



# Fire Research Report

## Evaluating Effective Methods of Engaging School-Leavers in Adopting Safety Behaviours

May 2015

**Auckland UniServices Limited**

While young adults aged between 18 and 24 years make up a significant proportion of those involved in unsafe fire behaviour, research into this group is sparse. This project aimed to gain information from a range of groups (secondary school and university students, the New Zealand Fire Service, the New Zealand Police, the University of Otago Proctor and Deputy Proctor, the University of Otago Students' Association and Social Marketers) on the best ways to engage young adults in safe fire behaviour, to be used in the development of new safety campaigns targeted at this group. Surveys and focus groups were conducted.

Suggestions from young adults for ways to better engage young adults in safe fire behaviour included more and better education on fire safety, campaigns highlighting the negative consequences of fire, use of victims of fire in campaigns, campaigns specifically targeted at the young adult population, utilising TV advertisements and Facebook and an increased Fire Service presence on campus. The Dunedin professionals agreed that wider culture change is needed to change the unsafe fire behaviour of young adults and that any future campaigns need to be young adult specific and driven. Suggestions from social marketers included the need for any future campaigns to engage multiple mediums, including TV advertisements, social media, the use of targeted advertising and "cookies", and interactive campaigns and presentations, as well as the use of brands and businesses to help promote safe fire behaviour. Humour was also considered particularly useful in engaging young adults, as were incentives. The report made New Zealand wide recommendations as well as those specific to Dunedin.

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**Evaluating Effective Methods of Engaging School-Leavers in Adopting Safety Behaviours**

**Auckland UniServices  
Limited**

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# Executive Summary

## Purpose

Young adults aged between 18 and 24 years make up a significant proportion of those involved in unsafe fire behaviour. Despite this, research into this group is sparse. Fire safety education programmes tend to be aimed at primary school age children only and it is assumed that they take these skills with them when they leave home. This project aimed to gain information from a range of groups (secondary school and university students, the New Zealand Fire Service, the New Zealand Police, the University of Otago Proctor and Deputy Proctor, the University of Otago Students' Association and Social Marketers) on the best ways to engage young adults in safe fire behaviour, to be used in the development of new safety campaigns targeted at this group.

## Methodology

### Survey Sample

Survey data was collected for a secondary school sample and a university sample.

**Participants.** Participants in the secondary school survey sample included 182 young people aged between 16 and 19 years.

Participants in the university survey sample included 2,242 young people aged between 17 and 24 years.

**Materials.** The questionnaire used in the survey for both samples was designed and constructed by the research team and was completed by participants through the online programme SurveyMonkey. It consisted of 38 questions that were either multiple choice or short answer questions. The questionnaire was reviewed by both local and overseas experts and feedback from these, and stakeholders, was incorporated in the final version of the questionnaire.

Data analysis was conducted in Excel.

**Procedure.** The secondary schools were approached and asked to participate by members of the research team with whom they had an existing relationship. The research team were based at the University of Auckland and so sought permission from the

Psychology Head of Department to undertake the project. The University of Otago was chosen as an additional research site due to its known fire problem and permission to undertake the project was sought from the University of Otago Vice Chancellor. The recruitment process was similar for both the secondary school survey sample and the university survey sample. Participants in the secondary school survey sample were recruited through invitation by head teachers and online school forums. Participants in the university survey sample were recruited through invitation by head tutors in lectures and online university forums.

Data obtained from the surveys was exported from SurveyMonkey into Excel and was then coded by members of the research team. Data analysis was conducted in Excel where frequencies and percentages were calculated.

## **Focus Groups**

**Participants.** Focus group data was collected from three focus groups; one with young adults from the University of Auckland and two with Dunedin members of the New Zealand Fire Service, New Zealand Police, the University of Otago Proctor and Deputy Proctor and the University of Otago Students' Association Representatives.

**Materials.** Questions for the focus groups were designed and constructed by the research team. Focus Group questions were also reviewed by both local and overseas experts and feedback from these, and stakeholders, was incorporated in the final version of the questions used.

**Procedure.** Participants in the young adult focus group were invited to participate via a question at the end of the online survey. Those who were interested in participating were contacted at a later date via the email address provided in the survey and a date and location was organised.

Participants in the two focus groups with the Dunedin professionals (with Dunedin members of the New Zealand Fire Service, New Zealand Police, the University of Otago Proctor and Deputy Proctor and the University of Otago Students' Association Representatives) were invited to participate by Barry Gibson from the New Zealand Fire Service.

The focus group discussions were recorded and later transcribed by a member of the research team. Data obtained in the focus group discussions was analysed using Braun and Clark's (2006) step by step guide to thematic analysis: familiarising yourself with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes and producing the report.

## **Interviews with Social Marketers**

**Participants.** Participants in the social marketer interviews were six social marketers who had previous experience in the development of campaigns targeting young adults with the use of technology.

**Materials.** Questions for the social marketer interviews were designed and constructed by the research team. The questions for the social marketer interviews were also reviewed by both local and overseas experts and feedback from these, and stakeholders, was incorporated in the final version of the questions used.

**Procedure.** Specific social marketers were chosen either due to pre-existing connections with members of the research team or because they were known for their work on key campaigns targeting youth. The social marketer interviews were either conducted in person or over the phone where face-to-face contact was not possible.

Social marketer interviews were recorded and later transcribed by a member of the research team. Data obtained in the social marketer interviews was analysed using Braun and Clark's (2006) step by step guide to thematic analysis: familiarising yourself with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes and producing the report.

## **Results**

The most common suggestions for how to better engage young adults in safe fire behaviour, given by young adults in the survey data, were with more and better education on fire safety, campaigns that highlight the negative consequences of fire, as well as the use of actual victims of fire in fire safety campaigns. The most preferred methods of engagement were the use of TV advertisements and Facebook, and additionally, in the secondary school sample, presentations by the fire service, while the social media site Tumblr was consistently considered the least effective method. Those in the young adult focus group also suggested

that future campaigns be developed in a similar fashion to the drink-driving “Ghost Chips” campaign, utilising a similar style of humour. The group agreed that any future campaigns should be targeted specifically at the young adult population and believed Facebook could be a particularly useful medium. The participants all believed that the first step for the Fire Service should be an increased presence on campus, particularly in orientation weeks.

The focus groups with Dunedin professionals agreed that a wider culture change is needed to change the unsafe fire behaviour of young adults. They agreed that any future campaigns need to be young adult specific and driven. Possible strategies may include harsher punishments for those who are caught lighting fires, the targeting of high risk individuals and flats and possible installation of CTV cameras in high risk areas.

The social marketers interviewed agreed that any future campaigns will need to engage multiple mediums, including TV advertisements, social media (for example, Facebook, Instagram, YouTube and Snapchat), the use of targeted advertising and “cookies”, and interactive campaigns and presentations, as well as the use of other brands and businesses to help promote safe fire behaviour (with the specific example of Powershop in Dunedin). The use of print mediums however, was not promoted for use with this target group. The social marketers believed that for a campaign to be successful, research must be done to establish what the barriers preventing young people from engaging in the desired behaviour are and target campaigns to match that. Humour was considered to be particularly useful in engaging young adults, as were incentives.

## **Recommendations**

Recommendations the New Zealand Fire Service might like to consider, based on the research undertaken for this project, are:

### **Recommendations for the whole of New Zealand**

- 1. Development of a new, updated education programme, specifically for secondary school students.**
- 2. Increased presence of New Zealand Fire Service on University Campuses.**
- 3. Development of new TV campaigns focused on fire safety for young adults.**
- 4. Consider the feasibility of making legislative changes to make it mandatory for landlords to have working smoke alarms installed in all rental properties.**



- 5. Increase New Zealand Fire Service presence, as well as the fire safety message, on social media.**
  - a. Better use of the New Zealand Fire Service Facebook page.**
  - b. Develop short unbranded YouTube advertisements about fire safety that will attract viewers and promote key safety messages.**
  - c. Consider development of an online YouTube series on fire safety for young adults.**
  - d. Consider development of campaigns using additional social media mediums such as Instagram and Snapchat.**

### **Dunedin Specific Recommendations**

- 1. Development of an initiative with the University of Otago Students' Association where second year students educate first year students on fire safety while living in flats.**
- 2. Consider the possible installation of CTV cameras in known high risk areas for unsafe fire use and behaviour in a small defined area of the North Dunedin student residential centre.**
- 3. Monitoring of "high risk" individuals and flats by Campus Watch in Dunedin.**
- 4. Investigate feasibility of involving other brands and businesses in fire safety campaigns.**
- 5. Consider liaising with the judiciary and the Vice Chancellor to determine whether criminal charges could be laid for those students caught lighting fires.**

# Introduction

## The Global Fire Problem

In the United States in 2013, a fire department responded to a fire every 25 seconds (Karter, 2014). In the same year there were 1,240,000 fires reported in the United States causing 3,240 deaths, 15,925 injuries and \$11.5 billion in property damage. In Britain, in the year 2012-2013, Fire and Rescue Authorities attended 192,600 fires (Department for Communities and Local Government [DCLG], 2014), and in New Zealand, in the year 2012-2013 the New Zealand Fire Service responded to 70,907 emergency incidents, 66% of which were fire related (New Zealand Fire Service [NZFS], 2013). A considerable number of these fires occur in residential locations with approximately 80% of all fire-related fatalities in the United States (Karter, 2014), and three quarters of all fire-related fatalities in Britain, occurring in residences (DCLG, 2014). One residential fire reportedly occurs every 85 seconds in the United States (Karter, 2014).

Prevalence is likely even higher due to under-reporting of fire incidents. The United States Consumer Product Safety Commission conducted a telephone survey of residential fires, whether attended by a fire department or not (Greene & Andres, 2009). Participants were asked if they had experienced “any incident large or small ... in or around [their] home ... that resulted in unwanted flames or smoke, and could have caused damage to life or property if unchecked” (Greene & Andres, p. i). Data was obtained from 916 households that reported experiencing at least one fire during the 90 days preceding the survey. From the results of the survey it was estimated that 7.4 million fires occur each year in the United States; however, only 3.4% of these are attended to by fire departments. This leaves an estimated 7.1 million fire incidents that go unreported each year.

There has been some success in reducing fire incidence both nationally and internationally. New Zealand has seen a 30% reduction in the number of avoidable residential fire fatalities per 100,000 head of population since June 2003 (NZFS, 2013). Fire statistics from the DCLG (2014) in Britain note a reduction in fire fatalities of 39% since the year 2003-2004, and of 5% since the year 2012-2013. Furthermore, the United States experienced a 5% reduction in home structure fire deaths in 2011 when compared to 2010 (Ahrens, 2013). Even with these improvements, the rate of fire incidence remains alarmingly high. Despite

the large reduction in fire fatalities in New Zealand, fire injuries have only been reduced by 14% since June 2003 (NZFS, 2013).

Young adults are a particularly at-risk group for fire injury, specifically those in the 18-24 age group (Flynn, 2010; Peck, 2012). Within this group are school leavers, many of whom will be living away from home for the first time. There is concern about the likelihood of fires in and around their residences due to unsafe and uninformed fire behaviour. In New Zealand, this problem is given considerable media attention, particularly in Dunedin. In one night in February 2015, firefighters attended seven callouts in just over two and a half hours in the student quarter of Dunedin (McNeilly, 2015a). Numerous stories of armchairs and rubbish on porches, as well as wheelie bins being set alight have also appeared since the start of the 2015 university semester (McNeilly, 2015b). One particular instance involved a chair being set alight in the entrance of a student flat, destroying the front of the house while approximately 100 intoxicated students stood nearby (Hume, 2015). There are concerns that if the current pattern of fire setting in Dunedin continues it is only a matter of time before one ultimately leads to fatalities.

### **Young Adults and Fire**

This concern about young adults, specifically university students flatting for the first time and their involvement in unsafe fire behaviour, is not New Zealand specific and has also gained considerable attention internationally.

Despite widespread media publication of this issue, little research has investigated the 18-24 age group and methods of engaging them in fire-safe behaviour. One barrier to this is the focus on fire fatalities as a measure of unsafe fire involvement. The existing literature suggests that those under the age of 5 years, and those over the age of 50 years, are most at risk of fatal residential fires (Flynn, 2010; Harpur, Boyce & McConnell, 2013; Warda, Tenenbein & Moffatt, 1999). The 2003 to 2007 fire department experience survey of approximately 3,000 participants conducted by the National Fire Protection Association, found that children below the age of 5 years were 1.5 times more likely than the general public to die in a residential fire (Flynn, 2010). Those in the 50-64 year old age group are reportedly 1.4 times more likely to die in a residential fire than the general public and those over 75 are three times more likely than the general public (Ahrens, 2013; Flynn, 2010).

When the focus of research is non-fatal fire-related injuries however, it is young adults who are identified as most at risk (Flynn, 2010; Peck, 2012). Flynn (2010) reported that those aged 20-49 years were most at risk for non-fatal fire injury, and those aged 20-34 were 1.3 times more likely than the general public to be injured in a residential fire. This age group are also 50% more likely to be injured in a cooking incident than the general public (Flynn, 2010).

While research on this age group and their fire involvement is sparse, literature from the United States, in particular, examining university housing may provide valuable insight into this problem. University housing is taken to include college and university residential buildings, dormitories and sorority and fraternity houses.

According to data taken from the United States Fire Administration's National Fire Incident Reporting System between 2007 and 2009, an estimated 3,800 university housing fires occur each year and on average, 10 students die each year as a consequence of campus-related fires (United States Fire Administration [USFA]; 2011). The Center for Campus Fire Safety (2014) report that since 2000, 87 fatal fires have been recorded on college campuses killing 123 people. Approximately 85% of these fires occurred in off-campus student housing, killing 105 people.

The leading cause of university housing fires is cooking-related incidents. The United States Fire Administration (2011) reported "cooking" as the cause of 88% of campus fires and 83% of university housing fires. Cooking-related fires include the use of stoves, hot plates, microwaves and portable grills. The use of candles accounts for 25% of dorm room fires and intentional fire starting accounts for 2.2% of university housing fires. Other common causes include arson, smoking and overloaded extension cords and power outlets (USFA, 2011).

The above research provides clear evidence for claims that this age group are high risk for fire involvement. The literature suggests that young adults may be high risk due to their likely membership within other high risk groups. Risk factors include the likelihood they may be living in rented accommodation, which may also be crowded; they may have low socioeconomic status; may engage in drug and alcohol use, and smoking; and as "young people" may be prone to risky behaviour, including in relation to fire. Each of these risk factors will be discussed in turn below and will be concluded with a discussion on the specific high risk nature of young people as a group. It is important to note that as the

research on this age group and their fire involvement is limited, caution should be taken when considering the relationship between young adults and the various risk factors set out below.

**Status as renters.** University age students rarely own the residences they live in, often choosing to rent accommodation throughout their studies. Home-ownership type has consistently been found to be associated with risk of fire fatalities and injuries. Greene and Andres (2009) found that households in which fire incidents occurred were more likely to be occupied by renters than owners of the property. While owners had, on average, 24.1 unattended fires for every attended fire, renters had 55.1 unattended fires for every attended fire. Per 100 households, there were 6.19 fires in owner-occupied housing compared to 7.58 fires in rental housing. In their cross-sectional study, Duncanson, Woodward and Reid (2002) also found this association in a New Zealand sample with owner-occupied households being at a decreased risk of fire incidents when compared to renter-occupied households. Tenants of rental accommodation were found to have higher rates of both residential fire-related injuries and deaths than owner-occupiers. This difference may be due to differing levels of investment, and consequently commitment to fire safety, that home-owners and renters have in property. This explanation is supported by Greene and Andres' (2009) finding that renters were less likely than home-owners to have a fire extinguisher in their residence.

**Crowded housing.** University students who live in flats often live with multiple people. "Crowdedness" of housing has been found to be a contributing factor in dwelling fires (Jennings, 1999). Larger households typically have more fire incidents than do smaller ones (Greene and Andres, 2009). The findings of Greene and Andres (2009) suggest that as the number of people in a household increases, so too does the incidence of fire. The authors reported that while households with a single member had 3.2 fires per 100 households, two member households had 4.8 fires, three member households had 8.3 fires, four member households had 10.0 fires, and households with more than four members had 12.9 fires per 100 households.

**Lower socio-economic status.** University students are typically considered as being of a lower socio-economic status. They have limited earning potential as generally, they are unable to work full-time. Research suggests that areas characterised by greater socio-economic deprivation (characterised by features including older housing, lower incomes, lower levels of employment, greater prevalence of vacant houses) are at a greater risk for fire incidents occurring (Chhetri, Corcoran, Stimson & Inbakaran, 2010; Jennings, 2013; Shai,

2006). Mulvaney et al. (2008), using data on fire casualties in England between 1995 and 2004, found that both fatal and non-fatal fire injury rates, for all sources of ignition, increased with greater levels of socio-economic deprivation. Similarly, in a New Zealand study using census mesh blocks (the smallest geographic unit of approximately 90 people for which statistical data is collected, defined by Statistics New Zealand) and the New Zealand index of socio-economic deprivation, Duncanson et al. (2002) observed that fatal, unintentional, domestic fire incidents occurred disproportionately more in areas considered socio-economically deprived. The most socio-economically deprived areas represented 20% of the total mesh block in the study yet experienced almost 40% of all unintentional fatal fire incidents. In turn, the mesh block considered the least deprived experienced less than 10% of all unintentional fatal fire incidents.

Similar results have been found internationally. Chhetri et al. (2010) used spatially disaggregated fire incident data to examine the geography of fire incidents across a large urban area in the South East Queensland region. The authors found that building fire density was higher in areas with greater social deprivation, evidenced by larger numbers of low income families and greater numbers of people working in unskilled occupations with little training. Corcoran, Higgs, and Higginson (2011) compared intra-urban trends in fire incidence in Brisbane (Australia) and Cardiff (United Kingdom), specifically examining the relationship between socio-economic factors and four types of fire incidence—building fires, secondary fires, vehicle fires and malicious false alarms. The results showed that in both cities there was a steady increase in fire incidents with greater socio-economic deprivation scores. Individual predictors did however differ between the two cities depending on the type of fire incidence. Higher rates of all types of fire incidence in Cardiff were associated with lower rates of owner occupancy and formal education, as well as higher rates of flats and unoccupied private dwellings. In Brisbane, in contrast, no single predictor was shown to be significant for all four types of fire incidence. Lower rates of car ownership, formal education and flats and unoccupied dwellings were associated with high rates of fire incidence in three of the four fire types assessed. While socio-economic deprivation is clearly associated with increased fire incidence, further research may be needed to determine which, if any, specific elements of deprivation best predict fire incidence.

**Alcohol and drug use.** Alcohol use is a well recognised feature of university culture both nationally and internationally. In preparing a report for the Alcohol Advisory Council of New Zealand, Towl (2004) reported that alcohol consumption levels of tertiary students were

well in excess of recommended limits. It was suggested that university culture promotes drinking; it is considered to be a defining feature of tertiary study. A considerable number of college students also engage in recreational drug use, most commonly marijuana use (see Rimsza & Moses, 2005 for a review).

Alcohol has been found to be a major contributing factor to burn injuries in college students in the United States (American Burn Association, n.d.), as well as to fire-related injuries and deaths in the general public. Between 2005 and 2009, 12% of residential fire deaths were estimated to have involved possible alcohol impairment while 5% were estimated to have involved possible drug or other chemical impairment. Of all fire deaths, a possible impairment of either alcohol or drugs was implicated in 14% (Evarts, 2011). The literature has focused on the relationship between alcohol use and fire incidence and harm considerably more than on the relationship with drug use. This may be due to the more widespread use of alcohol than other drugs in the general population.

In a United Kingdom based study, Holmes, Hold and James (2010) used data compiled from the National Burn Injury Database to examine trends in alcohol-related burn admissions over a 5-year period. The results suggested an increase over time in the number of alcohol-related burns. In 2003, 6% of burns were alcohol-related. Over 2004 and 2005, a gradual growth in the number of alcohol-related burns was observed with 10% in 2004 and 16% in 2005. This fell slightly to 9% in 2006; however, in both 2007 and 2008, 19% of burn admissions were found to be alcohol-related. A recent New Zealand study investigated 131 fatal unintentional residential fires between July 1997 and June 2003. The study found that just over a third (34%) of the primary fire victims had a blood-alcohol concentration greater than 80mg of alcohol per 100ml of blood, the standard legal driving limit at the time (Miller, 2005).

Holborn, Nolan and Golt (2003) analysed data on fatal fires and fire deaths for the period 1995 to 2000, sourced from the London Fire Brigade Real Fire Library. Of the unintentional dwelling fire victims, 58% were tested for the presence of alcohol and 40% of these were found to have a blood-alcohol concentration, which would have been over the legal limit for driving in the United Kingdom. Furthermore, 24% would have been highly intoxicated at the time of their death. While those without the presence of alcohol were more likely to have died between 6am and 9pm, those who were considered “highly intoxicated” were more likely to have died between 9pm and 3am with a peak in deaths at midnight.

Bruck, Ball and Thomas (2011), using data from the Australian Coroner's fire fatality records for the State of Victoria between 1998 and 2006, reported that 58% of fatal fire victims had a positive blood-alcohol concentration test. Men were found to be three times more likely than women to have consumed alcohol before their death. Men aged 18 to 60 years were also five times more likely to have consumed alcohol before their death than were men older than 60 years. Caution should, however, be exercised in generalising these results to the wider adult population, as of the 144 residential fire deaths recorded, only 95 had blood-alcohol concentration tested. Bruck et al. (2011) found that those with a positive blood-alcohol concentration test were less likely than those who were sober to have had a condition preventing their escape. The author suggests that the risk of fire-related death may be linked to the issue of alertness. This is in line with research suggesting that alcohol significantly reduces the likelihood of being woken by a standard smoke/fire alarm (Bruck, Thomas and Ball, 2007).

**Smoking.** Smoking continues to be relatively common among young adults. Caldeira et al. (2012) found that over one quarter of students at a United States university reported engaging in some level of smoking behaviour. Many college and university age students (approximately half of those who report smoking) consider themselves to be "social smokers", engaging in smoking only in certain social contexts (Berg et al., 2010; Moran Wechsler & Rigotti, 2004).

Smoking has consistently been linked with the incidence of fire throughout the literature (Brennan, 1999; Holborn, Nolan & Golt, 2003; Mulvaney et al., 2008; Runyan et al., 1992). Runyan et al. (1992) investigated fatal and non-fatal residential fires in predominantly rural areas and found that fatal fires were more likely than non-fatal fires to have been caused by smoking. The authors reported 31% of fatal fires having been caused by smoking. Holborn, Nolan and Golt (2003) found that almost half (47%) of all fatal unintentional dwelling fires were started by smoking materials such as cigarettes, cigars or tobacco. They also found that careless disposal of smoking material was the most common act resulting in fire (46%). Brennan (1999) also found the primary cause of unintentional fatal fires to be smoking (42%) and that this often involved careless disposal of cigarettes. Mulvaney et al. (2008) examined the five most common sources of ignition in fatal fire injuries in England over the period 1995-2004. Smoking materials were found to have the highest fatal fire injury rates for both males and females over the age of 14 years (15-59 years).



Holborn, Nolan and Golt (2003) suggest that the reason engaging in smoking increases the risk of fire is that smoking materials are a ready source of ignition. If they are incorrectly disposed of, or handled carelessly, there is a great risk of flame occurring. Cigarettes, in particular, can easily smoulder unnoticed while occupants sleep.

There may also be a connection between alcohol use and smoking. Brennan (1999) reported that, of the victims of fatal fire incidents who had high alcohol readings, 70% of the fires were started by cigarettes. When considering the 65 adults in the study, there were only 2 instances of fire being started by cigarettes where alcohol use was absent. This connection may be particularly relevant in light of the social nature of smoking for many young adults as social smoking is strongly associated with alcohol use (Moran et al., 2004).

**Status as “young people”.** While those aged 18-24 years are not considered children, there is no doubt that they are still “young” members of society. They are often perceived by society as impulsive, self-absorbed and reckless (France, 2012). These characteristics make them more prone to taking risks which can have dangerous and serious consequences. This may increase the likelihood of them using fire in an irresponsible and unsafe manner, for example, lighting couches on fire near residential properties and removing dying batteries from smoke alarms instead of replacing them.

The Center for Disease Control’s 1995 National College Health Risk Behaviour Survey provided clear evidence of young adults’ engagement in risky behaviour. Just under one third (28.8%) of college students aged 18 to 24 years were cigarette users and 41.5% reported episodic heavy drinking. In addition, 27.8% reported drinking and driving in the 30 days preceding the survey and 38.9% reported they had been in a car with a driver who had been drinking. Furthermore, only 37.7% of students had used a condom in their most recent act of sexual intercourse in the three months preceding the survey demonstrating risky sexual behaviour.

Adolescence is recognised as the time in an individual’s life where impressive brain change and development occurs. The prefrontal cortex, responsible for executive function, including coordination of thoughts and behaviours, response inhibition and self-regulation, is known to continue developing through adolescence (Steinberg, 2005). However, there is literature to suggest that this development does not end with adolescence, rather continuing well into the 20s. Evidence for this has been found specifically with regard to the development of psychosocial maturity (Monahan, Steinberg, Cauffman & Mulvey, 2013;

Steinberg, 2007). Utilising available research on neuroscience, Steinberg (2007) proposed that while both logical reasoning skills and psychosocial maturation increase from childhood, through adolescence and into adulthood, the two progress at different speeds. Logical reasoning abilities level off around age 16 whereas psychosocial capacities such as impulse control and future orientation continue to develop more gradually into young adulthood.

In their study of individuals who had engaged in anti-social behaviour, Monahan et al. (2013) found that, at age 25, individuals were still developing impulse control, regulation of aggression, future orientation, personal responsibility, peer influence and consideration for the feelings and perspectives of others.

The lack of future orientation in particular can be seen in university students living away from home for the first time who do not prioritise fire safety when moving into a flat. They equip their residence to suit their immediate needs with little regard to the hazards they are creating. It is not uncommon for students to use multiple extension cords, overloading electrical circuits, and to carelessly use electric blankets, hair straighteners and hot plates (ABA, n.d.).

Young adults, specifically university students, are also greatly influenced by their peers with regard to risky behaviour. As discussed earlier, excessive alcohol consumption is a key part of university culture and is considered necessary for acceptance by peers (Towl, 2004). Lo (1995) reported that peer influence was a greater predictor of levels of intoxication for first year university students than were parental norms/influence. This effect is particularly strong for men. Perkins (1985) also found that, in a study of undergraduates, peer influences, such as fraternity membership and friends' drinking norms, were stronger predictors of alcohol use than gender, religion and parental attitudes. Furthermore, Wechsler et al. (1995), in examining the effect of intensive peer exposure (through measures including hours spent socialising with friends and the number of friends an individual had), predicted higher levels of heavy drinking after controlling for demographic factors and other student activities.

Smith, Steinberg, Strang and Chein (2014) investigated the effect of peers on valuation and processing of rewards during decision making. The authors had participants complete a version of the High/Low Card Guessing Task while in an fMRI scanner. Participants were made up of adolescents (those aged between 14 and 19 years) and adults (aged between 25 and 35 years). The authors manipulated the social context with participants

completing the task both alone and while being observed by two same-age, same-sex peers the participant had brought with them to the study. They found that, compared to the adult group, the adolescents displayed greater engagement of areas of the brain associated with reward processing (for example, the ventral striatum), during receipt of reward when their peers were watching. As the High/Low Card Guessing Task involved no element of risk (it was not a matter of choosing between a risky and a safe option as has been the case in much of the previous research), the authors were able to conclude that the effect of peers on reward processing operates outside the context of risk taking. This study may provide useful information for our target population of 18- to 24-year-olds as participants included 18- and 19-year-olds. It is unclear however, where those aged between 20 and 24 years, not included in the study, fall with regard to this effect and whether they align more closely with the “adults” or the “adolescents”.

There is also evidence to suggest that young adults may be influenced by misperceptions of their peers’ behaviours and beliefs. Research has found that university students in particular have a tendency to overestimate their peers’ involvement in, and acceptance of risky behaviours such as drink-driving, heavy alcohol consumption, smoking and unsafe sex (Borsari & Carey, 2003; Kenney, LaBrie & Lac, 2013; Lewis, Litt, Crouce, Blayney & Gilmore, 2014). Lewis et al. (2014) observed both overestimation of peer norms for risky behaviour and underestimation of peer norms for protective behaviours. Problematically, research has consistently found that these misperceptions have predictive power regarding students’ future behaviour (Borsari & Carey, 2003; Carter, Bingham, Zakrajsek, Shope & Sayer, 2014; Kenney, LaBrie & Lac, 2013; Neighbors et al. 2011).

## **Effective Methods of Engaging Young Adults in Safety Behaviour**

### **Existing Fire Safety Campaigns**

There are a few fire-safety campaigns aimed at 18 to 24 year olds, running primarily in the United States, comprising mostly of informational resources and on-campus activities to promote safe fire behaviour. Some of these programmes are summarised below, however evaluations of efficacy or outcomes of such programmes is currently lacking.

In 2005, Campus Firewatch initiated a national campaign to designate September as “Campus Fire Safety Month” in the United States. The intention of this designated month was to raise fire safety awareness. Fire professionals are often on hand on campuses to

provide literature and answer student questions (The Center for Campus Fire Safety, 2014). In 2013, the University of Pennsylvania's Division of Public Safety and the Philadelphia Fire Department constructed two model dorm rooms to set on fire, one with a sprinkler, one without, and displayed them in a public space. The intention was to show students how fast a fire can spread when sprinklers are not present (The Center for Campus Fire Safety, 2014).

The Michael H. Minger Foundation developed Campus Fire Safety Community Service Projects which have so far been completed in Kentucky and North Carolina and are currently planned for six more locations (Michael H. Minger Foundation, 2013). These involve university students working alongside fire fighters to educate members of the community on fire safety and to test and install smoke alarms in local houses. The aim behind this was to engage university students in safe fire behaviour through having them help others to do so. Technological devices such as iPads were used throughout the projects as another technique for engaging these young adults.

In 2014, the Clery Center for Security on Campus, Campus Firewatch, Michael H. Minger Foundation, Rowan University, University of Pennsylvania and the Philadelphia Fire Department created a short film titled, "*The Alarming Truth*" (Clery Center for Security on Campus 2012). The film, portraying an off-campus house fire, is part of a wider national campaign to raise fire awareness among college students. The video is free to access and schools and universities are encouraged to make use of it to educate students. The film was written and produced by students from Rowan University.

Other resources include those produced by non-profit organisation, the Center for Campus Fire Safety, which describes its mission as "dedicated to reducing loss of life caused by fire at campuses across the United States" (The Center for Campus Fire Safety, 2014). They have developed fire safety information sheets for college students and guides for student advisors and parents to assist with educating young adults. The NFPA has also developed a college fire safety tip sheet and a one-page fire safety checklist to assist students living in off-campus housing to make sure their house is fire safe (NFPA, 2014).

Another programme is being developed by the Campus Fire Coalition, which is made up of CAMPUSfireSafety.com, Campus Firewatch and the Michael H. Minger Foundation. Together they aim to share and promote campus fire safety resources to help schools and communities in educating students, parents and administrators in the importance of fire safety (The Campus Fire Coalition, 2013). Throughout 2014 the Coalition has been working to get a

taskforce of fire professionals together to develop a strategic plan to help reduce off campus housing fire deaths.

### **What Works for Young People?**

Features of successful safety campaigns for young adults were reviewed as part of a systematic review of what works in social marketing for young people, conducted for the Health Research Council of New Zealand and the Ministry of Development (Thornley & Marsh, 2010). The authors note that programmes are most effective when implemented as part of a broader, more comprehensive intervention, rather than as a single component program. For example, school-only alcohol and drug prevention programmes have been found to have little or no effect on actual alcohol and drug use (see Casswell, Liggins & Dickinson, n.d. for a review). In contrast, programmes that integrate both schools and communities have had greater reported success in reducing these behaviours.

The authors set out various evidence-based success factors, found to be common to multiple campaigns. These included a youth-centred approach with strong youth involvement in the development of campaigns, as well as use of media that are familiar and appealing to this group. An example of this today would be the use of Facebook and Twitter. Comeau (2013) notes the importance of identifying specific social media outlets for different demographics within the wider 18-24 age group as well as changes in popularity over time. The Barnes and Noble 2012 College Marketing Report shows that 42% of students think television ads are the most effective form of advertising and while 65% of students engage with a brand weekly on Facebook, 55% do not think Facebook is a good place to advertise (Comeau, 2013).

Campaigns that empowered youth with strong positive emotional messages were also essential, as were age- and ethnic-specific programmes (Thornley & Marsh, 2010). Finally, campaigns based on comprehensive research, which effectively applied theory to design were most likely to successfully change behaviour.

Messages aimed at this age group should also be simple and require minimal effort to access (Comeau, 2013). Young adults are not swayed by large scale statistics and data, but rather prefer emotional personal stories they can relate to.

Campaigns directed at young adults typically utilise either a fear/threat based approach or a humorous approach. There is conflicting research regarding which strategy is most likely to provide the best outcomes.

**Threat based strategies.** Threat based strategies highlight undesirable consequences, vividly and graphically, through the use of graphic and sometimes disturbing images. This approach has historically been favoured in drink-driving campaigns, speeding campaigns and smoking campaigns. Examples include graphic photos on cigarette packets portraying the long-term harms of smoking or advertisements depicting car accident scenes. The aim of this strategy is to evoke a fear response in order to coerce behavioural change (Latour & Rotfeld, 1997). Despite its widespread use, inconsistent findings in the literature call into question its overall effectiveness (Carey, McDermott & Sarma, 2013; Tay & Ozanne, 2002).

A New Zealand based study assessed the effectiveness of advertising campaigns implemented by the Land Transport Safety Authority in 1995 (Tay & Ozanne, 2002). The campaigns predominantly targeted young adult males (aged 18-24) and aimed to reduce drink-driving and speeding behaviour through the use of a strong appeal to fear. At the time of this study, young adult males contributed to almost a quarter of all vehicle accidents involving a speeding driver that resulted in fatalities and serious injury.

While decreases in fatalities were seen for male drivers aged between 35 and 54 years (30%), female drivers aged between 15 and 24 (40%) and female drivers aged between 25 and 34 years (70%), the campaign did not decrease fatalities in the target group (males aged 18-24). These findings suggest that the “fear appeal” technique affects different groups in society in different ways and so may not be appropriate for reducing behaviour in all target groups.

Males and females have been found to respond differently to fear based appeals (Wundersitz, Hutchinson & Woolley, 2010). Lewis, Watson, Tay and White (2007), using an all-male sample, observed that the effect of threat appeals associated with driving behaviour were comparatively weak amongst males. Goldenbeld, Twisk and Houwing (2008) also observed that under the “fear appeal condition”, significant gender differences were present. They found that females viewed the suggested lower speeding zones positively as a result of the campaign while males did not. Both males and females were recorded as having an equally high perception of the problem under a “no fear appeal” condition; however, in contrast, under the “fear appeal” condition, males were less likely to view speeding as a

problem and reported being less likely to intend to comply with the suggested speed limit.

While it is important that a campaign grabs viewers' attention, the true measure of a successful campaign lies in its ability to change behaviour in the desired direction. Research suggests that although fear/threat based campaigns are found to be stimulating, arousing and memorable, this does not guarantee behaviour modification. Lee and Ferguson (2002) investigated the effects of smoking campaigns on a college student body. College students preferred realistic fear campaigns to vulgar humorous ones however they were less likely to cease smoking after viewing the realistic fear campaigns. A recent meta-analysis of research from 1990 to 2011 on road safety advertisement campaigns also observed that although threat/fear based campaigns increase fear arousal, no significant effect on driving outcomes was observed (Carey, McDermott & Sarma, 2013).

Brennan and Binney (2010) proposed that one reason for the limited effect of fear/threat based approaches is that fear/threat approaches cause the audience to activate defence mechanisms in order to maintain emotional and psychological well-being. Qualitative data collected by Brennan and Binney (2010) suggested that a common response to fear/threat appeals is self-protection in the form of message escape and avoidance. This results in inaction as opposed to adoption of new behaviour. It is therefore essential that safety campaigns are designed to be interesting enough to engage the viewer while avoiding the engagement of a defensive reaction (Lee, 2010).

**Use of humour and positivity.** An alternative approach is that of an appeal to humour. Through humour, information is thought to be processed heuristically, reducing the effects of threats presented in a message (Lee, 2010). Mukherjee and Dube (2012) suggest that incorporating humour into fear appeal presents the message in a safe context, reducing the likelihood of a defensive reaction and consequently increasing the persuasiveness of the message.

A recent notable example of this is the New Zealand "Legend" campaign, or "Ghost Chips" as it is colloquially known (the campaign will be referred to as "Ghost Chips" throughout the report as this is how participants most regularly named it). The campaign depicts, with wry humour, a situation at a party where a young man is conflicted about whether to stop his friend from driving drunk at the expense of being seen as uncool (Prince, 2012). The aim of the campaign was to break down barriers, and empower young people to voice their concerns about friends who drive drunk (Prince, 2012). This campaign

unintentionally gained large momentum on social media reaching over 1.5 million views on YouTube within two weeks of its initial release. However, no formal evaluation as to its effectiveness has yet been published.

Empirical research has found support for the use of humour in health and safety related messages. Mukherjee and Dube (2012) measured sunscreen usage and found that as fear arousal increased, persuasiveness decreased. Persuasiveness was measured by both attitude towards the brand and the intent of usage. However, when humour was incorporated into the campaign, participants' intention to adopt the safety behaviour increased.

The positive effect of humour has been found to be especially effective with men. Conway and Dube (2002) observed that male participants, ranked high on a masculinity measure, were more persuaded by a message that was humour based, with elements of moderate fear, than a message without the use of humour. Participants with a low masculine score showed no difference between the two approaches. Additionally, a study conducted by Lewis, Watson and White (2008) compared the effect of both fear and humour appeals on speeding behaviour with male and female participants. The study also took reported past speeding behaviour into account through the use of self-reports. The authors found the humour-based appeals to be more persuasive than the fear-based appeals in male participants, even when controlling for past speeding behaviour. These results should, however, be interpreted with caution due to the small sample size used in the study.

**Peer influence.** The findings of Smith et al. (2014), that increased engagement of the reward system in the presence of peers is not specific to decision making in risky situations, suggest that social context and, specifically, peer influence could be used in attempts to engage young people in prosocial and safe behaviour. The authors propose that education strategies that provide explicit rewards to young people in the presence of peers may increase engagement in the programme and ideally adoption of the message. As this finding is only new, further research will be necessary to determine whether engagement of the reward system in fact predicts future behaviour.

**Targeting social norms misperceptions.** As discussed previously, young people have a tendency to overestimate their peers' involvement in and acceptance of risky behaviours (Borsari & Carey, 2003; Kenney et al., 2013; Lewis et al., 2014). This misperception has also been found to predict future behaviour (Borsari & Carey, 2003; Carter et al., 2014; Kenney et al., 2013; Neighbors et al. 2011). Interventions directed at this group



should aim to clarify such misperceptions. This is the aim of social norms intervention research.

Considerable support has been found for social norms interventions with young adults (Burchell, Rettie & Patel, 2013; Lewis & Neighbors, 2007; Ridout & Campbell, 2014). Perkins, Linkenbach, Lewis and Neighbors (2010) evaluated a mass media campaign targeting drinking and driving in a group of young adults (a recognised high risk group) at a state wide level in the United States. The campaign presented a positive message with statements such as “most Montana young adults [4 out of 5] don’t drink and drive”. The results showed changes in individual perceptions, personal attitudes and reported behaviours following the campaign. Those in the intervention counties were more likely than those in the control counties to believe that their peers had not driven within an hour of consuming two or more drinks (or had done so significantly less) and that their peers almost always had a designated driver when they consumed alcohol. In addition, when compared to the control counties, those in the intervention counties were significantly less likely to have reported driving within an hour of consuming two drinks or more in the preceding month. Support for changing the blood-alcohol concentration legal limit, to allow less alcohol consumption before driving, also increased within the intervention counties following the campaign, while support decreased in the control counties.

Research on social norms interventions has commonly focused on groups that already display or engage in the target behaviour. There is evidence to suggest, however, that such interventions may also have success with groups that do not exhibit the targeted behaviour at the time of exposure. Neighbors et al. (2011) examined the effect of two types of social norms interventions (social norms marketing advertising and personalised normative feedback) on light-drinking and non-drinking first-year and sophomore college students. While overall alcohol consumption and frequency of drinking increased over time (noted by the authors as unsurprising as all were light- or non-drinkers to begin with and drinking behaviours increase with entrance into college), the social norms interventions were associated with consumption of fewer drinks per week over time than was the control condition. This finding has important implications for preventative campaigns as it may enable unsafe behaviours to be targeted before young people engage in them.

Effective programmes for engaging young people in fire safe behaviour should be grounded in research on what works best for this population. Interventions should recognise

that young adults are a distinct group with specific risk factors that need to be addressed by tailored and directed programmes. The use of humour and positivity will yield greater success than traditional scare tactics and research on peer influence and the need to challenge misperceptions should be utilised. Social norms interventions research suggests young adults could be targeted before leaving school, and consequently before they are at risk of unsafe fire behaviour, with positive messages surrounding fire safety in the home.

## **The Present Study**

Young adults, particularly those who have recently left home, are a high risk group for fire involvement. There are concerns around student fires, particularly at the University of Otago, where fire and the act of burning property, specifically couches, has become a part of the overall student culture. Existing successful fire safety campaigns are targeted at younger children however there is a need for better interventions for those who are planning to leave home. While the New Zealand Fire Service does have a fire safety education programme aimed at adolescents, in an evaluation of the programme, Brown, Ward and Bellet (2013) found that only 9 per cent of schools reported ever delivering the secondary school student programme. The development of interventions that effectively engage school leavers in adopting safe fire behaviour when they leave home is necessary to prevent significant harm that at present seems inevitable. This study aims to gain insight from young adults, professionals in the sphere of fire use and social marketers with experience targeting young adults, in order to provide recommendations for how future campaigns can best influence this population to engage in safer fire related behaviours.

## **Method**

Following approval and commission from the New Zealand Fire Service to undertake this study, ethical approval was granted by the University of Auckland Human Subjects Ethics Committee (No. 012651).

### **Survey Sample**

#### **Participants**

The overall survey sample consisted of 2,424 young adults aged between 16 and 24 years in either the Secondary School sample or the University sample. The secondary school sample consisted of 182 young people aged between 16 and 19 years from seven Auckland secondary schools and one Northland School. An additional four schools were contacted but declined to participate as they felt their students had already been asked to participate in a number of research projects over the course of the year. The sample included both males and females however as gender was not included in the survey, in order to better ensure anonymity, numbers of each gender are unknown.

The university sample consisted of 2,242 young people aged between 17 and 24 years. The university sample was comprised of students from the University of Auckland and the University of Otago. The sample included both males and females however as gender was not included in the survey, in order to better ensure anonymity, numbers of each gender are unknown.

#### **Materials**

The questionnaire used in the survey for both the secondary school and university survey samples, was designed and constructed by the research team and was completed by participants through the online programme SurveyMonkey. It consisted of 38 questions that were either multiple choice or short answer questions (see Appendix A). The questions covered topics including safe and unsafe fire behaviour, knowledge around fire and suggestions on how to better engage young adults in safe fire behaviour. This included questions such as “What fire safety equipment do you have in your home?”, “How do you put out an oil fire?” and “What suggestions do you have for how fire safe behaviour could be improved with young adults?” The questionnaire was reviewed by both local and overseas

experts and feedback from these, and stakeholders, was incorporated in the final version of the questionnaire.

Data analysis was completed using Excel.

## **Procedure**

The secondary schools were approached and asked to participate by members of the research team with whom they had an existing relationship. The research team were based at the University of Auckland and so sought permission from the Psychology Head of Department to undertake the project. The University of Otago was chosen as an additional research site due to its known fire problem and permission to undertake the project was sought from the University of Otago Vice Chancellor. Survey participants in the secondary school sample were recruited through invitation by head teachers and online school forums. Survey participants in the university sample were recruited through invitation by head tutors in lectures and online university forums.

Data obtained from the surveys was exported from SurveyMonkey into Excel and was then coded by members of the research team. Data analysis was conducted in Excel where frequencies and percentages were calculated.

## **Focus Groups**

Three focus groups were conducted for this study.

### **Participants**

The first focus group was conducted with young adults attending the University of Auckland aged between 19 and 23 years.

The second and third focus groups were conducted with Dunedin members of the New Zealand Fire Service, New Zealand Police, the University of Otago Proctor and Deputy Proctor and the University of Otago Students' Association Representatives.

### **Materials**

Questions for both focus groups were designed and constructed by the research team. Focus Group questions were also reviewed by both local and overseas experts and feedback

from these, and stakeholders, was incorporated in the final version of the questions used. The questionnaire was modified to reflect the data gathered from the survey.

Six open ended questions were created for the young adult focus group (see Appendix B). The questions were designed to elaborate on questions asked in the survey. The questions covered topics including safe and unsafe fire behaviour, suggestions on how to better engage young adults in safe fire behaviour, and asked participants for their opinion on non-fire safety campaigns. This included questions such as “How common is it for young people your age to engage in unsafe fire behaviour?” and “How successful do you believe the “Legend” (“Ghost Chips”) campaign was at increasing safe behaviour?”

Three broad open ended questions were created for the focus groups with the Dunedin members of the New Zealand Fire Service, New Zealand Police, the University of Otago Proctor and Deputy Proctor and the University of Otago Students’ Association Representatives (see Appendix C). These were: “How much of a problem is firesetting by young people aged 18-24 at the University of Otago?”, “How have you tried to address this problem and how effective do you think this has been?” and “What further steps need to be taken in order to address this problem?”

## **Procedure**

Participants in the young adult focus group were invited to participate via a question at the end of the online survey. Those who were interested in participating were contacted at a later date via the email address provided in the survey and were sent information about what the focus group would involve and a date and location was organised. The focus group was held at the University of Auckland and took one hour. The focus group was run by a member of the research team and was recorded with the permission of the participants.

Participants in the focus groups with Dunedin members of the New Zealand Fire Service, New Zealand Police, the University of Otago Proctor and Deputy Proctor and the University of Otago Students’ Association Representatives were invited to participate by Barry Gibson from the New Zealand Fire Service.

The focus group discussions were recorded and later transcribed by a member of the research team. Data obtained in the focus group discussions was analysed using Braun and Clark’s (2006) step by step guide to thematic analysis: familiarising yourself with the data,

generating initial codes, searching for themes, reviewing themes, defining and naming themes and producing the report.

## **Interviews with Social Marketers**

### **Participants**

Participants in the social marketer interviews were six social marketers who had previous experience in the development of campaigns targeting young adults with the use of technology.

### **Materials**

Questions for the social marketer interviews were designed and constructed by the research team (see Appendix D). The questions for the social marketer interviews were also reviewed by both local and overseas experts and feedback from these, and stakeholders, was incorporated in the final version of the questions used.

Two broad open ended questions were created for the social marketer interviews. These were: “What experience do you have in developing information technology with young people aged 18 to 24 years?” and “Given your experience, what do you think are the best methods for engaging or educating young people in safe behaviour?”

### **Procedure**

Specific social marketers were chosen either due to pre-existing connections with members of the research team or because they were known for their work on key campaigns targeting youth. The social marketer interviews were either conducted in person or over the phone where face-to-face contact was not possible.

Social marketer interviews were recorded and later transcribed by a member of the research team. Data obtained in the social marketer interviews was analysed using Braun and Clark’s (2006) step by step guide to thematic analysis: familiarising yourself with the data, generating initial codes, searching for themes, reviewing themes, defining and naming themes and producing the report.

# Results

## Survey Data

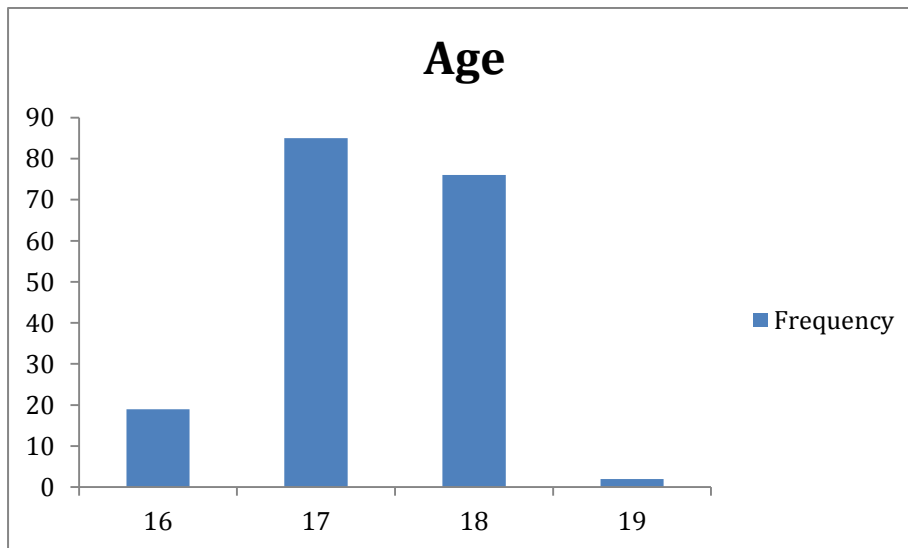
The results from the two survey samples, the secondary school sample and the university sample, are set out below. The secondary school sample data is discussed first followed by the university sample data.

## Secondary School Sample

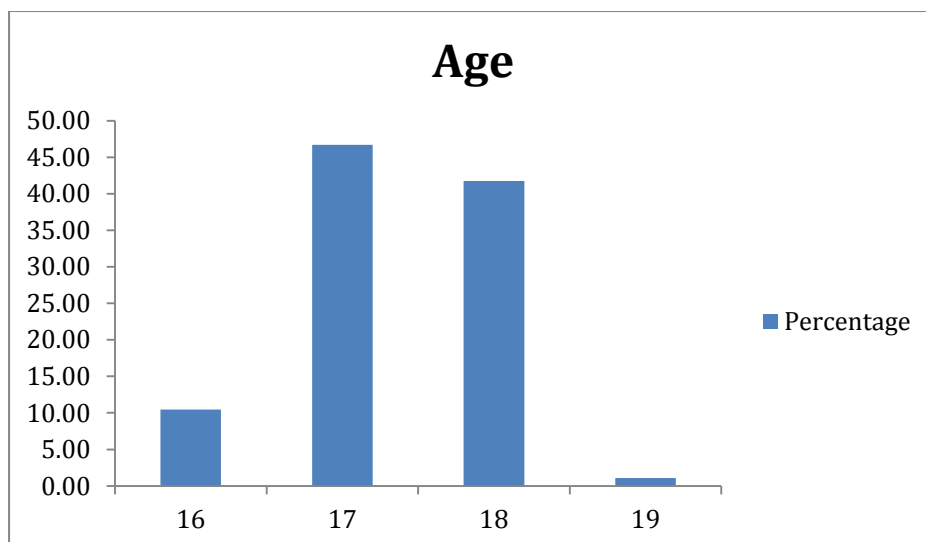
### Demographic Information

*Table 1: Age of participants in the secondary school sample.*

Response	Frequency	Percentage
16	19	10.44
17	85	46.70
18	76	41.76
19	2	1.10



**Figure 1: Age of participants in the secondary school sample expressed as a frequency.**



**Figure 2: Age of participants in the secondary school sample expressed as a percentage.**

**Age.** As shown in Table 1 (see also Figures 1 and 2), the majority of the participants in the secondary school sample (88.46%) were aged either 17 (46.7%) or 18 (41.76%) years old. 10.44% were aged 16 years and 1.10% were aged 19 years.

*Table 2: Educational Institution of participants in the secondary school sample.*

Response	Frequency	Percentage
Botany Downs Secondary College	85	46.70
Orewa College	23	12.64
Kristin School	57	31.32
Edgewater College	2	1.10
Mahurangi College	2	1.10
Rangi Ruru Girls' School	1	0.55
Kingsway College	8	4.40
Westland High School	1	0.55
Unknown	3	1.65



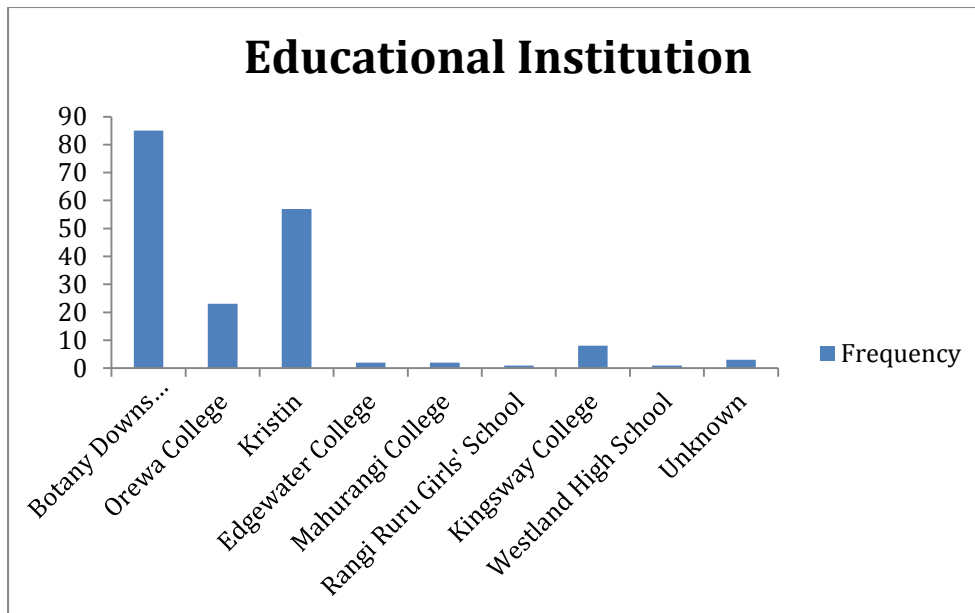


Figure 3: Educational institution of participants in the secondary school sample expressed as a frequency.

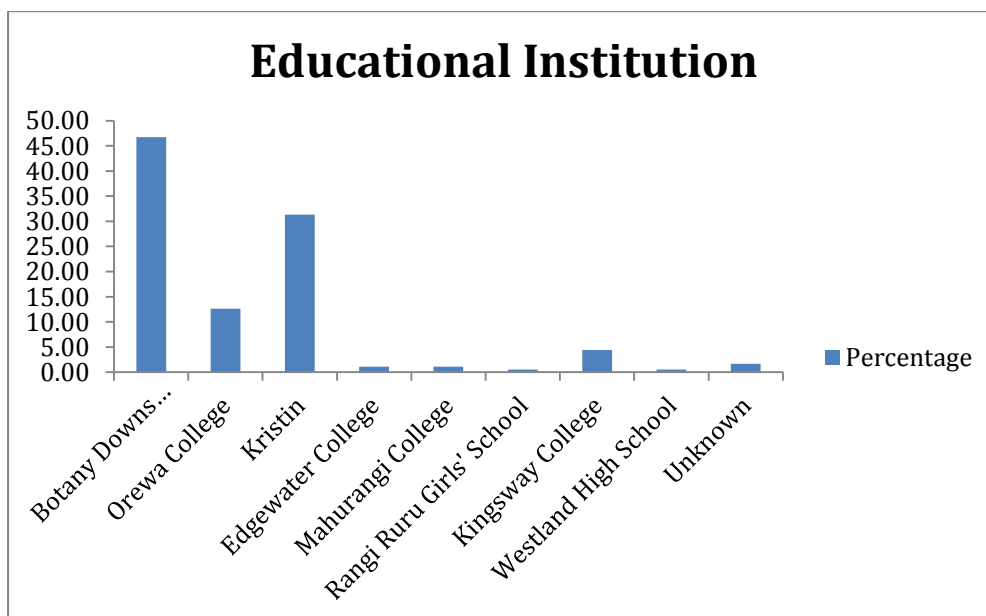


Figure 4: Educational institution of participants in the secondary school sample expressed as a percentage.

**Educational institution.** As shown in Table 2 (see also Figures 3 and 4), the greatest proportion of the sample attended Botany Downs Secondary College (46.7%) followed by Kristin School (31.32%). 12.64% of the secondary school sample attended Orewa College, 4.4% Kingsway College. 1.1% Edgewater College, 1.1% Mahurangi College, 0.55% Rangī Ruru Girls' School and 0.55% attended Westland High School. Information on educational institution was not available for 1.65% of the secondary school sample.

Table 3: Ethnicity of participants in the secondary school sample.

Response	Frequency	Percentage
NZ/European	110	57.29
Maori	8	4.17
Pacific	3	1.56
Asian	59	30.73
Other	12	6.25

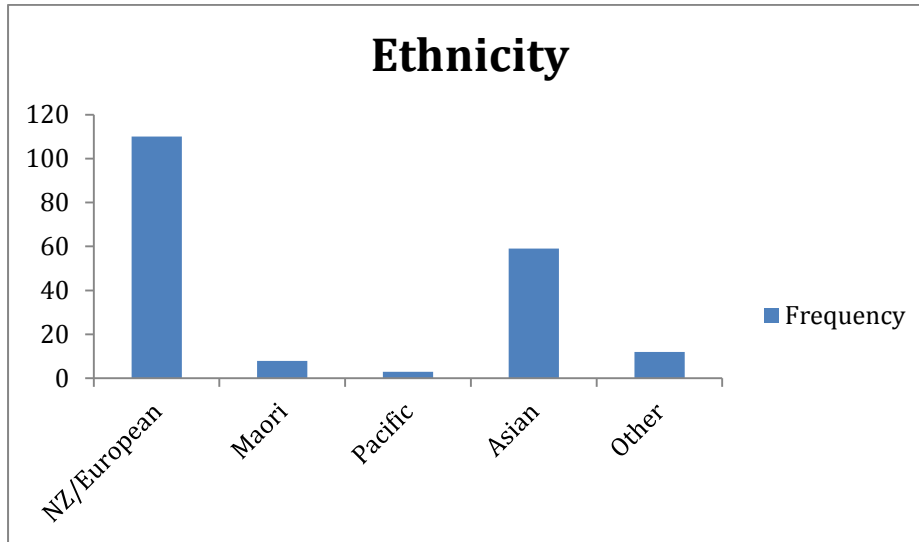


Figure 5: Ethnicity of participants in the secondary school sample expressed as a frequency.

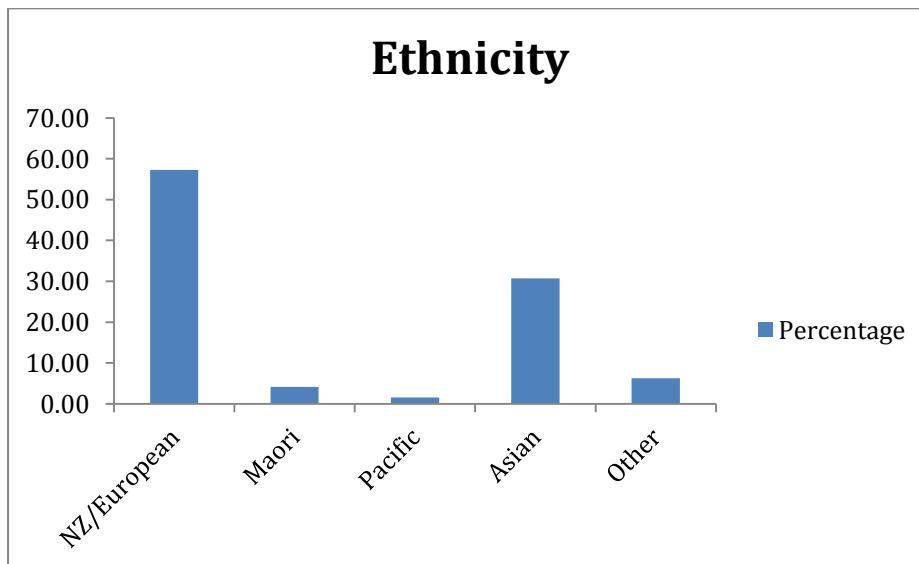


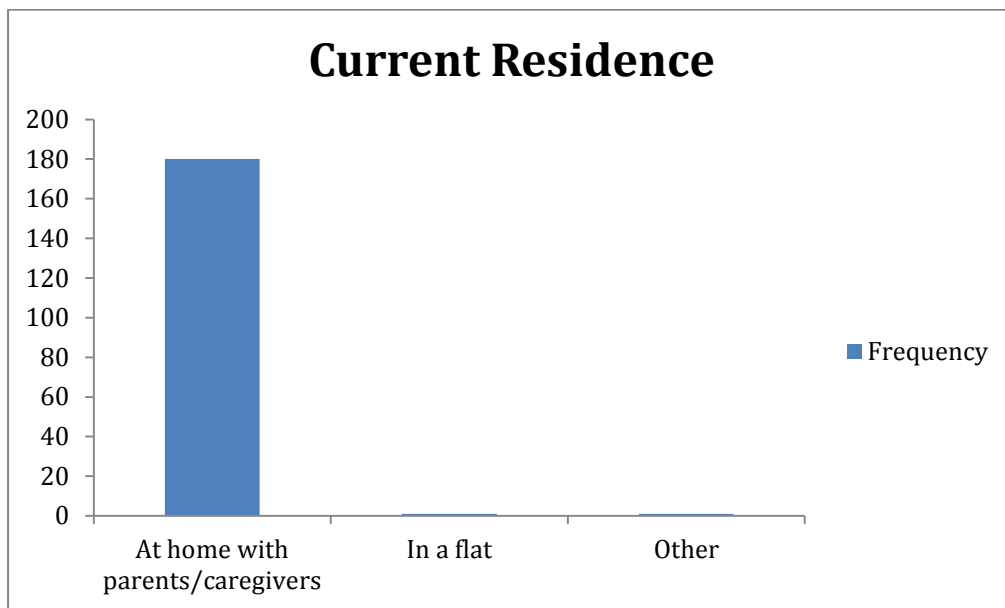
Figure 6: Ethnicity of participants in the secondary school sample expressed as a percentage.

**Ethnicity.** As shown in Table 3 (see also Figures 5 and 6), the majority of the participants in the secondary school sample identified as New Zealand/European (57.29%).

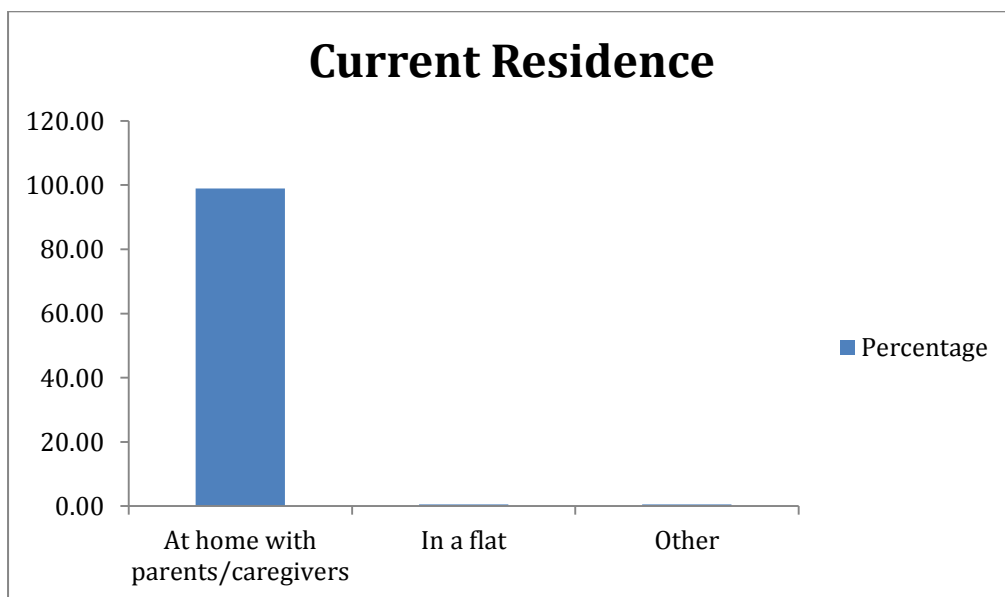
Approximately one third (30.73%) identified as Asian, 4.17% identified as Maori, 1.56% as Pacific and 6.26% as another ethnicity not listed above.

*Table 4: Current residence of participants in the secondary school sample.*

Response	Frequency	Percentage
At home with parents/caregivers	180	98.90
In a flat	1	0.55
Other	1	0.55



**Figure 7: Current residence of participants in the secondary school sample expressed as a frequency.**



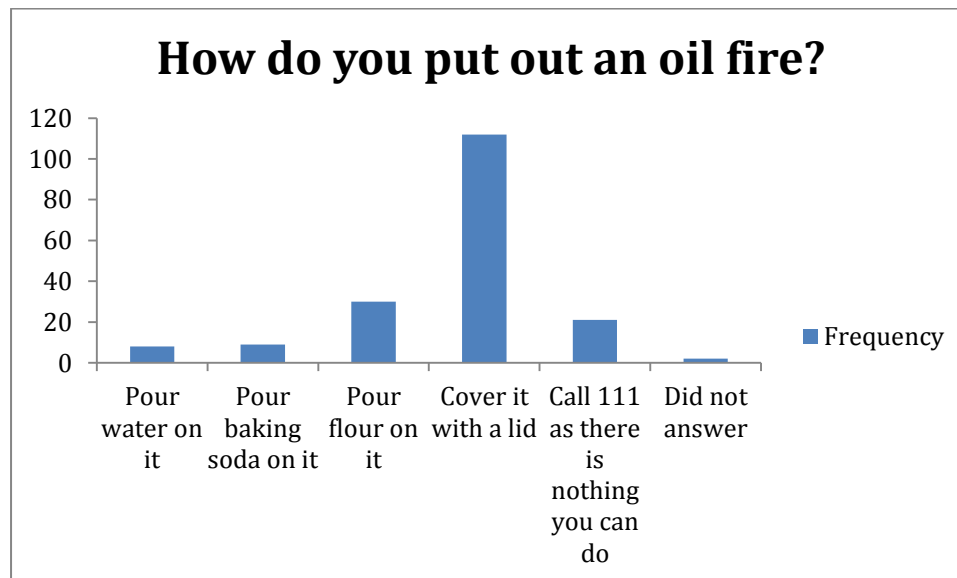
**Figure 8: Current residence of participants in the secondary school sample expressed as a percentage.**

**Current residence.** As shown in Table 4 (see also Figures 7 and 8), the majority of the participants in the secondary school sample (98.9%) were living at home with parents/caregivers at the time they completed the survey. One participant was living in a flat (0.55%) and one participant was living in some other residence not listed above (0.55%).

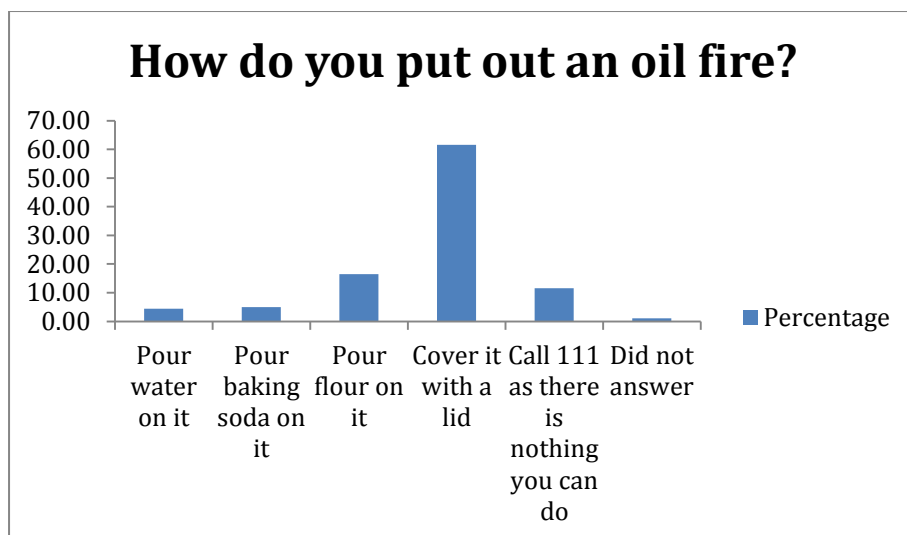
## Knowledge around Fire

*Table 5: Participants' knowledge about how to put out an oil fire.*

Response	Frequency	Percentage
Pour water on it	8	4.40
Pour baking soda on it	9	4.95
Pour flour on it	30	16.48
Cover it with a lid	112	61.54
Call 111 as there is nothing you can do	21	11.54
Did not answer	2	1.10



**Figure 9: Participants' knowledge about how to put out an oil fire expressed as a frequency.**

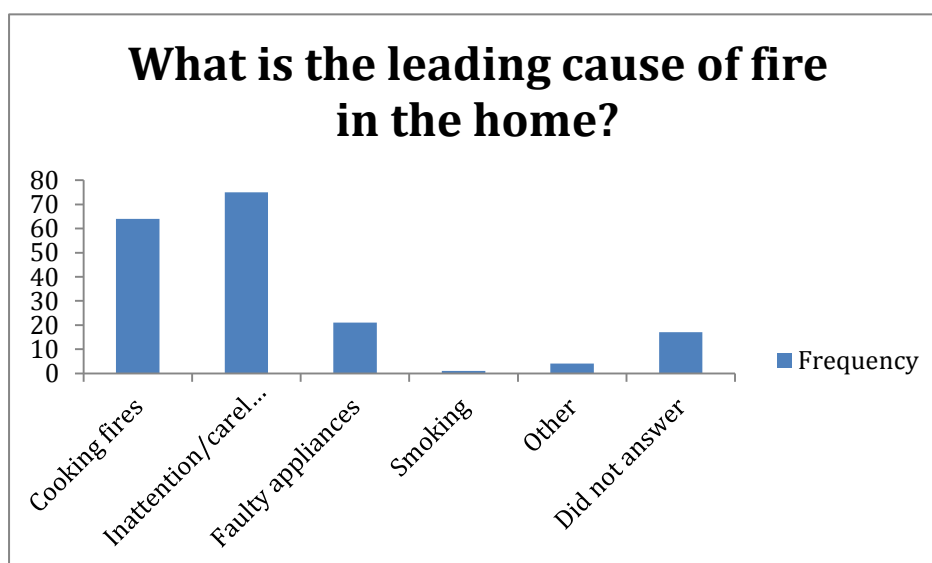


**Figure 10:** Participants' knowledge about how to put out an oil fire expressed as a percentage.

**How to put out an oil fire.** The correct answer to the question “how do you put out an oil fire?” is to cover it with a lid. As shown in Table 5 (see also Figures 9 and 10), the majority of the participants in the secondary school sample (61.54%) knew the correct way to put out an oil fire.

*Table 6: Participants' knowledge of the leading cause of fire.*

Response	Frequency	Percentage
Cooking fires	64	35.16
Inattention/carelessness with heat source	75	41.21
Faulty appliances	21	11.54
Smoking	1	0.55
Other	4	2.20
Did not answer	17	9.34



**Figure 11:** Participants' knowledge of the leading cause of fire expressed as a frequency.

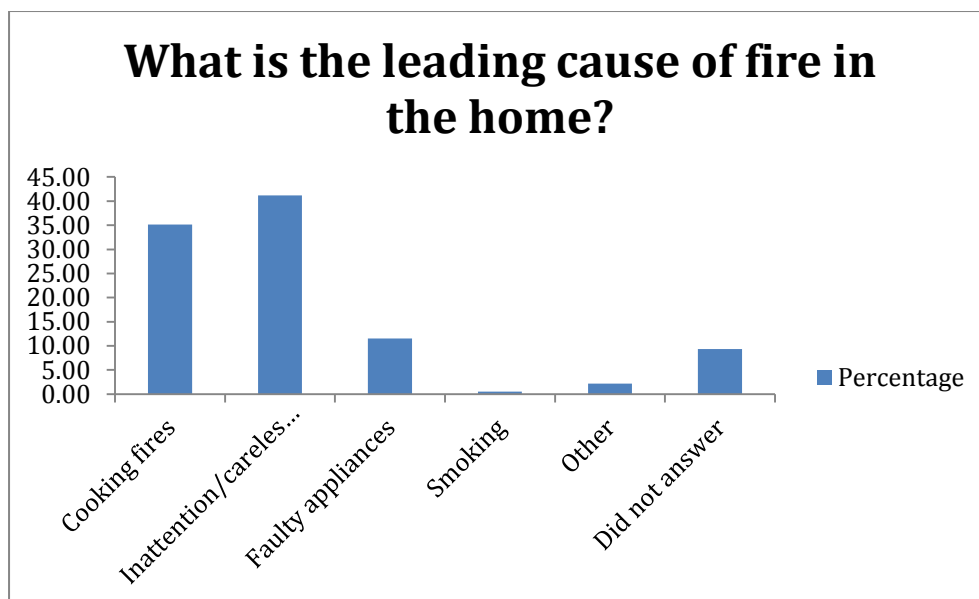


Figure 12: Participants' knowledge of the leading cause of fire expressed as a percentage.

**Leading cause of fire in the home.** The correct answer to the question “what is the leading cause of fire in the home?” is cooking fires. As shown in Table 6 (see also Figures 11 and 12), a little over one third (35.16%) of the participants in the secondary school sample knew that cooking fires were the leading cause of fires in the home, however, the greatest number (41.21%) believed inattention/carelessness with a heat source was the leading cause.

### Beliefs about Fire

Table 7: Confidence in ability to put out a fire.

Response	Frequency	Percentage
Not very confident	70	38.46
Quite confident	90	49.45
Very confident	21	11.54
Did not answer	1	0.55

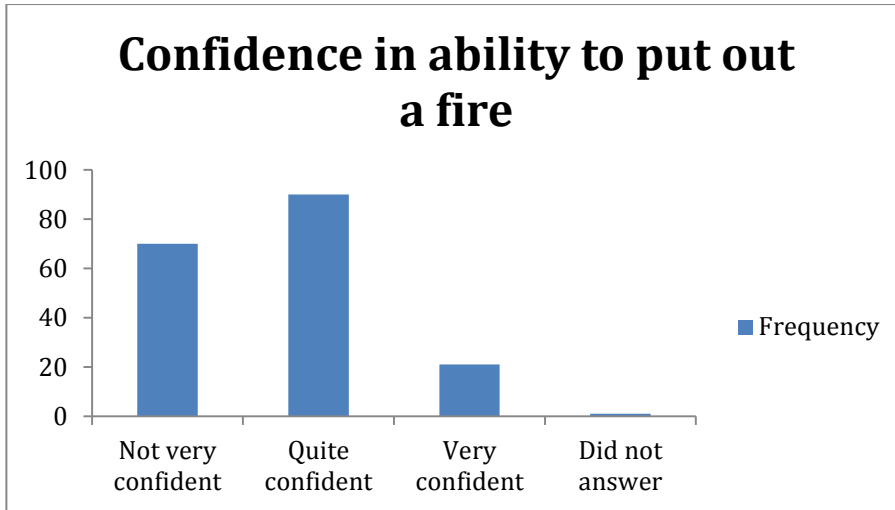


Figure 13: Participants’ confidence in ability to put out a fire expressed as a frequency.

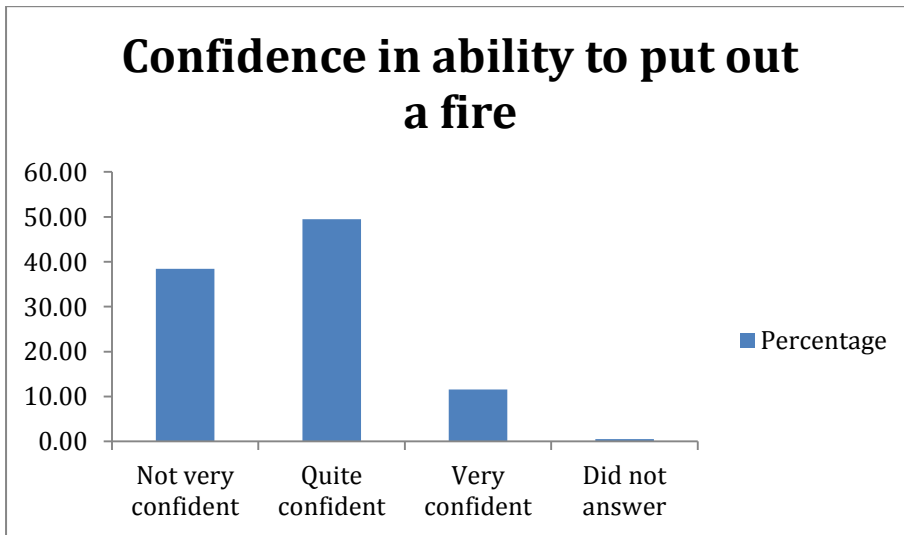
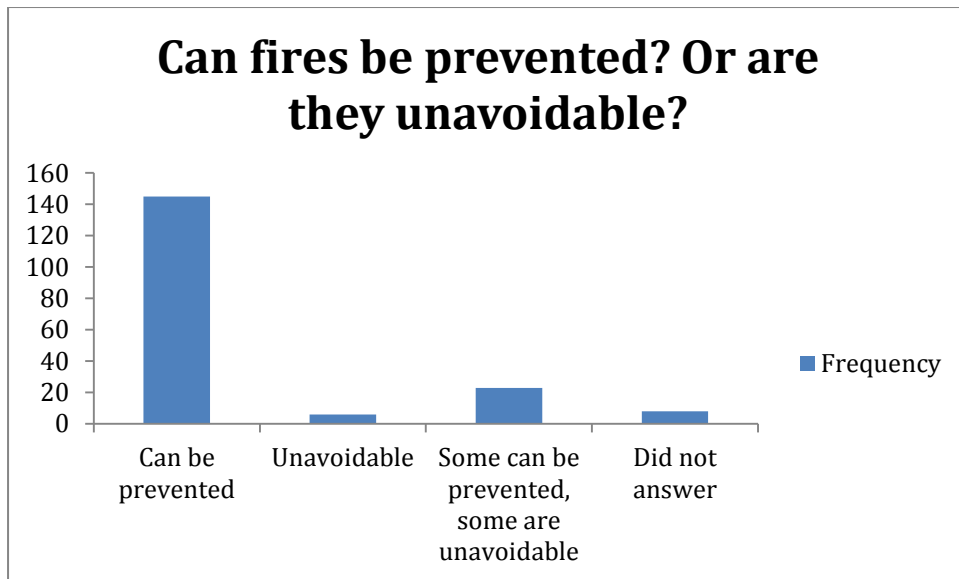


Figure 14: Participants’ confidence in ability to put out a fire expressed as a percentage.

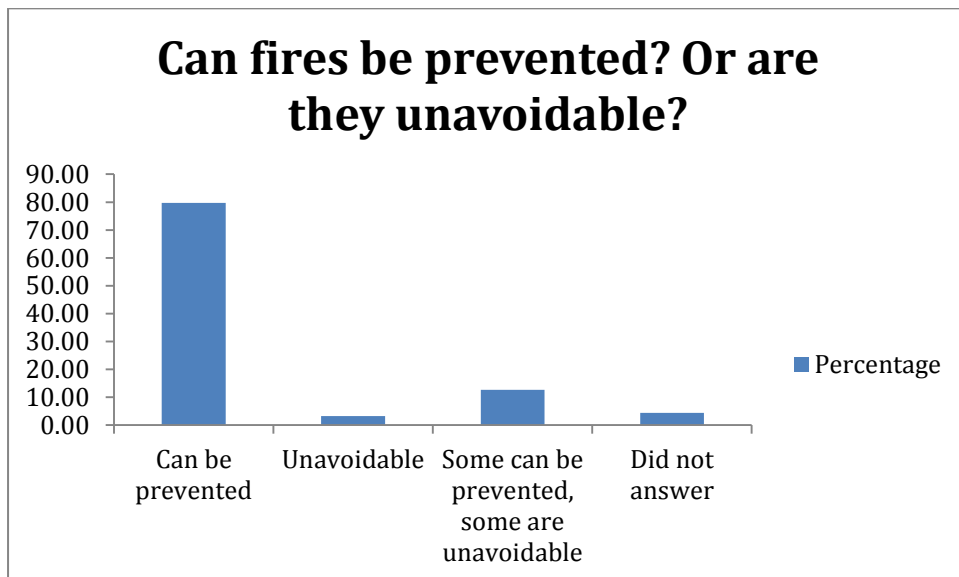
**Confidence.** As shown in Table 7 (see also Figures 13 and 14), approximately half (49.45%) of the participants in the Secondary school sample felt “quite confident” in their ability to put out a fire. 11.54% of the sample felt “very confident” in their ability and 38.46% reported that they were “not very confident” in their ability to put out a fire. 0.55% of the sample did not answer the question.

Table 8: Belief in whether fires can be prevented or are unavoidable.

Response	Frequency	Percentage
Can be prevented	145	79.67
Unavoidable	6	3.30
Some can be prevented, some are unavoidable	23	12.64
Did not answer	8	4.40



**Figure 15:** Participants' beliefs about whether fires can be prevented or are unavoidable expressed as a frequency.



**Figure 16:** Participants' beliefs about whether fires can be prevented or are unavoidable expressed as a percentage.

**Fires in the home as preventable or unavoidable.** As shown in Table 8 (see also Figures 15 and 16), the majority of the participants in the secondary school sample (79.67%) believe that fires can be prevented. 3.3% of the participants in the secondary school sample believe that fires are unavoidable while 12.64% believe that while some fires can be prevented, some are unavoidable. 4.4% of the sample did not answer the question.



Table 9: Ways fires can be prevented.

Response	Frequency	Percentage
Use of fire safety equipment	52	21.85
Safe fire behaviour	132	55.46
Fire safety education	20	8.40
Other	6	2.52
Did not answer	28	11.76



Figure 17: Participants' beliefs about how fires can be prevented expressed as a frequency.

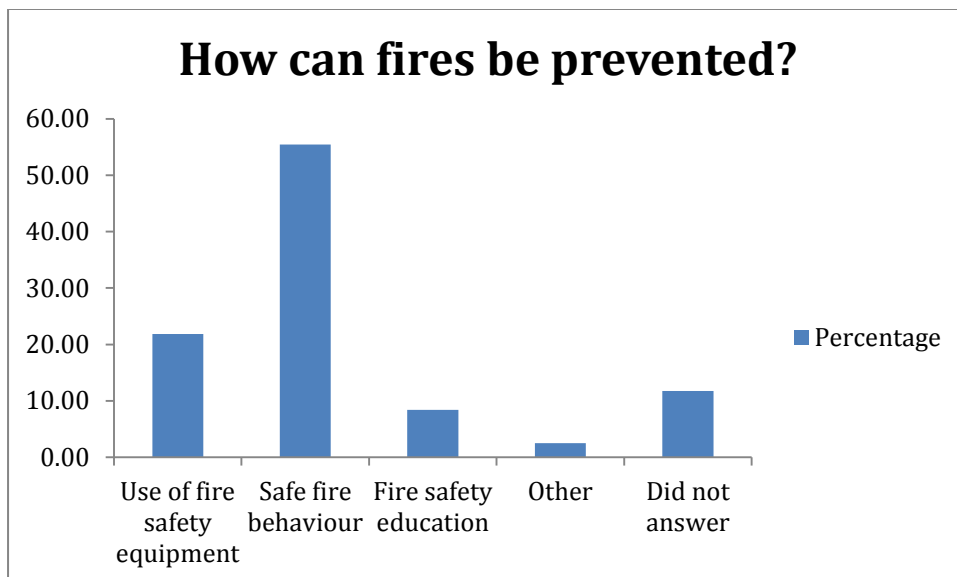


Figure 18: Participants' beliefs about how fires can be prevented expressed as a percentage.

**How to prevent fires.** As shown in Table 9 (see also Figures 17 and 18), more than half (55.46%) of the participants in the secondary school sample reported that fires could be prevented with safe fire behaviour (e.g. watching cooking, turning heat devices off after use).

Approximately one fifth (21.85%) of the participants in the secondary school sample reported that fires could be prevented with the use of fire safety equipment (e.g. smoke alarms, fire extinguishers) and 8.4% reported that fires could be prevented with fire safety education. 2.52% reported another way that fires could be prevented, not listed and 11.76% did not answer the question.

Table 10: Reasons fires are unavoidable.

Response	Frequency	Percentage
Electrical Fault	7	25.00
Human error	11	39.29
Weather/natural cause	1	3.57
Deliberate firesetting by another	2	7.14
Random occurrence	7	25.00

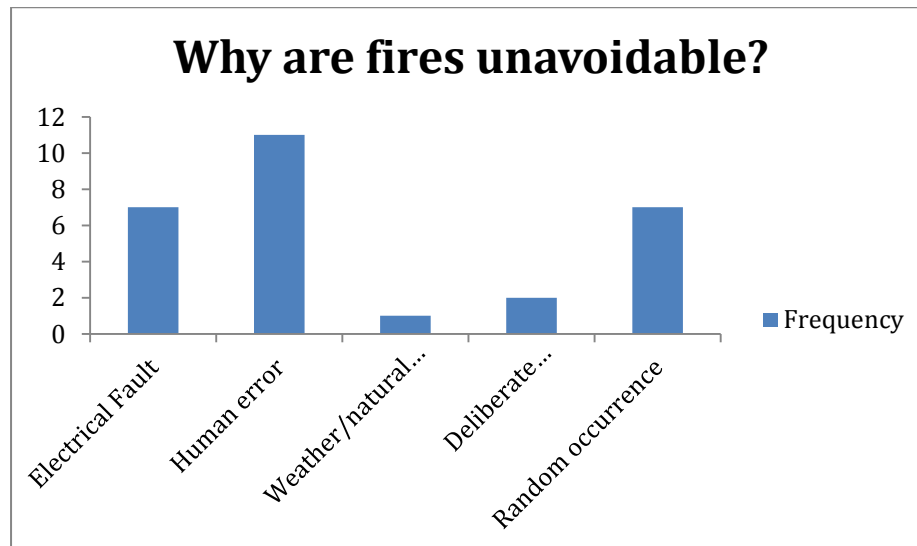


Figure 19: Participants' beliefs about why fires are unavoidable expressed as a frequency.

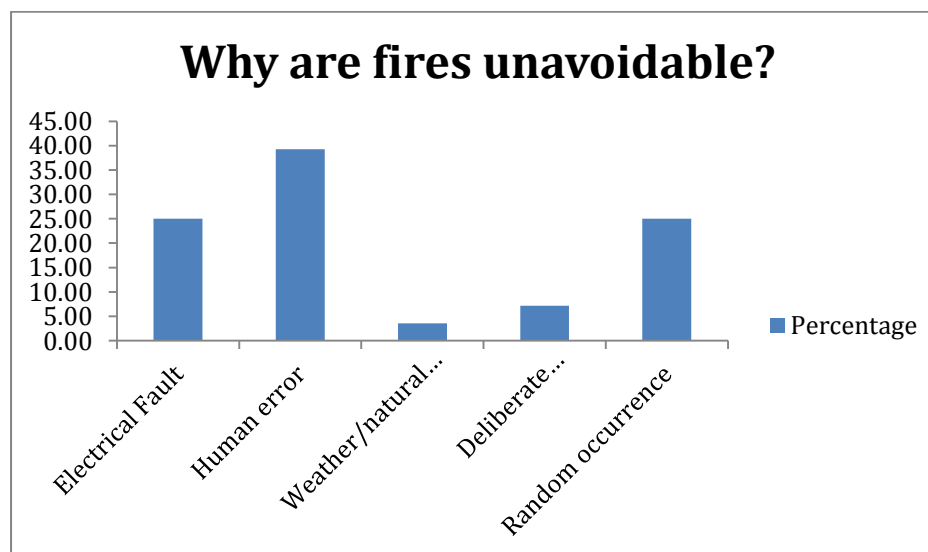


Figure 20: Participants' beliefs about why fires are unavoidable expressed as a percentage.

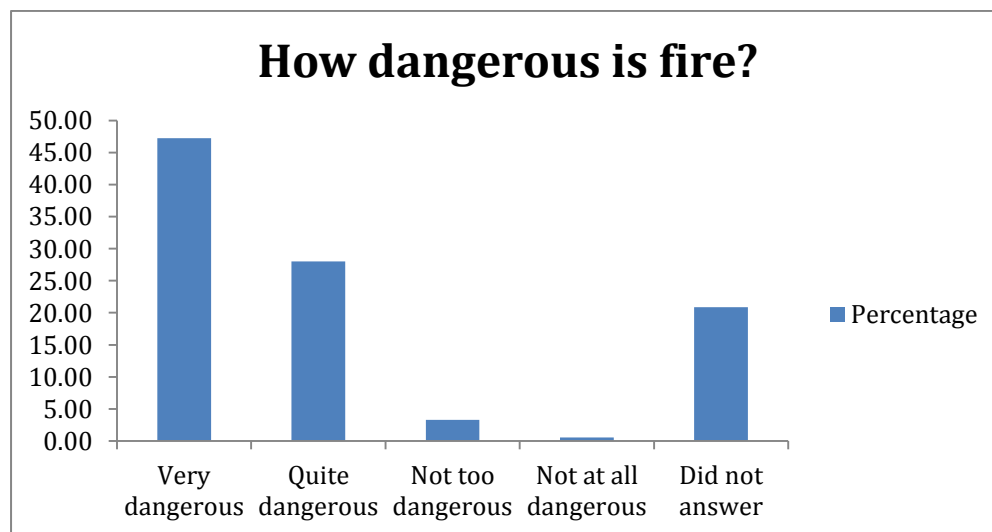
**Why fires are unavoidable.** As shown in Table 10 (see also Figures 19 and 20), of those who reported believing that fires were unavoidable, 39.29% said human error was the reason they are unavoidable while one quarter (25%) reported electrical faults as the reason, and one quarter (25%) believe that random occurrences are the reason. 3.57% believe weather/natural causes are the reason fires are unavoidable and 7.14% reported deliberate firesetting by others as the reason.

*Table 11: Perceived dangerousness of fire.*

Response	Frequency	Percentage
Very dangerous (e.g., “someone is often seriously burnt in a house or car fire”)	86	47.25
Quite dangerous (e.g., “sometimes people get burnt in a house or car fire”)	51	28.02
Not too dangerous (e.g., “it is rare for people to get burnt in a house or car fire”)	6	3.30
Not at all dangerous (e.g., “people hardly ever get burnt in a house or car fire”)	1	0.55
Did not answer	38	20.88



**Figure 21: Perceived dangerousness of fire expressed as a frequency.**

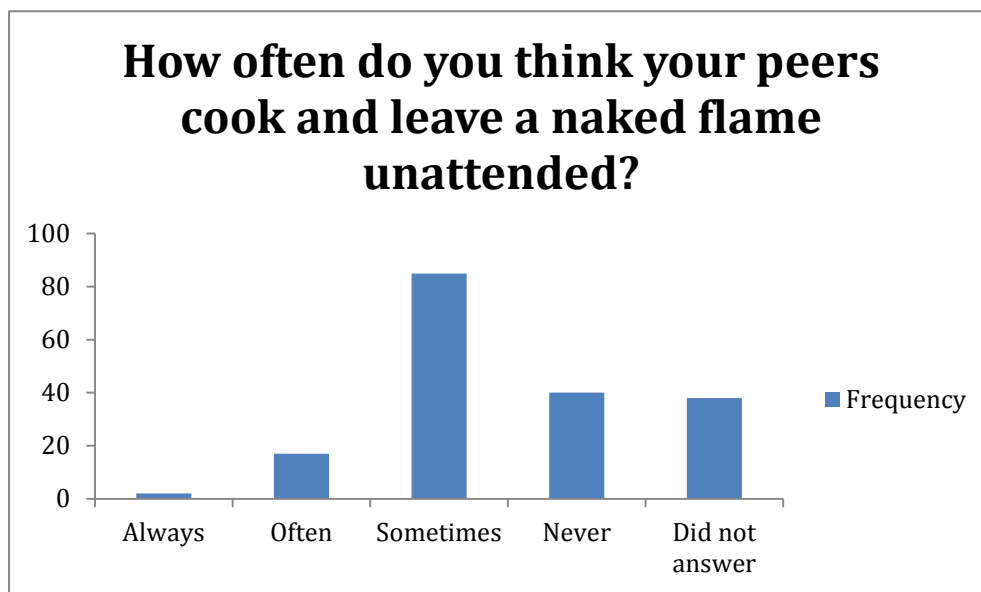


**Figure 22: Perceived dangerousness of fire expressed as a percentage.**

**Dangerousness of fire.** As shown in Table 11 (see also Figures 21 and 22), approximately half of the participants in the secondary school sample (47.25%) believe that fire is very dangerous. A little over a quarter believe that fire is quite dangerous (28.02%). 3.3% reported believing that fire is not too dangerous and only one participant (0.55%) believed that fire is not at all dangerous. 20.88% did not answer the question.

*Table 12: Beliefs about peer behaviour and how often leave a naked flame unattended.*

Response	Frequency	Percentage
Always	2	1.10
Often	17	9.34
Sometimes	85	46.70
Never	40	21.98
Did not answer	38	20.88



**Figure 23: Beliefs about peer behaviour and how often leave a naked flame unattended expressed as a frequency.**



**Figure 24: Beliefs about peer behaviour and how often leave a naked flame unattended expressed as a percentage.**

**Beliefs about peer behaviour.** As shown in Table 12 (see also Figures 23 and 24), almost half of the participants in the secondary school sample (46.7%) believe that their peers sometimes cook and leave a naked flame unattended. Approximately one fifth (21.98%) believe their peers never cook and leave a naked flame attended while 9.34% believe their peers often, and 1.1% believe their peers always, cook and leave a naked flame unattended. 20.88% did not answer the question.

*Table 13: Beliefs about own behaviour and how often leave a naked flame unattended.*

Response	Frequency	Percentage
Always	1	0.55
Often	9	4.95
Sometimes	39	21.43
Never	94	51.65
Did not answer	39	21.43

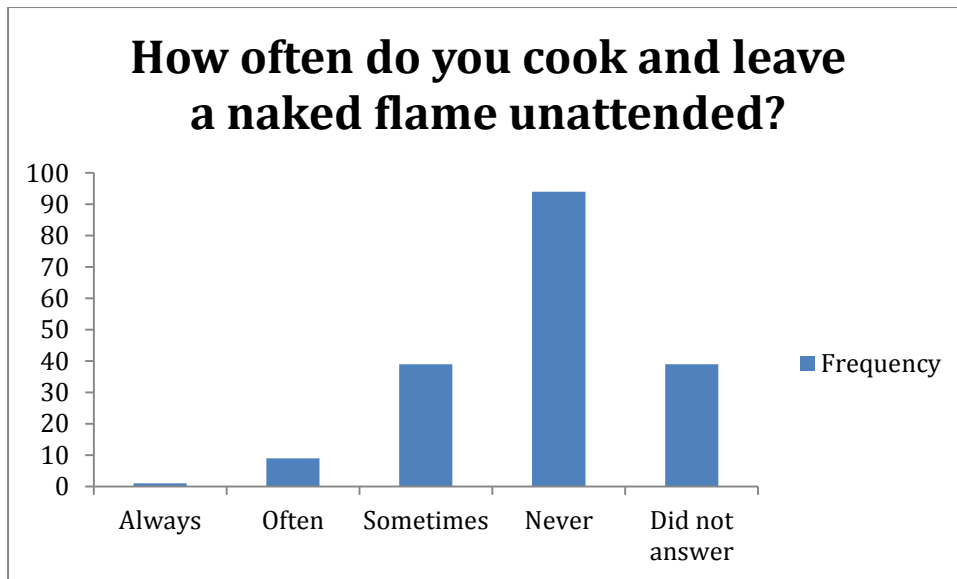


Figure 25: Beliefs about own behaviour and how often leave a naked flame unattended expressed as a frequency.

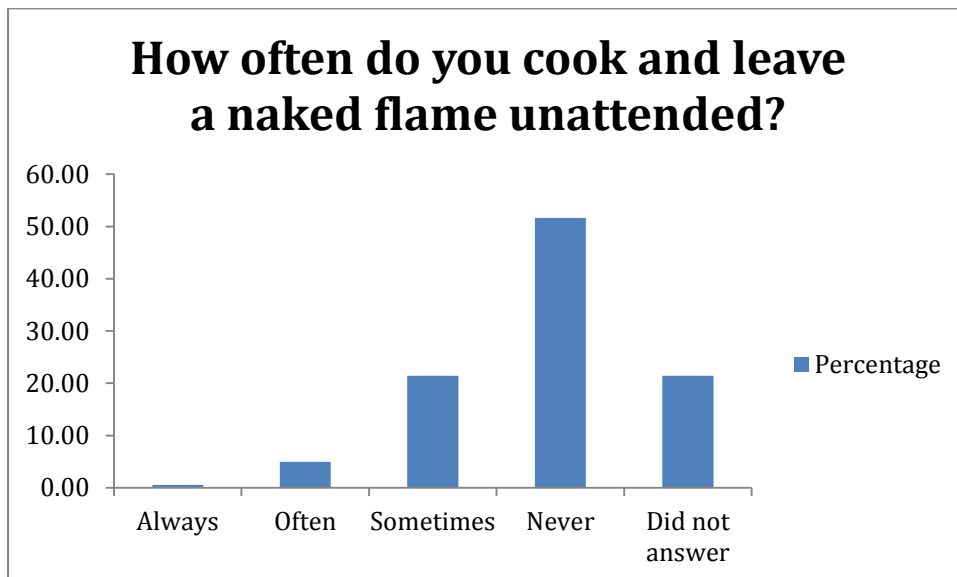


Figure 26: Beliefs about own behaviour and how often leave a naked flame unattended expressed as a percentage.

**Beliefs about own behaviour.** As shown in Table 13 (see also Figures 25 and 26), the majority of participants in the secondary school sample (51.65%) believe they never cook and leave a naked flame attended. Approximately one fifth (21.43%) believe they sometimes leave a naked flame unattended when they cook, while 4.95% believe they often left a naked a flame unattended when they cook and 0.55% believe they always do. 21.43% did not answer the question.

Table 14: Beliefs about peers' feelings around playing with fire.

Response	Frequency	Percentage
Strongly disapprove	40	21.98
Disapprove	63	34.62
Neutral	36	19.78
Approve	2	1.10
Strongly Approve	2	1.10
Did not answer	39	21.43

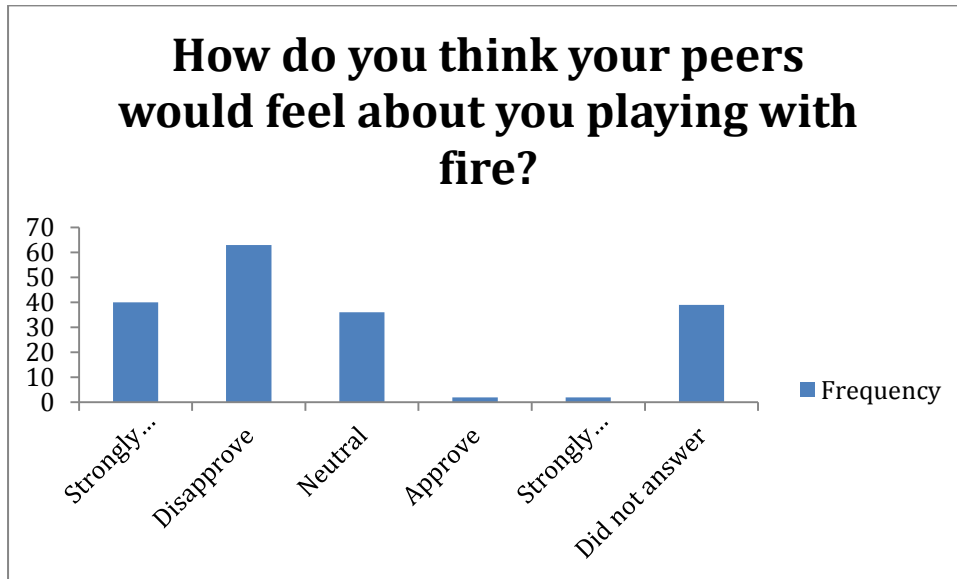


Figure 27: Beliefs about peers' feelings around individual playing with fire expressed as a frequency.

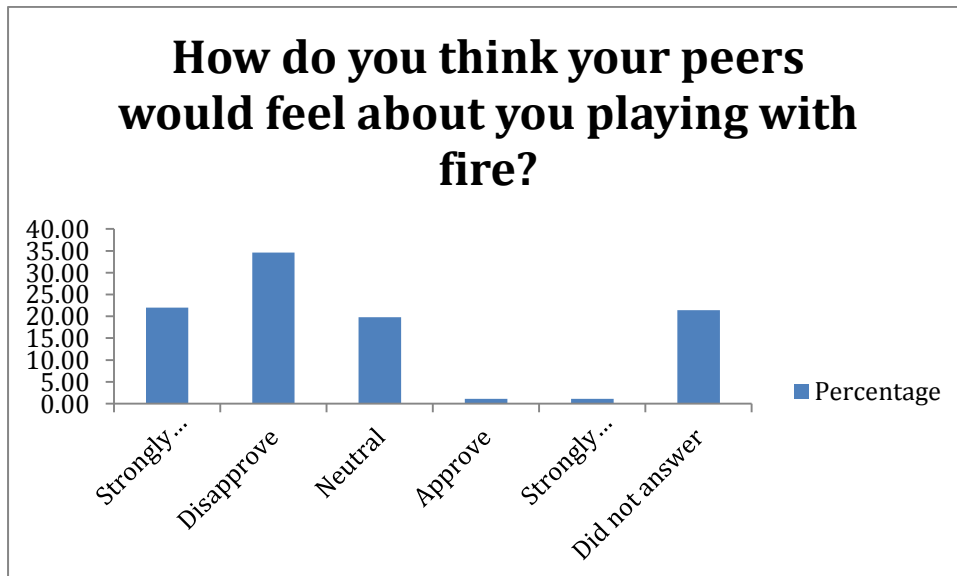
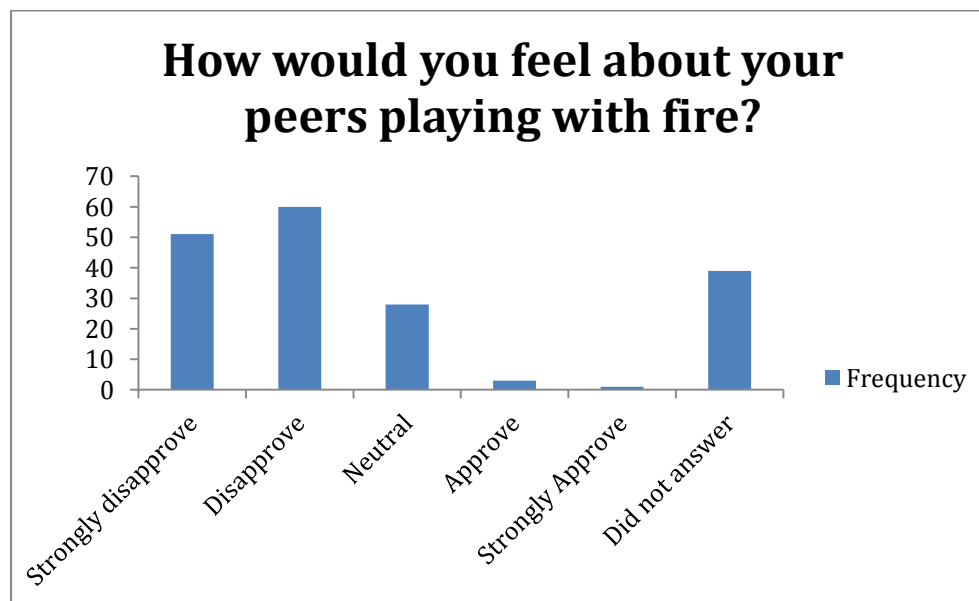


Figure 28: Beliefs about peers' feelings around individual playing with fire expressed as a percentage.

**Perceived feelings of peers about individual playing with fire.** As shown in Table 14 (see also Figures 27 and 28), more than one third of the participants in the secondary school sample (34.62%) believe their peers would disapprove of them playing with fire and approximately one fifth (21.98%) believe their peers would strongly disapprove of them playing with fire. 19.78% believe their peers would feel neutral about them playing with fire while 1.1% believe their peers would approve and 1.1% believe their peers would strongly approve. 21.43% did not answer the question.

*Table 15: Own feelings about peers playing with fire.*

Response	Frequency	Percentage
Strongly disapprove	51	28.02
Disapprove	60	32.97
Neutral	28	15.38
Approve	3	1.65
Strongly Approve	1	0.55
Did not answer	39	21.43



**Figure 29: Participants' own feelings about peers playing with fire expressed as a frequency.**



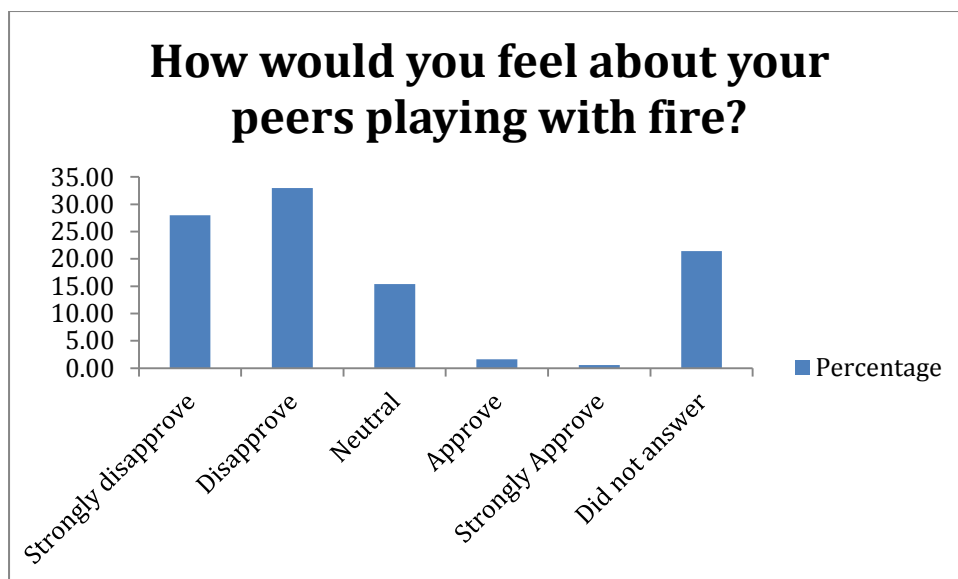


Figure 30: Participants' own feelings about peers playing with fire expressed as a percentage.

**Own feelings about peers playing with fire.** As shown in Table 15 (see also Figures 29 and 30), approximately one third of the participants in the secondary school sample (32.97%) reported that they would disapprove of their peers playing with fire and more than one quarter (28.02%) reported they would strongly disapprove. 15.38% said they would feel neutral about their peers playing with fire while 1.65% said they would approve and 0.55% said they would strongly approve. 21.43% did not answer the question.

Table 16: Reasons for fire use by young adults.

Response	Frequency	Percentage
Fun/enjoyment	65	23.64
Cooking	50	18.18
Smoking	34	12.36
Fireworks	6	2.18
For attention/social acceptance	21	7.64
Boredom	14	5.09
Bonfires/campfires	17	6.18
Heat/light	19	6.91
Experimentation/curiosity	5	1.82
Stupidity	5	1.82
Did not answer	39	14.18

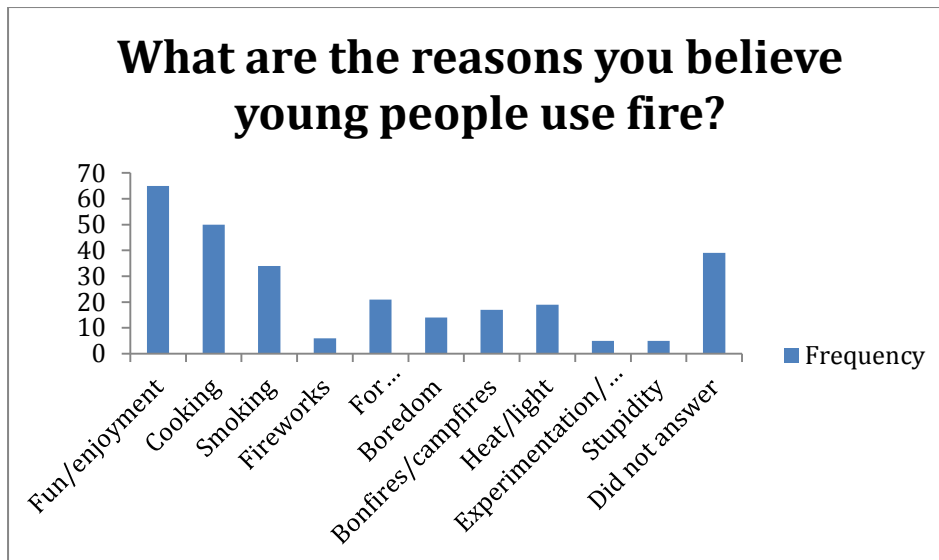


Figure 31: Reasons for fire use expressed as a frequency.

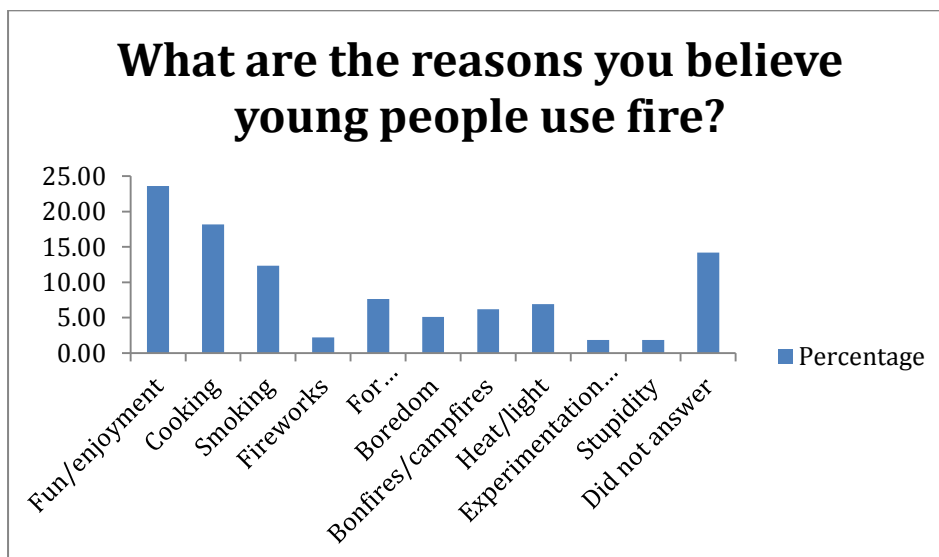


Figure 32: Reasons for fire use expressed as a percentage.

**Reasons for fire use.** As shown in Table 16 (see also Figures 31 and 32), the most commonly reported reasons participants in the secondary school sample believe people their age use fire were for fun/enjoyment (23.64%) and for cooking (18.18%). 12.36% said for smoking, 7.64% said for attention/social acceptance, 6.91% said for heat or light and 6.18% said for bonfires/campfires. 5.09% said for boredom, 2.18% said for fireworks, 1.82% for experimentation/curiosity, and 1.82% reported the reason as stupidity. 14.18% did not answer the question.

## Safe and Unsafe Fire Behaviour

Table 17: Fire safety equipment present in home.

Response	Frequency	Percentage
Smoke alarm	152	63.87
Fire extinguisher	63	26.47
Fire blanket	13	5.46
Other	5	2.10
None	5	2.10

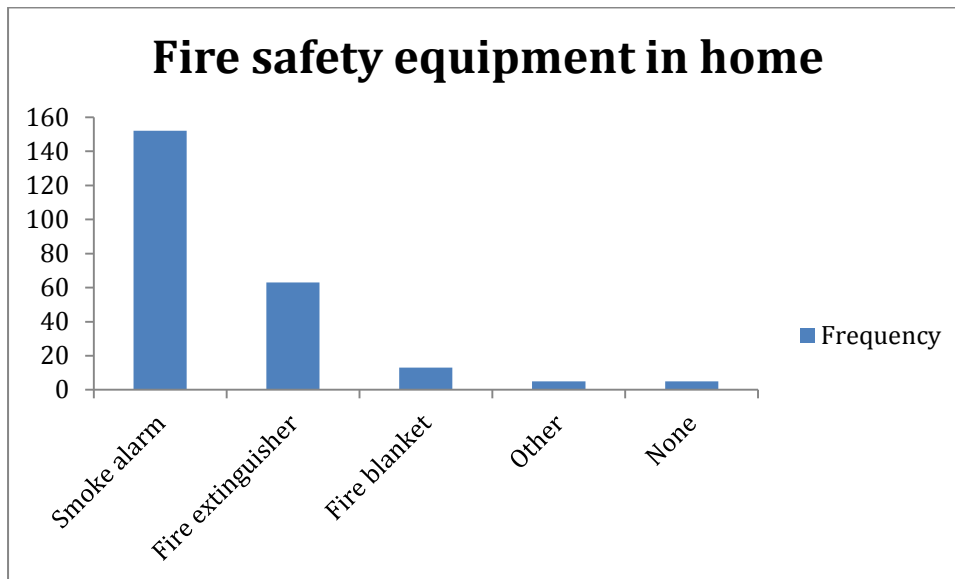


Figure 33: Fire safety equipment present in participants' home expressed as a frequency.

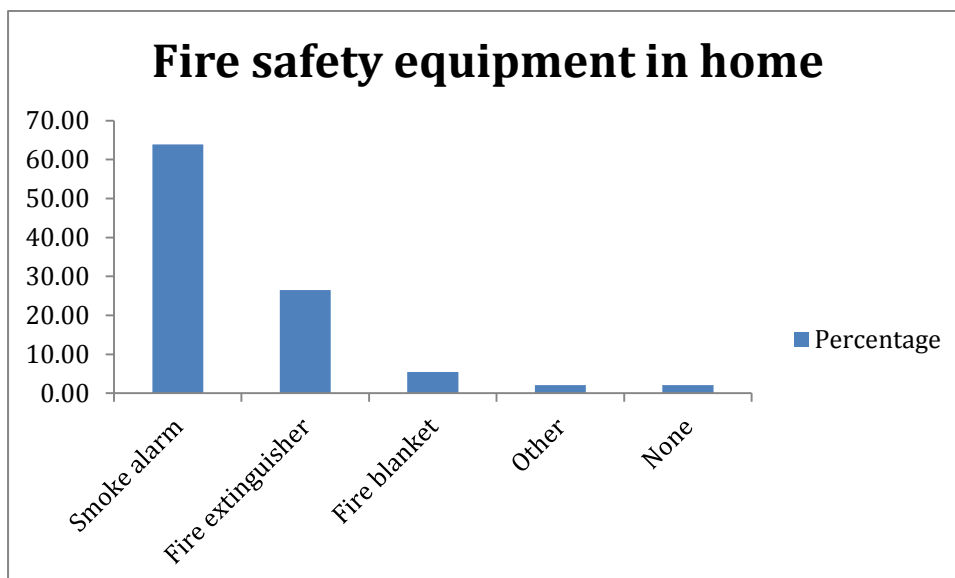


Figure 34: Fire safety equipment present in participants' home expressed as a percentage.

**Fire safety equipment in the home.** As shown in Table 17 (see also Figures 33 and 34), the majority of the participants in the secondary school sample (63.87%) had at least one

smoke alarm in their home. A little over one quarter (26.47%) reported having a fire extinguisher in their home, 5.46% reported having a fire blanket, 2.1% of the participants in the secondary school sample reported having some other fire safety equipment not already listed and 2.1% of the sample said they had no fire safety equipment in their home.

Table 18: Experienced a fire in the previous 12 months.

Response	Frequency	Percentage
Yes	5	2.75
No	159	87.36
Did not answer	18	9.89



Figure 35: Participants' who have experienced a fire in the previous 12 months expressed as a frequency.

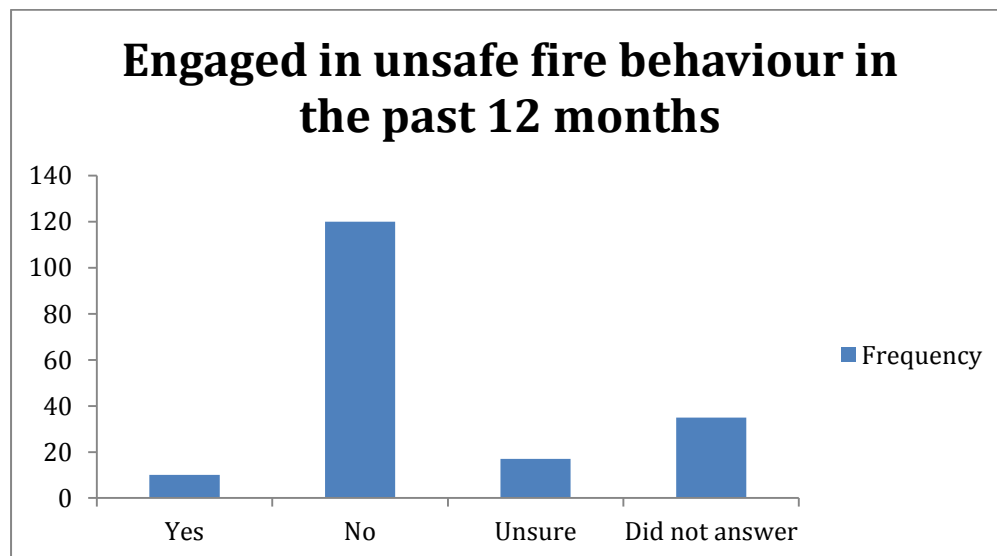


Figure 36: Participants' who have experienced a fire in the previous 12 months expressed as a percentage.

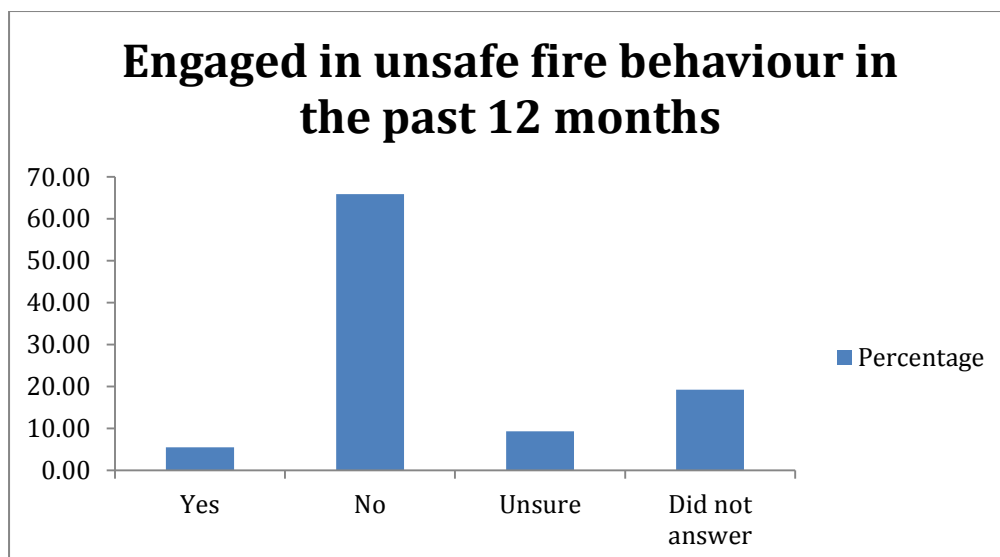
**Experience of fire in the previous 12 months.** As shown in Table 18 (see also Figures 35 and 36), the majority of the participants in the secondary school sample (87.36%) had not experienced a fire in the previous 12 months before completing the survey. 2.75% of the sample had experienced a fire in the previous 12 months and 9.89% did not answer the question.

*Table 19: Engaged in unsafe fire behaviour in the previous 12 months.*

Response	Frequency	Percentage
Yes	10	5.49
No	120	65.93
Unsure	17	9.34
Did not answer	35	19.23



**Figure 37: Participants' who have engaged in unsafe fire behaviour in the previous 12 months expressed as a frequency.**

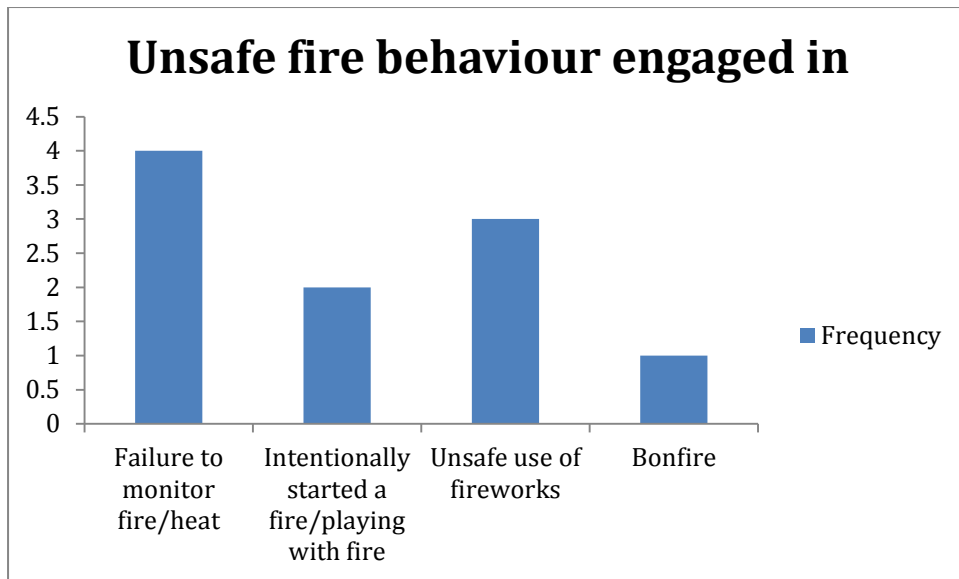


**Figure 38: Participants' who have engaged in unsafe fire behaviour in the previous 12 months expressed as a percentage.**

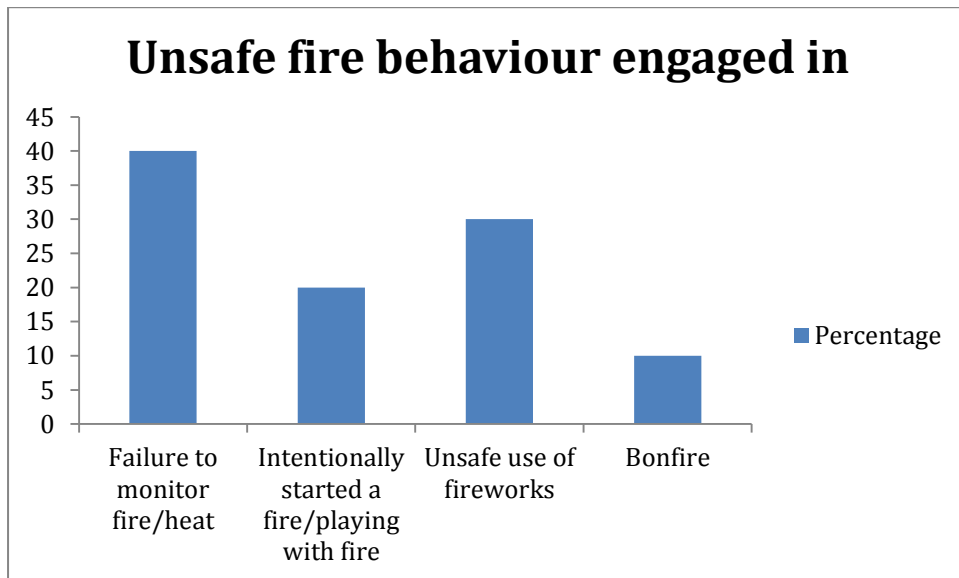
**Engagement in unsafe fire behaviour in previous 12 months.** As shown in Table 19 (see also Figures 37 and 38), the majority of the participants in the secondary school sample (65.93%) did not report having engaged in any unsafe fire behaviour in the previous 12 months before completing the survey. 5.49% of the participants in the secondary school sample reported having engaged in some unsafe fire behaviour in the previous 12 months, 9.34% were unsure whether they had engaged in any unsafe fire behaviour and 19.23% did not answer the question.

*Table 20: Unsafe fire behaviour engaged in.*

Response	Frequency	Percentage
Failure to monitor fire/heat	4	40
Intentionally started a fire/playing with fire	2	20
Unsafe use of fireworks	3	30
Bonfire	1	10



**Table 39: Unsafe behaviour engaged in by participants' expressed as a frequency.**



**Table 40: Unsafe behaviour engaged in by participants' expressed as a percentage.**

**Unsafe fire behaviour engaged in.** As shown in Table 20 (see also Figures 39 and 40), of those who reported having engaged in unsafe fire behaviour in the previous 12 months before completing the survey, 40% reported failing to monitor fire/heat, 30% reported unsafe use of fireworks and 20% reported having intentionally started a fire or having played with fire. 10% reported having a bonfire.

## Suggestions for How Fire Safety Campaigns Can be Improved

Table 21: Suggestions for how best to engage young adults in safe fire behaviour.

Response	Frequency	Percentage
More campaigns generally	9	4.71
More/better education on fire safety	31	16.23
Young adult specific campaigns	4	2.09
Use of actual victims in fire safety campaigns	3	1.57
Campaigns highlighting the negative consequences of fire	19	9.95
Use of social media/online mediums	8	4.19
TV as campaign medium	5	2.62
Promoting fire safety as "cool"	4	2.09
Entertaining and memorable campaigns	4	2.09
Other	11	5.76
Did not answer	93	48.69

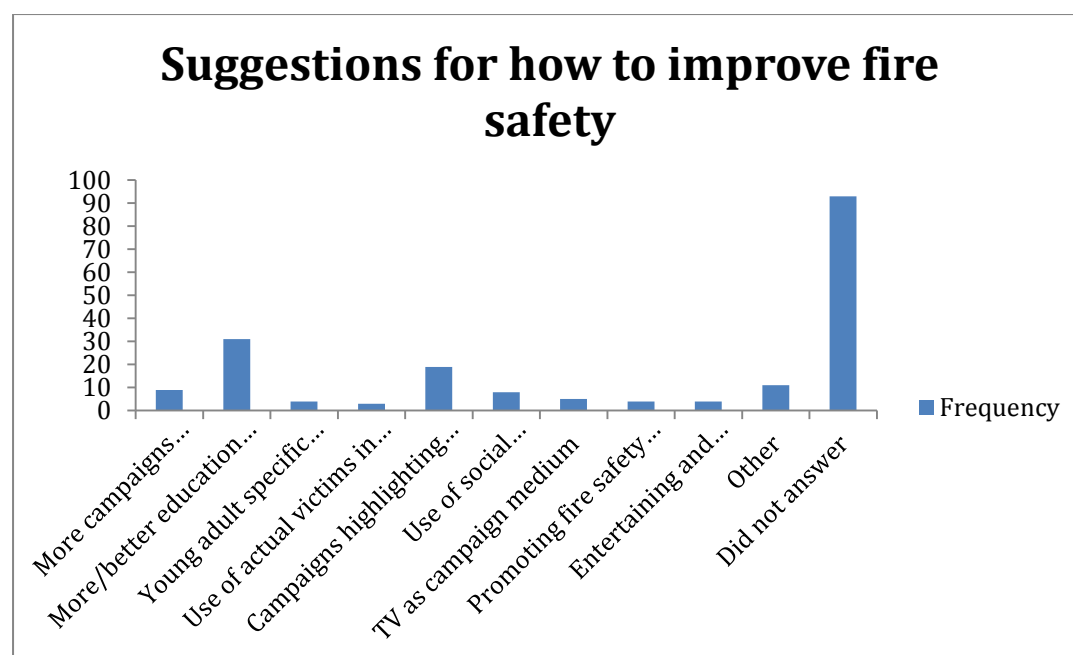
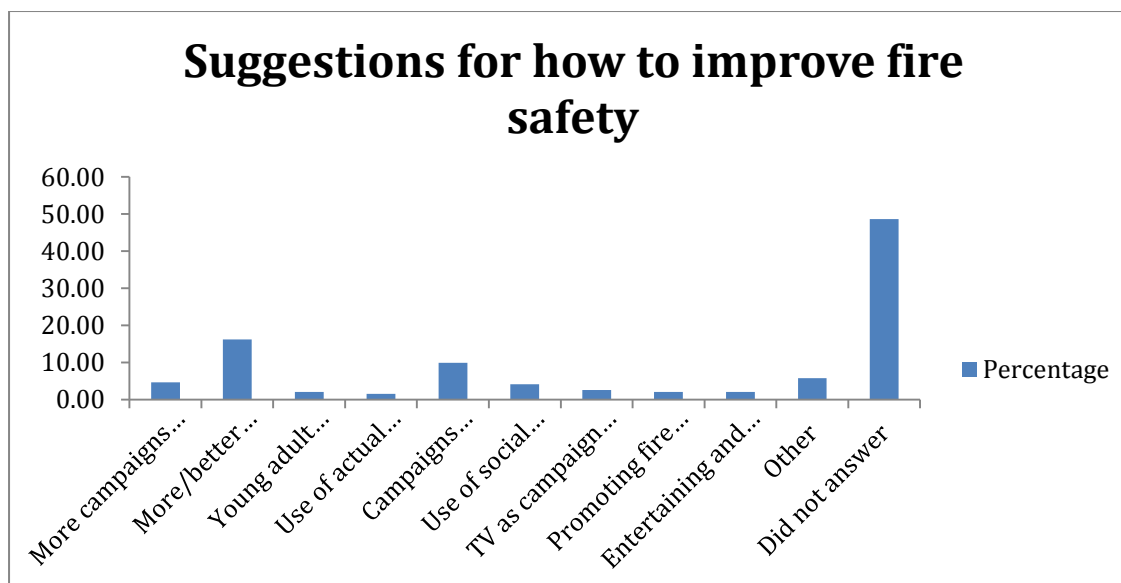


Figure 41: Suggestions for how to best engage young adults in safe fire behaviour expressed as a frequency.





**Figure 42: Suggestions for how to best engage young adults in safe fire behaviour expressed as a percentage.**

**Suggestions for how better to engage young people in safe fire behaviour.** As shown in Table 21 (see also Figures 41 and 42), the most commonly reported suggestion was more and better education on fire safety (including how fires start and how to put them out) (16.23%), followed by campaigns that highlight the negative consequences of fire (including injuries, legal consequences and financial consequences) (9.95%). Other suggestions included more campaigns in general (4.71%), campaigns specifically for young adults (2.09%), the use of social media and online mediums (e.g. YouTube) (4.19%), TV as a campaign medium (2.62%), promoting fire safety as “cool” (2.09%), use of actual victims in safety campaigns (1.57%), entertaining and memorable campaigns (2.09%) and 5.76% suggested another way to engage young people not already listed. Unfortunately 48.69% did not answer the question.

*Table 22: Preferred method of engagement.*

Response	Frequency	Percentage
Presentations by the fire service	32	17.58
Online modules	4	2.20
YouTube	14	7.69
Twitter	0	0.00
Facebook	30	16.48
Tumblr	1	0.55
Radio campaigns	2	1.10
TV advertisements	47	25.82
Did not answer	52	28.57

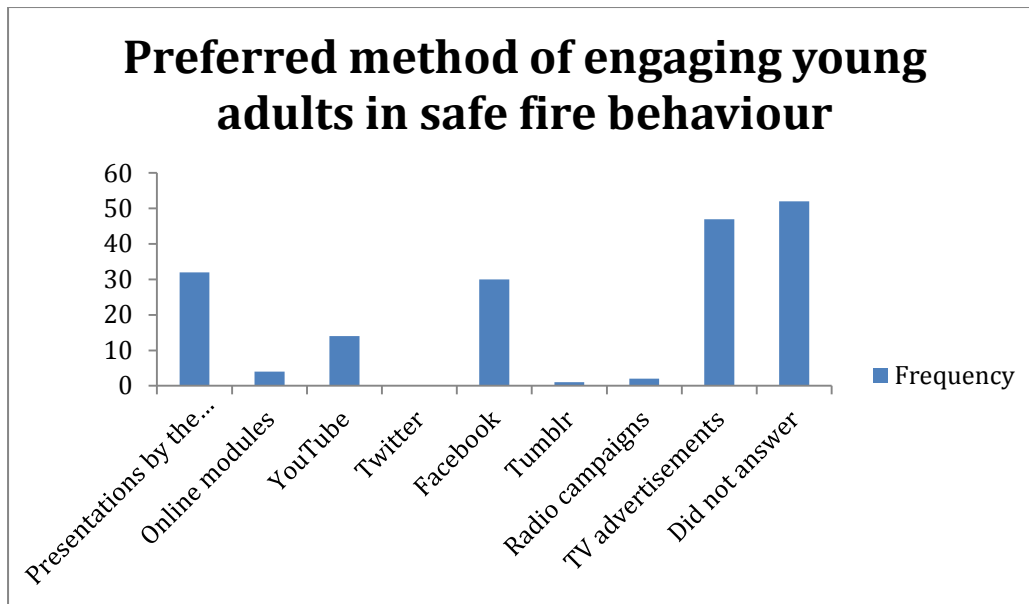


Figure 43: Preferred method of engagement expressed as a frequency.

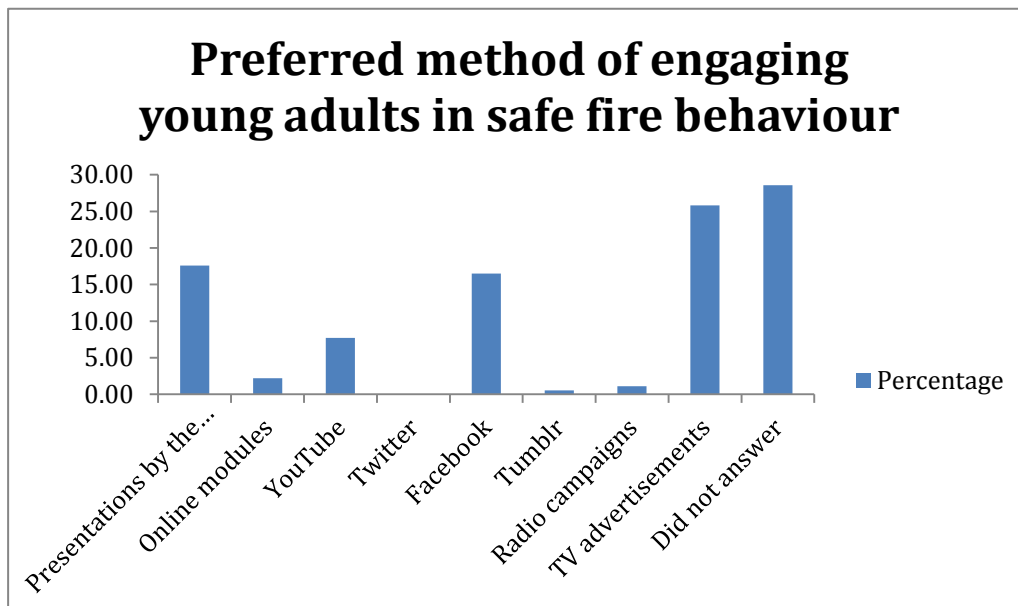


Figure 44: Preferred method of engagement expressed as a percentage.

**Preferred method of engaging young adults in safe fire behaviour.** As shown in Table 22 (see also Figures 43 and 44), the most commonly reported preferred method was TV advertisements (25.82%) followed by presentations by the fire service (17.58%) and the use of Facebook (16.48%).

Table 23: Least preferred method of engagement.

Response	Frequency	Percentage
Presentations by the fire service	10	5.49
Online modules	20	10.99
YouTube	3	1.65
Twitter	23	12.64
Facebook	0	0.00
Tumblr	39	21.43
Radio campaigns	26	14.29
TV advertisements	9	4.95
Did not answer	52	28.57

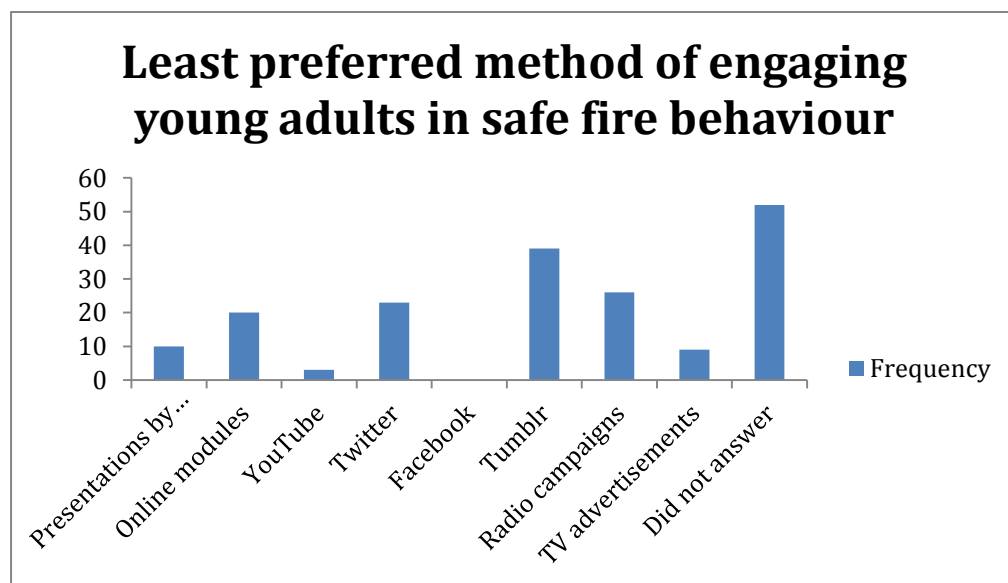


Figure 45: Least preferred method of engagement expressed as a frequency.

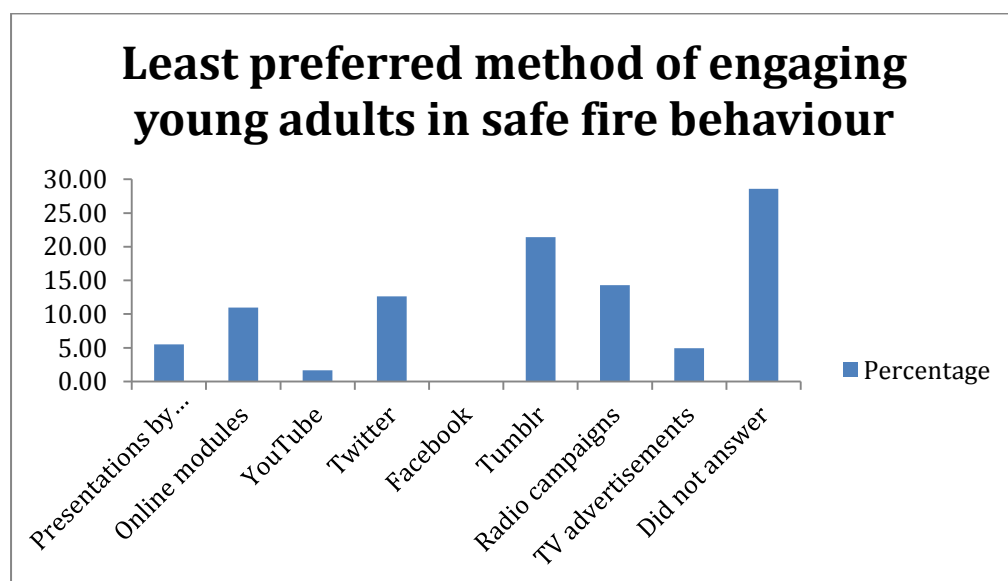


Figure 46: Least preferred method of engagement expressed as a percentage.

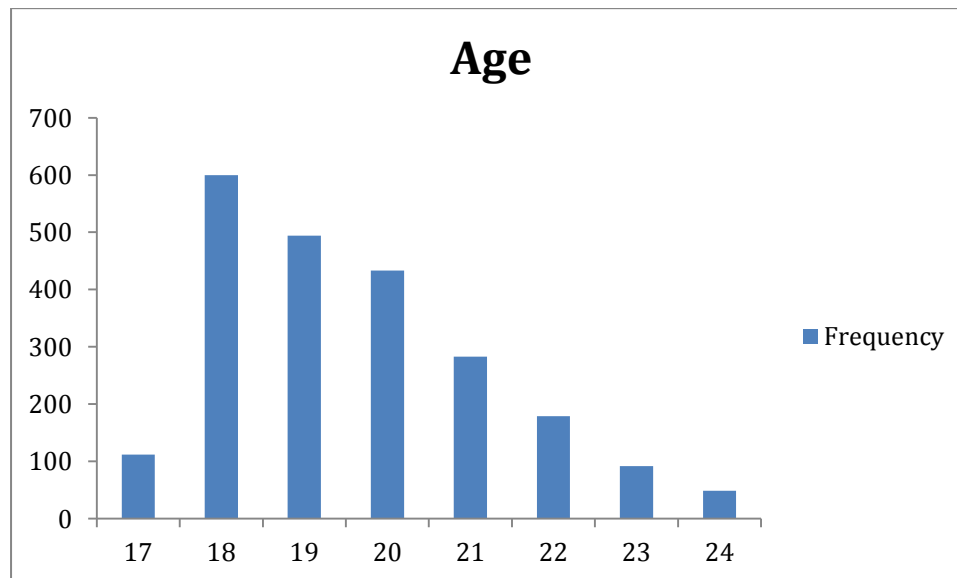
**Least preferred method of engaging young adults in safe fire behaviour.** As shown in Table 23 (see also Figures 45 and 46), the least preferred method was the use of Tumblr (21.43%) followed by radio campaigns (14.29%).

## University Sample

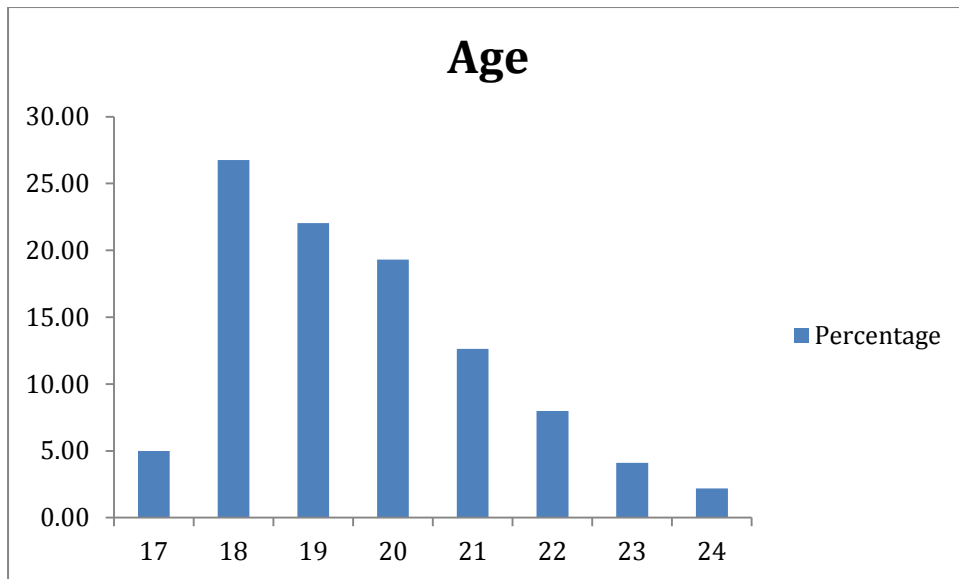
### Demographic Information

*Table 24: Age of participants in university sample.*

Response	Frequency	Percentage
17	112	5.00
18	600	26.76
19	494	22.03
20	433	19.31
21	283	12.62
22	179	7.98
23	92	4.10
24	49	2.19



**Figure 47: Age of participants in the university sample expressed as a frequency.**

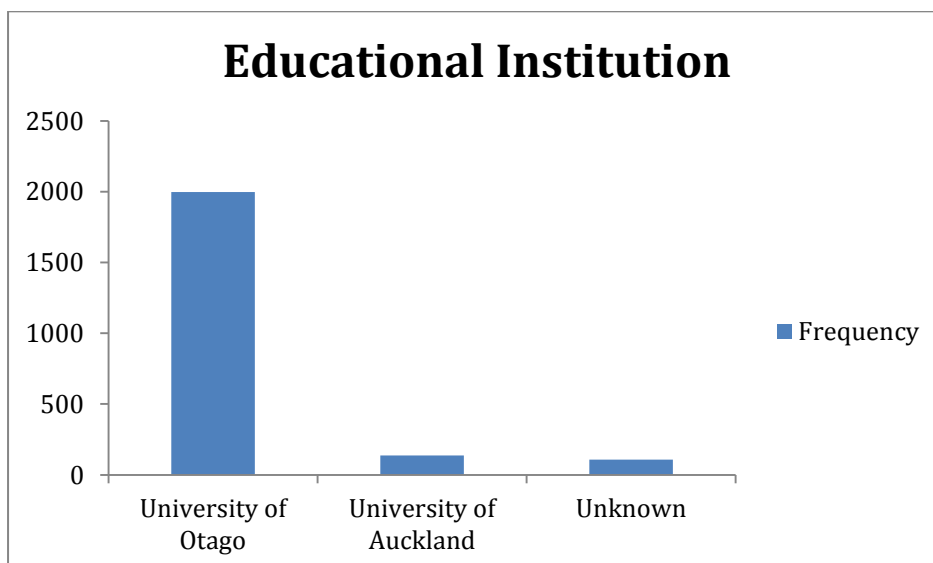


**Figure 48: Age of participants in the university sample expressed as a percentage.**

**Age.** As shown in Table 24 (see also Figures 47 and 48), the majority of participants in the university sample (68.1%) were aged between 18 and 20 years. 5% of those in the sample were aged 17 years, 12.62% were aged 21, 7.98% were aged 22, 4.1% were aged 23 and 2.19% were aged 24.

*Table 25: Educational Institution of participants in the university sample.*

Response	Frequency	Percentage
University of Otago	1997	89.07
University of Auckland	137	6.11
Unknown	108	4.82



**Figure 49: Educational institution of participants in the university sample expressed as a frequency.**

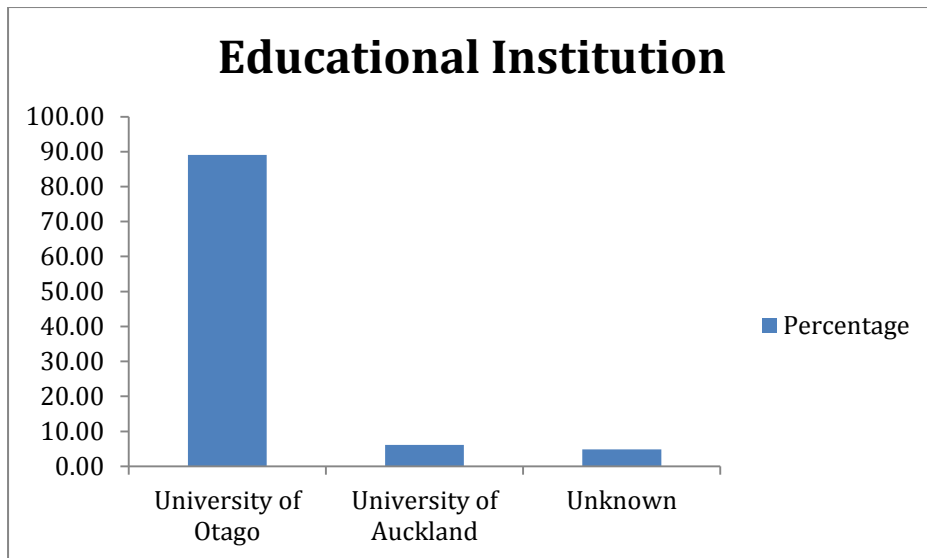


Figure 50: Educational institution of participants in the university sample expressed as a percentage.

**Educational Institution.** As shown in Table 25 (see also Figures 49 and 50), the majority of participants in the university sample (89.07%) were from the University of Otago. Only 6.11% were from the University of Auckland and information on educational institution was not available for 4.82%.

Table 26: Ethnicity of participants in the university sample.

Response	Frequency	Percentage
NZ/European	1715	69.55
Maori	166	6.73
Pacific	78	3.16
Asian	325	13.18
Other	182	7.38

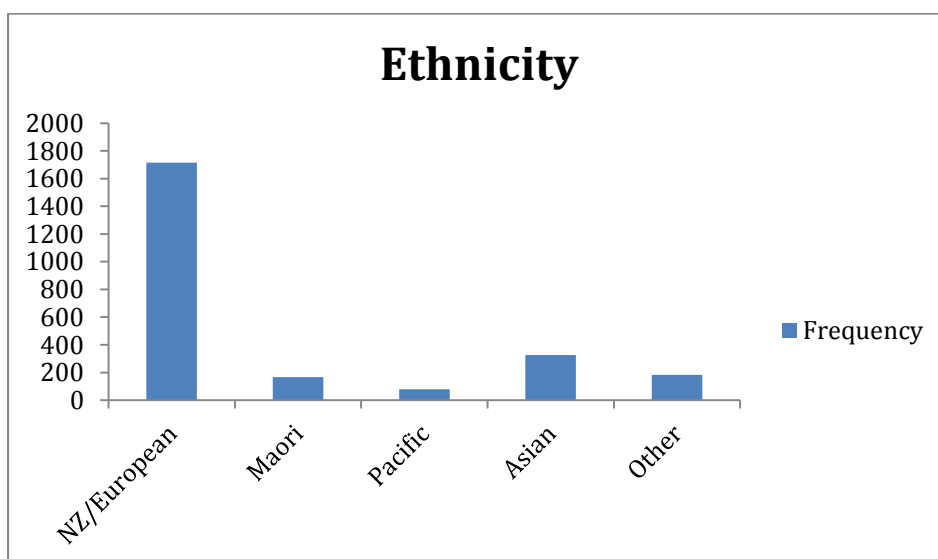
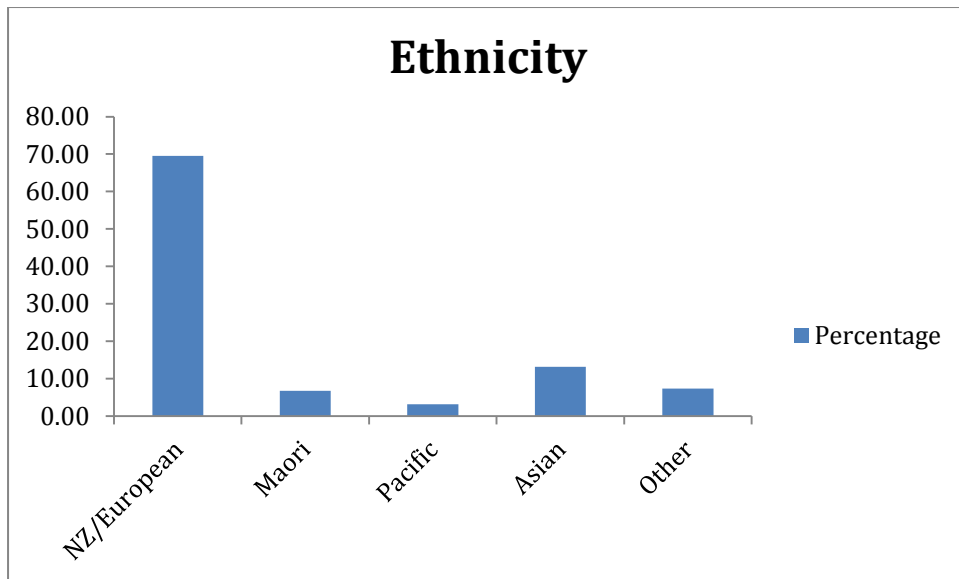


Figure 51: Ethnicity of participants in the university sample expressed as a frequency.



**Figure 51: Ethnicity of participants in the university sample expressed as a percentage.**

**Ethnicity.** As shown in Table 26 (see also Figures 51 and 52), the majority of the participants in the university sample identified as New Zealand/European (69.55%). The next most commonly identified ethnicity was Asian (13.18%), followed by Other (7.38%), Maori (6.73%) and finally Pacific (3.16%). It is necessary to remember that participants were able to choose to identify as more than one ethnicity.

*Table 27: Current residence of participants in the university sample.*

Response	Frequency	Percentage
At home with parents/caregivers	238	10.62
In a flat	1301	58.03
In a hall of residence	642	28.64
Boarding	31	1.38
Unknown	2	0.09
Other	28	1.25

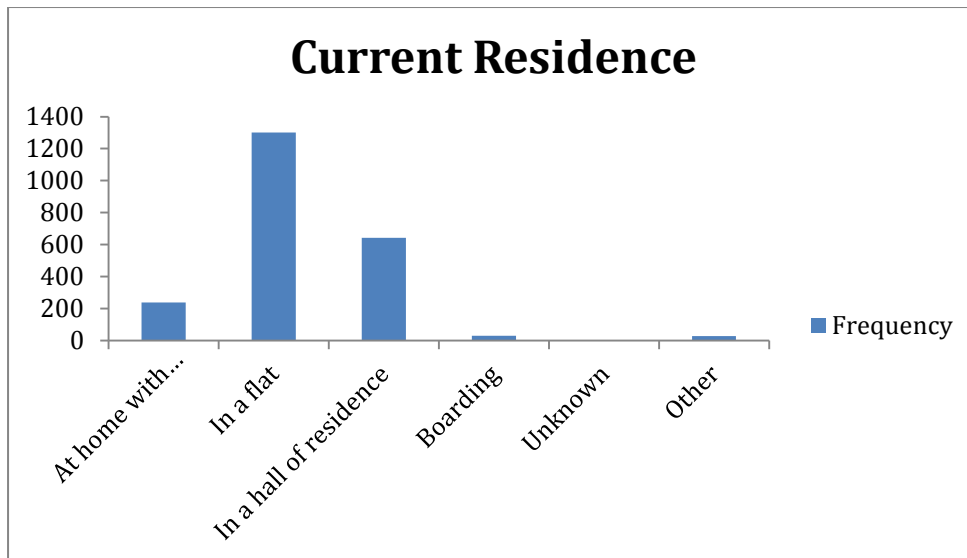


Figure 53: Current residence of participants expressed as a frequency.

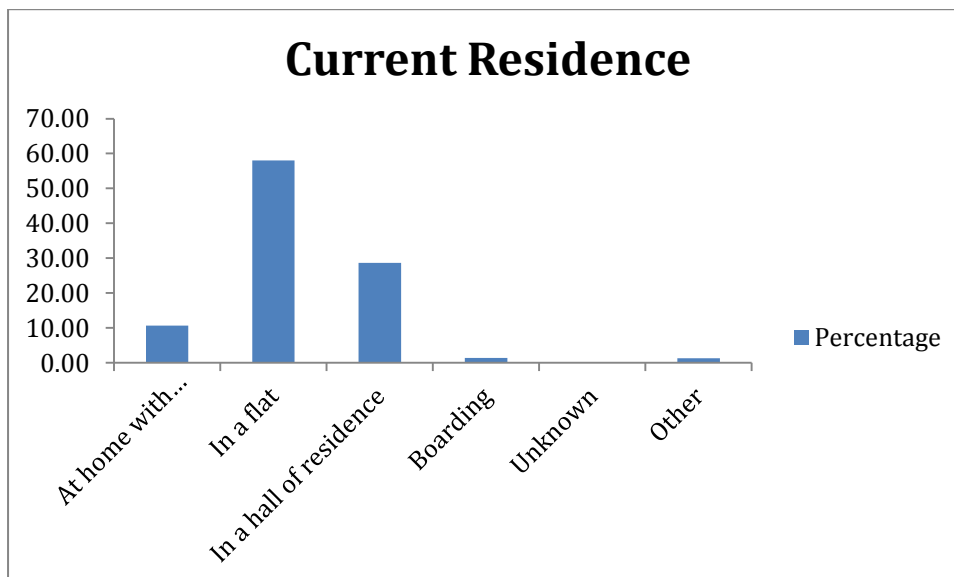


Figure 54: Current residence of participants expressed as a percentage.

**Current Residence.** As shown in Table 27 (see also Figures 53 and 54), the majority of participants in the university sample (58.03%) were living in a flat at the time the survey was completed. Approximately one quarter (28.64%) of the sample were living in a Hall of Residence while 10.62% of the sample were living at home with parents/caregivers, 1.38% were boarding and 1.25% were living in some other type of residence not listed. Information on current residence was not available for 0.09% of the sample (2 participants).



## Knowledge around Fire

Table 28: Participants' knowledge about how to put out an oil fire.

Response	Frequency	Percentage
Pour water on it	127	5.66
Pour baking soda on it	186	8.30
Pour flour on it	253	11.28
Cover it with a lid	1420	63.34
Call 111 as there is nothing you can do	240	10.70
Did not answer	16	0.71

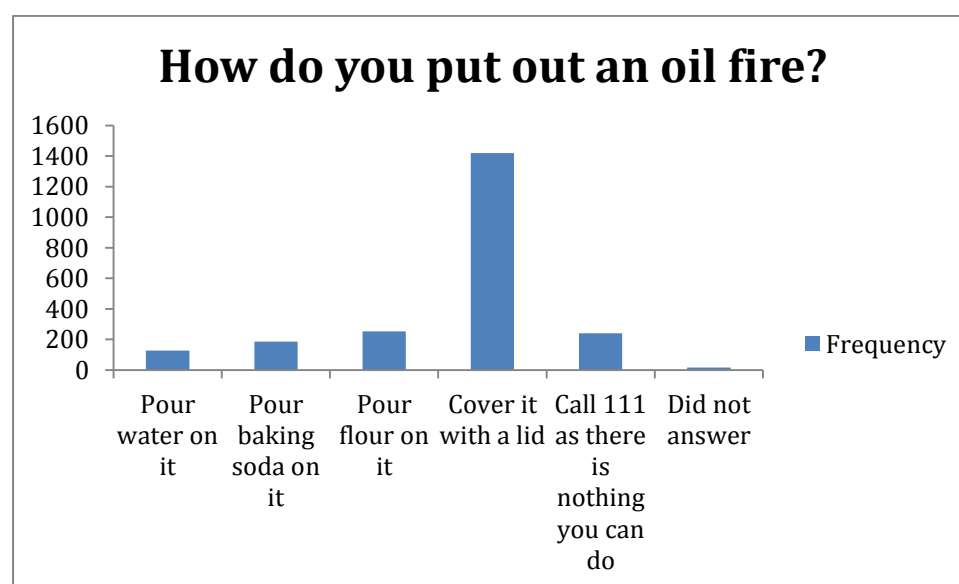


Figure 55: Participants' knowledge about how to put out an oil fire expressed as a frequency.

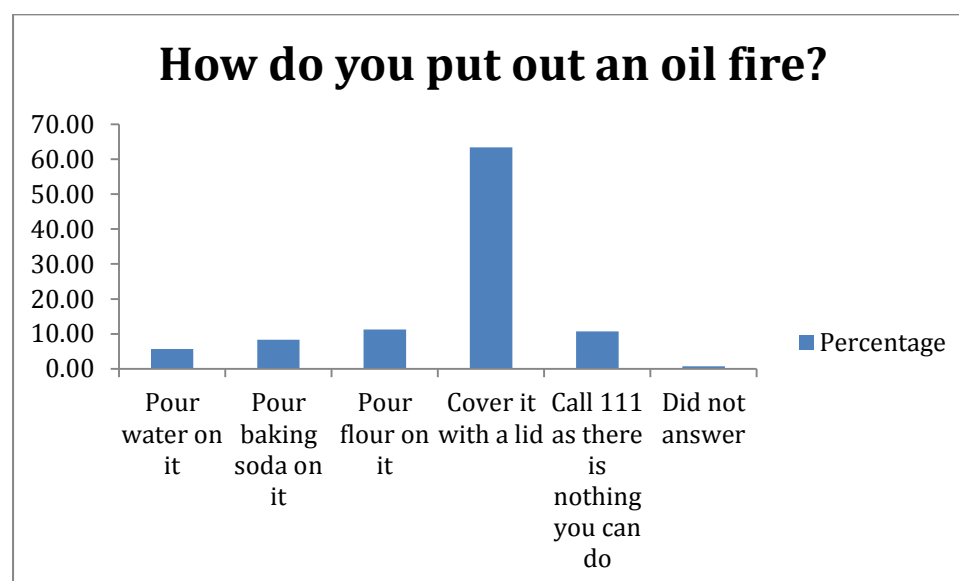
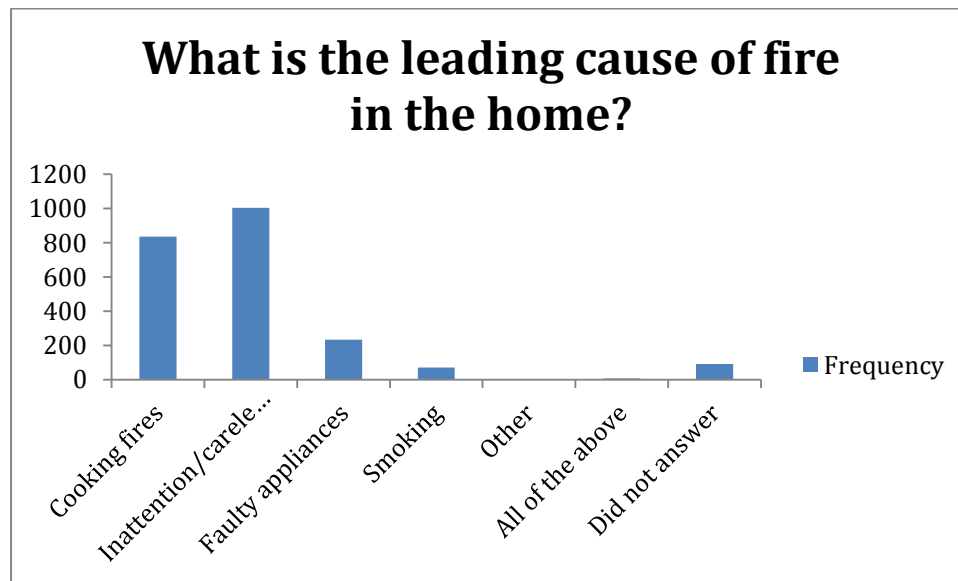


Figure 56: Participants' knowledge about how to put out an oil fire expressed as a percentage.

**How to put out an oil fire.** The correct answer to the question “how do you put out an oil fire?” is to cover it with a lid. As shown in Table 28 (see also Figures 55 and 56), the majority of the participants in the university sample (63.34%) knew the correct way to put out an oil fire.

*Table 29: Participants’ knowledge of the leading cause of fire.*

Response	Frequency	Percentage
Cooking fires	835	37.24
Inattention/carelessness with a heat source	1005	44.83
Faulty appliances	233	10.39
Smoking	70	3.12
Other	2	0.09
All of the above	6	0.27
Did not answer	91	4.06



**Figure 57: Participants’ knowledge of the leading cause of fire expressed as a frequency.**

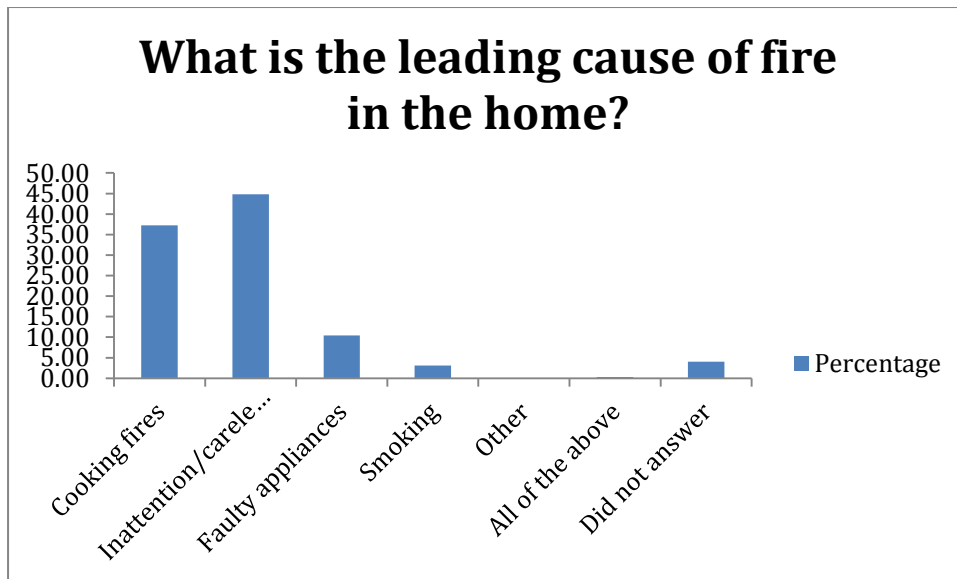


Figure 58: Participants' knowledge of the leading cause of fire expressed as a percentage.

**Leading cause of fire in the home.** The correct answer to the question “what is the leading cause of fire in the home?” is cooking fires. As shown in Table 29 (see also Figures 57 and 58), over one third (37.24%) of the participants in the university sample knew that cooking fires were the leading cause of fires in the home. 44.83% believe inattention/carelessness with a heat source is the leading cause of fires in the home.

### Beliefs about Fire

Table 30: Confidence in ability to put out a fire.

Response	Frequency	Percentage
Not very confident	940	41.93
Quite confident	1136	50.67
Very confident	162	7.23
Did not answer	4	0.18



Figure 59: Participants' confidence in ability to put out a fire expressed as a frequency.



Figure 60: Participants' confidence in ability to put out a fire expressed as a percentage.

**Confidence.** As shown in Table 30 (see also Figures 59 and 60), approximately half (50.67%) of the participants in the university sample felt “quite confident” in their ability to put out a fire. Only 7.23% of the sample felt “very confident” in their ability and 41.93% reported that they were “not very confident” in their ability to put out a fire. 0.18% of the sample did not answer the question.

Table 31: Belief in whether fires can be prevented or are unavoidable.

Response	Frequency	Percentage
Can be prevented	1960	87.42
Unavoidable	38	1.69
Some can be prevented, some are unavoidable	212	9.46
Unsure	3	0.13
Did not answer	29	1.29

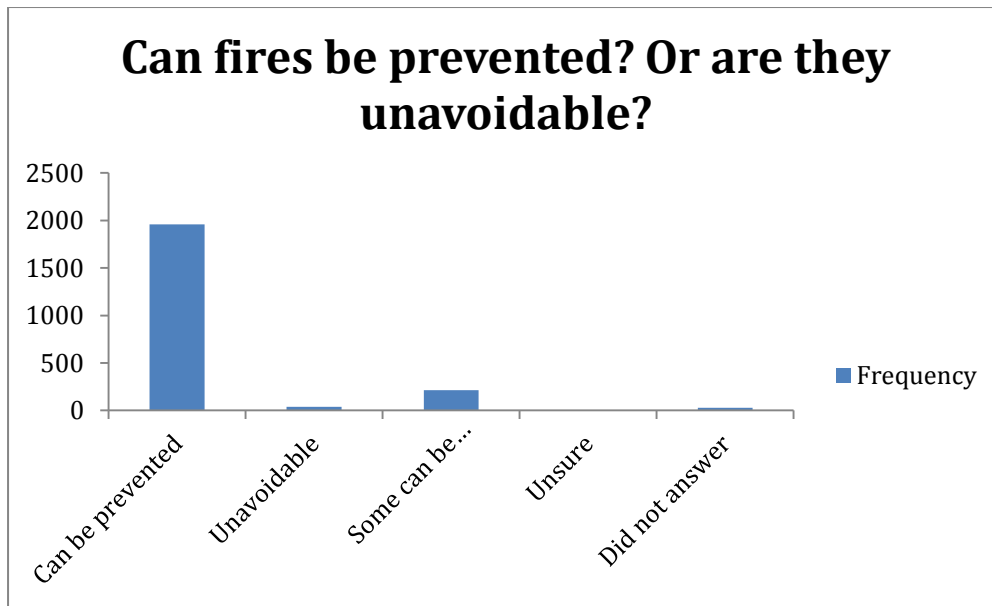


Figure 61: Participants' beliefs about whether fires can be prevented or are unavoidable expressed as a frequency.

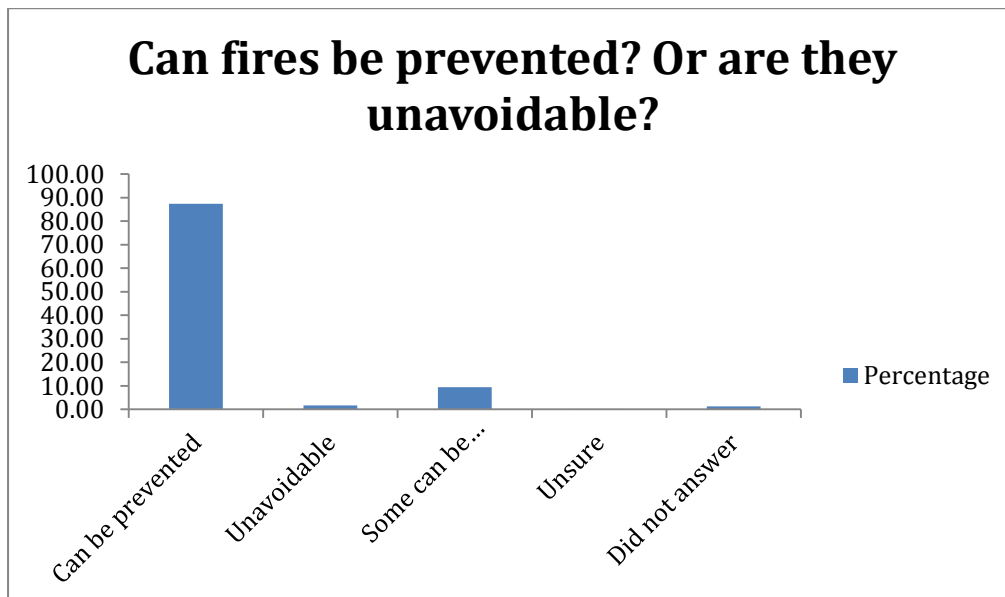


Figure 62: Participants' beliefs about whether fires can be prevented or are unavoidable expressed as a percentage.

**Fires in the home as preventable or unavoidable.** As shown in Table 31 (see also Figures 61 and 62), the majority of the participants in the university sample (87.42%) believe that fires can be prevented. 1.69% of the participants in the university sample believe that fires are unavoidable while 9.46% believe that while some fires can be prevented, some are unavoidable. 0.13% of the sample were not sure whether fires could be prevented or were unavoidable and 1.29% of the sample did not answer the question.

Table 32: Ways fires can be prevented.

Response	Frequency	Percentage
Use of fire safety equipment	705	24.00
Safe fire behaviour	1464	49.83
Fire safety education	220	7.49
Increased knowledge around fire	199	6.77
Common sense	46	1.57
Other	133	4.53
Did not answer	171	5.82

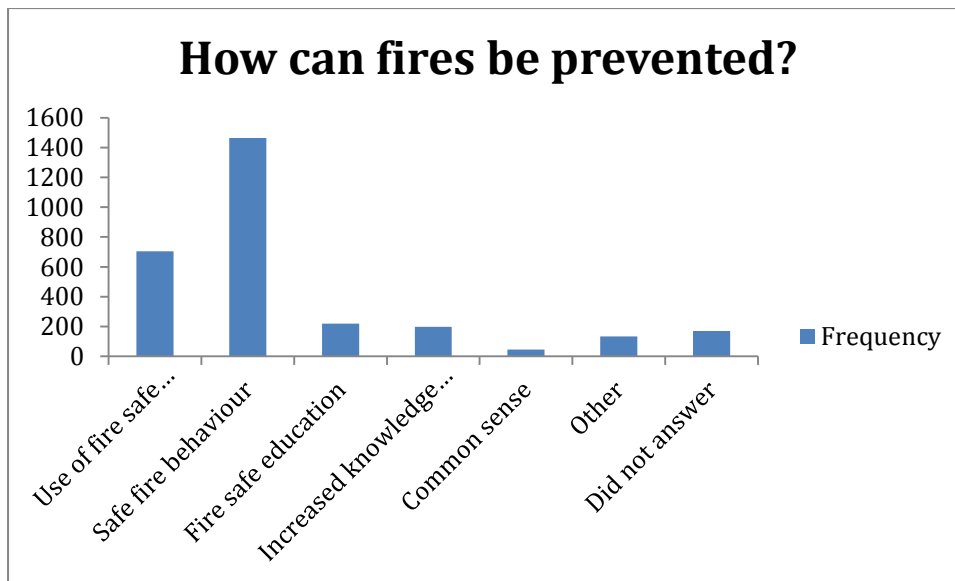


Figure 63: Participants' beliefs about how fires can be prevented expressed as a frequency.

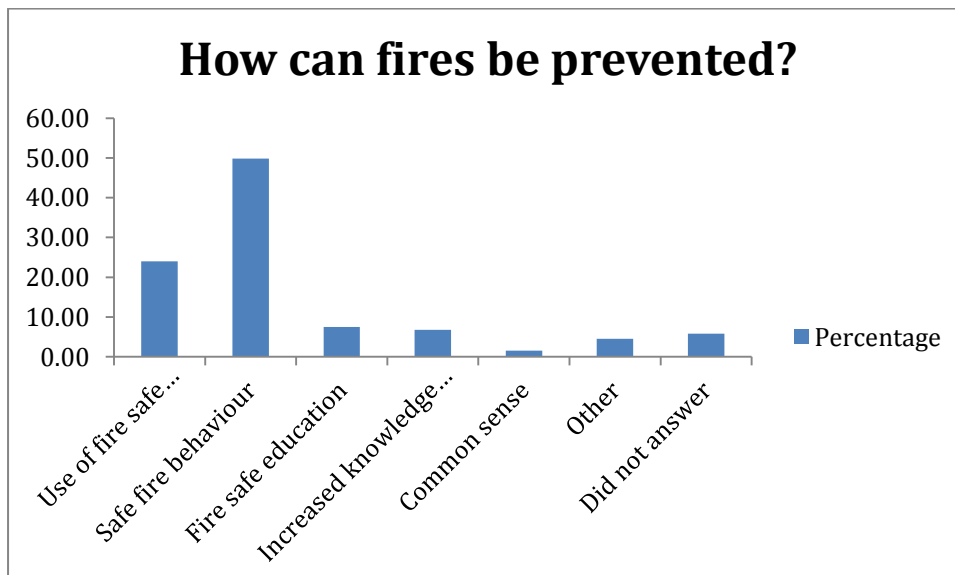


Figure 64: Participants' beliefs about how fires can be prevented expressed as a percentage.

**How to prevent fires.** As shown in Table 32 (see also Figures 63 and 64), approximately half (49.83%) of the participants in the university sample reported that fires could be prevented with safe fire behaviour (e.g. watching cooking, turning heat devices off after use). Approximately one quarter (24%) of the participants in the university sample reported that fires could be prevented with the use of fire safety equipment (e.g. smoke alarms, fire extinguishers). 7.49% reported that fires could be prevented with fire safety education and 6.77% reported that fires could be prevented with increased knowledge around fire (e.g. how they start, how to put them out). 1.57% reported that fires could be prevented by people using common sense and 4.53% reported another way that fires could be prevented, not listed. 5.82% did not answer the question.

Table 33: Reasons fires are unavoidable.

Response	Frequency	Percentage
Electrical fault	128	43.10
Human error	79	26.60
Weather/natural cause	16	5.39
Deliberate firesetting by another	14	4.71
Random Occurrence	60	20.20

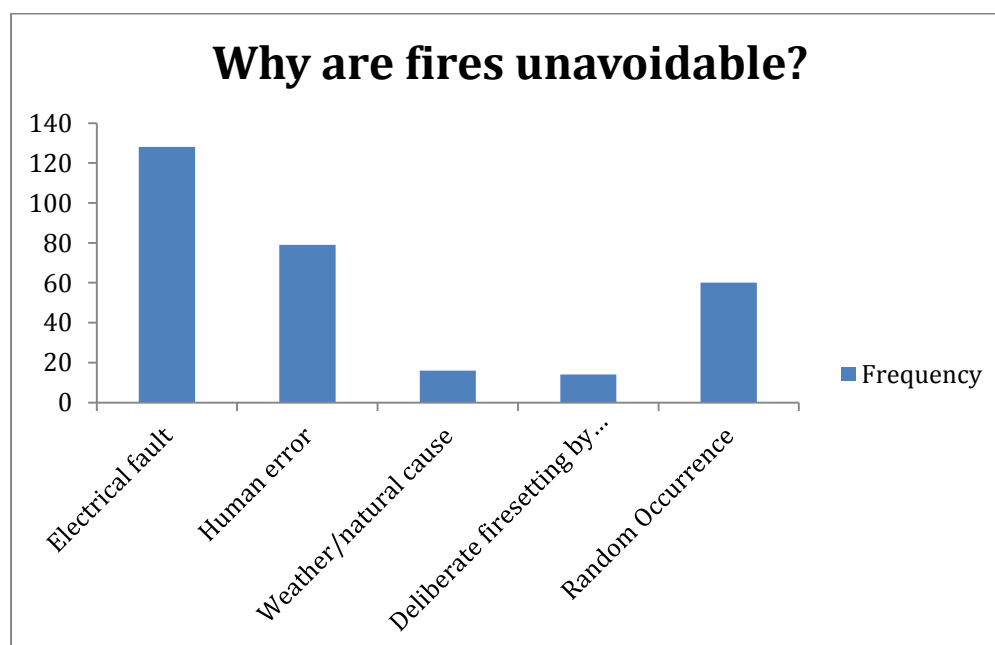
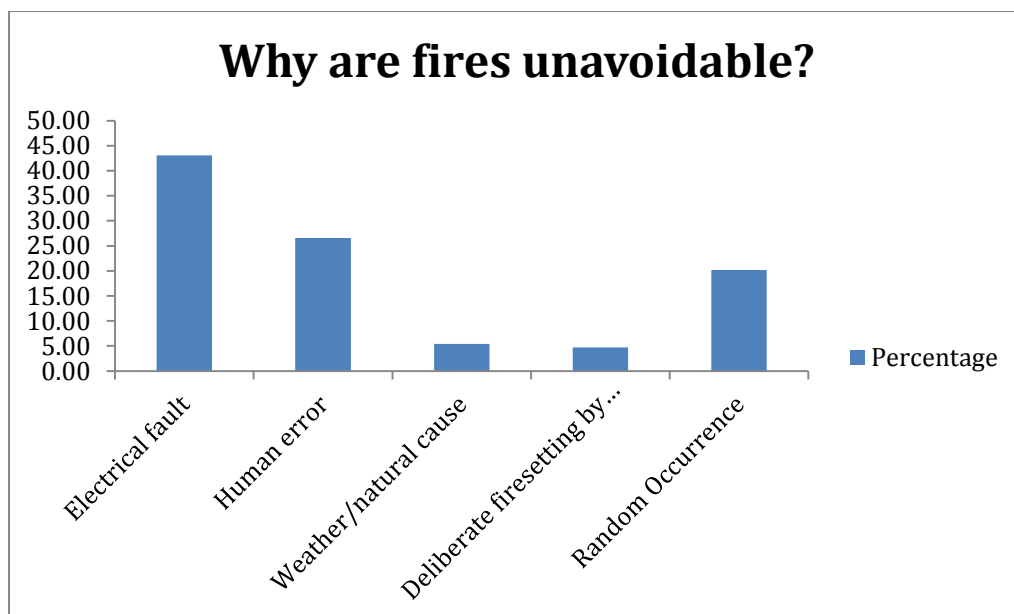


Figure 65: Participants' beliefs about why fires are unavoidable expressed as a frequency.



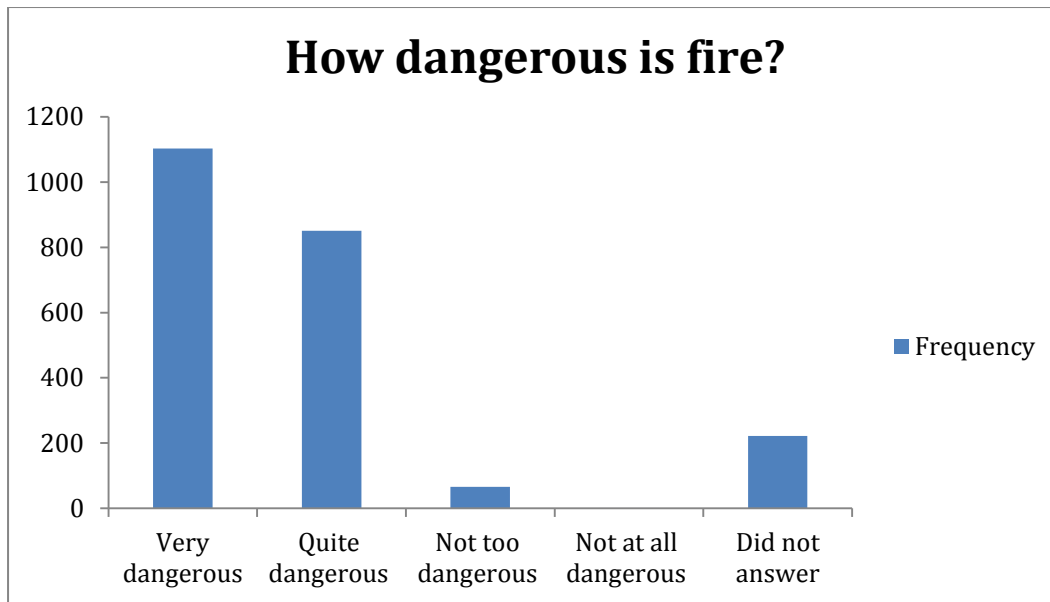
**Figure 66: Participants' beliefs about why fires are unavoidable expressed as a percentage.**

**Why fires are unavoidable.** As shown in Table 33 (see also Figures 65 and 66), of those who reported believing that fires were unavoidable, a little under half (43.1%) reported electrical faults as the reason fires are unavoidable and approximately one quarter (26.6%) said human error was the reason. One fifth (20.2%) believe that random occurrences are the reason fires are unavoidable, 5.39% reported weather/natural causes and 4.71% reported deliberate firesetting by others.

*Table 34: Perceived dangerousness of fire.*

Response	Frequency	Percentage
Very dangerous (e.g., "someone is often seriously burnt in a house or car fire")	1102	49.15
Quite dangerous (e.g., "sometimes people get burnt in a house or car fire")	851	37.96
Not too dangerous (e.g., "it is rare for people to get burnt in a house or car fire")	66	2.94
Not at all dangerous (e.g., "people hardly ever get burnt in a house or car fire")	1	0.04
Did not answer	222	9.90





**Figure 67: Perceived dangerousness of fire expressed as a frequency.**



**Figure 68: Perceived dangerousness of fire expressed as a percentage.**

**Dangerousness of fire.** As shown in Table 34 (see also Figures 67 and 68), approximately half of the participants in the university sample (49.15%) believe that fire is very dangerous. The next most common answer was that fire is quite dangerous (37.96%). 2.94% reported believing that fire is not too dangerous and only one participant (0.04%) believed that fire is not at all dangerous. 9.9% did not answer the question.

Table 35: Beliefs about peer behaviour and how often leave a naked flame unattended

Response	Frequency	Percentage
Always	12	0.54
Often	211	9.41
Sometimes	1077	48.04
Never	718	32.02
Did not answer	224	9.99

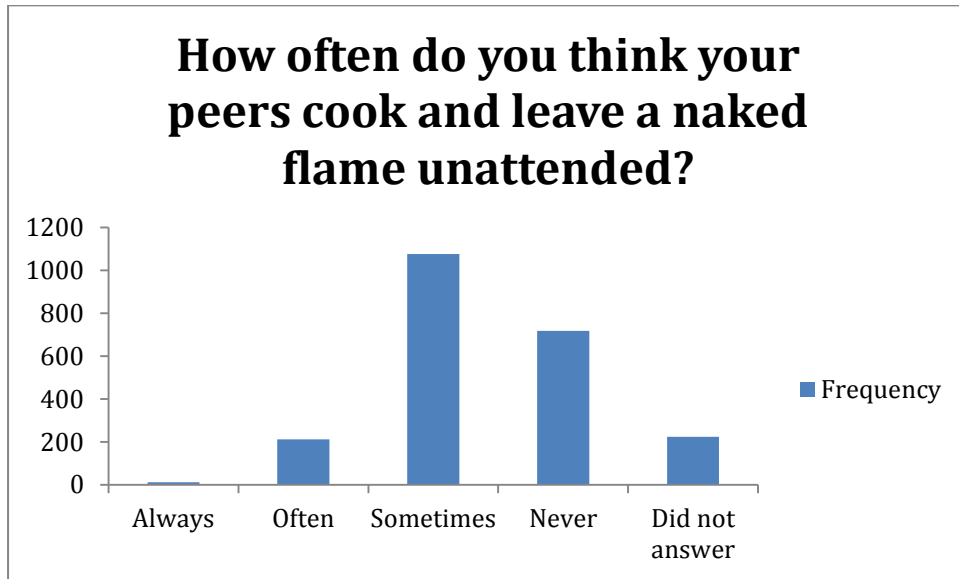


Figure 69: Beliefs about peer behaviour and how often leave a naked flame unattended expressed as a frequency.

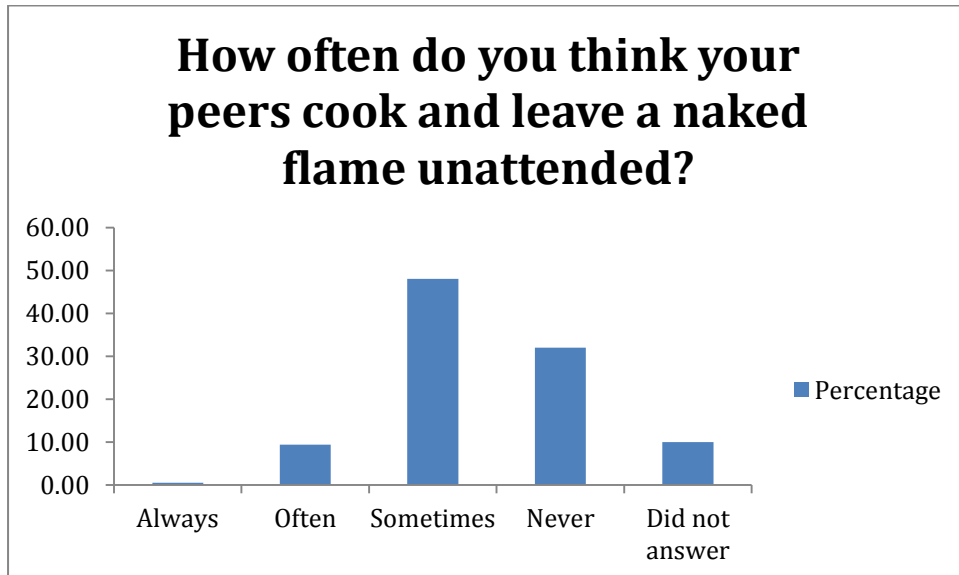
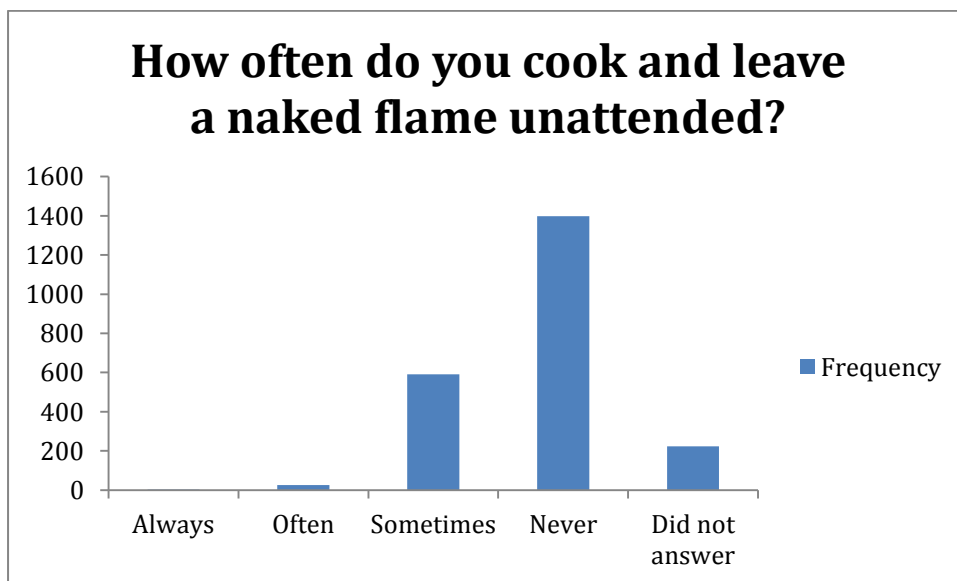


Figure 70: Beliefs about peer behaviour and how often leave a naked flame unattended expressed as a percentage.

**Beliefs about peer behaviour.** As shown in Table 35 (see also Figures 69 and 70), almost half of the participants in the university sample (48.04%) believe that their peers sometimes cook and leave a naked flame unattended. Approximately one third (32.02%) believe their peers never cook and leave a naked flame attended while 9.41% believe their peers often, and 0.54% believe their peers always, cook and leave a naked flame unattended. 9.99% did not answer the question.

*Table 36: Beliefs about own behaviour and how often leave a naked flame unattended.*

Response	Frequency	Percentage
Always	3	0.13
Often	26	1.16
Sometimes	591	26.36
Never	1398	62.36
Did not answer	224	9.99



**Figure 71: Beliefs about own behaviour and how often leave a naked flame unattended expressed as a frequency.**



**Figure 72: Beliefs about own behaviour and how often leave a naked flame unattended expressed as a percentage.**

**Beliefs about own behaviour.** As shown in Table 36 (see also Figures 71 and 72), the majority of participants in the university sample (62.36%) believe they never cook and leave a naked flame attended. Approximately one quarter (26.36%) believe they sometimes leave a naked flame unattended when they cook, while 1.16% believe they often left a naked a flame unattended when they cook and 0.13% believe they always do. 9.99% did not answer the question.

*Table 37: Beliefs about peers' feelings around playing with fire.*

Response	Frequency	Percentage
Strongly disapprove	475	21.19
Disapprove	824	36.75
Neutral	638	28.46
Approve	67	2.99
Strongly Approve	12	0.54
Did not answer	226	10.08

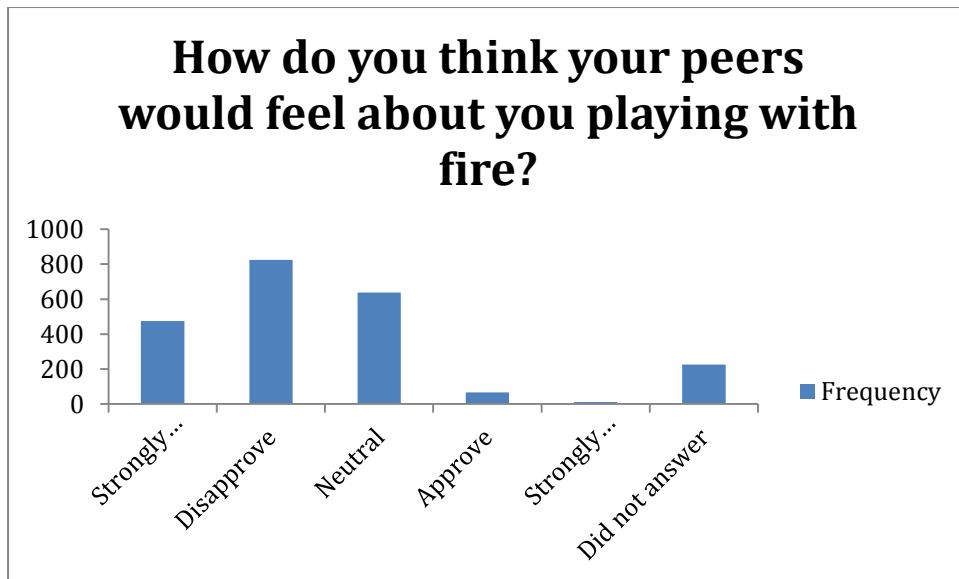


Figure 73: Beliefs about peers' feelings around individual playing with fire expressed as a frequency.

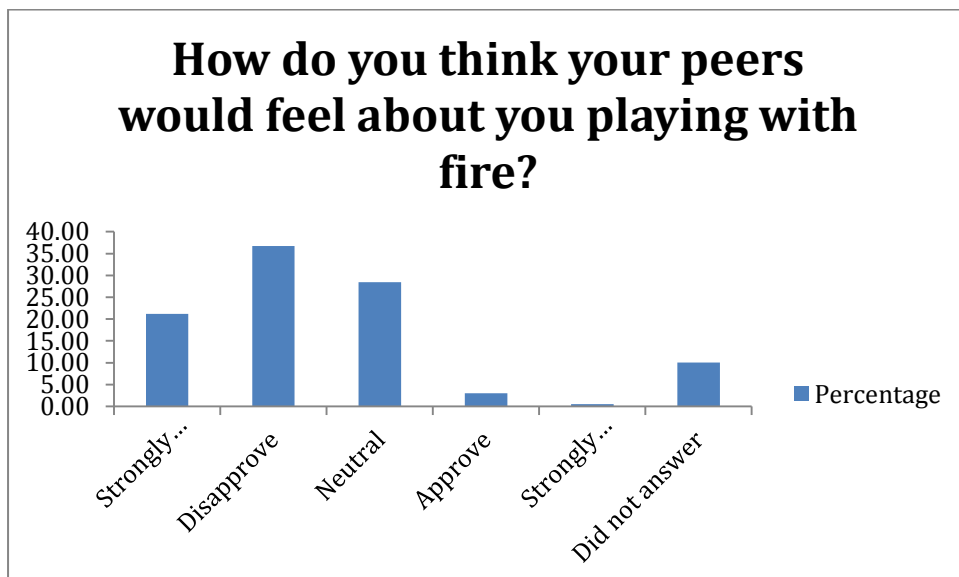


Figure 74: Beliefs about peers' feelings around individual playing with fire expressed as a percentage.

**Perceived feelings of peers about individual playing with fire.** As shown in Table 37 (see also Figures 73 and 74), more than one third of the participants in the university sample (36.75%) believe their peers would disapprove of them playing with fire and approximately one fifth (21.19%) believe their peers would strongly disapprove of them playing with fire. 28.46% believe their peers would feel neutral about them playing with fire while 2.99% believe their peers would approve and 0.54% believe their peers would strongly approve. 10.08% did not answer the question.

Table 38: Own feelings about peers playing with fire.

Response	Frequency	Percentage
Strongly disapprove	721	32.16
Disapprove	806	35.95
Neutral	446	19.89
Approve	36	1.61
Strongly Approve	6	0.27
Did not answer	227	10.12

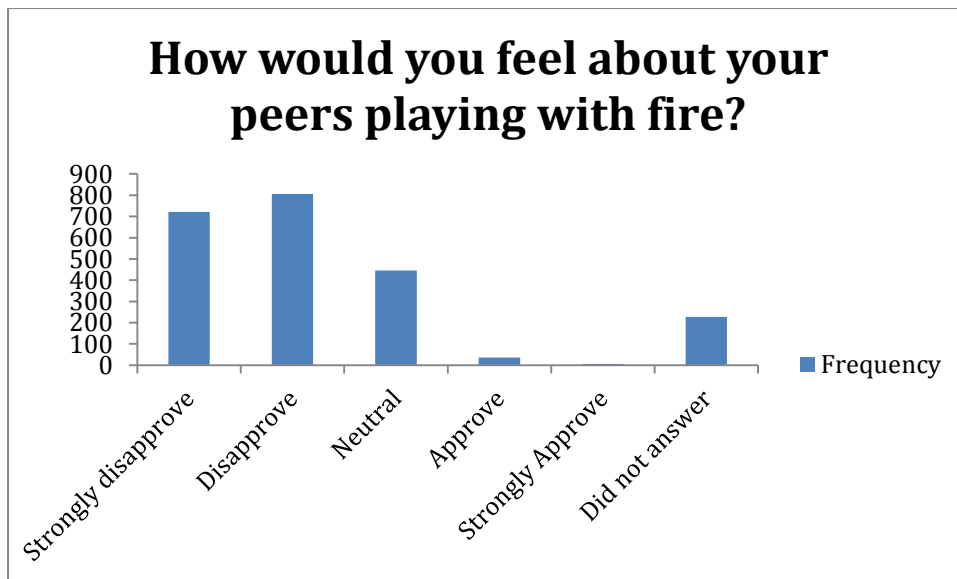


Figure 75: Participants' own feelings about peers playing with fire expressed as a frequency.

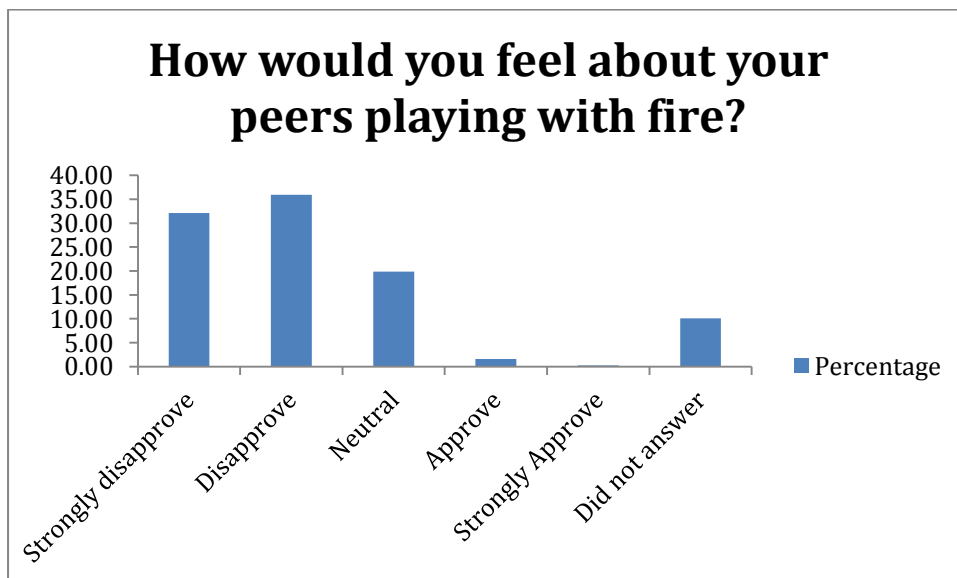


Figure 76: Participants' own feelings about peers playing with fire expressed as a percentage.

**Own feelings about peers playing with fire.** As shown in Table 38 (see also Figures 75 and 76), more than one third of the participants in the university sample (35.95%) reported

that they would disapprove of their peers playing with fire and just under one third (32.16%) reported they would strongly disapprove. Approximately one fifth (19.89%) said they would feel neutral about their peers playing with fire while 1.61% said they would approve and 0.27% said they would strongly approve. 10.12% did not answer the question.

Table 39: Reasons for fire use by young adults.

Response	Frequency	Percentage
Fun/enjoyment	1017	26.86
Cooking	701	18.51
Smoking	413	10.91
Fireworks	60	1.58
Candles	97	2.56
For attention/social acceptance	219	5.78
Boredom	51	1.35
Bonfires/campfires	190	5.02
Heat/light	373	9.85
Intoxicated	109	2.88
Experimentation/curiosity	69	1.82
Stupidity	88	2.32
Part of Dunedin culture	22	0.58
Intentional destruction of property	25	0.66
Other	80	2.11
Did not answer	273	7.21

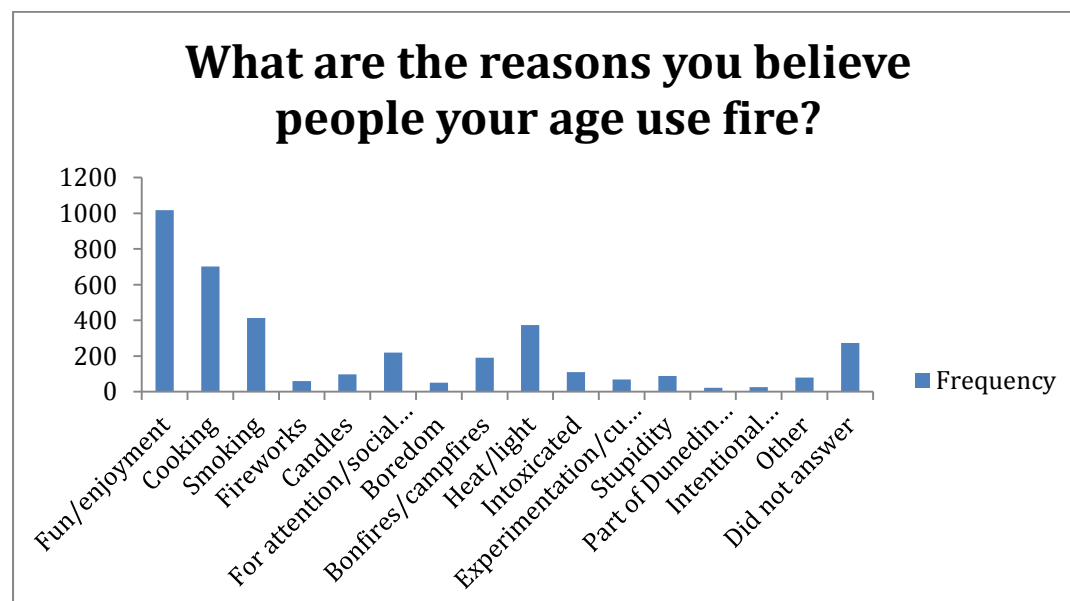


Figure 77: Reasons for fire use expressed as a frequency.

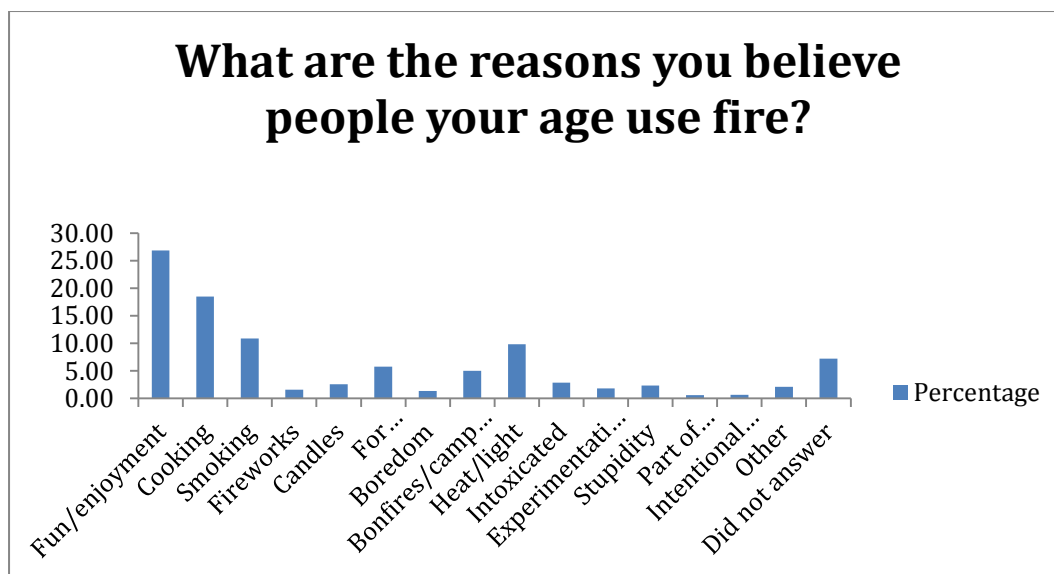


Figure 78: Reasons for fire use expressed as a percentage.

**Reasons for fire use.** As shown in Table 39 (see also Figures 77 and 78), the most commonly reported reasons participants in the university sample believe people their age use fire were for fun/enjoyment (26.86%) and for cooking (18.51%). 10.91% said for smoking, 9.85% said for heat or light, 5.02% said for bonfires/campfires and 5.78% said for reasons of attention/social acceptance. 2.56% reported for candles, 1.35% for boredom, 2.88% reported fire was used while intoxicated, 1.82% for experimentation/curiosity, 2.32% reported the reason as stupidity, 1.58% for fireworks, 0.58% as a part of the Dunedin culture, 0.66% for reasons of intentional destruction of property and 2.11% reported some other reason for fire use not already listed. 7.21% did not answer the question.

## Safe and Unsafe Fire Behaviour

Table 40: Fire safety equipment present in home.

Response	Frequency	Percentage
Smoke alarm	2045	61.80
Fire extinguisher	923	27.89
Fire blanket	231	6.98
Fire hose	12	0.36
Sprinkler system	39	1.18
Other	18	0.54
None	41	1.24



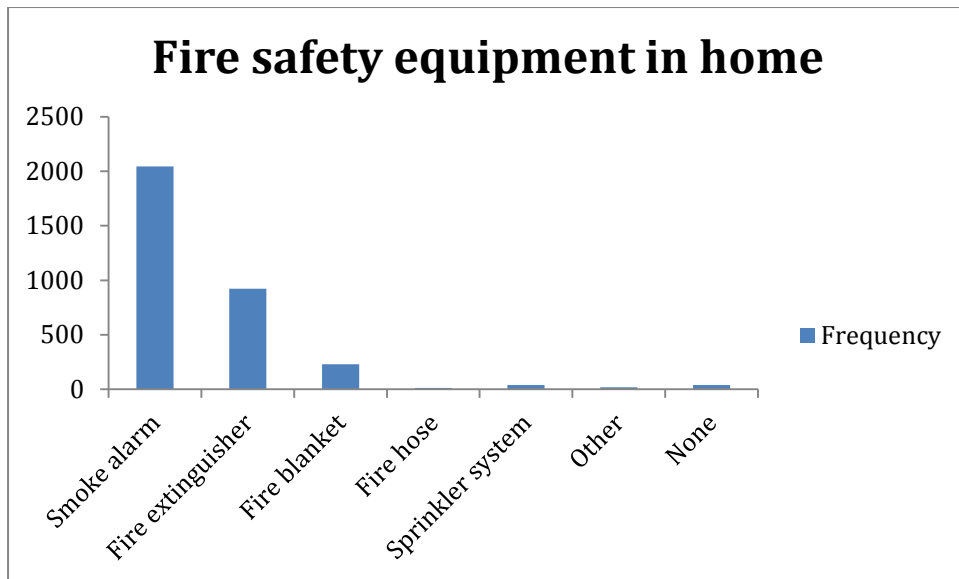


Figure 79: Fire safety equipment present in participants' home expressed as a frequency.

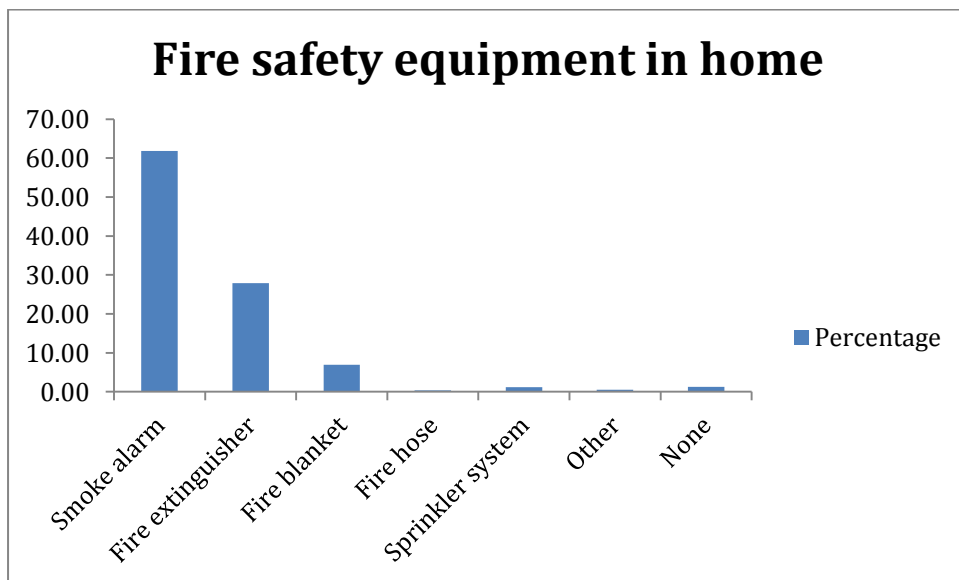


Figure 80: Fire safety equipment present in participants' home expressed as a percentage.

**Fire safety equipment in the home.** As shown in Table 40 (see also Figures 79 and 80), the majority of the participants in the university sample (61.8%) had at least one smoke alarm in their home. A little over one quarter (27.89%) reported having a fire extinguisher in their home, 6.98% reported having a fire blanket, 0.36% a fire hose and 1.18% reported having a sprinkler system. 0.54% of the participants in the university sample reported having some other fire safety equipment not already listed and 1.24% of the sample said they had no fire safety equipment in their home.

Table 41: Experienced a fire in the previous 12 months.

Response	Frequency	Percentage
Yes	77	3.43
No	2072	92.42
Did not answer	93	4.15



Figure 81: Participants' who have experienced a fire in the previous 12 months expressed as a frequency.



Figure 82: Participants' who have experienced a fire in the previous 12 months expressed as a percentage.

**Experience of fire in the previous 12 months.** As shown in Table 41 (see also Figures 81 and 82), the majority of the participants in the university sample (92.42%) had not experienced a fire in the previous 12 months before completing the survey. 3.43% of the sample had experienced a fire in the previous 12 months and 4.15% did not answer the question.

Table 42: Engaged in unsafe fire behaviour in the previous 12 months.

Response	Frequency	Percentage
Yes	147	6.56
No	1677	74.80
Unsure	217	9.68
Did not answer	201	8.97

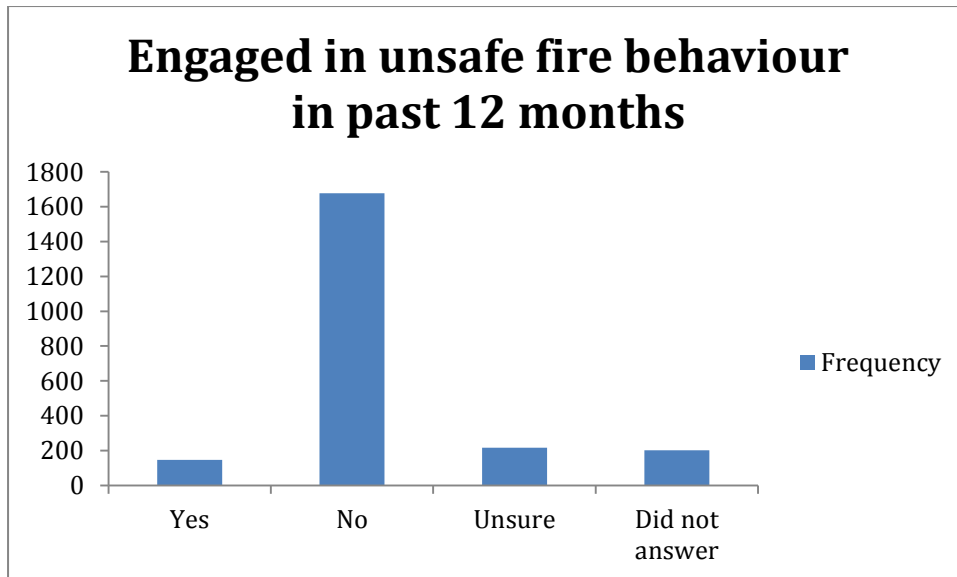


Figure 83: Participants' who have engaged in unsafe fire behaviour in the previous 12 months expressed as a frequency.

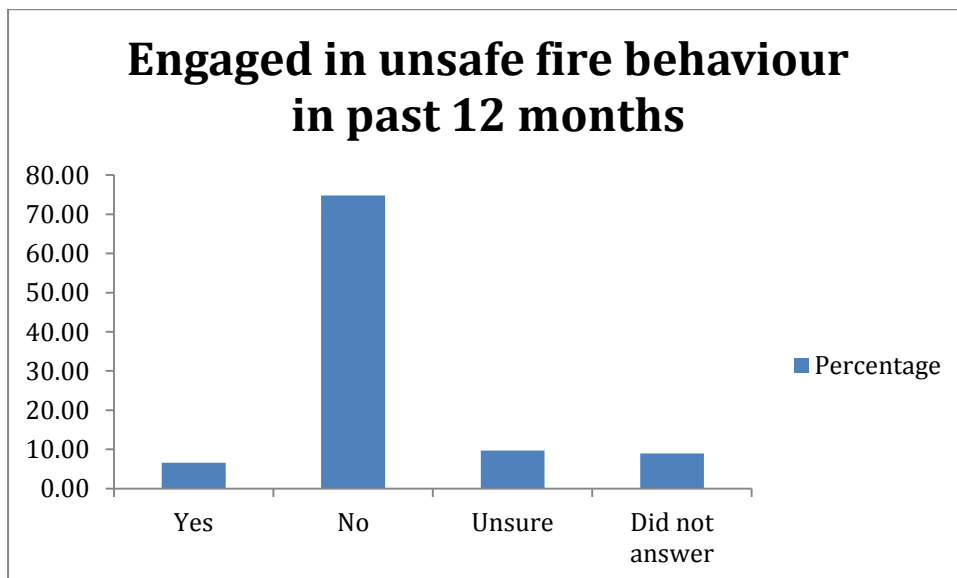


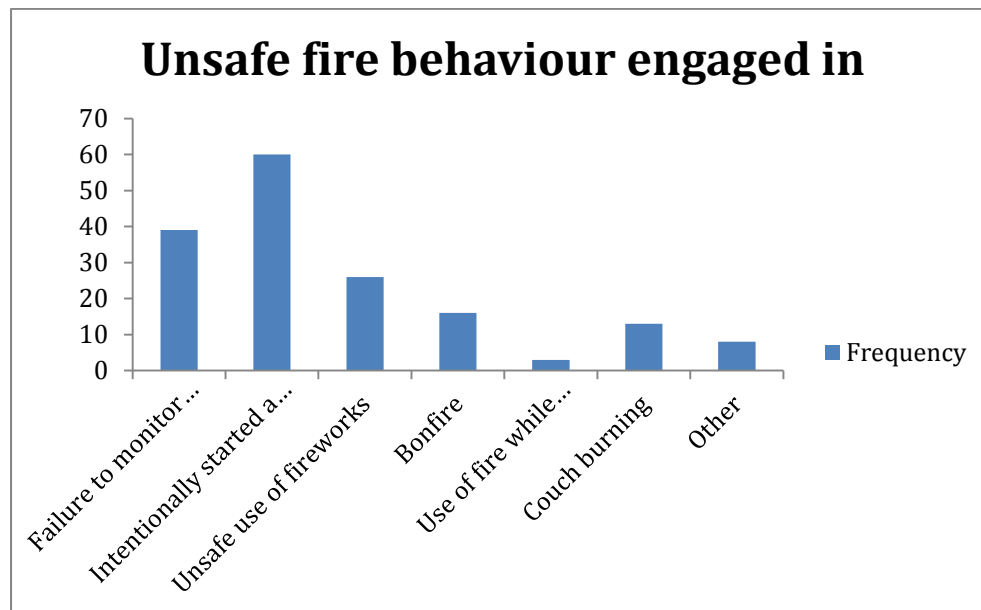
Figure 84: Participants' who have engaged in unsafe fire behaviour in the previous 12 months expressed as a percentage.

**Engagement in unsafe fire behaviour in previous 12 months.** As shown in Table 42 (see also Figures 83 and 84), the majority of the participants in the university sample

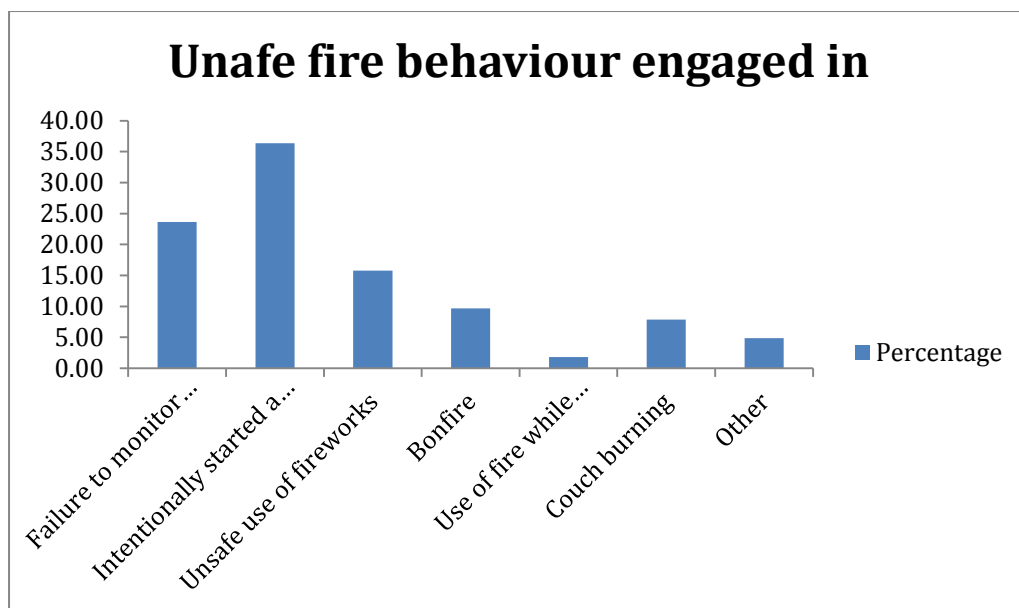
(74.8%) did not report having engaged in any unsafe fire behaviour in the previous 12 months before completing the survey. 6.56% of the participants in the university sample reported having engaged in some unsafe fire behaviour in the previous 12 months, 9.68% were unsure whether they had engaged in any unsafe fire behaviour and 8.97% did not answer the question.

*Table 43: Unsafe fire behaviour engaged in.*

Response	Frequency	Percentage
Failure to monitor fire/heat	39	23.64
Intentionally started a fire/playing with fire	60	36.36
Unsafe use of fireworks	26	15.76
Bonfire	16	9.70
Use of fire while intoxicated	3	1.82
Couch burning	13	7.88
Other	8	4.85



**Table 85: Unsafe behaviour engaged in by participants' expressed as a frequency.**



**Table 86: Unsafe behaviour engaged in by participants' expressed as a percentage.**

**Unsafe fire behaviour engaged in.** As shown in Table 43 (see also Figures 85 and 86), of those who reported having engaged in unsafe fire behaviour in the previous 12 months before completing the survey, more than one third (36.36%) reported having intentionally started a fire or having played with fire. The next most commonly reported unsafe fire behaviour engaged in was failure to monitor fire/heat (23.64%) followed by the unsafe use of fireworks (15.76%). 9.7% reported having a bonfire, 7.88% reported being involved in a couch burning, 1.82% reported use of fire while intoxicated and 4.85% reported engaging in some other form of unsafe behaviour not already listed.

## Suggestions for How Fire Safety Campaigns Can be Improved

Table 44: Suggestions for how best to engage young adults in safe fire behaviour.

Response	Frequency	Percentage
More campaigns generally	90	3.49
More/better education on fire safety	380	14.72
Young adult specific campaigns	117	2.05
Use of actual victims in fire safety campaigns	53	12.59
Campaigns highlighting the negative consequences of fire	325	12.59
Use of social media/online mediums	46	1.78
TV as campaign medium	46	1.78
Free/cheaper fire safety equipment	42	1.63
Campaigns on campus	70	2.71
Interactive campaigns	21	0.81
Harsher consequences for unsafe fire behaviour	79	3.06
Promoting fire safety as "cool"	48	1.86
Live demonstrations	30	1.16
Entertaining and memorable campaigns	50	1.94
Other	113	4.38
Did not answer	1071	41.50

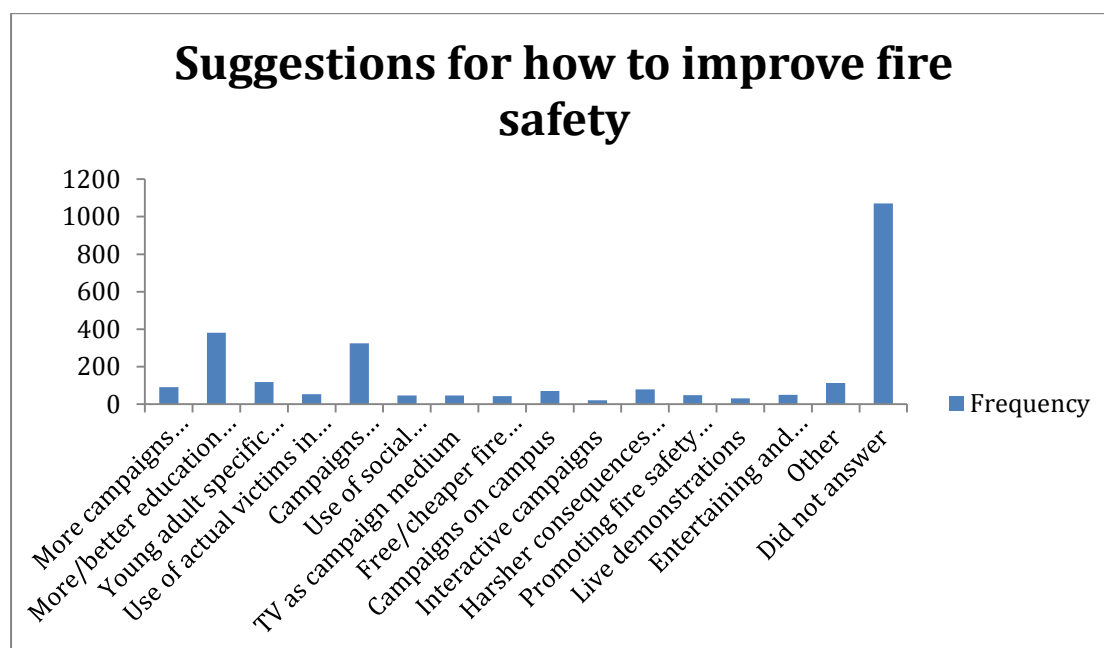
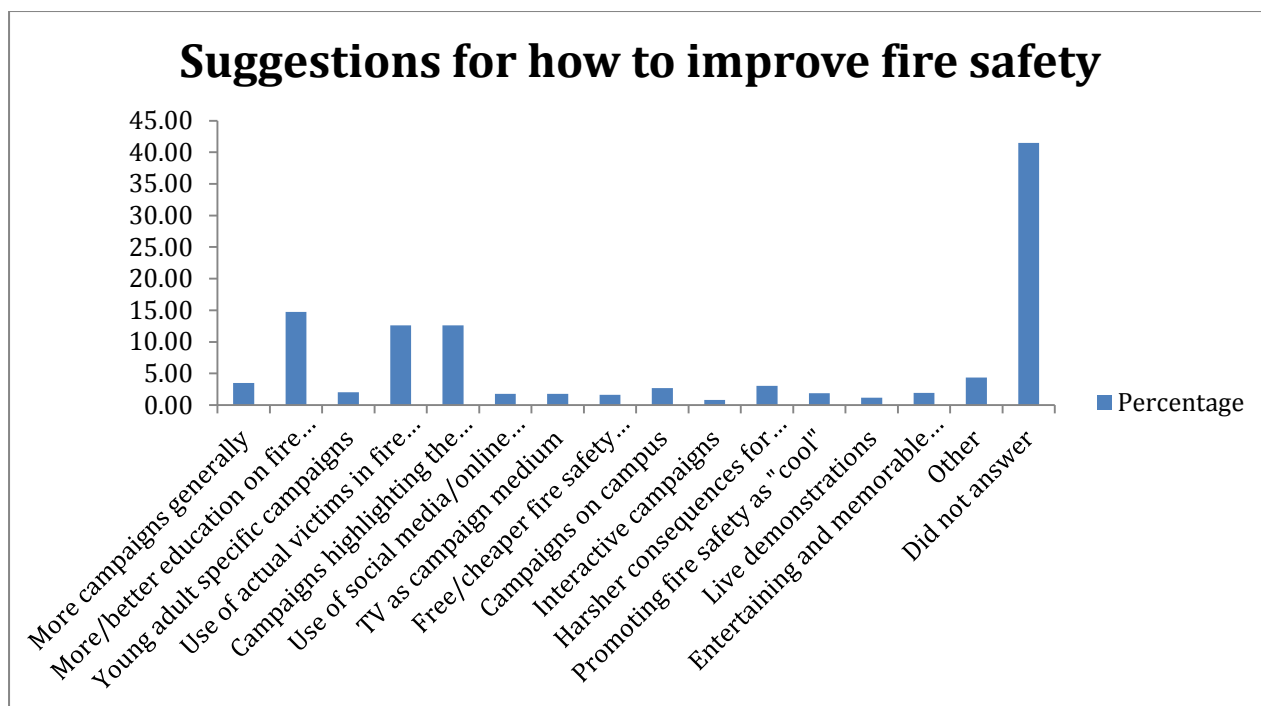


Figure 87: Suggestions for how to best engage young adults in safe fire behaviour expressed as a frequency.



**Figure 88: Suggestions for how to best engage young adults in safe fire behaviour expressed as a percentage.**

**Suggestions for how better to engage young people in safe fire behaviour.** As shown in Table 44 (see also Figures 87 and 88), the most commonly reported suggestions were more and better education on fire safety (including how fires start and how to put them out) (14.72%), the use of actual victims of fire in fire safety campaigns (12.59%) and campaigns that highlight the negative consequences of fire (including injuries, legal consequences and financial consequences) (12.59%). Other suggestions included more campaigns in general (3.49%), campaigns specifically for young adults (2.05%), the use of social media and online mediums (e.g. YouTube) (1.78%), Tv as a campaign medium (1.78%), free or subsidised fire safety equipment (e.g. smoke alarms) (1.63%), campaigns on university campuses (2.71%), interactive campaigns (0.81%), harsher consequences for unsafe fire behaviour (3.06%), promoting fire safety as “cool” (1.86%), live demonstrations (1.16%), entertaining and memorable campaigns (1.94%) and 4.38% suggested another way to engage young people not already listed. Unfortunately 41.5% did not answer the question.

Table 45: Preferred method of engagement.

Response	Frequency	Percentage
Presentations by the Fire Service	326	14.54
Online modules	68	3.03
YouTube	208	9.28
Twitter	26	1.16
Facebook	600	26.76
Tumblr	47	2.10
Radio campaigns	42	1.87
TV advertisements	580	25.87
Did not answer	345	15.39

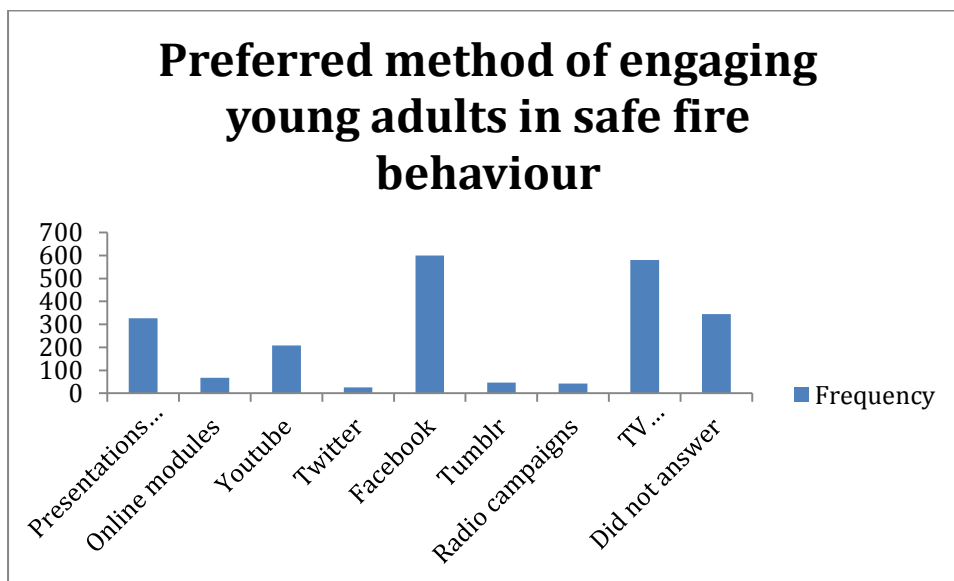


Figure 89: Preferred method of engagement expressed as a frequency.

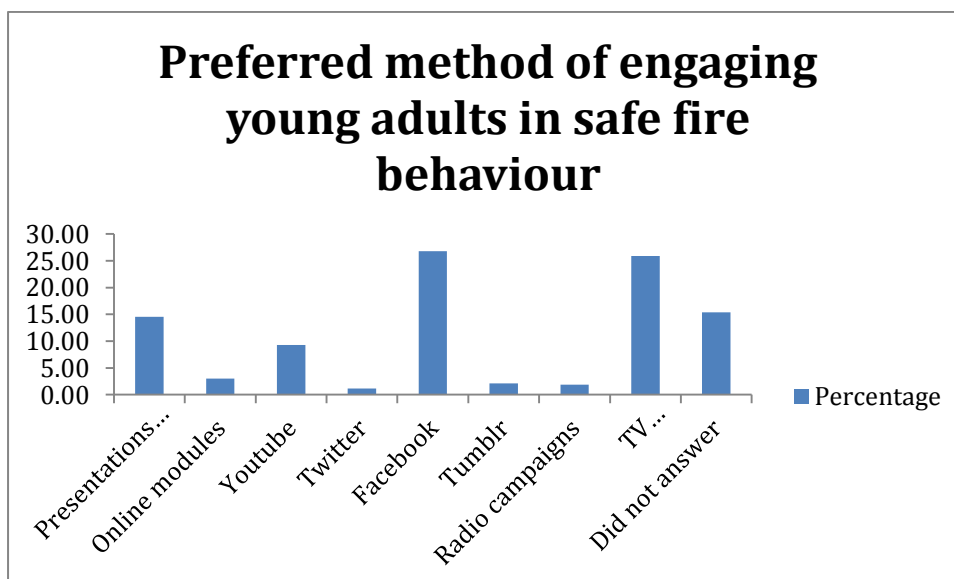


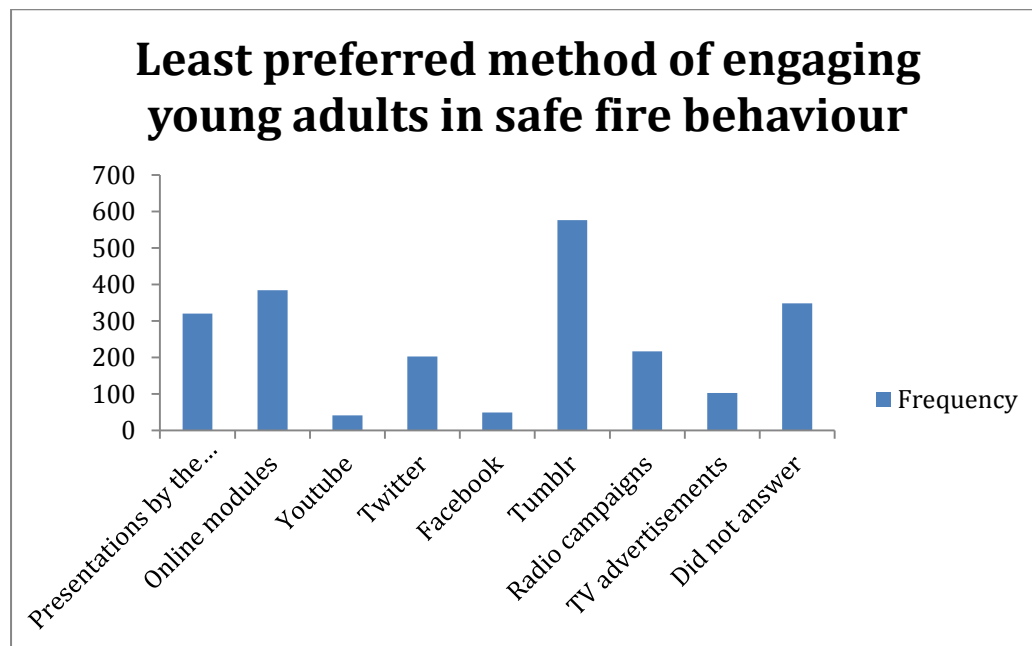
Figure 90: Preferred method of engagement expressed as a percentage.



**Preferred method of engaging young adults in safe fire behaviour.** As shown in Table 45 (see also Figures 89 and 90), the two most commonly reported preferred methods were the use of Facebook (26.76%) and the use of TV advertisements (25.87%).

*Table 46: Least preferred method of engagement.*

Response	Frequency	Percentage
Presentations by the Fire Service	320	14.27
Online modules	384	17.13
YouTube	41	1.83
Twitter	203	9.05
Facebook	49	2.19
Tumblr	577	25.74
Radio campaigns	217	9.68
TV advertisements	103	4.59
Did not answer	348	15.52



**Figure 91: Least preferred method of engagement expressed as a frequency.**

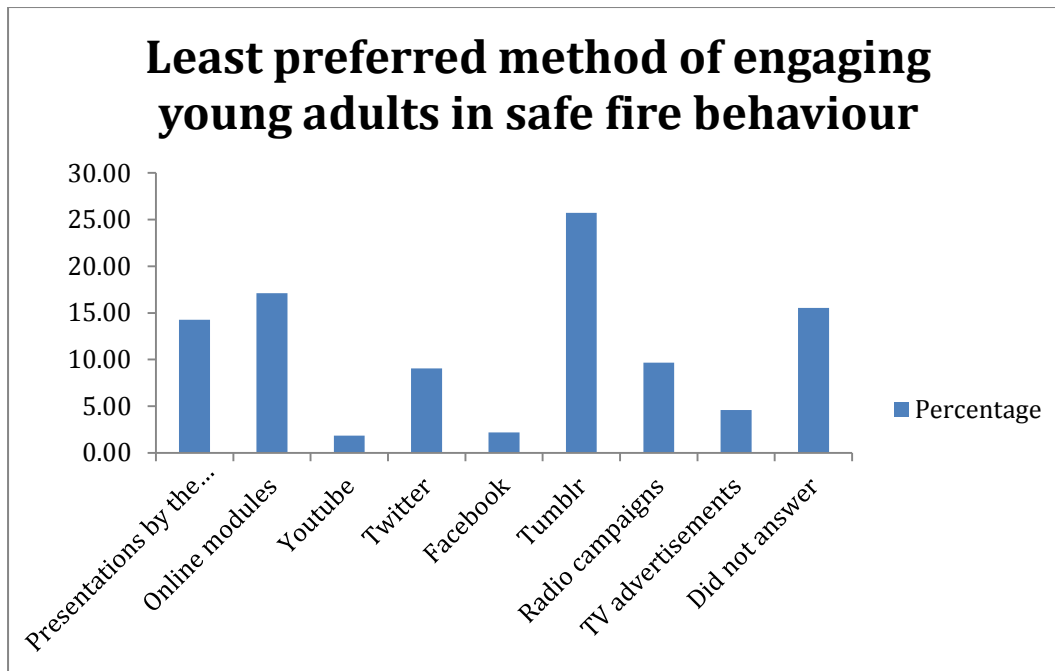


Figure 92: Least preferred method of engagement expressed as a percentage.

**Least preferred method of engaging young adults in safe fire behaviour.** As shown in Table 46 (see also Figures 91 and 92), the least preferred method was the use of Tumblr (25.74%).

## Focus Group Data

### Young Adult Focus Group

A number of themes were revealed from the young adult focus group. They were: Fire has a social function, dangerous fires most often occur in the presence of alcohol, the technique of the “Ghost Chips” advertisement should be recreated, campaigns should be targeted at young adults, participants were not aware of any recent fire campaigns, participants were only aware of being taught fire safety in primary school, the first step should be “on campus”.

**Fire has a social function.** The focus group all agreed that fire use is fun and that it most often occurs in the context of hanging out with friends. Fire brings people together, for example to watch a couch burning or a bonfire. The risk and danger associated with fire use make it seem exciting and may impress others.

“Everyone on the stretch comes to our party because we have got a couch on fire”

**Dangerous fires most often occur in the presence of alcohol.** Members of the focus group believed that having fires, particularly bonfires, is not particularly dangerous in itself, however, often it occurs in the context of drinking alcohol and that is when it gets dangerous. A participant discussed the issue of people throwing bottles into a bonfire.

**The technique of the “Ghost Chips” advertisement should be recreated.** The focus group all agreed that the “Ghost Chips” campaign was highly successful at combatting drunk driving. They liked the fact that the advertisement was not condemning and had provided them with a way to stop friends from driving drunk without them having to become “preachy”. The focus group participants discussed how while young adults may not want their friends to engage in unsafe behaviour, telling them not to can often be awkward and uncomfortable. They agreed that a catchy phrase “you know I can’t eat your ghost chips” gave them an easy way to tell friends not to drive drunk and reported having used it themselves (and by friends) at parties.

“It’s kind of an easier thing to say to someone when before it might have been a bit awkward to say ‘hey you are a bit drunk...’”

**Campaigns should be targeted at young adults.** The focus group suggested that campaigns targeting young adults flatting and potentially set in flats and involving young adults would be more effective with this age group than those focusing on harm to one’s children or family. The participants noted that many students do not live at home and so do not see their families as often as they see peers and so advertisements involving peers may also be more effective.

“Use people our age, in our situation, in a dingy kind of flat cooking dinner together...”

They also believed that the emphasis in campaigns should be different for young adults who are at university compared to those who are still in secondary school as those who are in secondary school will often have parents around to check whether smoke alarms are working and whether cooking is being monitored. They noted that once individuals are flatting they need to be more responsible so campaigns should aim to promote awareness of this.

Within this theme, the young adults discussed the particular usefulness of Facebook to target this age group. The participants discussed the possibility of an incentive to get young adults to “like” the New Zealand Fire Service Facebook page, such as a chance to win a prize, which would then allow the Fire Service to post information and links that would appear in the young adults’ newsfeed. The participants did not however believe that Twitter would be a successful campaign medium.

**Participants were not aware of any recent fire campaigns.** When asked if they could name any fire safety campaigns other than the “Precious” campaign on smoke alarms, none of the participants in the focus group were able to. They did, however, believe the “Precious” campaign had made them more likely to check their smoke alarms.

**Participants were only aware of being taught fire safety in primary school.** When asked if they had been involved in any official fire safety programmes while at school, participants could only think of what they did in primary school. All participants agreed that another programme for secondary school students would be valuable.

**The first step should be “on campus”.** When asked what the first thing the New Zealand Fire Service should focus on, the focus group unanimously agreed that having people on the ground on campuses should be it. They suggested that it would be the quickest way to get the message out to the target group. The focus group participants suggested open air type events on campus with live demonstrations and presentations delivered in a humorous and enjoyable way, rather than having someone simply telling them to “watch their cooking.” They also suggested a stall at a clubs expo during orientation week for increased visibility for the Fire Service.

## **Focus Groups with Dunedin Professionals**

A number of themes were revealed from the focus groups with Dunedin members of the New Zealand Fire Service, New Zealand Police, the University of Otago Proctor and Deputy Proctor, and the University of Otago Students’ Association Representatives. They were: While improvements have been made there is still a way to go, the biggest problem is the difficulty in catching those who deliberately set fires, unsafe fire behaviour is linked with alcohol use, a proactive approach to intervention is required, a wider culture change around

how fire is viewed is needed, a harsher response to unsafe fire use is necessary, intervention needs to be young adult specific and driven, intervention needs to reach beyond university students, individual problem flats should be identified and targeted, consideration should be given to the installation of CTV cameras in known high risk areas for unsafe fire use and behaviour.

**While improvements have been made there is still a way to go.** Changes to rubbish days, exclusion of students found engaging in unsafe fire use and collaboration with the Students' Association were all commended by the focus groups with the Dunedin professionals, as was the work by the University of Otago Campus Watch.<sup>1</sup> While the statistics on fires have definitely decreased, the New Zealand Fire Risk Personnel still report feeling like the ambulance at the bottom of the cliff.

**The biggest problem is the difficulty in catching those who deliberately set fires.** The young adults who are setting fires are not then sticking around to watch the fires. They are setting them and then running away making dealing with these individuals particularly challenging.

**Unsafe fire behaviour is linked with alcohol use.** Much of the unsafe fire behaviour that is occurring is occurring in conjunction with alcohol use, at parties. Interventions should focus on both fire safety and alcohol use.

**A proactive approach to intervention is required.** The best approach will be a proactive one in the halls, before it becomes a problem when the students go flatting. The second year students are the biggest concern as those in their first year are most often living in a Hall of Residence. It is when the students move into flats for the first time in their second year that the problem arises. The best approach is believed to be getting the message out early, however there is conflict over the benefit of doing this in Orientation week. There is concern that at this time there may be an information overload for the students.

Approaches such as incentives for not setting fires were suggested, such as free pizza for a street that does not have any fires throughout the semester, to prevent fire setting in the first place and decrease the motivation to do so.

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<sup>1</sup> Campus Watch work under the management of the Proctor and Deputy Proctor of the University of Otago. Their role is pastoral and involves ensuring student behaviour remains at a reasonable level, manning the Safety Patrol service and providing "walks home". They provide information on a range of issues largely associated with the transition from Residential Colleges to flatting.

**A wider culture change around how fire is viewed is needed.** At present fire use is seen as a key element of student life, particularly at the University of Otago. Couch burning is seen as a rite of passage. A theme from the focus groups with the Dunedin professionals was the need to make setting fires “uncool”. Campus Watch was implemented in 2007 however very few people were reporting damage when it occurred. It is necessary that students do not feel “uncool” for reporting fire use.

**A harsher response to unsafe fire use is necessary.** One suggestion that came up a lot in the focus groups with the Dunedin professionals was the need for tougher responses to unsafe fire use by young adults, as opposed to an increased focus on diversion. The Vice Chancellor at Otago University told students that anyone caught having bonfires would be excluded and since then between 6 and 12 students have been excluded. The Police do not want to continue giving out pre-charge warnings. Reportedly, of those who were excluded by the Vice Chancellor, none have reappeared as problematic. It is seen as a severe punishment as fees paid for the semester are not refunded.

Naming and shaming was also put forward for example in student magazines however one problem with this approach is the potential for privacy issues.

**Intervention needs to be young adult specific and driven.** At the University of Otago, reportedly 80% of students come from outside of Dunedin. They do not have parents present to tell them not to engage in unsafe behaviour. Many of these individuals are 18 years and over and so parents cannot be involved. Therefore the focus needs to be on ensuring young people are not engaging in unsafe fire behaviour for their own reasons. Any messages about fire safety need to come from peers. This can involve more work from the Students’ Associations and the use of student friendly mediums such as social media and the university magazines Critic (University of Otago) and Craccum (University of Auckland).

One suggestion is that at the end of the first year, students in Halls of Residence are educated on fire safety by other students who have been living in flats for a year. They would ideally communicate this information in a way that is truly appropriate for the age group, rather than what adults believe is going to be appropriate.

**Intervention needs to reach beyond university students.** The focus groups with the Dunedin professionals noted that students who attend polytechnic institutions and those who are in the trades or are completing apprenticeships may be more of a problem than the

University of Otago students. While exclusion may work as a deterrent for those enrolled in education programmes, this will not work for those who are not studying and so other methods will need to be developed to target the wider group of young adults.

**Individual problem flats should be identified and targeted.** The focus group also agreed that, as unsafe fire use is often engaged in by specific individuals and specific flats, these should be targeted separately. This could include members of the University of Otago's Campus Watch regularly visiting these flats, educating the individuals and monitoring them carefully for unsafe fire use.

**Consideration should be given to the installation of CTV cameras in known high risk areas for unsafe fire use and behaviour.** This came up as a topic of discussion and questions arose as to the feasibility of this as an option.

## **Interviews with Social Marketers**

Various themes were revealed in the interviews with social marketers. These were: Young adults do not respond well to the "big stick", campaigns should utilise more than one medium, use of incentives, use of humour, use of cookies, use the power of other brands.

**Young adults do not respond well to the "big stick".** Those interviewed all commented that content should not feel as though it is being forced on the viewer. There is an assumption in the profession that young adults do not respond well to a dictatorial approach and tend to switch off when confronted with it. Young adults need to own and discover their own thoughts rather than simply being told what to do.

"People who have ownership have a bigger sense of involvement and commitment."

The message should be directed to the needs of young people. One social marketer noted that the developers of the "Ghost Chips" campaign targeted the fact that young adults did not want their friends to drink and drive but did not "want to kill the vibe for speaking up ... they didn't want to look like a dick in front of their mates". The campaign gave young people the tools to do with without ruining the atmosphere.

They key is to establish what the barriers are preventing young adults from changing and working from there. One social marketer said "you have to find something they can't

argue their way out of”. Campaigns should not come across as judging but rather should empower young adults to speak up and make them look good for doing so. The drink driving advertisements changed from “you’re a bloody idiot” to “you’re a bloody legend” demonstrating a shift to making the target group feel good about engaging in the specific behaviour.

**Campaigns should utilise more than one medium.** All of those in the interviews agreed that multiple mediums should be utilised in order to get the message of fire safety everywhere. Campaigns should use both passive mediums, for example TV advertisements, in conjunction with digital mediums such as Instagram and Facebook which is thought to be more interactive. TV is considered the fastest way to build a brand and the consensus was that it should continue to play a key part in any campaign. The use of print based campaigns however, did not have support. Alternative mediums include Facebook, Instagram, Snapchat and YouTube.

One social marketer interviewed noted a drug-driving campaign that had used Snapchat and had success with it. The Snapchats follows a group of young adult males under the influence of drugs over the course of a day. At the end of the day they were in a car crash and presented on the screen was a URL link for further information on driving while under the influence of drugs. Also noted was a Facebook driving game where when, at the end you inevitably crash, instead of getting a new life as is usually the case with such games, photos of family and friends from Facebook photos appeared along with the message “you only live once, slow down”. While neither of these campaigns appear to have been evaluated, the social marketers considered them successful based on information of comments and share rates. A YouTube reality series was also suggested that would involve newly recruited firefighters discussing their experience since joining the New Zealand Fire Service.

Additional campaigns elements could include interactive campaigns such as “register your couch and get a discount on power” or live demonstrations of the effects of fire run by the New Zealand Fire Service. Competitions were also viewed positively and it was suggested that they be used as “bait” to lead young adults to more information and other mediums.

**Use of incentives.** The use of incentives was thought to be particularly important with this demographic who are often focused on their own self-gain. The use of incentives was



suggested as “bait” to engage young adults in the first place before directing them to further information.

**Use of humour.** Humour was largely supported as the means for communicating with this demographic. It was considered the best method to provide young people with the tools to discuss safety behaviour with friends. However, it was noted that different people will respond to different types of messages so this should not necessarily be the only approach.

“Humour allows people to have conversations that might otherwise be too awkward.”

**Use of cookies.** The suggestion of attaching “cookies” that follow student internet usage with repetitive advertisements was put forward by multiple social marketers interviewed.

**Use the power of other brands and businesses.** This was suggested as a way of communicating the campaign from a different angle. For example, working with Powershop in Dunedin. One specific idea put forward was to have students register couches with Powershop and those who still have them at the end of the year would get an incentive, such as a discount on power.

## **Discussion**

The findings of this study were largely consistent with the available literature. However, this study also contributed new insights into the topic of how best to engage young adults in safe fire behaviour. The key findings are discussed in further detail below and are the basis for the final recommendations found at the end of this report.

### **Survey Samples**

The majority of the young adults in the secondary school and university samples identified as NZ/European. In the secondary school sample, the majority were living at home with parents/caregivers at the time the survey was completed, while the majority of the university sample were living in flats.

The majority of the young adults in both samples knew the correct way to put out an oil fire, however closer to one third of each sample knew that the leading cause of fires was cooking fires. The majority of young adults in both samples had at least one smoke alarm in their residence however a considerably smaller number had fire extinguishers or a fire blanket. The majority of young adults in both samples believed fires were preventable with the most cited reasons being with safe fire behaviour (for example, watching cooking) and the use of fire safety equipment (for example, smoke alarms). The most commonly reported reasons why young adults in both samples believed fires were unavoidable were human error and electrical faults. Approximately half each sample reported feeling “quite confident” in their ability to put out a fire, however approximately 40% of each reported they did not feel very confident in their ability. Young adults in both samples were more likely to believe they were safer in their fire use (for example, monitoring a naked flame while cooking) than were their peers.

Only a very small percentage of each sample had experienced a fire in the previous 12 months before completion of the survey, while a slightly higher number had engaged in some form of unsafe fire behaviour in that same time. Of those who had engaged in unsafe fire behaviour in the secondary school sample, the most common behaviours engaged in were failure to monitor heat or light and the unsafe use of fireworks. Of those who had engaged in unsafe fire behaviour in the university sample, the most common behaviours engaged in were intentionally starting a fire or playing with fire and failure to monitor heat or light.

Young adults in both the secondary school and university samples reported that the most common reason for fire use among young people was fun/enjoyment, and in many cases it occurred within a social context, for example, at a bonfire or campfire, or for the purpose of gaining attention or social acceptance from peers.

The majority of young adults in both samples both expressed disapproval, either strongly disapproving or disapproving, of peers playing with fire and also believed their peers would disapprove or strongly disapprove of them playing with fire. This may suggest that although young adults believe fire is fun and “cool”, many do not actually approve of their peers engaging in fire use. This is a positive finding as it suggests there may be a positive response to campaigns that attempt to better engage young adults in safe fire behaviour. Participants also often discussed the need for a campaign to make fire safety “cool” and fire use “uncool”.

With regard to suggestions for how to better engage young adults in safe fire behaviour, the most common responses were with more and better education on fire safety and campaigns that highlight the negative consequences of fire (including injuries, legal consequences and financial consequences), as well as the use of actual victims of fire in fire safety campaigns. The most preferred methods of engagement were the use of TV advertisements and Facebook, and additionally, in the secondary school sample, presentations by the fire service. The social media site Tumblr was considered to be the least effective method of engagement and so any future campaigns should not focus on the use of this.

## **Focus Groups**

### **Young Adult Focus Group**

The young adult focus group discussion data complimented the survey data. The participants agreed that the most common reason for fire use by young adults was for fun and that fire use has a social function. The group believed that fire on its own was not a danger however, in the context of use by young adults, fire use is often in the presence of alcohol which is where the danger lies.

With regard to suggestions for how to better engage young adults in safe fire behaviour, the focus group believed that the technique of the “Ghost Chips” campaign should

be recreated. They all felt this campaign had given them a way to talk to their peers about drunk driving and that a similar approach was needed to promote fire safety with young adults. The participants also discussed the importance of memorable campaigns with catchy slogans, and referenced “you know I can’t eat your ghost chips” from the “Ghost Chips” campaign.

None of the participants in the young adult focus group were able to name a current fire safety campaign aside from the “Precious” campaign. They also only reported having engaged in fire safety education while at primary school and believed an additional programme at secondary school level was necessary. The group agreed that any future campaigns should be targeted specifically at the young adult population and believed Facebook could be a particularly useful medium. They did not however believe Twitter would be a useful medium. The participants all believed that the first step for the Fire Service should be an increased presence on campus, particularly in orientation weeks.

### **Focus Groups with Dunedin Professionals**

The focus groups with the Dunedin Professionals were able to add valuable additional insight from the perspective of those dealing with the problem of unsafe fire behaviour first hand. The group agreed that although many positive steps have been taken in the past eight years, there was still a way to go to resolve the problem. Like the young adult focus group, the focus groups with the Dunedin professionals recognised the role of alcohol in young adult fire use and noted that the biggest problem those dealing with fire use face is how to catch those who are lighting the fires.

These focus groups were also able to provide a unique perspective on the fire problem, noting that, in Dunedin specifically, the bigger problem may actually be with young adults who do not attend the University of Otago. Different strategies may need to be developed to engage this additional group of young adults.

The focus groups agreed that for any real change to occur, a wider culture change around how fire is viewed would be needed, and any future campaigns need to be young adult specific and driven. Additional strategies to better ensure safe fire behaviour by young adults, also suggested in these focus groups, included harsher punishments for those who are

caught lighting fires and a move away from the diversionary approach, as well as the targeting of high risk individuals and flats and possible installation of CTV cameras in high risk areas.

## **Interviews with Social Marketers**

The interviews with social marketers were able to provide a useful perspective on the development of safety campaigns and the approaches that are typically favoured with the young adult target group. The key finding from this aspect of the data was the need to engage multiple mediums in any campaign. This included TV advertisements, the use of social media (for example, Facebook, Instagram, YouTube and Snapchat), the use of targeted advertising and “cookies”, and interactive campaigns and presentations. The use of other brands and businesses to help promote safe fire behaviour was also suggested, with the specific example of Powershop in Dunedin. The use of print mediums however, was not promoted for use with this target group.

The social marketers interviewed all recognised that young adults do not respond to “the big stick” or being told what to do. They believed that for a campaign to be successful, research must be done to establish what the barriers preventing young adults from engaging in the desired behaviour are and target campaigns to match that. One social marketer discussed the “Ghost Chips” campaign and the way it provided young adults with the “tools” to tell their peers not to drink and drive. A similar approach would likely prove successful for fire safety campaigns. Humour was also considered to be particularly useful in engaging young adults, as were incentives.

## **Conclusions**

The importance of having campaigns developed specifically for the target population was a finding from the current study. Success is far more likely with a campaign that is targeted at young adults rather than at the population as a whole. This was discussed by Thornley and Marsh (2010), in their review for the Health Research Council of New Zealand and the Ministry of Development, and was considered one of the more important elements of a successful campaign targeting young adults. A recurrent theme that emerged from the data was that young adults, particularly those who are studying at university, are often newly

moved out of home and having to be responsible for themselves for the first time. They cannot rely on their parents to make sure they are acting in a safe way and therefore the campaign must be targeted at these young people and their newfound freedom and responsibility.

The “big stick” as it was referred to by one social marketer interviewed, will likely not be successful with this target group. Young adults need to discover their own truths for them to stick. One way to do this would be in allowing young adults a part in the development of campaigns and in the promotion of campaigns, similar to the student involvement in the development of the short film *The Alarming Truth* at Rowan University in the United States (Clery Center for Security on Campus 2012), or the student involvement in the Campus Fire Safety Community Service projects in the United States (Michael H. Minger Foundation, 2013). Getting young adults involved in campaigns, for example second year students educating first year students on fire safety while flatting, will likely be far more effective than simply having head teachers telling them what to do.

The importance of the use of humour was a consistent theme emerging from the survey data, as well as the young adult focus group and the interviews with social marketers. While those in the young adult focus group did note that the “horror” or “emotional” based advertisements promoting fire safety, for example the “Precious” campaign on smoke alarms did influence their behaviour (for example checking smoke alarms in a new flat), the use of a humorous campaign, similar in approach to the “Ghost Chips” campaign, would have the best chance of changing the wider culture around fire use. This is also unsurprising given the research to support the use of humour in campaigns promoting other safety behaviours with young adults (Conway and Dube, 2002; Lewis, Watson and White, 2008; Mukherjee and Dube, 2012). Participants also suggested the use of “Kiwi humour” such as is used in the “Ghost Chips” campaign. It is important to note however, that the “Ghost Chips” campaign has not yet been empirically evaluated so its actual success with regard to behaviour change is currently unknown.

A key finding of this study was the fact that, while young adults do want their peers to engage in safe behaviour, they often don’t feel comfortable promoting it for fear of coming across as “preachy”. This was also found in the social marketer interviews, and was reportedly the case for drinking and driving behaviour, and was the driver behind the development of the “Ghost Chips” campaign. A light hearted campaign allows young adults

to promote safe behaviour with their peers without them having to take a stand against the dangerous behaviour, appearing as a “party pooper”. The disapproval expressed to questions about peer fire use demonstrates that young people do want to promote safe behaviour but need to be given an easy way to do this. The “Ghost Chips” campaign allowed young people to say “don’t drink and drive” in a relaxed way that avoided discomfort for those involved.

The need for more and better education was another common theme throughout the data. Those in the young adult focus group were unable to name any fire safety education programmes they had been involved in later than primary school age. A new modernised education programme for secondary school students could be extremely valuable. It would, however, need to differ from what is taught in the primary school programme. Many of the young adults, particularly in the university sample discussed a desire to know, not only how fires can start and what the hazards are, but also how to deal with a fire if one (typically a small one) does occur. Information about how to use fire extinguishers and how to check smoke alarms would also be important elements. Programmes would need to be at least partly interactive to best engage this target population, and would need to be delivered in an entertaining and engaging way as part of a wider campaign on fire safety. One suggestion in an interview with a social marketer was to use younger newly recruited firefighters to get the message across. In the university sample, of those who believed that fires were unavoidable a considerable number believed that electrical faults were the reason for this, and a number believed that fires sometimes happened as random occurrences. While those who believed fires were unavoidable amounted to less than 15% of the total sample, education about how fires start and how fire is rarely truly random could still be beneficial.

Harsher punishments for engaging in unsafe fire behaviour would also likely be supported as this was a consistent theme in both the young adult surveys and the data from the focus groups with Dunedin professionals. However, success may be limited for those who are rebellious and see breaking the law as a game. While this approach may provide some benefit, the overall aim must be changing the culture of unsafe fire behaviour and use, ultimately removing any positive reinforcement gained from this behaviour.

Multiple mediums in any future campaigns will be required. A key theme that came up was the need simply for more awareness and exposure of fire safety messages. The most successful campaign will, to the extent possible with consideration of resources, cross multiple mediums. TV advertisements are consistently seen as successful by social marketers

and were considered successful by a number of young adults. In addition however, social media should be made use of, as well as live and interactive presentations. Events on campus were recommended either in orientation week or later in the semester. An alternative strategy could be to designate a period of time on campus, for example a week, to promote fire safety in a similar way to Campus Fire Safety Month in the United States. On campus events could involve presentations, stalls or even live demonstrations similar to that done by the University of Pennsylvania's Division of Public Safety and the Philadelphia Fire Department with the model dorm rooms set alight, but potentially in the context of a flatting situation. The findings of Thornley and Marsh (2010) provide support for the multi-medium approach, with the authors stating that programmes promoting safety behaviours are most effective when implemented as part of a broader, more comprehensive intervention, rather than as a single component programme.

There was clear support from all participants for the use of social media in any future campaigns. However, this study has revealed that only specific forms of social media will be effective with the target group. While Facebook and YouTube are seen as highly successful, Tumblr and Twitter were among the least preferred mediums for young adults. Instagram and Snapchat were both suggested by social marketers however as neither of these were included in our survey, young adult views on these mediums are not available.

One suggestion from social marketers was the use of "cookies" and targeted advertisements, however, many of the young adults in the survey data noted that young people often have "ad blocker" software installed to combat this, which may limit the effectiveness of such a strategy. An alternative could be YouTube advertisements that cannot be skipped, that appear before popular videos. The use of "cookies" however, may not practically be a top priority.

Targeting the problem of unsafe fire behaviour in young adults will not be a one-step fix. The findings of this study show that an ultimate culture change to the way fire use is viewed will be necessary in order to change the behaviour of young adults. This may also need to involve culture change around alcohol use as the link between dangerous fire behaviour and alcohol use was noted both by young adults and the Dunedin professionals in this study. While the findings of this study, regarding the attitudes of young adults, suggest this will be possible, multiple mediums and strategies will need to be employed. New



campaigns will need to be developed specifically targeted at young adults and input from these young adults will also be crucial.

## **Strengths and Limitations**

A key strength of this study was that data was gathered from a range of different sources: secondary school students, university students, Dunedin members of the New Zealand Fire Service, New Zealand Police, the University of Otago Proctor and Deputy Proctor and the University of Otago Students' Association Representatives, as well as social marketers. The overall sample size was also large meaning there was considerable data to work with.

Triangulation of data was another key strength of the study as data was obtained from both quantitative (survey data) and qualitative sources (focus group discussions and interviews). This provided us with more detailed and comprehensive data that enabled us to understand the viewpoints of multiple groups involved in the development of safety campaigns (those who will consume it- young adults, those who will enforce it - Dunedin members of the New Zealand Fire Service, New Zealand Police, the University of Otago Proctor and Deputy Proctor and the University of Otago Students' Association Representatives, and those who will assist with the development of such a campaign – social marketers).

The study did however have some limitations. The secondary school sample was considerably smaller than the university student sample so comparisons between the groups, in order to determine whether approaches should vary, were not able to be conducted. The student sample was also largely New Zealand/European and consisted of individuals from higher socio-economic backgrounds; the schools were mostly decile 8 and above and those who are able to afford to go to university. Numerous attempts were made by the research team to contact four additional low decile schools however they declined to participate as they felt their students had been asked to participate in a number of research projects already over the school year.

The study also did not include individuals who were not in the chosen educational institutions and as was suggested in the focus groups with the Dunedin professionals, those who are not attending university, for example those at polytechnic institutions and those who are doing apprenticeships, may in fact be contributing more to the unsafe fire use problem. Future research should include this group to determine whether different strategies should be employed for those who do and do not attend university

## Recommendations

The following recommendations are made based on the research undertaken for this project and reflect the data obtained from the secondary school and university survey samples, the young adult focus group, the focus groups with Dunedin members of the New Zealand Fire Service, New Zealand Police, the University of Otago Proctor and Deputy Proctor and the University of Otago Students' Association Representatives, and interviews conducted with social marketers. The recommendations are ones the New Zealand Fire Service might like to consider when developing new campaigns with the aim of engaging young adults in safe fire behaviour. The recommendations have been separated into those that are relevant to the whole of New Zealand and those that are specific to Dunedin and targeting its unique fire use problem.

### Recommendations for the whole of New Zealand

- 1. Development of a new, updated education programme, specifically for secondary school students.** This should revise the basics taught in the primary school programme while including new material on fire related hazards and risk factors, as well as ways to extinguish small fires. This should be taught in an interactive manner and should utilise humour that appeals to young adults.
- 2. Increased presence of New Zealand Fire Service on University Campuses.** Members of the New Zealand Fire Service should attend events such as clubs expos during Orientation week and throughout the semester. This may also be valuable towards the end of the second semester when first year students are organising flats for the following year. While this is occurring on some university campuses, a wider New Zealand presence on university campuses is needed. Involving younger firefighters may also prove valuable as young adults may relate better to them than to adults.
- 3. Development of new TV campaigns focused on fire safety for young adults.** These should be in a similar style to the Legend ("Ghost Chips") campaign, utilising "Kiwi" humour while still making the consequences of unsafe fire behaviour apparent. The aim of these should be to provide young adults with a way to discuss safe and unsafe fire behaviour with their peers and to tell each other not to engage in unsafe fire behaviour without feeling uncomfortable.

4. **Consider the feasibility of making legislative changes to make it mandatory for landlords to have working smoke alarms installed in all rental properties.**
5. **Increase New Zealand Fire Service presence, as well as the fire safety message, on social media.** Increase the available resources within the Fire Service to monitor and advocate for fire safe behaviours in this medium.
  - a. **Better use of the New Zealand Fire Service Facebook page.** This could include competitions involving “liking” the page and going into the drawer to win a prize. The Facebook page could then be used to communicate fire safety tips and promote fire safety presentations and events to these young adults. Information and links posted by the New Zealand Fire Service would then automatically appear in the young adults’ newsfeeds.
  - b. **Develop short unbranded YouTube advertisements about fire safety that will attract viewers and promote key safety messages.** These would appear before videos and should be the type that cannot be skipped by viewers. Many young adults have “ad blocker” software installed on their computers and so can skip regular YouTube advertisements after five seconds. If advertisements cannot be skipped, the young adult is a captive audience as they wait to be able to watch their video.
  - c. **Consider development of an online YouTube series on fire safety for young adults.** This could feature new Fire Service firefighters talking about their experiences since joining the Fire Service or could feature victims of fires discussing their experiences.
  - d. **Consider development of campaigns using additional social media mediums such as Instagram and Snapchat.** An example could be a Snapchat “story” that shows young adults in a flat or at a party and as the Snapchats progress throughout the day a fire gets out of control and the young adults must deal with it. Instagram could be used to create a fire safety hashtag or to get young adults sharing posts around fire safety.

## **Dunedin Specific Recommendations**

1. **Development of an initiative with the University of Otago Students’ Association where second year students educate first year students on fire safety while living**

**in flats.** A group of second year students could be taught about fire safety by members of the New Zealand Fire Service, similar to the approach in the Campus Fire Safety Community Service projects in the United States but focused within the university community, and could then take that knowledge and teach first year university students in each hall of residence. This could be done towards the end of the second semester before exam time.

- 2. Consider the possible installation of CTV cameras in known high risk areas for unsafe fire use and behaviour in a small defined area of the North Dunedin student residential centre.** The feasibility of this in certain areas should be considered to address the problem of uncertainty around who is responsible for lighting fires.
- 3. Monitoring of “high risk” individuals and flats by Campus Watch in Dunedin.** A record of those individuals and flats that are considered “high risk” for engaging in unsafe fire use should be kept by Campus Watch and the level of intervention from Campus Watch/Police would be determined by the level of illegal behaviour undertaken by the individuals. The individuals and flats should be monitored carefully and should be visited regularly by members of Campus Watch.
- 4. Investigate feasibility of involving other brands and businesses in fire safety campaigns.** The example given in a social marketer interview was to work with the power company Powershop, in Dunedin to promote fire safety. If the business could provide incentives, such as lower power costs for those engaging in safe fire behaviour, or for those who refrain from burning couches as a more specific example, this could engage young adults who are often most focused on their own self-gain.
- 5. Consider liaising with the judiciary and the Vice Chancellor to determine whether criminal charges could be laid for those students caught lighting fires.** In those cases where the individual/individuals are caught lighting fires, it may be valuable if criminal charges could be laid. The Focus Groups with Dunedin professionals suggested that warnings or alternative diversionary approaches should no longer be the first response.

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# Appendices

## Appendix A

### Secondary school sample and university sample questionnaire

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### Evaluating Effective Methods of Engaging School-Leavers in Adopting Safety Behaviour

Please check as many boxes as are relevant to you

1. What is your age?

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2. What ethnic group do you belong to?

- NZ/European
- Maori
- Pacific
- Asian
- Other, please specify \_\_\_\_\_

3. Where do you currently live?

- At home with parents/caregivers
- In a flat
- In a hall of residence
- Boarding
- Other, please specify \_\_\_\_\_

4. How many people do you live with?

- 1
- 2-4
- 5-7
- More than 8 people

5. How confident are you in your ability to put out a fire?

- Not very confident
- Quite confident
- Very confident

6. How do you put out an oil fire?

- Pour water on it
- Pour baking soda on it
- Pour flour on it
- Cover it with a lid
- Call 111 as there is nothing you can do

7. Do you think fires in homes can be prevented or are they unavoidable?

\_\_\_\_\_

8. If you think they can be prevented, what can be done?

\_\_\_\_\_

\_\_\_\_\_

9. If you think they are unavoidable, please state why.

\_\_\_\_\_

\_\_\_\_\_

10. What is the leading cause of fire in the home?

- Cooking fires
- Faulty appliances
- Smoking
- Inattention/carelessness with heat source
- Other, please specify \_\_\_\_\_

11. What fire safety equipment do you have in your home?

- Smoke alarms
- Fire extinguisher
- Fire Blanket
- Other, please specify \_\_\_\_\_

12. In the past 12 months, have you experienced a fire in the home? (If yes, move to question 13, if no move to question 14)

- Yes
- No

13. What did you do?

- Try to put out the fire yourself
- Called 111
- Alerted other occupants in the house
- Evacuated the house
- Other, please specify \_\_\_\_\_

14. If you do not live at home with parents/caregivers, what fire safety devices were present when you first moved in to your current residence?

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15. What actions increase the risk of a person getting a serious burn injury in any sort of fire?

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16. In the past 12 months, have you engaged in any unsafe fire behaviour? (If no, move to question 20)

- Yes
- No
- Unsure

17. If you answered 'yes' what did you do?

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18. Were other people involved?

- Yes
- No



19. If yes, who?

- Parents
- Siblings
- Friends
- Strangers
- Other, please specify \_\_\_\_\_

20. When you think about fire, what word(s) come to mind?

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21. How dangerous do you believe fire is?

- Very dangerous (e.g., “someone is often seriously burnt in a house or car fire”)
- Quite dangerous (e.g., “sometimes people get burnt in a house or car fire”)
- Not too dangerous (e.g., “it is rare for people to get burnt in a house or car fire”)
- Not at all dangerous (e.g., “people hardly ever get burnt in a house or car fire”)

22. How often do you think your peers cook and leave a naked flame unattended?

- Never
- Sometimes
- Often
- Always

23. How often do you cook and leave a naked flame unattended?

- Never
- Sometimes
- Often
- Always

24. How do you think your peers feel (or would feel) about you playing with fire?

- Strongly disapprove
- Disapprove
- Neutral
- Approve
- Strongly approve

25. How do you feel (or would feel) about your peers playing with fire?

- Strongly disapprove
- Disapprove
- Neutral
- Approve
- Strongly approve

26. What are the reasons you believe people your age use fire?

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27. If you light a fire in a street, what is likely to happen to you?

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28. What behaviour does the law describe as arson?

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29. Can you be prosecuted for deliberately starting a fire?

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30. If you set a fire and it spreads to neighbouring buildings causing damage, can you be held accountable?

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31. What recent safety campaigns targeting young adults are you aware of?

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32. Which do you believe was the most effective safety campaign targeting young adults and why?

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33. What recent fire safety campaigns are you aware of?

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34. Which do you believe was the most effective fire safety campaign and why?

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35. Please rank what method would be most preferred and effective at getting people your age to adopt safety behaviours.

With 1 being the most preferred/effective and 8 being the least preferred/effective

- \_\_\_ Presentations by the fire service
- \_\_\_ Online modules
- \_\_\_ YouTube
- \_\_\_ Twitter
- \_\_\_ Facebook
- \_\_\_ Tumblr
- \_\_\_ Radio campaigns
- \_\_\_ TV advertisements

36. What suggestions do you have for how fire safe behaviour could be improved with young adults?

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37. If you would like to be entered into the draw to win one of two \$100 iTunes vouchers, please provide a contact e-mail address in the space provided below.

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38. If you would like to further take part in our study, there is an opportunity to participate in a focus group. This would take a maximum of 60 minutes of your time. All participants will receive a \$20 iTunes voucher.

If you are interested or would like further information, please leave a contact e-mail address in the space provided below.

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## Appendix B

### Questions used in young adult focus group

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#### **Evaluating effective methods of engaging school-leavers in adopting safety behaviours.**

1. What do you consider to be unsafe fire behaviour? What do you consider “playing with fire”?
2. How common is it for young people your age to engage in unsafe fire behaviour? Are young people your age more often safe or unsafe with fire?
3. Why do young people your age engage in unsafe fire behaviour?
4. What are the benefits for those who engage in unsafe fire behaviour?
5. How successful do you believe the “Legend” (“Ghost Chips”) campaign was at increasing safe behaviour? And why?
6. What suggestions do you have for the development of future fire safety campaigns aiming to increase safe fire behaviour and decrease unsafe fire behaviour?

## Appendix C

### Questions used in the focus groups with Dunedin professionals

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#### **Evaluating effective methods of engaging school-leavers in adopting safety behaviours.**

#### **Questions for New Zealand Fire Staff, New Zealand Police, University of Otago Proctor and University of Otago Students' Association Representatives**

1. How much of a problem is firesetting by young people aged 18-24 at the University of Otago?
2. How have you tried to address this problem and how effective do you think this has been?
3. What further steps need to be taken in order to address this problem?

# Appendix D

## Questions used in the social marketer interviews

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### **Evaluating effective methods of engaging school-leavers in adopting safety behaviours.**

1. What experience do you have in developing information technology with young people aged 18 - 24?
2. Given your experience, what do you think are the best methods for engaging or educating young people in safe behaviour?