working on getting a new impartial chair to lead the organization. Right now the two organizations work on separate agendas then come together on projects. Furthermore, each committee in HFSC Australia is headed by a chair. HFSC Australia only has one big initiative to date. HFSC Australia worked on changing the NCC 2019 to create more legislation for home fire sprinklers. Furthermore, they are working to pass more legislation for the NCC 2022. Figure 27 shows the logo of HFSC Australia and the partners of the organization. HFSC offers educational content for the community and consumers which outlines home installed fire sprinkler systems, how they work, and why they provide affordable safe protection to people. As noted by Ivan West, the secretary of HFSC Australia, public campaigns in both the United States and Canada have worked to educate the public and influence them to include sprinklers in their homes. In Australia, the HFSC has done work to prove sprinklers are effective, and new sprinkler systems have been developed to bring the cost down on these systems. Additionally, the HFSC in Australia continues to work on promoting changes in sprinkler requirements to include more residential buildings.



Figure 27: HFSC Australia Logo

Australasian Fire and Emergency Service Authorities Council (AFAC)

AFAC was founded to create synergy in the emergency management sector. The members of AFAC support reduction in the time of response phase for emergency management and the transition to recovery (Home Fire Sprinkler Coalition, 2020). AFAC's main strategy for disseminating information and informing the public on fire safety is through the use of their doctrine publications (AFAC, 2008). According to their website, their publications are evidence-based, constantly reviewed, and serve as the official view of the AFAC National Council. AFAC's primary purpose is to disseminate fire safety knowledge and practices to their members and subsequently the community. As of February 18, 2021, AFAC has 2128 articles published on the importance of fire safety knowledge and practices (AFAC, 2008). The board of AFAC is made up of 9 members, the president, the treasurer, the CEO, and 6 directors. Mr. Stuart Ellis has been the CEO of AFAC since 2012. His biography on the AFAC website says he is focused on "national initiatives that progress the effectiveness and professional

standing of fire and emergency services and has a focus on progressing an industry-wide, integrated approach to emergency management” (AFAC, 2008). Mr. Stuart Ellis is also one of the heads of HFSC.

FPA Australia

FPAA is the second main partner in the HFSC Australia coalition. Like AFAC, FPAA’s primary focus is to provide information, services, and education to the industry and the community. Their vision is to create a safer community through effective fire protection. The FPAA also offers training services and routine retraining services for its members. Furthermore, the FPAA is partnered with the Fiona Wood Foundation as their official charity partner. Professor Fiona Wood is the leader of the Fiona Wood Foundation and is an internationally acclaimed burn surgeon and researcher. She developed a spray-on skin used to help burn victims. The FPAA along with AFAC make use of social marketing techniques to help create successful public safety campaigns to spread awareness of the life-saving benefits of fire protection systems. This leads to the question of what is social marketing and how can it be used in this project to promote home fire sprinklers?

Appendix B: Summary of Australian Campaigns

This Appendix describes each campaign we investigated and researched as well as how the campaign operated.

Campaign	Problem	Solution	Action to be taken (by a viewer)	Attention-grabbing elements	Goal	Other Notes
Road Safety Victoria https://www.towardszero.vic.gov.au/	The roads remain dangerous for everyone involved.	“Safer roads, safer cars, safer people, safer speeds”	Understand the risks of driving under the influence of anything or driving with little sleep - change behaviors to avoid these things Adapt safe driving technologies (Automatic brakes)	Graham - What a human would need to look like to survive car crashes. Lives lost to date counter: 2020 vs 2021	Towards zero - no fatalities on the road	Live counters of losses (+ comparison to last year's rates) Makes it clear humans are not invincible Very fact-based Identifies penalties for breaking the laws Scare tactic - you will get caught Identifies some solutions/ guidance for how to be safer
Road Safety NSW https://towardszero.nsw.gov.au/	There are still fatalities on the roads. Any fatalities are unacceptable.	“Speed cameras save lives” Unified action from people, government, businesses, etc. to make roads safer	Avoid taking risks on the road - no excuses Expect to be caught if you are speeding - don't speed	Language to make it personal: “closer to home than you think”, it can happen to anyone, the road toll “isn't just a number, it's a people”	Towards zero - no fatalities on the road	Directly personal - attempts to put a meaning behind the statistics
National Tobacco Campaign https://www.health.gov.au/initiatives-and-programs/national-tobacco-campaign	Smoking is the leading cause of preventable deaths in AUS and leads to extensive costs within the community	Campaigns on TV, social media, digital apps, other media wherever possible Campaigns have proven to be effective since they started	Points to resources and contacts to do more, but there is not much else for someone looking to take action.	None	Discourage smoking, support people trying to quit, increase tobacco control policies, and change community attitudes towards smoking	Summarizes what has been done to distribute, but does not provide much information on the content of the campaign
“Quit” Australian Smoking Campaign https://www.quit.org.au/	Smoking causes severe health risks: “sticky blood” leads to heart failure	Quit smoking!	Individualized support based on where they are in the process of quitting (thinking about quitting, trying to stay on track, starting again, helping others to quit) The phone number for the helpline (on the front page 5 times)	“Smoking causes sticky blood” is the main attention grabber Identifies any potential situations that smokers or ex-smokers could be in.	Assist people with quitting smoking and prevent people from starting again	Full of actionable information for people considering quitting Identifies potential situations and gives immediate feedback Provides multiple resources Lots of ways to take action

						Puts the negative effects of smoking into even worse light
Smoke Alarms Victoria https://www.frv.vic.gov.au/smoke-alarms	Smoke alarms are important, however, they are not always well maintained or checked. This puts occupants at significant risk in the event of a fire.	Proper maintenance of sprinklers is key	Test, clean, and replace detectors when needed Identify which sprinklers you have, understand the requirements and recommended practices with them	Includes hard facts about fires without detectors: “dangerous within minutes” “Likely to damage or destroy property” “More likely to cause serious injury or death”	Increase installation of detectors in homes (beyond minimum requirements) Inform the public about the best practices to consider with smoke detectors	Directly states legal requirements and how to maintain the alarms Outlines actions for maintenance Alternative options if they are necessary (Deaf or elderly) Explains responsibility of landlords vs tenants Brochure on optimal placement, best maintenance practices, etc.
Smoke Alarms NSW https://www.fire.nsw.gov.au/page.php?id=80	People are not maintaining smoke detectors	“The risk of a fatality in a home fire is halved if there is a working smoke alarm in a residential dwelling.”	Make sure you are following the laws in place Maintain your smoke detector (by following the guides given) Install detectors as recommended to have more safety	Leads with the benefit of smoke alarms Warning that smoke alarms do not last forever and must be maintained. The law was put in place over 10 years ago, but detectors do not last 10 years - general scare tactic when paired with the risks of not having them	Increase installation of detectors in homes (beyond minimum requirements) Inform the public about the best practices to consider with smoke detectors	
Workplace Safety Victoria https://www.worksafe.vic.gov.au/ohs-essentials-program	Fatalities and serious injuries and illnesses in NSW were the highest in Australia from 2011 to 2016.	Constant vigilance by the state legislation of NSW to keep businesses and workplaces accountable for the safety of their employees	Make sure to follow the laws for workplace safety Train employees on proper workplace safety to keep them aware	Super straightforward roadmap of goals, strategies, and priorities laid out for their six-year plan The website provides a ton of information on how to contact SafeWork NSW in the event of a violation	Make workplaces safer and promote a safe workplace culture in NSW Make sure employers keep the employees as safe as possible	
Workplace Safety NSW https://www.safework.nsw.gov.au/	Hazards and risks in Victoria’s small businesses are dangerous	Keeping safety standards high in small businesses protects employees	Request an OHS consultant to come in and identify potential safety concerns and violations	OHS consultants are completely confidential and will not report their clients Tailored specifically to small businesses that might not consider safety as high a priority	Make small businesses safer places to work in Victoria Give small business owners a way to keep their workspaces safe without having to spend a lot of money	OHS is confidential The consultants do not work for WorkSafe

Appendix C: Methods Interview Questions and Consent Scripts

This Appendix is the interview questions we developed and asked during our interviews as well as the survey.

HFSC US Members Consent Script and Interview Questions:

Verbal Consent to Participate in Interview:

You have been asked to participate in an interview sponsored by the Home Fire Sprinkler Coalition in Australia in partnership with Worcester Polytechnic Institute. The purpose of the interview is to understand the approaches and evaluation methods used to develop the Home Fire Sprinkler Coalition campaigns in the United States. We would like to better identify what can be applied to build an effective home fire sprinkler campaign in Australia. You can choose whether or not to participate in the interview and stop at any time. With your verbal consent, we will be recording this interview for us to review later if needed. Please give verbal consent stating that you agree to participate fully under the conditions stated above.

Figure 28: Consent Script for HFSC US Campaign Organizers

1. How are you doing today?
2. Can you tell us a bit about what your company does with HFSC US and the partnership your company has with them?
3. Why are you focused on home fire safety in a lot of your campaigns?
 1. What got you into the field 30 years ago?
4. How long have you been working with HFSC US?
5. Can you elaborate on the local fire department's role in educating the public on home fire safety?
 1. Is it important to make the public aware of not only the civilian lives saved by fire sprinklers but also firefighters when creating advertisements?
 1. Is this effective?

An important thing we have seen on the HFSC US website is the home fire timeline, can you speak to its development and its effectiveness with education on home fire safety?

How were the home fire sprinkler education props used?

- . Public education tool for educators in fire departments
- a. Were they given out or were they used in demonstrations?

We saw the twelve holiday safety tips infographic on your website, do seasonal advertisements have a better effect than regular advertisements?

What other community-focused campaigns/promotions have HFSC undertaken that your company has worked on?

What are the most effective types of campaigns you have seen the HFSC carry out in your time working with the organization?

Can you elaborate on some of these campaigns?

What would you have done differently in a campaign to have it be more effective?

Are there any obstacles that you have faced working on?

- . If so, what were they and how did you face them?

What were the key factors for a campaign to be successful?

Is there any specific approach you take to creating more effective or impactful visuals for campaign materials?

What kind of research is done to reach a specific target audience?

Do you contribute to the content that is included on these websites (specifically HFSC US/Canada)?

- . If so, what do you feel are the most important elements to include?

How has social media affected how public safety campaigns are carried out?

- . How do you measure effectiveness in a social media campaign?

In your opinion, what makes campaigns effective?

Have you or the HFSC US evaluated the effectiveness of previous campaigns?

Did you get feedback from the target audience?

Is there any way we can have access to information relating to your evaluation of previous campaigns?

What kinds of pitfalls should be avoided when developing and planning a campaign?

Is there anything else you would like to add or any advice you can give us as we plan out campaign materials for HFSC Australia?

Figure 29: Interview Questions for Peg Paul

1. How are you doing today?
 2. What got you interested in the field of fire protection?
 3. Can you elaborate on the local fire department's role in educating the public on home fire safety?
 1. Is it important to make the public aware of not only the civilian lives saved by fire sprinklers but also firefighters when creating advertisements?
 1. Is this effective?
- Does the HFSC of NFPA have information on risk perception of fires?
- . How does HFSC evaluate risk perception of the target audience?
 - a. In your opinion, when does risk perception play a role in fire safety?
 - b. Does the HFSC collect data on risk perception, campaign effectiveness, and community retention?
 1. If so can we have access to that information to help us develop our campaign?
- An important thing we have seen on the HFSC US website is the home fire timeline, can you speak to its development and its effectiveness with education on home fire safety?
- Can you speak to the NFPA podcast, the Survivors?
- . Did this podcast have an effect?
- How has home fire sprinkler week evolved because of the pandemic?
- How effective was the faces of fire campaign?
- How were the home fire sprinkler education props used?
- . Public education tool for educators in fire departments
 - a. Were they given out or were they used in demonstrations?
- What other community-focused campaigns/promotions have HFSC undertaken?
- What are the most effective types of campaigns you have seen the HFSC carry out?
- . Can you elaborate on some of these campaigns?
- What would you have done differently in a campaign to have it be more effective?
- Have you encountered any obstacles while working on fire safety campaigns?
- . If so, what were they and how did you face them?
- What were the key factors for a campaign to be successful?
- What kind of research is done to reach a specific target audience?
- How has social media affected how public safety campaigns are carried out?
- . How do you measure effectiveness in a social media campaign?
- In your opinion, what makes campaigns effective?
- Have you or the HFSC US evaluated the effectiveness of previous campaigns?
- Did you get feedback from the target audience?
- Is there any way we can have access to information relating to your evaluation of previous campaigns?
- What kinds of pitfalls should be avoided when developing and planning a campaign?
- Kitchen fire safety is always a big theme in fire protection campaigns, are there any key messages that seem to have a high impact on that focus area?
- What are the best ways to push the messages of how cost-effective sprinklers can be to both developers and potential buyers?
- Is there anything else you would like to add or any advice you can give us as we plan out campaign materials for HFSC Australia?

Figure 30: Interview Questions for Lorraine Carli

1. How are you doing today?
 2. Can you tell us a bit about what you do with HFSC US?
 3. How long have you been working with HFSC US?
 4. Can you elaborate on the local fire department's role in educating the public on home fire safety?
 1. Is it important to make the public aware of not only the civilian lives saved by fire sprinklers but also firefighters when creating advertisements?
 1. Is this effective?
- An important thing we have seen on the HFSC US website is the home fire timeline, can you speak to its usefulness for educating the public on home fire safety?
- Did you use the home fire sprinkler education props?
- . Public education tool for educators in fire departments
- How effective have HFSC US campaigns been in your community?
- What are the most effective types of campaigns you have seen the HFSC carry out in your time working with the organization?
- Can you elaborate on some of these campaigns?
- Are there any obstacles that you have faced working on educating the public?
- . If so, what were they and how did you face them?
- What do you think the key factors are for a campaign to be successful?
- What is the best way to speak to consumers about fire sprinklers?
- Do you use social media to educate the people in your community and how has educating the public changed with the rise of social media?
- In your opinion, what makes campaigns effective?
- Can you speak to the effects developer incentives have on large-scale developers?
- . Do they incline the developers to install sprinklers?
- How do you educate developers on developer incentives?
- Is there anything else you would like to add or any advice you can give us as we plan out campaign materials for HFSC Australia?

Figure 31: Interview Questions for Charlie Johnson

Fire and Rescue NSW Consent Script and Interview Questions:

Verbal Consent to Participate in Interview:

You have been asked to participate in an interview sponsored by the Home Fire Sprinkler Coalition in Australia in partnership with Worcester Polytechnic Institute. The purpose of the interview is to understand the approaches and evaluation methods used to develop public safety campaigns. We would like to better identify what can be applied to build an effective home fire sprinkler campaign in Australia. You can choose whether or not to participate in the interview and stop at any time. With your verbal consent, we will be recording this interview for us to review later if needed. Please give verbal consent stating that you agree to participate fully under the conditions stated above.

Figure 32: Consent Script for Public Safety Campaign Organizers

1. How are you doing today?
 2. What do you do in your role in FRNSW?
 3. How long have you been working with the organization?
 4. Could you give us an overview of the campaigns that you have worked on?
 1. Has FRNSW done campaigns on fire sprinklers as well?
 2. Which ones have you worked on?
 3. Which campaigns have been most effective?
 4. What are the key factors for a campaign to be successful?
 5. Were there any obstacles that you have encountered?
 1. If so, what were they and how did you address them?
 - f. What pre work had to be done for a campaign you worked on?

Has Fire and Rescue NSW evaluated the effectiveness of its campaigns?
Does Fire and Rescue NSW have feedback from the community about its campaigns?
What pitfalls should we avoid when creating a campaign?
Does Fire and Rescue NSW have information on risk perception of fires?
. How does Fire and Rescue NSW evaluate risk perception?
 - a. In your opinion, when does risk perception play a role in fire safety?
 - b. Does Fire and Rescue NSW collect data on risk perception, campaign effectiveness, and community retention?
 1. If so can we have access to that information to help us develop our campaign?
- What sort of attention-grabbing elements do you include in your campaigns?
What approach do you take to push people to take action?
Is there anything else you would like to add or any other advice you can give us?

Figure 33: Fire and Rescue NSW Interview Question

Current and Future Homeowners Consent Script and Survey Questions:

Verbal Consent to Participate in Survey:

You have been asked to participate in a survey sponsored by the Home Fire Sprinkler Coalition in Australia in partnership with Worcester Polytechnic Institute. The purpose of the survey is to understand homeowner's and prospective homeowner's opinions and perspective on home fire sprinklers and fire risks in homes. The goal is to better identify what can be applied to build an effective home fire sprinkler campaign in Australia. You can choose whether or not to participate in this survey and stop at any time. Please check the box below to confirm that we have your consent to participate in this survey.

Figure 34: Consent Script for Current and Future Homeowners

The survey was broken up into subsections and each one was labeled. The last question in each subsection said which section they were sent to next.

Section 2 Initial Information

1. Please select your age range:
 1. 18-25
 2. 26-35
 3. 36-45
 4. 45-55
 5. 55-64
 6. 65+
 7. Prefer not to say
2. Do you currently own a home
 1. Yes, I currently own a home.
 1. Go to section 3
 - b. No, I do not currently own a home
 1. Go to section 6

Figure 35: Initial Information Section of Survey

Section 3 Current Homeowners

1. Are you looking to buy a home in the next 3 years?
 1. Yes, I am looking to buy a home.
 1. Go to Section 4
 - b. No, I am not looking to buy a home.
 1. Go to Section 5

Figure 36: Current Homeowners Subsection

Section 4 Current Homeowners (looking)

1. What type of neighborhood do you currently live in?
 1. Suburb
 2. City
 3. Rural
 4. Other
2. What type of neighborhood are you looking to live in?
 1. Suburb
 2. City
 3. Rural
 4. Other
3. What type of dwelling are you looking to live in?
4. When buying a home, how high of a priority are safety elements?
 1. Not a priority
 2. Low priority
 3. Somewhat of a priority
 4. High Priority
 5. Top Priority
5. On a scale of 1 to 10, how large of a risk do you perceive home fires to be for you?
 1. 1- Not at all
 2. 10- Very large risk
6. Do you currently have home fire sprinklers in your home?
 1. Yes
 2. No
7. Do you think home fire sprinklers would provide significant protection in the event of a fire?
 1. Yes
 2. No
8. On a scale of 1 to 10 how effective do you think fire sprinklers are in containing a fire to the room it started in?
 1. 1- Less than % 10 effective
 2. 10- %90-%100 effective
9. How expensive do you think a home fire sprinkler system is for a single family home?
10. What price would the installation of home fire sprinklers have to be for you to consider including in a newly built home?
11. What price would the installation of home fire sprinklers have to be for you to consider retrofitting to a current home?
12. If given the option, would you install a home fire sprinkler system in your home?
 1. Yes
 2. No
 3. Maybe
13. If you would consider installing home fire sprinklers what is the main driver of the decision?
14. If you would not install home fire sprinklers what are the reasons for that decision?
15. Are you looking to have home fire sprinklers in your new home?
 1. Yes
 2. No
16. Were you ever presented with an option to adopt a sprinkler system during the home purchasing/ building process?
 1. Yes
 2. No
17. In the event of a fire after a smoke alarm goes off, what do you think happens?
 1. All sprinklers activate because of the smoke alarm's activation.
 2. All sprinklers activate because of the heat of the fire, not the smoke alarm activation.
 3. Sprinklers close to the fire activate because of the smoke alarm's activation.
 4. Sprinklers close to the fire activate because of the heat of the fire, not the smoke alarm activation.
18. When a sprinkler activates, do you think that the damage caused by water will be:
 1. Greater than the fire damages caused if the sprinklers did not activate.
 2. Equivalent to the fire damages caused if the sprinklers did not activate.
 3. Less than the fire damages caused if the sprinklers did not activate.
19. Were you aware that home fire sprinklers can be unobtrusive and hidden behind covers that match your room colour?
 1. Yes
 2. No
20. Were you aware that home fire sprinklers contribute to sustainability and resilience by minimising the fire spread resulting in less waste and rebuilding?
 1. Yes
 2. No
21. After Section 4, Go to Section 8

Figure 37: Current Homeowners (Looking) Subsection

Section 5 Current Homeowners (not looking)

1. What type of neighborhood do you currently live in?
 1. Suburb
 2. City
 3. Rural
 4. Other
2. What type of dwelling do you currently live in?
3. When buying a home, how high of a priority are safety elements?
 1. Not a priority
 2. Low priority
 3. Somewhat of a priority
 4. High Priority
 5. Top Priority
4. On a scale of 1 to 10, how large of a risk do you perceive home fires to be for you?
 1. 1- Not at all
 2. 10- Very large risk
5. Do you currently have home fire sprinklers in your home?
 1. Yes
 2. No
6. Do you think home fire sprinklers would provide significant protection in the event of a fire?
 1. Yes
 2. No
7. On a scale of 1 to 10 how effective do you think fire sprinklers are in containing a fire to the room it started in?
 1. 1- Less than %10 effective
 2. 10- %90-%100 effective
8. How expensive do you think a home fire sprinkler system is for a single-family home?
9. What price would the installation of home fire sprinklers have to be for you to consider including in a newly built home?
10. What price would the installation of home fire sprinklers have to be for you to consider retrofitting to a current home?
11. If given the option, would you install a home fire sprinkler system in your home?
 1. Yes
 2. No
 3. Maybe
12. If you would consider installing home fire sprinklers what is the main driver of the decision?
13. If you would not install home fire sprinklers what are the reasons for that decision?
14. Were you ever presented with an option to adopt a sprinkler system during the home purchasing/ building process?
 1. Yes
 2. No
15. In the event of a fire after a smoke alarm goes off, what do you think happens?
 1. All sprinklers activate because of the smoke alarm's activation.
 2. All sprinklers activate because of the heat of the fire, not the smoke alarm activation.
 3. Sprinklers close to the fire activate because of the smoke alarm's activation.
 4. Sprinklers close to the fire activate because of the heat of the fire, not the smoke alarm activation.
16. When a sprinkler activates, do you think that the damage caused by water will be:
 1. Greater than the fire damages caused if the sprinklers did not activate.
 2. Equivalent to the fire damages caused if the sprinklers did not activate.
 3. Less than the fire damages caused if the sprinklers did not activate.
17. Were you aware that home fire sprinklers can be unobtrusive and hidden behind covers that match your room colour?
 1. Yes
 2. No
18. Were you aware that home fire sprinklers contribute to sustainability and resiliency by minimising the fire spread resulting in less waste and rebuilding?
 1. Yes
 2. no
19. After Section 5, Go to Section 8

Figure 38: Current Homeowners (Not Looking)

Section 6 Prospective Homeowners

- a. Are you looking to buy a home in the next three years?
 1. Yes, I am looking to buy a home.
 1. Go to Section 7
 2. No, I am not looking to buy a home.
 1. Submit form

Figure 39: Prospective Homeowners

Section 7 Prospective Homeowners (looking)

1. What type of neighborhood do you want to live in?
 1. Suburb
 2. City
 3. Rural
 4. Other
2. What type of dwelling do you want to live in?
3. When buying a home, how high of a priority are safety elements?
 1. Not a priority
 2. Low priority
 3. Somewhat of a priority
 4. High Priority
 5. Top Priority
4. On a scale of 1 to 10, how large of a risk do you perceive home fires to be for you?
 1. 1- Not at all
 2. 10- Very large risk
5. Do you think home fire sprinklers would provide significant protection in the event of a fire?
 1. Yes
 2. No
6. On a scale of 1 to 10 how effective do you think fire sprinklers are in containing a fire to the room it started in?
 1. 1- Less than %10 effective
 2. 10- %90-%100 effective
7. How expensive do you think a home fire sprinkler system is for a single family home?
8. What price would the installation of home fire sprinklers have to be for you to consider including in a newly built home?
9. What price would the installation of home fire sprinklers have to be for you to consider retrofitting to a current home?
10. If given the option, would you install a home fire sprinkler system in your home?
 1. Yes
 2. No
 3. Maybe
11. If you would consider installing home fire sprinklers what is the main driver of the decision?
12. If you would not install home fire sprinklers what are the reasons for that decision?
13. Were you ever presented with an option to adopt a sprinkler system during the home purchasing/ building process?
 1. Yes
 2. No
14. Do you want home fire sprinklers in your new home?
 1. Yes
 2. No
15. In the event of a fire after a smoke alarm goes off, what do you think happens?
 1. All sprinklers activate because of the smoke alarm's activation.
 2. All sprinklers activate because of the heat of the fire, not the smoke alarm activation.
 3. Sprinklers close to the fire activate because of the smoke alarm's activation.
 4. Sprinklers close to the fire activate because of the heat of the fire, not the smoke alarm activation.
16. When a sprinkler activates, do you think that the damage caused by water will be:
 1. Greater than the fire damages caused if the sprinklers did not activate.
 2. Equivalent to the fire damages caused if the sprinklers did not activate.
 3. Less than the fire damages caused if the sprinklers did not activate.
17. Were you aware that home fire sprinklers can be unobtrusive and hidden behind covers that match your room colour?
 1. Yes
 2. No
18. Were you aware that home fire sprinklers contribute to sustainability and resiliency by minimising the fire spread resulting in less waste and rebuilding
19. After Section 7, Go to Section 8

Figure 40: Prospective Homeowners (Looking)

Section 8 Interview Follow-up

1. Would you be interested in participating in a follow-up interview?
 1. Yes
 2. No
2. Please provide your contact information if you answered yes to the previous question.

Figure 41: Interview Follow-up Subsection

Appendix D: Findings Summary

This Appendix describes our findings from each interview and the survey.

Campaign Organization	HFSC US/Canada Peg Paul	FRNSW	North Carolina HFSC US Charlie Johnson	HFSC US/Canada Lorraine Carli	Findings
Duration of Campaign	Over 30 years		32 years as a fire marshal State capture HFSC for 6 years	25 Years	
Barriers	<p>Sprinklers are not required due to local amendments in codes</p> <p>Builders want to minimize cost</p> <p>Individuals have some misconceptions about sprinkler systems</p>	<p>Safety visits</p> <p>Get info about the home and occupants</p> <p>Survey with initial thoughts, inform, and follow up with other info</p> <p>2015 study on risk perception</p> <p>Misunderstanding of how smoke alarms are effective</p> <p>People's perceptions of smoke alarms - misunderstanding of what a working smoke alarm is</p> <p>50% have a working smoke alarm - other 50% is unknown or not working</p> <p>Other 50% is unknown to us</p> <p>Potentially pushback from even firefighters</p>	<p>Providing better messaging to the fire departments</p> <p>Need to make sure that firefighters fully understand the design of the sprinklers system</p> <p>Belief that there's a lot of water damages</p>	<p>People still believe common fire/sprinkler myths</p> <p>Costs</p> <p>- The biggest argument against sprinklers</p> <p>Appearance</p> <p>Function</p> <p>Builders Lobby against sprinkler legislation</p>	<p>- There are misconceptions about how fire safety systems work</p> <p>- Held by both homeowners and some fire fighters</p> <p>- Few common beliefs/potential targets</p> <p>- The costs are too high</p> <p>- They are obtrusive (don't know they can be hidden)</p> <p>- Water damages are greater than the fire damages</p>
Target Audience	<p>Current and future homeowners</p> <p>Understand the perspectives of who is buying homes (Millennials currently)</p> <p>Home Builders</p>	<p>Community members</p> <p>Increased focus on higher-risk communities (elderly/disabled)</p> <p>Firefighters</p>	<p>Better educate the fire services</p> <p>Educating the plumbers</p> <p>Relator training program</p>	<p>Homeowners</p> <p>Home Developers</p> <p>Home Builders</p> <p>Fire Department</p>	<p>- Two main targets in the community</p> <p>- People who are buying the most homes</p> <p>- People who are at a higher risk from fires</p> <p>- Developers are the best target to get sprinklers installed</p> <p>- AHJ may be easier to approach first</p>

	Community developers				- Fire departments must be educated to push the messages
Family/Community Oriented	<p>Collaboration with local fire departments</p> <p>Community side-by-side burns</p> <p>Providing other educational materials to use (small home kits)</p> <p>Using fire events as a learning experience for the community</p>	<p>Case study with emotional context</p> <p>One example: burn victim</p> <p>Lost sister in fire, suffered severe brain damage from lack of oxygen</p> <p>Using fire dept to connect with community from trusted source</p>	<p>Mainly focuses on educating fire departments to in turn educate the community</p> <p>Using fire dept to connect with community from trusted source</p>	Distributing campaign materials to the local departments to release as they see fit	<p>- Using fire department to present the message (generally trusted by the community)</p> <p>- Use examples of home fires in the community to push the safety messages more</p> <p>- Case studies used to show how a fire can affect the whole community</p>
Instructions/Actions	<p>Understand how sprinklers work</p> <p>They do not all go off when one goes off</p>	<p>Be aware of the fire risks in homes</p> <p>Install smoke alarms all around your house</p> <p>Check your smoke alarms frequently</p> <p>Replace when needed</p>	<p>Distribute residential fires sprinkler educational props to the fire departments</p> <p>List of legislative representatives</p>	Understand how AHJs and Developers can use incentives	<p>- Understand home fire risks</p> <p>- Understand the benefits of fire safety systems</p> <p>- Learn about the facts surrounding common misconceptions</p> <p>- Firefighters must also be educated on these things to push the message to the community</p>
Channels	<p>International builder show for 17 years</p> <p>Other shows/conventions</p> <p>Virtual reality/ 360 videos</p> <p>Websites</p> <p>Social Media</p>	<p>Website</p> <p>Firefighters spreading the word (delivery in uniform)</p> <p>Physical campaign materials (wooden spatula was effective)</p>	<p>Use fire departments to spread information to the homeowners</p> <p>Due to covid, things have moved to social media</p> <p>In-person live burns are forced to be virtual</p> <p>Lunch and learn in November focused on incentives available to builders. Three counties where there was a lot of new construction and introduced incentives</p> <p>Another lunch and learn May 11th (Lorraine Carli, Peg Paul, Gary Key, water purveyors, and over 200 inspectors) to push incentives</p>	<p>Fire services are always a great option to spread the word</p> <p>Better connection to local environment</p> <p>Attention grabbing element with case studies (faces of fire and survivors podcast)</p>	<p>- Website - main target is homeowners</p> <p>- Can expand to provide information and resources to developers, AHJs, and fire services</p> <p>- Social Media - Targeted at homeowners</p> <p>- Fire Fighters - Provide digital and physical materials to distribute and present to the community</p> <p>- Youtube ads/content - can be promoted - engaging enough for people to continue watching</p>
Clear Message	Sprinklers are effective, only the ones	“Looking when cooking”	Fire sprinkler timeline proves to be effective	The amount of time you have to escape your home is decreasing	- Sprinklers are effective at reducing the risks of home fires

	<p>that need to activate will activate</p> <p>Sprinklers can be very cost effective, especially with incentives</p>	<p>Most fires start in the kitchen, especially when occupants are not paying attentions</p> <p>If a fire happened in your neighborhood, it is more likely that one could happen to you</p> <p>Smoke alarms and an escape plan save lives</p>	<p>Sprinkler systems necessary for lightweight construction</p> <p>Messages have been developed for each day of sprinkler week from HFSC US and are being distributed to different fire departments</p> <p>Rely on HFSC to provide messaging</p>	<p>If you have a fire in your home today you are more likely to die than if you were in 1980</p> <p>Home fire timeline</p> <p>Drives home the fact that there is very little time to escape a burning building</p> <p>Very effective resources, especially since it went from a static image to an animated image</p> <p>Been used extensively in public education activities and events</p> <p>Case studies - fires affect more than just one home, they impact the whole community</p> <p>Builders and developers think about the business</p> <p>Strategy to put money in their pockets</p> <p>Fire service and AHJs had to become salesperson as well as an educator</p> <p>Come to the table with something that work for the developers</p> <p>AHJs did not know they could give incentives, developers did not know they could get them, but they want them</p>	<p>- Only the ones that need to activate will activate (explain how they work)</p> <p>- Sprinklers can be cost effective, especially with incentives</p> <p>- New homes can still burn (sometimes even faster than before) - Necessary for newer/lighter construction</p> <p>- Push home fire timeline - there is not a lot of time to escape a burning building</p> <p>- Introduce case studies, explain that fires can affect communities</p> <p>- Incentives for developers cut costs significantly and can give more opportunities for building homes</p>
Assessment	<p>Website analytics</p> <p>Social media responses</p> <p>YouTube analytics (watch time)</p>	<p>Three different time frames of assessment</p> <p>Short term goals - What do people recall immediately?</p> <p>Long term goals - What do people recall long term? Is action being taken?</p>	<p>Because of covid there's no guarantee that when people fill out a survey they will follow through with what they said</p> <p>Did one lunch and learn to teach effectiveness of sprinklers and provide incentives</p>	<p>Analyze overall trends for home fire sprinklers - are more homes sprinklered now?</p> <p>Look for engagement on the website and social media</p>	

	Direct contact from viewers of the campaign	Long term effects - Based on data and trends Survey people before and after they are exposed to the campaign materials in order to understand their effects	Was successful so another one is planned for May 11th		
Notes		<p>Planning and understanding target audience is top priority</p> <p>Incident data has been collected</p> <p>Understand impacts on the target audience and risks involved</p> <p>Present messages with a mix of techniques</p> <p>Shock, positive, non-impact</p> <p>Critical review of the campaigns by other bodies used during preparation stages</p> <p>Pre-testing of the campaign</p>	<p>HFSC providing fire departments with resources, materials, and messaged to spread</p> <p>The way homes are built now is different from 25 years ago. Lightweight construction is a bigger fire risk.</p> <p>Studie data were done with millennials</p> <p>California - Jose Colin campaigns related to living with sprinklers</p> <p>The State of Washington. New legislative changes requiring townhomes to sprinkler new construction - Todd Short</p> <p>Peg Paul has a list of state coalition contacts</p>	<p>Saving lives will always come first</p> <p>Built for Life fire Departments</p> <p>Increased interest in fire sprinklers</p> <p>A lot of work through fire service media</p> <p>Email campaigns</p> <p>Magazines</p> <p>Website</p> <p>Other easy to use resources</p> <p>Focus is moving away from legislation, as it is a losing battle</p>	

Appendix E: Campaign Materials

This Appendix is filled with our deliverables and how they can be carried out by HFSC Australia.

Twitter Campaign

We recommend creating a Twitter account (@HFSC-AUS or something similar) to post weekly or more frequent tweets about home fire safety. We have a list of potential tweets for any day of the year, as well as seasonal tweets to have a higher impact. Infographics, videos, and other materials can be included in these tweets to expose more people to their messages. There is also the option to promote these through twitter ads. The messaging is focused entirely on current and future homeowners. Hopefully this gets the main points in their heads, so they will more heavily consider home fire sprinklers in the future.

1. This is the official Twitter account for Home Fire Sprinkler Coalition Australia. Check out our website here! <https://homefiresprinklers.org.au/>
2. Home fires can become dangerous in as little as two minutes. Our Home Fire Timeline shows you what can happen when a fire starts in a home. [insert timeline]
3. Sprinklers save lives! They will activate in time to stop the spread of the fire, prevent flashover, and protect occupants within the home. [insert NFPA data]
4. Sprinklers are activated by the hot gasses produced by the fire. The liquid in the small glass vessel will expand from the heat and break the glass, causing the water to pour out and extinguish the fire.
5. Sprinklers are effective at minimizing the risks of residential fires. There is a X% drop in injuries and X% drop in fatalities in the event of a fire in a sprinklered home compared to a fire in an unsprinklered home.
6. Only the sprinklers near the fire will activate. If the sprinklers activate, it means that they were likely needed to control the fire. All sprinklers do not go off at the same time!
7. Sprinklers can be hidden with wall or ceiling plates, which would be released in the event of a fire. You can paint over these covers so they blend in with your house and you will barely notice them!
8. With the right incentives, sprinklers can be cost effective for both the home builder and buyer while providing much more fire safety than any other residential fire protection systems.
9. New homes DO burn! Smaller and lighter construction materials and synthetic furniture create a larger fire risk in your new home. Sprinklers can decrease the risks of a fire growing out of control in any home. [insert new home fire or synthetic furniture burn]
10. When a home fire starts, it becomes dangerous almost immediately. Even with functioning smoke alarms, there's almost never a good chance to control the fire. The best plan is to get everyone out and stay out. Sprinklers give you extra time to ensure you and your loved ones can get out safely.
11. Poll: How long do you think it will take for the fire to grow out of control after it starts?
 - a) Less than 2 minutes
 - b) 2-4 minutes
 - c) 4-6 minutes
 - d) More than 6 minutesAnswer: Less than 3 minutes! [home fire timeline or other fire test video]
12. Do you have any questions about fire sprinklers? Send them in the replies to this and we will respond!
13. Older adults are at an increased risk in the event of a fire. Sprinklers can reduce that risk significantly.

- 14. Sprinklers are much more efficient in terms of water usage. One sprinkler uses about 95 Liters per minute, while a fire hose will use about 950 Liters. (HFSC US has a graphic in gallons)
- 15. While many think that there is a greater risk of fire in other buildings, such as hotels, your own home is likely at a higher risk for a deadly fire. The difference is that hotels are required to have sprinklers. Your home is not, but the option is there if you know to ask for them!
- 16. Young children may require assistance to escape a home fire. Sprinklers will make sure you have the time you need to ensure everyone can get out safely.

<https://www.nfpa.org/Public-Education/Staying-safe/Safety-equipment/Home-fire-sprinklers/Fire-Sprinkler-Initiative/Take-action/Free-downloads/How-sprinklers-work>

YouTube Ad Campaign

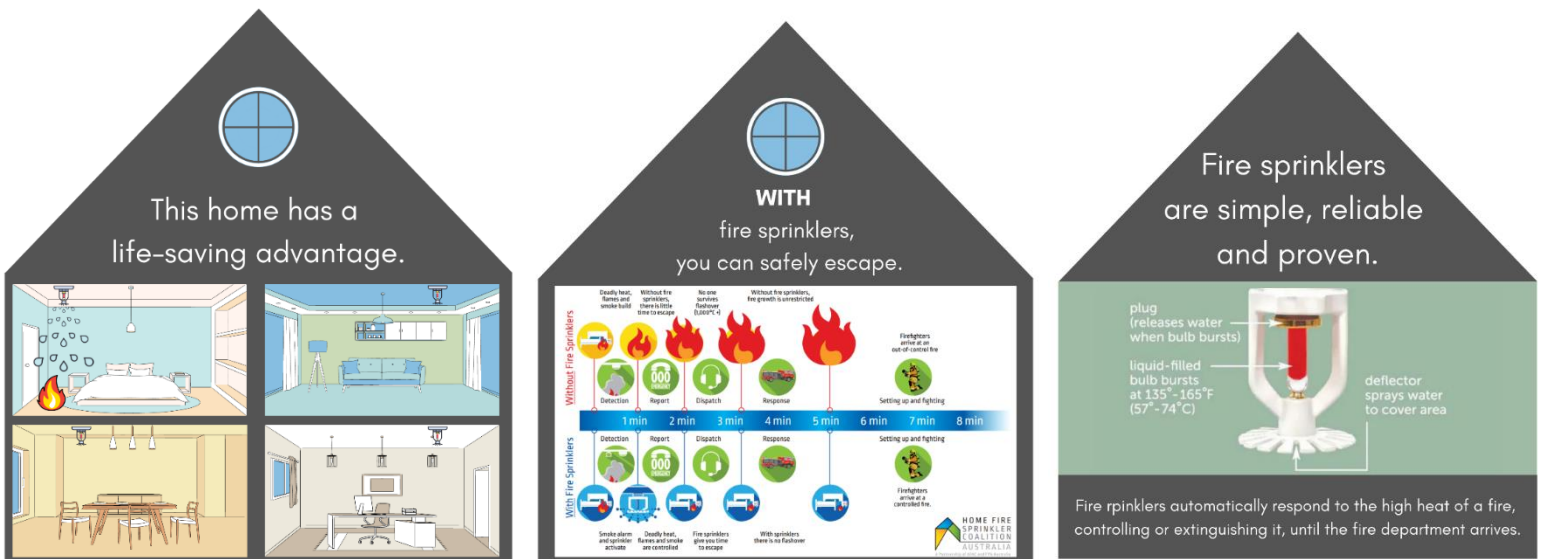
We created a video showing the capabilities of fire sprinklers and how they can save lives. It can be released on YouTube or any other video sharing platform.

Education Prop

The education prop shown in Figure 35 was designed by HFSC US to help fire services educate the public when there is a fire. We have designed new materials for the inside of the box to adapt the messages for the Australian context. Once these are designed, they can be printed, assembled, and sent out to local fire services. They can use these whenever they see fit to explain how fire sprinklers work and their benefits. Figure 36 includes our new designs for HFSC Australia.



Figure 42: HFSC US Home Fire Sprinkler Educational Prop



Is your home safe from fire?

- Early warning (working smoke alarms)
- Escape plan and practice
- Suppression (installed fire sprinklers).

Smoke alarms detect smoke and warn you. make sure your home has working smoke alarms:

- Install smoke alarms inside every bedroom, outside every sleeping area, and one er level of the home, including the basement
- Test your smoke alarms once a month.



Addressing sprinkler misconceptions.

Every new home should have a sprinkler system.

- All sprinklers do not go off at the same time.
- Unlikely sprinklers will activate accidentally.
- Sprinklers do not activate with smoke alarms.
- Sprinklers are cost-effective
- There are ways the hide the sprinkler heads.
- During a fire, the water damages from the sprinklers will be less than the fire damage if the sprinkler did not activate




Figure 43: Education Prop Graphics for Australian Campaign

Physical/Digital Campaign Materials

The HFSC US has created posters and brochures on their website that they have offered to the Australian HFSC. The main idea would be to “Australianise” these materials and distribute them to the fire departments. They can be sent digitally and printed by the departments or printed by the HFSC and supplied physically. The fire services can use them to present and hand out any important materials.