

Fire Research Report

Developing Indicators of Household Risk and Targeting Interventions

CRESA

July 2005

This research was conducted to improve our understanding of the links between fire risk and household stability and composition. The research was based on structured interviews with 247 householders in a range of different households. They included 147 households in the Bay of Plenty and 100 from the Lincoln Fire District. The research revealed several indicators of fire risk at a household level, and also gave some insight into the extent to which householders recognised and responded to these risk factors. Interview findings showed some link between household stability, familiarity of household members with each others activities and systematic household management. It provides the basis for identifying appropriate interventions to encourage fire safety in different household types.

New Zealand Fire Service Commission Research Report Number 51

ISBN Number 1-877349-21-6

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DEVELOPING INDICATORS OF HOUSEHOLD RISK AND TARGETING INTERVENTIONS

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July 2005

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ACKNOWLEDGEMENTS

Several people provided us with assistance in developing indicators of fire risk at a household level, development of the survey instrument, the administration of the survey, and interpretation of survey findings. In particular we would like to thank the following New Zealand Fire Service personnel for their considerable assistance and enthusiasm for the project: Jim Dance, John Jobe and the Bay of Plenty Fire Ambassadors, Paul Burns and Neil Challends. We would also like to thank Sandra Winter from Lincoln and Districts Community Care and Susanne Vallance, Social Science, Tourism and Recreation Group, Lincoln University.

EXECUTIVE SUMMARY

Introduction

This research aimed to improve our understanding of the links between fire risk and household stability and composition. It provides the basis for identifying appropriate interventions to encourage fire safety in different household types.

People's perceptions of fire risk and their responses to it are potentially influenced by factors such as the dwelling type, including where people sleep and cook; household composition; householders' awareness of each others comings and goings; whether people take specific responsibility for key household activities; fire safety strategies in place; and socio-economic characteristics.

There risks are behaviour related and include careless smoking, unattended cooking, children playing with matches and other naked flames and excessive drinking and drug abuse. Often these behaviours are interrelated.

People are often reluctant to acknowledge fire risk. However, little is known about how people's perceptions of fire risk are shaped by the existence of risk factors and their awareness of these. This research sought to provide more insight into the links between people's living arrangements, perceptions of fire safety and responses to fire risk.

The research approach

The research was based on structured interviews with 247 householders in a range of different households. They included 147 households in the Bay of Plenty and 100 from the Lincoln Fire District. The questionnaire was designed to build up a profile or picture of:

- Household circumstances, location composition, living and sleeping arrangements
- Household information flows and management
- Householders' familiarity with each other's activities, perceptions of fire risk, fire safety behaviour and preferred sources of information and advice.

Household profiles

Almost all the 147 **Bay of Plenty** households included in the research were family-based and more than half had Māori members. They included one-parent, two-parent, couple-only and extended family/whanau. They also included single-person households. Almost half described themselves as low-income, 41% lived in rental accommodation and 25% had at least one member who was disabled or had a long term illness.

Household sleeping quarters were often not in the main dwelling. More than half regularly used 'other buildings' or places, including sheds, caravans,

sleep-outs and cars. Others sometimes used such places when visitors came. At the time of the interviews, 8% had people staying temporarily.

One in three householders had smoke alarms before the Fire Ambassadors' visits although many were not working, usually because batteries had gone flat. But some purposely removed batteries to avoid false alarms. Some did not see themselves as at risk. Some, especially those who had some experience of fire, had other equipment like fire extinguishers or fire blankets.

For most households, someone was taking responsibility for checking who was staying, where they were sleeping, who was away or home and who was looking after the children. However, it appears that in around one in ten households no one was taking specific responsibility for these tasks. Similarly, in the majority of households responsibility for fire safety equipment and activities lay with particular people. But in at least one in three households that was not the case.

Other than concern about cooking, people tended to see factors about their house as the greatest fire risk - old wiring or electrical faults, fire places, and electrical appliances. Their responses to perceived fire risk tended to be behaviour related - changing smoking behaviour, putting matches and lighters away, adopting safety and escape plans and taking more care during cooking. Most people recognised that they needed information to help them change their behaviour, preferably from the New Zealand Fire Service

Most householders had thought about what they would do in the event of a fire and most had talked to other household members about this. Households with previous fire experience of house fire were more likely to discuss what they would do if a fire occurred.

TV was most often identified as the main source of information, followed by the Fire Service and schools.

Of the 100 households included in the **Lincoln Fire District** half were family-based, 36% were flatting households (mostly students) and the balance were single people (often elderly) or hostels for students. One in five households had a member who did not speak English as a first language and half described their households as low income (most living in rental accommodation). Sixteen percent had one or more householders with a disability or long term illness.

Compared with the Bay of Plenty, households were less likely to rely on other buildings for sleeping quarters. Nevertheless, 17% regularly used 'other buildings' like sleep-outs, garages and garden sheds. Households were more likely to have guests at the time of the research: 14% had people staying temporarily. Most households relied on electricity for home heating. Most households had access to the internet (in the Bay of Plenty, such access was far less common).

Eighty percent of householders had working smoke alarms and almost half also had fire extinguishers. Flatting households, always in rental accommodation, accounted for most of those without alarms.

It was reasonably common, especially in student households, for people to not be aware of each others comings and goings: in most households people were regularly socialising in the evenings, working and studying. Students reported not knowing each others study and lecture timetables, part-time work hours and socialising activities. They also reported often not knowing who was sleeping in the households: flatmates' friends often stayed overnight or they stayed at friends. They stressed that they lived independent lives.

While most households had a particular person who took major responsibility for overall household organisation, this was not the case in flatting households. For instance, it was rare for people to take responsibility for inviting people to stay or organising where guests would sleep.

People were most likely to see cooking as the greatest fire risk although householders also focused on physical aspects of their dwellings - the condition of the house, wiring or electrical faults. They also noted behavioural factors that might increase risk: students were particularly mindful of risks relating to drug or alcohol consumption.

Although people tended to focus on the physical aspects of their homes and appliances when identifying risks, they focused on behaviour responses to mitigate those risks. Identified sources of advice or help included the Fire Service, local or regional council, television and messages from schools.

Most people had thought about what they would do in the event of a fire and most had talked about this with other householders. But 41% had not. Half had an escape plan, because they had experienced a fire, wanted to avoid the consequences of fire or heeded messages they had seen on television. Reasons for not having escape plans included complacency, a belief that they were not at risk and confidence that escape would not be a problem.

Indicators of fire risk

The research revealed several indicators of fire risk at a household level, and also gave some insight into the extent to which householders recognised and responded to these risk factors.

- *Household composition* is a key determinant of fire risk with fire incidence higher amongst single-parent and crowded households, and in those with old people, children and people with disabilities. However, householders did not recognise these characteristics of their household as a fire risk.
- Several of the characteristics of *low income households* that are implicated in increased fire risk were apparent in the sample. A number of households lived in substandard buildings, many of which were *rental accommodation*, which is associated with increased fire risk. People were

generally aware of the potential fire risk that old or poorly maintained homes presented.

- Households commonly relied on *other structures* on their properties for sleeping quarters. There is a link between the use of sheds, caravans, and other temporary structures for housing and increased fire incidence and injury or death, for instance because of a reliance on lighting and heating alternatives like candles and bottled gas. However, no one recognised the risk from the use of these sleeping places.
- *House tenure* had little or no impact on people's perceptions of fire risk despite evidence that rental accommodation is implicated in increased risk. There was some link between tenure and lack of fire preparedness
- Householders were mindful of the risks that *smoking* presented and most stressed the need for behavioural changes to reduce that risk.
- Even though fire incidence is higher in households where there are people with *disabilities*, including those relating to age, householders did not recognise the risk.
- Often householders were concerned about the fire risk their *open fires*, or chimneys.
- There is a link between *fire preparedness* and household income. Variation in the possession of working smoke alarms was linked to both household income and tenure. Respondents' stated reasons for not having smoke alarms and / or escape plans suggest a high degree of denial of fire risk coupled with a sense of invincibility.
- A number of factors are implicated in increasing householders' awareness of fire risk. These include children bringing home messages from school, local fire incidents, personal experience of fires, the skeletons of burned out houses in the community, and public awareness campaigns.
- The *changing composition* of some households makes it difficult for people to keep abreast of who is around at any one time. Composition changes throughout the day as adults go to work, children go to school and adults and children play sport, visit, shop and so on. It also changes on a day-to-day basis as people arrive and leave overnight. In some households, it also changes over time longer as members come and go on temporary or longer term bases.
- Householders' *knowledge of each others comings and goings* tended to reflect composition. In flatting situations householders were far less aware of others movements and who was staying over and away.
- Although most householders were fairly systematic about how their households were *managed and organised* overall, this was not always the case. In around one in ten family households and most flatting households

responsibility for some key tasks that potentially relate to fire safety is rather haphazard. Systems did not seem to be in place to ensure that someone knew who is in, and where they were, at any one time. Rarely did people see this haphazardness as a fire risk.

- *Unsafe behaviours* like excessive alcohol consumption and drug abuse pose risk. But it was reasonably uncommon for householders to identify these as risk factors. They were more likely to identify cooking, smoking, and the condition of their house as risks.

Conclusions and implications of findings for NZFS

Interview findings showed some link between household stability, familiarity of household members with each others activities and systematic household management. The flatting households and around ten percent of others stood out in this regard: householders generally did not know each others comings and goings, sometimes did not know who was sleeping in the dwelling overnight and did not have amongst them someone who took specific responsibility for household organisation and management.

These findings have a number of implications for the NZFS in terms of:

- Who to target to ensure dissemination of advice and information within households, including installation and maintenance of fire alarms and development of safety plans
- How to best package and disseminate fire safety messages
- Checking who is likely to be in a dwelling, including sleeping in other buildings', in the event of a fire
- The resources put into public awareness, including dedicated community-based activities and media campaigns
- The content of messages, including some shift in focus to raise awareness of the potential risks associated with the use of 'other buildings' for sleeping and haphazard household management.

The identification of household fire risk factors has informed the development of a survey instrument that can be used by communities and/or NZFS to identify at-risk households.

1. BACKGROUND

1.1 Introduction

This research aimed to provide the evidential base for the New Zealand Fire Service (NZFS) to develop fire safety interventions targeted at at-risk households. Part of the research also included the development of an assessment tool (in the form of a questionnaire) that the NZFS and communities could use to both identify at-risk households and build household awareness of fire risk and fire safety. The research examined fire risk factors at a household level in a range of household types and circumstances to identify links between household dynamics and fire risk. This analysis provided the basis for identifying appropriate interventions to encourage fire safety in different household types.

Fire risk and fire safety perceptions, behaviours and activities at a household level are influenced by an interrelated set of factors that we can collectively call household dynamics. The term household dynamics describes a complex set of interrelated characteristics and activities of a group of people living together and the dwelling in which they live. These physical, demographic and social characteristics might include the physical features of the dwelling, household composition, and the ways that household members use their living spaces and manage and carry out household activities. To understand the household dynamics of households included in this research, we focused on the following:

- The dwelling type, including other living/sleeping quarters and amenities
- Who lives permanently or temporarily in the household
- Where people sleep and cook
- How rooms are lit and heated
- The activities for which people move in and out of the dwelling
- Householders awareness of each others comings and goings
- Patterns of responsibility for key household activities, including fire safety
- The fire safety strategies that are in place
- Socio-economic characteristics.

Previous research has focused on the importance of one or some of these aspects of household dynamics as determinants of fire risk. The University of Otago Research Team (2000) has traced the link between social and economic deprivation and fire incidents, mainly using aggregate data at a community level. Duncanson (2001) and Duncanson *et al* (2001, 2002) have conducted several studies tracing the links between fire incidents, injuries and deaths with variables such as individual demographic characteristics and behaviours and household composition. CM Research's study (2000), although focusing on developing greater community responsibility for fire safety, looked at individuals' understandings and views of fire safety. Lloyd and Roen's (2001) research on households still focused on individuals within households rather than how the collection of people in households interact, regroup, use their housing amenities, and interact with their communities.

To date there has been little research that takes a wider focus on the inter-relationships between the risk factors and how householders take account of these interrelated factors in their own conception of fire risk. Nor has there been research that focuses on how these interrelated factors influence the way that households respond to perceived fire risk. The way that householders conceive and respond to fire risk has important implications for how NZFS and others develop effective fire safety interventions.

A focus on household dynamics is particularly important in the current context, given significant change in the composition and circumstances of New Zealand households over the past 10-20 years. This research looked for patterns of response to fire risk, as well as any identifiable patterns in fire risk factors, across a range of communities and household types. The range of communities includes: rural and urban; Māori and Pakeha; North and South Island; and areas of high and low deprivation.

This investigation has been informed by research carried out by Saville-Smith *et al* in 2004. In that research, a typology of household types was developed that takes account of different levels of stability in membership across households. Household types ranged from the highly stable in terms of composition (the same people live together over time) to the highly fluid (the composition of people living together keeps changing over time). The most stable comprises a permanent set of members (or a single person) who are linked by kinship and reside in one house/location on a long term basis. More fluid are households that include a permanent set of core members (or a single person) who are linked by kinship as well as other non-core, non-permanent members. These non-core members, such as adult children, grandchildren and other relatives, move in and out of the household (sometimes staying for long periods), while the core members (usually parent/s) remain. The most fluid households include a variable set of household members who also move house frequently. They include households with members linked by kinship and households where members have no kinship links (e.g. flatmates, seasonal workers in temporary quarters).

Intersecting with household stability is household composition, or who lives in households at any one time. Households can consist of one or more families, one-person households or non-family households. The Census provides 5-yearly snapshots of household composition, from which composition trends can be identified. Census statistics highlight some important changes in household composition that potentially have implications for fire prevention and safety, including how to target education. These include: an increasing proportion of one-parent households; a decreasing proportion of two-parent households (a growing number of which are re-constituted families); and an increase in the proportion of one or two-parent households with adult children and, in many cases, grandchildren. The proportions of one-person households and couples with no children or children who have left home are also increasing while the proportion of multiple-family/whānau households has remained steady.

There are significant ethnic differences in household composition as well as regional and local differences. For instance, two-parent households still predominate for Pakeha children (but not for Māori and Pacific children). Multiple-family households and households with three or more children are more likely to be Māori or Pacific Island. Rural and provincial areas, especially in Northland, the East Coast, Wairarapa and the Eastern Bay of Plenty, and some urban areas (e.g. parts of Porirua City and Manukau City), are characterised by relatively higher proportions of households with lower incomes, dependency on benefits, higher numbers of children and single parents. In the rural areas, the age distribution in households is often skewed with higher proportions of older people, often living alone, and young families (Warren, 2002a and 2002b).

These household composition trends, coupled with differences in the stability of household membership, reflect a mix of social and economic trends, many of which point to increased fire risk. Some of these risks are identified in research such as that of the University of Otago Research Team (2000). Social trends, discussed in the most recent edition of the *From Birth to Death* series (Davey, 2003) include the ageing of the population; the continuation of a trend towards later motherhood; increasing divorce, relationship breakdown and reconstituted families; and children staying at home for longer (or returning to their parents' home). Economic trends include changes in the labour market leading, for instance, to increasing proportions of women in the workforce; a decline in the proportion of families where fathers work full-time and mothers look after children full-time; decreasing work opportunities in rural areas; and the increasing costs of housing, health, education and other services.

These trends mean increasing financial and other pressures on households, especially those households comprising families with children. The consequences of these pressures, for instance, arising from extra costs of childcare, housing, health, education and other services and uneven availability of work, include increasing family/whānau conflict (discussed in Davey, 2003), possibly leading to increased alcohol and drug use,¹ and decreased household stability as children (and sometimes their children) and other relatives return to the parental home in search of work, or to reduce housing and/or childcare costs.

1.2 Fire risk factors

Both international and New Zealand based studies of fire incident data show a strong correlation between economic conditions and residential fire incidents or deaths (e.g. University of Otago Research Team, 2000; Duncanson, 2001; Fire Research Reports 30-33, Nicopoulos *et al*, 1997; Jennings, 1999; and Office of the Deputy Prime Minister, 2004). Residential fires are more likely to occur and, when they do, are more likely to result in death or injury in areas of economic and social deprivation. Māori and Pacific people face greater risk as

¹ There have been a number of studies showing the link between alcohol and fire (e.g. Duncanson, M. 2001)

they are more likely to be in households in the lower income brackets (Davey, 2003; Warren, 2002a and 2002b).

The links between household income and fire risk are both direct and indirect. Lower income households are more likely to live in substandard housing with, for instance, poor wiring, poorly maintained heating systems and poorer quality appliances, all of which are implicated in increased fire risk. However, household circumstances such as the quality and design of the dwelling, and the type of heating, cooking and other household amenities used are not necessarily limited to low income households. Lower income households also have a higher reliance on sheds, mobile homes, caravans and other less permanent structures for their living or sleeping quarters. These too are linked to increased fire risk. These households are also more likely to rely on candles, open fires and bottled gas, which are again linked to increased incidence of fires (Office of the Deputy Prime Minister, 2004). The increased use of these heating, cooking and lighting alternatives in poorer households can be explained, to some extent, by their greater reliance on additional living quarters that are separate from the main dwelling and its services and by their higher rates of disconnection from national utility systems. Lower income households are also more likely to live in rental accommodation, which is also linked to fire risk. Lower income households, and those in rental accommodation, are less likely to have working smoke alarms and are likely to have generally lower investment in fire protection equipment overall. This trend is confirmed by New Zealand-based research (Duncanson *et al*, 2002). Individual factors such as lower education levels, unemployment, smoking and excessive alcohol consumption and drug abuse, all of which are implicated in increased fire risk, are also linked to higher levels of deprivation. For instance, educational levels are implicated because they influence householders' capacity to understand and respond to fire risk.

Household composition is also a key determinant of fire risk although some links between household composition and increased fire risk can be explained by economic conditions. The incidence of fire is higher amongst one-parent households, which are more typically in lower income brackets. In New Zealand, one-parent households are becoming relatively more economically disadvantaged because they are more sensitive to the economic trends described above. These households are less likely to have a parent in paid work, compared with two-parent households, where an increasing proportion have both parents participating in the workforce. And there are ethnic differences, with a high proportion of Māori children living with single mothers generally who are not in the workforce (Davey, 2003).

The incidence of fire is also higher in crowded households, and crowding is often associated with low income. In New Zealand, family-based households with three or more children are more likely to be in the lower household income brackets. Conversely, family-based, two-parent households with one child are often in the higher household income brackets (Warren, 2002a and 2002b).

Economic conditions do not explain all links between household composition and increased fire risk. Research shows that the presence of children and the elderly, and the presence of people with disabilities, increases fire risk (The Columbus Organisation, 2002). Young and old, and those with disabilities, are more likely to become a casualty than other age groups. It is unclear whether this increased risk stems from more fires occurring amongst these groups or from problems they face escaping from fires (Office of the Deputy Prime Minister, 2004).

Experience in the United States shows that student households, especially those located off-campus, are particularly at risk (Song & Demon, 2005) and that most students live off-campus. The publication of Campus Firewatch (first published in 2000) reflects the recognition of this heightened risk amongst off-campus student households. In its monitoring of fire incidents in student households across the United States, this publication notes the higher incidence of fire fatalities in off-campus accommodation. Factors contributing to this higher risk include the absence or defectiveness of fire safety equipment, the poor disposal of cigarette butts and other smoking material, and the excessive use of alcohol. In addition, students are often living on their own for the first time and have not been educated about what they should do to prevent a fire or respond to protect themselves (Campus Firewatch, January 2005). Other reasons for fires in student accommodation include the use of candles, the overloading of extension cords and power outlets and unattended cooking. That these students are living so closely together is also implicated (Underwriters Laboratories Inc., 2005).

Some past research has focused on behaviour. Behaviours that are implicated in increased fire risk include careless smoking, unattended cooking, children playing with matches and other naked flames and excessive drinking and drug abuse. Often these behaviours are interrelated. For instance, excessive drinking is often blamed for unattended cooking, careless smoking and unsupervised children (Conley & Fahy, 1994 cited in the Office of the Deputy Prime Minister, 2004).

1.3 People's perceptions of risk

People are often reluctant to acknowledge fire risk. This is so even in situations where people live in close proximity to high risk areas, such as in bush areas of Australia (Rohrmann, 1999) and extensively managed wildland in California (Gardner *et al*, 1987). It seems that people are slow to adopt fire prevention measures and other fire safety strategies partly, at least, because they have little awareness of fire risk and, for some, believe they are invincible. Little research has been carried out to assess the links between people's perceptions of fire risk and the existence of factors that would indicate high or low risk.

Some research has been carried out to assess the barriers to, and opportunities for, increasing people's awareness of fire risk. For instance, Lloyd and Roen's (2001) research highlighted the complexity of interactions when fire fighters talk with residents about fire safety in their own homes.

They suggest that people's responses to fire risk are shaped by the way they interact with fire fighters. That has implications for the way NZFS provide expert advice to householders. For instance, the authors concluded that people are likely to respond better when the experts are less formal and friendlier in their approach. Thomas *et al* (2000), Hoskins *et al* (2001) and Duncanson *et al* (2001) also found that different approaches to fire safety interventions are required for different groups. Because culturally appropriate fire safety strategies are required, consultative approaches are needed to design and implement strategies for addressing Māori fire safety issues. Fire safety interventions also need to be closely aligned with community processes. Roen and Lloyd's (2002) research, which shows the need for NZFS employees to be more involved in community activities, supports the principle of community-based roles like those of Fire Ambassadors.

1.4 Research approach

This research aimed to improve our understanding of the links between fire risk and household stability and composition, both of which are changing as a consequence of a range of social and economic trends. The findings will provide a basis for developing targeted interventions to enhance households' and communities' capacity to assess, prevent and manage fire risk. The research was primarily based on interviews with 247 householders in a range of different households. They included 147 households in the Bay of Plenty and 100 from the Lincoln Fire District.

The households selected for these studies included stable family-based and single-person households, some less stable households, for instance with adult children staying temporarily and other extended family, and less stable flatting households. The family-based households included one and two-parent households with children, and couple-only households.

The householder interviews were conducted in a number of urban and rural communities in the Bay of Plenty and in the Lincoln Fire District. These areas were selected in consultation with NZFS staff and with reference to fire incidence data. These areas were selected for the following reasons:

- they include vulnerable communities (with reference to fire risk) or present with characteristics that indicate vulnerability to fire risk, including high levels of deprivation and rurality;
- they include significant populations of Māori, identified as at-risk (Thomas, *et al*, 2000 and others), and
- they enable this research to build on the Rural Housing Programme activities (particularly learning from the experience of Fire Ambassadors) and the Smoke Alarm Installation Project (reviewed by Duncanson *et al*, 2002).

The survey instrument employed in this research, and attached in Appendix 1, was designed to provide people from a range of different household types with the opportunity to reflect on their fire risk given some key physical, demographic and social characteristics. The questionnaire required them to consider things like what their dwelling and amenities were like, who lived in

the dwelling and how, what sort of fire safety equipment they had and so on. The research sought to assess the extent to which householders' perceptions of fire risk reflected the risk that these household dynamics indicated.

The questionnaire was designed to build up a profile or picture of the following:

- Household circumstances and location
- Household composition and stability
- Living and sleeping arrangements
- Familiarity of household members with each other's activities and movements
- Household information flows
- Household management
- Perceptions of, and attitudes to, fire risk, fire prevention and fire safety
- Household fire safety and prevention behaviour
- Preferred sources of information and advice.

The questionnaire was designed with considerable input from NZFS staff at a national and local level, including Fire Ambassadors in the Bay of Plenty, and from community members.

Interviews were carried out by CRESA staff and, after training, by Fire Ambassadors in the Bay of Plenty, community members in the Lincoln Fire District and students at Lincoln University. Community members were paid for each interview completed.

A focus group was also held with Fire Ambassadors to feed back and verify research findings and seek further clarification about key issues. Further consultative meetings were held with Head Office and regional staff around the development of recommendations.

The data collected from the in-depth interviews was content analysed, coded and entered into an SPSS database. It was analysed to:

- identify the links between fire risk and household stability, composition, familiarity, sleeping arrangements, household management and information flows
- assess access to and availability of fire safety information, advice and assistance
- identify the barriers to adopting positive fire safety behaviours, and
- identify opportunities for household-focused fire safety interventions.

1.5 The report

There are four further sections to this report. Section 2 presents the findings from interviews in the Bay of Plenty. Section 3 presents findings from interviews in the Lincoln Fire District. Section 4 discusses the main indicators of fire risk and their implications for the development of fire safety interventions. Section 5 includes a revised questionnaire that NZFS and communities could use for further household and community capacity building and fire risk assessment.

2. BAY OF PLENTY INTERVIEW FINDINGS

2.1 An overview

One hundred and forty-seven interviews were carried out in the Bay of Plenty Region. This region includes 12,486 km² of land, encompasses seven local government districts – Western Bay of Plenty, Tauranga, Whakatane, Kawerau, Opotiki, Rotorua and Taupo. The households included in this research were located in five of these: the Western Bay of Plenty, Tauranga, Whakatane, Kawerau and Opotiki Districts.

The Western Bay of Plenty District had 16% of the region's population in 2001, the most recent census. There had been a 9% population growth between 1996 and 2001. The district's economy is land based, with land use including horticulture, grazing, dairying and exotic and plantation forestry. Kiwifruit growing and meat processing are particularly important.

The Tauranga District, which is the region's largest residential and commercial area, had 38% of the region's population. While the district's population had grown by 17% between 1996 and 2001, that of the Tauranga urban centre had increased by 36%.

The Whakatane District had 14% of the region's population in 2001, having experienced a 1% decrease between 1996 and 2001. The Whakatane urban area is the third largest in the region and current urban development suggests population growth since the last census.

Three percent of the region's population lived in the Kawerau District in 2001, where there had been an 11% population decline between 1996 and 2001. The Kawerau township was built in 1953 to create a centre for the production of forest products from the nearby Tarawera, Matahina and Kaingaroa forests. Carter Holt Harvey and Norske Skog continue to be key employers but overall forestry production has declined.

The Opotiki District, with 4% of the region's population, had the lowest population density in the region in 2001. The district experienced a population decrease of 2% between 1996 and 2001. Dairying, beef and sheep production are the mainstays of the district's economy but kiwifruit and other horticultural crops also make a contribution. Local industries, including a dairy factory, clothing manufacturer, footwear factory and bacon works closed in the 1990s.

2.2 Household fires in the region

The Bay of Plenty area experiences a comparatively high number of fires on residential properties. In the most recent calendar year there were 96 fires. As Table 2.1 shows, the most common causes were arson and unattended cooking.

Table 2.1: Causes of fires in residential properties, Bay of Plenty 2004

Cause	% of total
Arson fires	20%
Unattended cooking	15%
Electrical/mechanical failure/short circuit	13%
Out of control deliberate	11%
Other carelessness	11%
Combustibles and heat source too close	7%
Careless disposal smoking materials	4%
Reckless act	3%
Misuse of electrical/mechanical equipment	6%
Other cause	9%

2.3 Profile of the householders and households surveyed

One hundred and forty seven interviews were carried out with households in the region. Usually one person was interviewed in each household. Of those interviewed, 39% were Pakeha, 38% were Māori, 17% were Māori/Pakeha and 6% included other ethnicities such as New Zealander, Māori/Celt, Māori/French/Canadian/Scottish and Māori/Pacific Island. Thirty-three percent were male and 63% were female. One respondent identified as transsexual and the remaining “Other” respondents were made up of husband and wife teams. Six percent of households had a member who did not speak English as a first language. And around 41% had at least one smoker amongst their members.

Almost all the households included in the research were family-based households. That is, using the census definition of ‘family’, they included one-parent, two-parent, and couple-only families. Most of the sample (38%) comprised two parents and children, the same proportion as for the region as a whole. Seventeen percent were couples without children (compared with 27% for the region as a whole), while a further 16% were single parents with children (compared with 21% for the region as a whole). Nearly one in five Māori households in the sample was a one-parent household, which is more or less consistent with the region as a whole. Eight percent of the households interviewed contained extended family and children (census data does not allow a regional comparison) and 2% included more than one family with children: 2% of the region’s households are multi-family households. None were non-family households (e.g. flatting situation), which account for 4% regionally. Twelve percent were single-person households, compared with 23% regionally. The smaller percentage may be partially explained by the reluctance of some elderly people living on their own to let the interviewers through the door. Ironically, there were also times when elderly people living on their own welcomed interviewers in to relieve their loneliness. Two out of three households had one or more pets.

Forty-eight percent of the householders described their household as low-income, 47% described them as medium-income and 6% described them as high-income. Forty-one percent lived in rental accommodation. Around three

quarters of households had insurance that covered fire damage to dwelling and/or contents of the dwelling.

It was reasonably common for households to have at least one member who was disabled or had a long term illness. Of the thirty-five households who indicated having such members (24% of the total), twenty-one had one person with a disability or long-term health problem, twelve had two people and three had three people. Twenty-nine percent of households with members with disabilities also had members that were aged 65 years and over. Medical illnesses included allergies, asthma, cancer, diabetes, epilepsy, heart conditions and high blood pressure. Other health and disability conditions included impaired hearing, hip and/or knee replacements, the effects of a triple bypass, advanced osteoporosis, back injury, emphysema, intellectual disability and head injuries. Those with disabilities ranged across all age groups.

It was very common for households to use more than one building for sleeping quarters. While, for most, the main family dwelling was a detached house, more than half the households surveyed regularly used 'other buildings' or places for sleeping quarters. Of the 67 households using other buildings for sleeping quarters, two thirds indicated that people sometimes slept in cars. Sheds and sleep-outs were also commonly used (see Table 2.2).

Table 2.2: Other buildings people usually sleep in (n=67)

Other buildings	% of households with other sleeping quarters
Car	67%
Shed	58%
Sleep-out	24%
Garage	15%
Garage/shed	12%
Motor-home/Caravan	8%
Workshop	2%
Backyard	2%

Around one in five households sometimes used 'other buildings' or places for sleeping quarters, often for visitors. These included the backyard, caravans, carports, tool and wood sheds, cottages, garages and motor homes. At the time of the interviews, 8% of the households had people staying temporarily. Reasons for their stays ranged from children being fostered, to people visiting as a holiday. In addition, many households regularly used their living areas as sleeping areas although they did not necessarily define these rooms as bedrooms. Instead, they saw them as living rooms that were multi-functional.

All households reported cooking occurring on a regular basis in the kitchen, with 24% also cooking on a barbecue or, in some cases, in a hangi pit. One also reported cooking in a shed and a small number reported cooking in other places like a caravan.

Households often relied on burning fuel for home heating, and often reported more than one fuel source. As Table 2.3 shows, most relied on burning coal or wood, with almost half using gas and 43% using electricity. Other sources included a free-standing oil burning heater (heated by electricity) and an air conditioning unit.

Table 2.3: Sources of home heating (n=134)

Heat source	% of households
Wood/coal	71%
Gas	49%
Electricity	43%
Other	2%

Most households had access to a telephone, either through the landline system or through the cell phone network. Some had both. Low-income families were more likely to not have access to a telephone. Less than one household in five had internet access (see Table 2.4).

Table 2.4: Household communication (n=119)

Communication type	% of households
Telephone	84%
Cell phone	61%
Internet access	40%
Fax access	16%
None	2%

2.4 Possession of working smoke alarms

Before the Fire Ambassadors' visits, only one in three (34%) of the householders interviewed already had smoke alarms. Many were not working alarms, usually because the batteries were flat or missing. Many of those with alarms had had them installed by the Fire Service in a similar programme carried out in 1997. Those with working smoke alarms were equally likely to be in rental or owned or partly owned dwellings.

For those without working alarms, it seemed that negligence rather than active choice explained the lack. Some households believed they had working alarms when, in fact, they did note they were damaged or had flat batteries. Of those who provided reasons for their lack of alarms, one in three said the batteries were missing or dead and 25% said that they had not got around to getting an alarm (see Table 2.5). Others did not know how to go about purchasing or installing them or could not afford them. Those making an active decision not to have one were either annoyed by them going off unnecessarily (11%) or did not see themselves as at risk (7%). Other reasons included removing the battery when the beeping was annoying and finding its placement a nuisance.

Current practice around the placement of smoke alarms addresses people's frustrations about alarms going off unnecessarily. Now, Fire Ambassadors are

likely to install smoke alarms in bedrooms and other sleeping areas, where people are at risk, rather than the potential source of the fire (the kitchen) when everyday cooking is likely to set the alarm off and, therefore, frustrate householders. Nevertheless, it is sometimes difficult for Ambassadors to convince householders that the kitchen is not the best place for an alarm.

Table 2.5: Main reason for not having a working smoke alarm (n=44)

Household type	% of households
Batteries are missing or dead	32%
Live in rented accommodation	27%
Haven't got around to getting one/keep forgetting	25%
Cannot afford to buy a smoke alarm	21%
Do not know how or where to install smoke alarm	18%
Dislike false alarms/they are annoying and go off unnecessarily	11%
Do not know where to buy smoke alarms	11%
Do not consider/myself/household to be at risk of fire	7%
Have never considered getting one	2%
Other	5%

Nearly one in four householders described other fire safety equipment they had, the most common being fire extinguishers (26 households) and or fire blankets (5 households). Six also listed hoses and one household had a smoke alarm connected to a security company. Householders who had some experience of fire were more likely to have other fire equipment.

2.5 Household management

One objective of this research was to understand how households of people live together and organise various household arrangements and activities, and whether there was any link between how people live together and their perception of fire risk and fire safety. One set of questions householders answered was around household management. We were interested in the extent to which householders would know who was in the house at any one time, and where they might be (especially at night time). We were also interested in the extent to which they would see any lack of householders' knowledge of each others movements as a factor that might contribute to people being at risk should there be a fire. So, we asked respondents whether:

- all people in the household knew about each others comings and goings for work, recreation, schooling and so on, and
- they would always know who is staying and where they are sleeping.

Householders did not always know who was sleeping in the dwelling. Nine percent of householders interviewed considered that there would be times when people would not know. Reasons for that lack of knowledge included having teenagers whose friends sometimes stayed and having parties where guests (the numbers often not known) might stay over night rather than drive home.

Householders generally knew of each others comings and goings. This was the case despite householders describing a variety of activities that would

regularly take people out of the home. As Table 2.6 shows, in most households people were regularly leaving for work and/or school or other education organisations. People also went out for sports/recreational activities, evening socialising, voluntary work and marae activities on a regular basis. Shopping was the most common ‘other’ regular out of home activity, followed by voluntary teaching.

Table 2.6: Activities householders regularly leave the home for (n=130)

Activity	% of households
Work	73%
School/other education	61%
Sport/recreation	41%
Evening socialising	23%
Other voluntary work	25%
Helping on the marae	37%
Other	12%

Almost all those interviewed considered that everybody in the household would know each others movements. Only 7% considered that some householders would not. Explanations for the lapse in knowledge often reflected the special circumstances of the households. So, for instance, one householder was often away and another was on 24 hour call out. Similarly, most householders felt that everyone would know about temporary visitors.

In the majority of households at least one person took general responsibility for organising the household. In two-parent households, it was often the case that both parents took overall responsibility. However, in 12% of households who provided information, no particular person or people took responsibility. It was also usually the case that one or more people took specific responsibility for particular household tasks. As Table 2.7 below summarises, in 87% of households who responded one or more people took specific responsibility for buying supplies. In similarly high percentages of households, one or more people also took specific responsibility for cooking, inviting people to stay, and organising where people slept. Interestingly, the household activities people were least likely to take responsibility for were purchasing fire safety equipment and other fire safety activities and away from home recreation activities. Sometimes children pressured their parents to take action on “other” fire safety activities such as developing escape plans and setting assembly points.

These results suggest that, for most households, someone is taking responsibility for checking who is staying, where they are sleeping, who is away or home and who is looking after the children. However, it appears that in around one in ten households no one is taking specific responsibility for these tasks. Similarly, in the majority of households that provided information, responsibility for fire safety equipment and activities lay with particular people. But in at least one in three households that provided information, that is not the case. Household maintenance was usually specifically the responsibility of one or more people.

Table 2.7: Responsibilities for household tasks

Households tasks	Somebody in particular	No-one in particular
Household shopping/supplies (n=136)	87%	13%
Inviting people to stay overnight (n=124)	79%	21%
Organising where people sleep (n=128)	90%	10%
Household cooking (n=135)	90%	10%
Away from home recreation activities (n=123)	82%	18%
Purchasing fire safety equipment (n=86)	74%	26%
Other fire safety activities (n=58)	67%	33%
Maintaining fire safety equipment (n=100)	81%	19%
Childcare (n=92)	95%	5%
Checking that people have arrived home from school, work, etc (n=102)	88%	12%
House/dwelling maintenance (n=118)	91%	9%

2.6 Perception of fire risk

As discussed previously, the household questionnaire was designed to capture householders' perceptions of fire risk, given the particular characteristics of their households, household composition and household management and activities. To that end, the questionnaire was designed to encourage people to think about things around household formation and management, such as:

- who lives in the house and their special needs (including pets)
- where people sleep (including buildings other than the main dwelling)
- what activities take people away from the house
- people's knowledge of each others comings and goings
- responsibility for a range of household activities and management.

They were also encouraged to think about organisational matters like where cooking occurs, how the house is heated, whether anyone smokes, how rooms are lit and whether there is a smoke alarm.

We wanted to see how much importance, in terms of fire risk and safety, people placed on how householders moved in and out of their home and managed key household activities around organising visits, overnight stays, sleeping arrangements and so on. In considering their particular household risk, other than concern about cooking, people tended to focus on the physicality of the house. So the largest group (48%) were concerned about cooking-related risks like leaving pots and pans unattended, food catching fire during cooking, children unsupervised as they cook (see Table 2.8). The next most common risks were related to the physicality of old homes, with old wiring or electrical faults; fire places, chimneys or gas heaters; young children with lighters and matches; and electrical appliances (especially those with faults). In many homes, there was the risk that the old wiring was insufficient to safely accommodate the number of appliances householders used. So, as Fire Ambassadors observed, it was common for people to have a multitude of double plugs, leads and other risky and overloaded electrical systems. Some even had wires hanging from the central light socket.

Twelve percent of people identified the behaviour or activities of unsupervised children, for instance playing with matches or lighters, as a fire risk. Examples of other comments included:

- *Earthquake shaking fire into living room (being asleep when this happens)*
- *This dwelling is well organised and prepared for a fire*
- *Garage - cleaning/fuels*
- *Candles*
- *Petrol can*
- *Ignorance and carelessness.*

Table 2.8: Risks leading to house fire and/or injury (n=113)

Risk	% of households
Cooking related	48%
Old home/wiring/electrical fault	23%
Fire, chimney, gas	20%
Electrical appliances	13%
Young children, lighters, matches	12%
Smoking	8%
Disability	2%
Cannot see risk	1%
Other	16%

Other risk behaviours observed by Fire Ambassadors but not necessarily acknowledged by householders, or underrated, included:

- Rubbish. One house, for instance, had rubbish and firewood stacked against all outside walls. In another family household, dog excreta, food scraps and other rubbish covered the floors of every room in the house
- Clothes left against heaters to dry
- Children playing with matches and lighters
- People's belief that they were invincible and that fire would not happen to them. This seemed more prevalent amongst young people.

2.7 Responding to fire risk

Although they often attributed risk to physical causes, in considering how to reduce fire risk, householders were far more likely to focus on people's behaviours (see Table 2.9). Thus, 63% emphasised the need for people to practice responsible behaviour even though problems around the physicality of the house and appliances were seen to be key to fire risk. Examples of 'other' actions to reduce fire risk included:

- *Applying multi boxes*
- *Well I just found out to put a bit of water in the ash tray and have more ash trays around.*
- *Give up smoking!!*
- *Tell landlord*
- *Ring Fire Department.*

Table 2.9: Actions to reduce identified risks (n=105)

Risk	% of households
Practice responsible behaviour	63%
Fire/chimney	15%
Dwelling maintenance, rewiring, inspect wiring	14%
No smoking in house/matches and lighters in safe place	12%
Fire safety equipment/plan	7%
Checking appliances	4%
Other	22%

Householders suggested a number of ways that people could practice responsible behaviour, in addition to changing their smoking behaviour, putting matches and lighters away and adopting safety and escape plans. Generally, the comments referred to cooking and use of appliances, including:

- *Not leaving cooking unattended or unsupervised*
- *Remembering to turn off appliances when finished*
- *Monitoring and being careful with appliances*
- *Being aware of risks and hazards*
- *Making sure the gas is turned off at the wall, and*
- *[Putting the] fire out at night.*

Some examples of responsible behaviour identified included:

- *Being more aware of hazards*
- *Being as careful as possible*
- *Making sure appliances have been turned off*
- *Making sure the main switch to the oven is always off when not in use and keeping an eye on your cooking*

Other comments included:

- *Educating the parents to be more vigilant with children in fire-causing material*
- *Putting my landlord onto it*
- *Always keeping the chairs on top of table while not in use*
- *When we go away I remove the knobs of the stove and turn on safety valve.*

Most people recognised that they needed information to help them change their behaviour, preferably from the New Zealand Fire Service (particularly Fire Ambassadors). Distant second preferred choices for information were community groups, clubs or marae (see Table 2.10).

Table 2.10: Preferred information sources (n=138)

Organisations	% of households
Fire service/fire station/fire ambassadors	66%
Community group/club/church/marae	23%
Whoever/any/all	18%
Police	11%
School/university/community education	5%
Ambulance	4%
Fellowship (a church group)	3%
Local/regional council	2%
Citizens Advice Bureau	2%
Family/friends/neighbours	2%
ACC	1%
Te Puni Kokiri	1%
Child Youth and Family	1%
None	1%
Don't know	1%
Other	5%

Virtually all householders (95%) interviewed said that they had thought about what they would do in the event of a fire and most (84%) had talked to other household members about this. Indeed, 80% said they had an escape plan, most often as a consequence of Fire Service encouragement. However, Fire Ambassadors, in their visits to households, considered householders reporting of preparedness as over inflated. In their experience, information was passed around the household when there were children, given school programmes, but, in the absence of children, household discussion about fire was relatively rare. Also, households with previous fire experience of house fire were more likely to discuss what they would do if a fire occurred.

Householders' explanations for their preparedness included that it would be commonsense to have a plan and fear about the consequences of fires. The following quotes give some flavour of their reasons:

- *A visit from the Whakatane Fire Service boys - Te Kotahitanga*
- *An absolute necessity in the event of a fire in your house. An escape plan known by all in the house plus visitors. To evade injury be observant in house at all times to prevent fire*
- *Because of what happened to [my] mother's home*
- *Common sense*
- *Experiences from recent fires*
- *Hearing of so many people getting burnt*
- *Knowing how quick a fire can spread*
- *A fireman son-in-law*
- *A requirement of home-caring*
- *Fire safety ads, having a small child*
- *News of difficult house fires through TV and papers.*

In thinking about the range of possible disasters, the largest proportion of householders (62%) felt most prepared for fires compared with earthquakes and floods. Reasons included previous experience, their physical location (especially those most prepared for floods), and advice and practical help

from the Fire Service. For those most prepared for fire, some reasons provided included:

- *Because I have been in a couple of situations concerning fires*
- *Because in a fire you just have to get out, and I have contents insurance*
- *Fire is terrifying*
- *Because of all the alarms, escape plans, extinguishers we have*
- *Fire is the worst accident to have, then earthquake and then floods.*
Earthquakes you do not know when it will strike. Floods you do not know how high
- *Gas on property*
- *It is the one thing we have more control over.*

While householders commonly attributed their current preparedness to the Fire Service, and in particular, the Fire Ambassadors, the range of sources of information, advice and assistance they had accessed was far wider. As the table below shows, TV was most often identified as the main source of information to date, followed by Fire Ambassadors and schools. Householders' comments about sources of information reinforce the important part schools and school children play as messengers about fire safety. As one householder said "*My kids. They are very serious about fire safety*". Other sources of information cited included Work and Income, Housing New Zealand, ACC Thinksafe, and insurance companies (see Table 2.11).

Table 2.11: Current sources of fire safety information, advice, assistance (n=135)

Source	% of households
TV	78%
Fire ambassadors	56%
Schools	52%
Fire-fighters	47%
Friends and relations	31%
Community groups	15%
Local council	8%
Nowhere	1%
Other	7%

2.8 Experience of household fire

More than one in ten households (11%) included in this research had experienced an accidental fire in their home in the previous 12 months. Most of these fires were minor. They were most commonly related to cooking, but other causes included children playing with fire and faulty electrical equipment. Some examples of these fires are listed:

- *Two fires in the oven warming draw. Chip paper was left in there*
- *BBQ - lack of cleaning of the drip tray*
- *Flashover in oil on stove top - stupid eh!*
- *Minor - left the pot on*
- *My washing machine died, smoked a little then just nothing - now up the dump (no fire just smoke)*
- *Rubbish fire in bedroom caused by child playing with lighter*

- *Son dropped frying pan on kitchen floor - caught fire (while talking on phone).*
- *Come home from party, left frying pan on, my dog woke me up, house was full of smoke, no fire, thank God.*

A larger proportion of households (29%) had experienced fire at a previous time (that is, more than a year ago). Some of fires experiences were described:

- *Arson*
- *Child playing with matches*
- *Cooking in kitchen. Fat in frying pan*
- *Cooking left unattended*
- *Diesel heater flue burning inside the wall*
- *Fire had started in room at a friend's house while visiting - electrical*
- *Helped rescue lady from burning house. Tried to rescue old lady from burning house (not successful)*
- *Fire started in bedroom from throwing blanket onto bar heater - a long time ago*
- *My husband, as a child, lit fireworks inside the house*
- *Not a house fire but a car fire, yes.*

3. LINCOLN FIRE DISTRICT INTERVIEW FINDINGS

3.1 An overview

Interviews were carried out with 100 households located in the Lincoln Fire District. This area is located in the Selwyn District and includes a number of small and medium towns and settlements as well as farms and rural lifestyle blocks. These settlements include the Lincoln township, Prebbleton, Selwyn Huts, Springston, Ellesmere, Motukarara and Tai Tapu and the surrounding rural areas. A little under half the people in the wider Selwyn District live in towns and settlements and the rest are rurally based.

The Selwyn District overall continues to grow, with a 16% population growth between 1991 and 1996 and a further 10% growth between 1996 and 2001. The number of occupied dwellings is also increasing, from 6,907 in 1991 to 9,318 in 2001.

While the population of the Selwyn District grew between 1996 and 2001, that of the Lincoln community declined by 8%. Many of the households participating in this research were located in and around the Lincoln township, within the Selwyn District. One of the reasons we selected the Lincoln township for inclusion in the study was because of the high number of student households, given the proximity of Lincoln University. In 2001, 9% of households in the Lincoln area were non-family, multi-person households (or flats), compared with 3% for the Selwyn District overall and 5% for New Zealand. Other characteristics of the Lincoln population that reflect the university's proximity include:

- the comparatively young age profile: around a quarter of the population are aged between 15 and 24 (almost double the proportion for the Selwyn District as a whole and New Zealand).
- the comparatively high proportion (11%) of people belonging to an Asian ethnic group, compared with the Selwyn District (2%) and New Zealand (6%).

Almost half of those in the Selwyn District workforce commute to Christchurch for their jobs. Around one in three work on farms, a third in office and sales positions and just under a third in professional and technical occupations. Some of the district's professional and technical workers work in the Lincoln township, where there is a concentration of research and education effort at Lincoln University and various Crown Research Institutes and other research organisations.

The Christchurch Fire Service Chief sees the Lincoln area as an important focus of research because of a combination of the relatively high incidence of household property fires that have occurred recently, the large area covered by a voluntary fire service and the large number of student flats. In addition, since Lincoln University has a high proportion of foreign students, many of the student flats include people unfamiliar with local services and infrastructure, not to mention cooking, heating and household appliances.

3.2 Profile of the householders and households surveyed

One hundred households were surveyed for this research. Usually one person was interviewed in each household. Of those interviewed, 74% were Pakeha, 5% were Asian, 2% were Māori, 2% were Pacific, 1% were Māori/Pakeha and 16% included combinations of these and other ethnicities. Forty percent were male and 60% were female. One in five households had a member who did not speak English as a first language. And around 27% had at least one smoker amongst their members.

As Table 3.1 shows, 7% of the households had children below 5 years, 20% had older children and 23% had householders over 65 years.

Table 3.1: Age of householders (n=100)

Age	% of households
0-4 years	7%
5-16 years	20%
17-25 years	50%
26-65 years	53%
65+ years	23%

Most (83%) of the householders interviewed lived in detached houses. Eleven percent lived in houses, flats or apartments joined to one other house and 4% lived in houses, flats or apartments attached to two or more other houses. Two percent were “other” dwelling types including a student hostel.

The largest proportion of households was family-based. That is, using the census definition of ‘family’, they included one-parent, two-parent, and couple-only families. Altogether, they accounted for 51%, including families of two parents with children (28% of the sample), couples without children (20% of the sample), single parents with children (2% of sample), and more than one family with children (1% of the sample). As well, flatting households accounted for 36% of the sample. Most of these households included at least one student. Nine percent of the sample were single-person households and 4% were other household formations such as student hostels. Nearly half of the households had one or more pets

Forty-seven percent of the respondents described their household income as low, 46% described it as medium and 7% described it as high. Forty percent were in rental accommodation, most of these being student flats. Around 78% of households had insurance covering fire damage to dwelling and/or contents of dwelling.

Sixteen percent of households had one or more household members with a disability or long term illness. Around half these had one person with a disability/long-term health problem and around half had two people. Two thirds of the households where members had disabilities also had members over 65 years. The types of disabilities and/or health problems included Parkinson’s, stroke, war injuries, spinal injuries, weakness in leg requiring a walking frame and a stick for support, ADHD and brain dysfunction, arthritis,

ileo-rectal anastomosis, heart attack, asthma, emphysema, heart problem, diabetes, knee problems and post-car accident disability. One householder considered their nine month old baby to have a disability as it cannot yet walk.

It was relatively common for households to regularly use more than one building for sleeping quarters. While, for most, the main dwelling was a detached house, 17% regularly used 'other buildings' for sleeping. These included sleep-outs, a flat over a detached garage, a bus, garages, garden sheds, a guest house and another house on the same section.

Only 5% sometimes used 'other buildings' for sleeping quarters for people staying temporarily. At the time of the interviews, 14% of the households had people staying temporarily.

Almost all households (98%) reported cooking occurring on a regular basis in the kitchen, with 8% also cooking on a barbecue or in a hangi pit. A small percentage (4%) reported cooking in other places like a caravan.

Electricity was the main source of heating for most of the houses (see Table 3.2). However, households often relied on burning fuel, particularly wood. Other sources of heating identified included oil heaters, pine cones, boilers and diesel.

Table 3.2: Sources of home heating (n=100)

Heat source	% of households
Electricity	85%
Wood	64%
Bottled gas	26%
Coal	5%
Mains gas	2%
Other	4%
None	1%

As Table 3.3 shows, all households had access to a telephone, either through the landline system or through the cell phone network. Most had both. Almost three quarters also had internet access.

Table 3.3: Household communication (n=66)

Communication type	% of households
Telephone	98%
Cell phone	87%
Internet access	72%
Fax access	31%

3.3 Possession of working smoke alarms

Eighty percent of householders had working smoke alarms. Flatting households accounted for the majority of households without alarms. For those without working alarms, that they lived in rented accommodation was

the main reason given for the lack. Other reasons were related to negligence rather than active choice (see Table 3.4). So, the next most common reasons offered were that the batteries were missing or dead, they had not got around to getting an alarm or they had not considered getting one. However, 16% said they did not have one because they disliked them or felt annoyed when they went off unnecessarily. Eleven percent felt they were not at risk.

Table 3.4: Main reason for not having a working smoke alarm (n=25)

Household type	% of households
Live in rented accommodation	53%
Batteries are missing or dead	32%
Dislike false alarms/they are annoying and go off unnecessarily	16%
Haven't got around to getting one/keep forgetting	16%
Have never considered getting one	16%
Do not consider myself/my household to be at risk of fire	11%
Cannot afford to buy a smoke alarm	11%
Do not know where to buy smoke alarms	5%
Worried about damage to other household fixtures and fittings	5%
Think that they look unsightly	5%
Other	5%

Sixty percent of householders described other fire safety equipment they had. Of those that provided details, they most commonly had a fire extinguisher (see Table 3.5). Other fire safety equipment identified included a knapsack sprayer, anything suitable at hand to smother a cooking fire and, in the same vein, a large pan lid.

Table 3.5: Other fire safety equipment (n=51)

Other equipment	% of households
Fire extinguisher	82%
Hose	18%
Blanket	4%
Bucket	6%
Other	6%

3.4 Household management

This research focused on trying to understand the link between people's perception of fire risk and the way households live together and organise household activities. In the Lincoln based research, the households in the sample were selected to include a number of student flats. Student flats accounted for 36% of the sample. The rest of the sample more or less reflected the general distribution of household types in the wider Selwyn area and nationally, although the sample has smaller proportions of single-person and single-parent households. More than half the sample comprised family households – 28% were two-parents with children households, 20% were couples without children and 2% were single-parent with children households. A small number of people interviewed lived in student hostels.

One set of questions for householders related to household management. We were interested in the extent to which householders would know who was in their dwelling at any one time and where they might be (especially at night time). We were also interested in whether householders perceived any fire risk arising from householders' non-awareness of others movements and sleeping arrangements. Did they identify any risk, if a fire occurred, from people being unsure about who was home and/or visiting and where they might be sleeping? So, householders were asked about each others comings and goings for work, recreation, schooling and so on (as well as who might be staying) and whether all householders were aware of them.

As Table 3.6 shows, householders from most dwellings were regularly leaving their homes for a range of activities. In three out of four households, members were regularly socialising in the evenings, in 72% they were leaving for work and in 62% they were leaving for study. In more than one in three households, people were regularly leaving for voluntary work. Other activities included family outings, holidays, visiting the club, part-time work, daytime socialising, shopping and visiting relatives.

Table 3.6: Activities householders regularly leave the home for (n=100)

Activity	% of households
Evening socialising	75%
Work	72%
Sport/recreation	70%
School/other education	62%
Other voluntary work	34%
Helping on the marae	1%
Other	15%

It was reasonably common for people to not be aware of each others comings and goings. Overall, of the 16% that did not know, most were flatting households. Indeed, 64% of respondents in flatting situations indicated that members did not always know others comings and goings. Reasons given for their lack of knowledge centred on people not knowing each others study and lecture timetables, part-time work hours and socialising activities. As a number of householders pointed out, young people in flatting situations tended to have full social lives and were in and out of their home at all times of the day and night. Here is a sample of their comments:

- *All have independent lives, not so worried about what other people are doing*
- *Because everyone has a different timetable and their freedom to arrange their spare time*
- *Haven't set curfews for people so not sure what time people will be back*
- *I have irregular study/work hours. My boyfriend stays some nights only and not everyone else always sees him. Mum has irregular work hours. When "evening socialising" we all have irregular getting home hours*
- *Live our own lives, does not bother me when they come and go*
- *Random comings and goings to Uni, friends, houses, etc.*

A similar pattern was evident in regard to householders' knowledge of how many people might be sleeping in the house temporarily. Overall, in 36% of the Lincoln households, people sometimes did not know how many people might be sleeping there. Most of these were flatting households. Amongst flatting households, 72% would be unsure at times of sleeping numbers.

In contrast, householders always knew about temporary visitors. Fourteen percent of Lincoln households had temporary visitors, with varied reasons for their stay. Most were staying for very short periods, for instance as friends or family visiting or holidaying. In flatting situations it was sometimes the case that boyfriends, girlfriends or partners stayed overnight (sometimes on a regular and predictable basis) and sometimes more randomly. In a couple of instances, visitors were around for longer, as boarders or longer term guests before travelling. In all cases, respondents considered that all household members would know of their stay.

In most households a particular person took major responsibility for overall household organisation. However, in 26% of households that was not the case. Mostly these households were flatting situations. As Table 3.7 shows, it was often the case that no one in particular took responsibility for organisational activities like inviting people to stay overnight (52%), organising away from home recreational activities (51%) and checking that people had arrived home from work, school, etc. (46%). In contrast, it was far more likely that a particular person (or people) would take specific responsibility for purchasing (73%) and maintaining (75%) fire safety equipment and for household maintenance (82%). Also, where applicable, there was usually somebody who took specific responsibility for childcare arrangements (but not always).

Table 3.7: Responsibilities for household tasks

	Somebody in particular	No-one in particular
Household shopping/supplies (n=99)	66%	34%
Inviting people to stay overnight (n=93)	48%	52%
Organising where people sleep (n=93)	58%	42%
Household cooking (n=98)	63%	37%
Away from home recreation activities (n=95)	49%	51%
Purchasing fire safety equipment (n=78)	73%	27%
Other fire safety activities (n=48)	54%	46%
Maintaining fire safety equipment (n=77)	75%	25%
Childcare (n=31)	84%	16%
Checking that people have arrived home from school, work, etc. (n=63)	54%	46%
House/dwelling maintenance (n=82)	82%	18%

3.5 Perceptions of fire risk

The household questionnaire was designed to capture householders' perceptions of their fire risk. We hoped the introductory questions, that generally covered household composition and management, would encourage people to consider this question in the light of their particular

household circumstances. The particular circumstances included factors such as:

- who lives in the household and their special needs (including pets)
- where people sleep (including places other than the main dwelling)
- what activities take people away from home
- people's knowledge of each others comings and goings
- whether someone takes responsibility for various household activities.

Householders were also encouraged to think about other household operational details like where cooking occurs, how the house is heated, whether anyone smokes, how bedrooms are lit and whether there is a smoke alarm. We wanted some understanding of what importance, in terms of fire risk and safety, people placed on how household members moved in and out of the house and managed key activities.

Overall, householders focused on the risk of a fire occurring rather than safety issues in the event of a fire. People were most likely to see cooking as the greatest fire risk. Sixty-one percent of respondents identified cooking. Others focused on the physical aspects of their dwellings. Forty-three percent were concerned about the condition of the house, the wiring or electrical faults; 34% were concerned about electric blankets, heaters and a general overloading of the electrical capacity of the dwelling; and 27% were concerned about fireplaces, wood burners and other naked flames like candles. Other concerns are outlined in Table 3.8.

Table 3.8: Risks leading to house fire and/or injury (n=97)

Risk	% of households
Cooking related	61%
House issue (old, wiring, access)	43%
Electric blankets, heaters, overloading	34%
Wood burner, fireplace, naked flame	27%
Drug, alcohol related	10%
Neighbours, rural location, long grass	7%
Fire-poi/fireworks	4%
Children, matches, lighters	4%
Lack of fire safety equipment	4%
Smoking	3%
None	3%
Other	10%

People were also concerned about behavioural factors that might increase their risk. One in ten was concerned about risks relating to drug or alcohol consumption. And small percentages were concerned about people playing around irresponsibly with firecrackers or fire poi (4%), children playing with matches or lighters (4%), and smoking (3%).

In some of the more rural areas, householders saw their rural locations as a special risk, because of their isolation from fire fighters, because they were surrounded by long grass or because they had careless neighbours (7%).

3.6 Responding to fire risk

The responses that people identified as needed to mitigate the fire risks did not always match with the identified risks themselves. For instance, although people tended to focus on the physical aspects of their homes and appliances when identifying risks, they focused on behaviour responses to mitigate those risks as Table 3.9 shows, 66% talked about some sort of responsible behaviour. In addition, a few (5%) talked about the need to supervise children or drunken flatmates. Twenty-eight percent talked about household maintenance and rewiring, 25% talked about improving fire safety equipment or developing a fire escape plan and 17% talked about the need to replace, service or check electrical appliances.

Table 3.9: Actions to reduce risks (n=96)

Risk	% of households
Practice responsible behaviour	66%
Dwelling maintenance, rewiring	28%
Fire safety equipment/plan	25%
Replace/service appliances	17%
Supervision (children, drunk flatmates)	5%
No risks	4%
Other	12%

Some of the householders' specific suggestions to reduce risks included:

- *Always checking that gas is off. Keeping cigarette lighters out of reach of children.*
- *Sort out a safety route to be taken if fire occurred downstairs and we were trapped upstairs.*
- *Be more careful when cooking. Buy new kettle.*
- *Buy food before coming home rather than cooking yourself. Everyone get into habit of regularly checking gas is off. Make sure at least one flat member is sober at party to keep an eye on others.*
- *Keep grass short around house at least 100m away. Not to let rubbish build up. To have tank of water with fire fighting equipment handy.*
- *Supervise drunken flatmates. Watch the cooking at all times. Don't get drunk!*

Householders were asked to consider what advice or help they might need to increase their fire safety and from where that could best come. The majority considered that they needed information. People looked to a range of different sources for information and advice, including the local council, government agencies, and community groups. Other preferred forms of information included fliers, pamphlets and other mail-based forms, home visits and demonstrations from the Fire Service, television and advertising, lectures, courses and meetings (see Table 3.10). A number wanted general guidance on what equipment to buy or how to develop an escape plan, a small percentage (7%) wanted cheap or free fire safety equipment.

Table 3.10: Preferred help and information (n=93)

Help and information	% of households
Information from councils/government agencies/community groups	29%
TV/advertising	22%
Home visit/demonstration from Fire Service	20%
Flyers/pamphlets/mail/reminders	20%
Guidance on safety equipment/plan	20%
Lectures/courses/meetings/community education	8%
Free/cheap fire safety equipment	7%
Don't know	8%
Don't need any/none	11%
Other	13%

As Table 3.11 shows, in thinking about where to get information or advice, most households (60%) identified the Fire Service, followed by the local or regional council (29%) and community groups (16%).

Table 3.11: Preferred information sources (n=97)

Organisations	% of households
Fire service/volunteer brigade/fire station	60%
Local/regional council	29%
Community group/club/church/marae	16%
Police	9%
Whoever/any/all	9%
School/university/community education	6%
Library	5%
The Internet	3%
Family/friends/neighbours	3%
Civil Defence	2%
Citizen Advice Bureau	2%
Insurance company	2%
Don't know	7%
None	5%
Other	17%

Most householders (79%) interviewed had thought about what they would do in the event of a fire. However, 21% had not. Fifty-nine percent had talked to other household members about this – which means that 41% had not. One in two households (51%) had an escape plan, variously because they (or others they knew) had experienced a fire, it would be common sense (they want to avoid the consequences of fire), because of the messages they had seen in television and other campaigns, they had concerns about the age, wiring or design of the house, they had children or they were advised or required to. Some typical comments about fire preparedness included:

- *A TV advertisement spurred [me] to do something.*
- *Because I was the district president of RSA who supplied smoke detectors and firewood to elderly people and found that many of them were locked in with several locks. I determined not to do this and have 5 egress doors.*
- *Because of information brought home from school, TV ads.*
- *[Be]cause I had small fires before, I leave the BBQ on.*
- *[Be]cause we sleep upstairs - the stairs may catch alight and we would need an outside escape route.*

- *Commonsense. Get out of the house in case of a fire.*
- *Concern for family members.*
- *House is major fire risk, dodgy wiring, over 100 years old, really dry house, not damp at all.*
- *Lessons learnt from other peoples' experiences.*
- *Our daughter insisted that we had smoke alarms and an extinguisher, then we realised how stupid the design of our house was for fire safety.*
- *Part of Bed and Breakfast requirements.*
- *The fire in the kitchen. Self preservation. Being disabled makes it necessary to have a plan.*

Some of the reasons people offered for not having a plan included complacency, that they were not at risk, the design of the house, their childless household, and confidence that escape would not be a problem. Specific comments included:

- *Hasn't come up in conversation, no one has made an effort to talk about it.*
- *Have not seen a need for it since there aren't any children here.*
- *Haven't given it sufficient pre-meditation. However I am confident that I could easily escape if a fire started anywhere in the house.*
- *Haven't thought about it. Don't really think a fire will occur in this household.*
- *Never really brought the subject up, haven't crossed our minds.*
- *Plenty of large windows in all rooms therefore we can see to ourselves. All on one floor therefore easy to get out.*
- *Too lazy, everyone I think knows what to do in a fire.*
- *We do not usually formalise things this way. Once the children are told to do something they do it.*
- *We haven't really seen fire as a real risk.*
- *Youngest household member is 16 - we're not idiots or children, we would go out an obvious exit (doors or windows). Don't really need a specific plan.*

In thinking about the range of possible disasters, householders were more likely to see themselves as prepared for fire (59%), compared with earthquakes (28%), floods (6%) and other disasters (24%). The reasons they offered for this preparedness included:

- the persuasiveness of the messages they received through their children at school and/or television campaigns
- their knowledge of the speed with which fires could take hold
- the special risks that their rural surroundings posed
- the fact that they had fire extinguishers, smoke alarms and/or escape plans
- previous fire experience
- workplace training, and
- the design of their house.

Some typical comments were:

- *Am more educated on fire safety than any other of these through school and TV ads.*
- *Because it can be so quick in engulfing flammable materials.*

- *Because it is more likely to occur here. The area is dry.*
- *Because of fire extinguisher and doing survey has made them think it through. Civil Defence.*
- *Escape plan - smoke alarms, fire extinguisher.*
- *Received fire training as a job. Have a fire extinguisher.*
- *Situation in rural areas. Burn offs of crop paddocks. TV ads.*
- *The house is permanent materials with a low fire risk.*
- *We all know how to get out of the house, and have insurance for it.*
- *We have lots of exits, smoke alarms, hoses, etc.*

Householders most often identified television as their current source of information, advice and assistance, followed by information from fire fighters (together with Fire Ambassadors) and messages from schools (see Table 3.12). As well as friends and family, community groups and the local council, other sources of information listed by householders included service club visits to a fire brigade, fire safety education through work, fire safety training through Wormald (which is also usually work related) and general knowledge that has been accrued, publicity (mail out literature, newspapers, seminars, display at community event), and knowing someone with fire safety responsibility.

Table 3.12: Sources of fire safety information, advice, assistance (n=99)

Source	% of households
TV	81%
Fire-fighters and ambassadors	52%
Schools	50%
Friends and relations	29%
Community groups	15%
Local council	13%
Nowhere	4%
Other	21%

3.7 Experience of household fire

Eight percent of households included in this research had experienced an accidental fire in their home in the previous 12 months. Most of these fires were minor. They most often related to cooking. Examples of the fires include:

- *[leaving] the BBQ on twice.*
- *A log of wood fell onto the carpet but luckily someone was there to extinguish it.*
- *Bathroom wall started to smoulder, lots of smoke, threw water on it (not electrical).*
- *Brother turned on oven warmer drawer (which had baking paper in it) instead of grill.*
- *Burning the incense made the alarm sound.*
- *Chips put in bottom of oven and paper started smoking.*
- *Cooking oil.*

A larger proportion of households (19%) had (or someone they knew had) experienced fire at a previous time (that is, more than a year ago). Fires were caused variously by cooking mishaps, electrical faults, children playing,

chimney fires, natural events, garden fires and using a blow torch. Some of fires experiences were described:

- *A hedge beside the house caught fire and burnt the potting shed. The fuse box in an old house caught fire.*
- *A child playing with a candle set fire to curtains while [my] wife was babysitting.*
- *A family home burnt down, after [I] had left home (due to a faulty electric blanket).*
- *Child's toy caught fire from heater.*
- *Electric blanket caught fire while I was asleep. A lightening strike burnt out the detractor box in our kitchen telephone and scorched the inside of the cupboard.*
- *House fire when aged 4, self lit playing with matches.*
- *In the family home in Dunedin. One bedroom was badly damaged when painters were burning off paint and there was minor damage in my bedroom (on two occasions minor cooking fires have occurred when pots left on stove). In this house a wall was scorched when a crystal ball focused the sunlight onto the wall.*
- *In the UK brother leaving a plasma ball on for too long causing small fire on desk.*
- *My mum burned papers in the garden but it caused a fire.*
- *Oil in a pan caught fire. In childhood was visiting a friend - a candle was knocked over and house burnt down.*

4. INDICATORS OF FIRE RISK

4.1 Household and householder profiles

The householders and households included in this research were varied: in the Bay of Plenty, more than half the householders interviewed defined themselves as Māori or Māori/Pakeha. In the Lincoln Fire District, most were Pakeha but there were also significant proportions of Asian and other ethnicities (largely reflecting the university's proximity). One in five households included people who did not speak English as a first language (compared with 6% of Bay of Plenty households). Also, in the Lincoln area, more than a third of the sample were flatting households (mostly including students). In the Bay of Plenty, most were family-based, including extended families and multiple families.

Household composition is a key determinant of fire risk. Fire incidence is higher amongst single-parent and crowded households, and in those with old people, children and people with disabilities. A number of houses were crowded – for instance one of the flatting households had 24 members and most of the flatting households had regular 'extras' staying. The extent to which householders recognised the characteristics of their household as a fire risk is discussed with reference to the main themes below.

4.2 Household income and condition of dwelling

Previous research shows a strong correlation between economic conditions and residential fire incidents or deaths. In both the Bay of Plenty and the Lincoln Fire District, a large proportion of the households interviewed experienced economic deprivation. Around half the households self-identified as low income households. Several of the characteristics of low income households that are implicated in increased fire risk were apparent in the sample.

A number of households lived in substandard housing: for instance the Bay of Plenty Fire Ambassadors described the poor condition of some of the dwellings they visited, especially in some of the predominantly rural Māori settlements. They described them as sometimes very rudimentary and lacking in amenities like bathrooms, electricity and telephones. These households often relied on potentially dangerous electrical systems including extensions, overloaded plug boxes and double-plugs to run kitchen appliances, televisions, and so on. Ambassadors reported seldom visiting homes without televisions although other amenities would be missing. Other buildings regularly used as sleeping and living quarters in these more rudimentary dwellings were even more basic. In the Lincoln area some households, especially student households, were also living in old homes with old wiring and poor heating systems.

Despite the often poor quality of dwellings, there was remarkable consistency in householders' satisfaction or acceptance of their homes. Most people reported liking their homes, and desired changes were often minor, for instance relating to general maintenance or upgrading or involving some enhancement, like extensions. It was very rare for people to dislike their current dwelling because they saw it as posing a fire risk.

Many of the lower income households in both the Bay of Plenty and the Lincoln area, including both family-based and flatting households, lived in rental accommodation. Research shows increased fire risk associated with rental accommodation.

Householders were generally more aware of the potential fire risk that old or poorly maintained homes presented than other risks. In the Lincoln area, more than 40% were concerned about the condition of the house and, in the Bay of Plenty, one in four were concerned about the age of their house (e.g. its combustibility and the condition of the wiring). This concern for the risk that their physical surroundings posed also extended to the age and quality of household appliances.

4.3 Regular use of structures other than main house for sleeping

Although most households included in the research described their main dwelling as a single detached house, they commonly relied on other structures on their properties for sleeping quarters. In the Bay of Plenty, more than half the households regularly used other structures on the property, usually sheds, for sleeping quarters. Around two thirds of these households, virtually all of them Māori households in the eastern Bay of Plenty, also said that cars parked on the property were occasionally used for sleeping. In the Lincoln Fire District, 17% regularly used other sleeping quarters, usually sheds and other permanent buildings. This use of other structures was far more common in flatting situations, where one in four regularly had people sleeping out of the main dwelling.

These households also often expanded into other buildings or structures to house temporary guests, and in around one out of six households temporary guests were staying at the time of the interview.

There is a demonstrated link between the use of sheds, caravans, and other temporary structures for housing and increased fire incidence and injury or death. One explanation for this increased incidence is the reliance on lighting and heating alternatives like candles and bottled gas. There seems to be little research on the extent to which increased injuries or deaths stem from difficulties people face escaping from these structures in the event of a fire or fire fighters face in establishing how many people are in a burning dwelling.

While a number of householders considered that the condition of their dwellings posed fire risk (discussed elsewhere), none considered the fact that people regularly slept in other structures as a risk.

4.4 House tenure

There was a link between household income levels and house tenure. In both areas, around 40% of the households lived in rental accommodation, and most of these households described themselves as low income. However, household composition varied in rental accommodation across the two areas surveyed. In the Lincoln area, most rental households were flatting households and most family-based and single-person households lived in their own homes. Conversely, in the Bay of Plenty, a portion of family-based households were in rental accommodation.

House tenure had little or no impact on people's perceptions of fire risk: it was rare for anyone to mention that their home was rented as a fire risk although a couple suggested that their landlords needed to be educated about fire risk.

However, there was some link between tenure and fire preparedness in the Lincoln Fire District. Almost half the flatting households (virtually all of which were in rented accommodation) did not have working fire alarms compared with only 20% over the Lincoln sample as a whole. Householders usually explained the lack by the rental status of the dwelling. In the Bay of Plenty, house tenure did not explain fire preparedness: those with working smoke alarms were equally likely to be in rental or owned or partly owned dwellings.

4.5 Smoking

Smoking was more prevalent in the Bay of Plenty households, at 41% compared with 27% in the Lincoln Fire District. This is consistent with generally higher levels of smoking amongst Māori in New Zealand overall. However, although smoking, often in combination with excessive alcohol consumption, is implicated in increased fire risk it was reasonably uncommon for people to identify smoking as a risk factor. In the Bay of Plenty, 8% identified smoking as a risk (despite the relatively high level of smoking in households) and in the Lincoln Fire District only 3% identified smoking.

Householders were mindful of the risks that smoking presented when considering possible responses to fire risk. In both areas, householders focused on people's behaviours even though they often attributed risk to physical aspects of their homes and appliances. More than 60% in each area stressed the need for behavioural changes, especially around smoking and the use of matches and lighters. Those in family-based households also noted the need to keep matches and lighters away from children.

4.6 Prevalence of disabilities and long term illnesses

It was relatively common for households in the two areas to have members with disabilities or long term illnesses. This was the case for one in four Bay of Plenty households in the sample and 16% of the Lincoln households. However, the bases of their disabilities and illnesses seemed to differ. In the Lincoln area, most were related to age and included conditions like Parkinson's, stroke, war injuries, arthritis and heart problems. In the Bay of

Plenty, households with disabled or otherwise incapacitated members were more likely to include younger members. Conditions included things like allergies, asthma, cancer, diabetes, epilepsy, impaired hearing, intellectual disability and head injuries.

Household composition is a key determinant of fire risk and fire incidence is higher in households where there are people with disabilities, including old people. However, despite the fact that a number of households had one or two members with disabilities, no one saw that as a fire risk, including a risk that people would be harmed in the event of a fire.

4.7 Fuel sources

As with the rest of New Zealand, households in the Bay of Plenty and the Lincoln Fire District were heavily reliant on wood for their heating. However, the Bay of Plenty households were far more reliant on burning fuels than those in the Lincoln area, which were also heavily reliant on electricity.

Householders in both areas were concerned about the fire risk their open fires, or chimneys, posed (27% in Lincoln and 20% in the Bay of Plenty). Their concern is backed up by research on the risk that open fires and other fuel based heating poses. To some extent, though, their concerns did not reflect actual fuel use. In the Lincoln Fire District, most households used electricity and two thirds used wood. One in four used bottled gas. In the Bay of Plenty, there was far greater reliance on burning fuels (71% wood and 43% gas) and less on electricity (43%) but less concern about fire places as a fire risk.

4.8 Fire preparedness

The absence of working smoke alarms is recognised as a major fire risk in poorer households. This link between household income and the possession of working smoke alarms was borne out in this research. Although possession of working smoke alarms varied across the two areas, much of the variation was linked to household income. The 20% of households without working alarms or other fire safety equipment in the Lincoln Fire District area were virtually all flatting (and student) households self-defined as low income. They were also living in rental accommodation. In the Bay of Plenty, only one in three of the householders had working smoke alarms prior to the Fire Ambassadors' visits. This was despite the Fire Service's 1997 programme to install alarms. Although these households were usually self-defined as low income, householders most often attributed the lack to complacency, with people not getting around to replacing the batteries. Frustration with false alarms was also common, with a number of people intentionally removing batteries or letting them go flat to avoid that happening. The current placement of alarms away from cooking areas is designed to avoid these false alarms.

Because the Fire Ambassadors had installed smoke alarms in the Bay of Plenty homes included in the sample, no one identified their lack as a fire risk. And only 4% identified the lack as a risk in the Lincoln Fire District. This was despite 20% either having no alarm or not knowing whether they had one.

Respondents' comments suggest a high degree of denial of fire risk coupled with a sense of invincibility.

One in two Lincoln households had an escape plan, variously because:

- they (or others they knew) had experienced a fire
- it would be common sense
- they had heeded messages presented in television and other campaigns,
- they had concerns about the age, wiring or design of their house, or
- they had children.

In the Bay of Plenty 80% said they had an escape plan, most often as a consequence of Fire Service encouragement, because it would be commonsense or fear about the consequences of fires.

As with people's attitudes to smoke alarms, those without escape plans also tended to attribute the lapse to complacency. However, it was not unusual for householders, especially in Lincoln, to deny they were at risk or that they needed an escape plan. They often considered that they would be able to get out of their homes with ease, for instance because of its design or because of the absence of children.

Householders also felt they were most prepared for fire compared with other natural disasters. To some extent, they explained this relatively better preparedness to the fact that natural disasters were out of their hands while they could do something to prevent fire. In the Lincoln Fire District, householders most often attributed their preparedness to the persuasiveness of the messages they received, usually through television campaigns or through their children at school. In the Bay of Plenty, householders most often attributed their preparedness to the Fire Service, and in particular, the Fire Ambassadors. But they also noted the importance of television campaigns and school programmes.

4.9 Awareness of fire risk

There was some difference in householders' awareness of fire risk in the two areas surveyed. Virtually all householders in the Bay of Plenty reported having thought about what they would do in the event of a fire, and most said they had talked with others about it. However, Fire Ambassadors, in their visits to households, considered householders reporting of preparedness as over inflated. In their experience, information was passed around the household when there were children, given school programmes. However, recent Australian based research (AAMI, 2004) showed that one in four Australian parents admitted that their children would not know what to do if a fire broke out in their home. In Lincoln it was less likely that householders talked about fire risk: four out of five had thought about what they would do in a fire, and less than 60% had talked about it with other household members. Fire Ambassadors in the Bay of Plenty attributed the high awareness of fire in the area to recent serious household fires. Also, in a couple of the townships, the skeletons of burned out houses served as grim reminders of the

consequences of fire. In the absence of children and house fire experience, household discussion about fire was relatively rare.

Householders' previous experience of fire also motivated them to think about what they would do if it should happen again. In the Bay of Plenty, more than one in ten households had experienced an accidental fire in their home in the previous year, and in the Lincoln area, 8% had. Most of these fires were minor and cooking related. Around one in five householders in the two areas had some personal experience of fire or knew someone who had over their whole lives. These fires varied in severity and causes, and included cooking mishaps, electrical faults, children playing, chimney fires, natural events, garden fires and so on.

4.10 Householders' familiarity with others activities

In most households surveyed, composition changed throughout the day as adults went to work, children went to school and adults and children played sport, visited, shopped and so on. The high proportion of households with more than one person going to work is consistent with a general increase in workforce participation in New Zealand, particularly in two-parent households. The flatting households, in particular, showed high levels of out-of-home activities, with members studying, working and socialising during evenings and the day. Their reported socialising was more frequent than that reported in family-based households. One person described a flat as like a 'railway station', given the numbers of people moving through in any one day. One of the flatting households surveyed had 24 household members.

The composition of many households also changed on a day-to-day basis as people arrived and left overnight. Some worked shift work or other jobs that required overnight absences. Some went on holidays or visited friends and relations fairly regularly. At the time of the survey, 6% of the Bay of Plenty households and 9% of those in the Lincoln area had someone away. Some have people staying with them. More than one in ten households had guests staying at the time of the survey: usually they were visiting relatives or friends. And flatting households reported that people often stayed overnight, one of the more common reasons being that these guests were boyfriends or girlfriends of household members. Households that hosted parties (and some did frequently) also had guests overnight – party-goers who went home in the morning.

In some households, there was longer term change in household composition as members came and went on temporary or longer term bases. There were temporary changes in some households when children were away for a school term. In flatting situations that involved students, household composition changed in holiday periods when some members returned to parents' homes and others invited family and friends to stay. In others, the composition change was more permanent. For instance, some households in the Bay of Plenty included children who were fostered; then the numbers of children (and the actual children) in the household changed, as some left and others arrived. In flatting households, the composition often changed at the

start of the academic year, and for a time flatmates would hardly know each other.

4.11 Householders' knowledge of each others comings and goings

The extent to which people knew of their household companions' comings and goings varied considerably. In most family-based households (including both the more stable households, and those where adult children and others had returned home), people knew what others were up to. The experience of households in the Bay of Plenty and the non-flatting households in the Lincoln Fire District were similar regardless of size and the number of families/whanau. Household members were almost always acquainted with each others movements (particularly in the Bay of Plenty). In 5% of non-flatting Lincoln households this was not the case.

While people in non-flatting situations were almost always aware of each others comings and goings they were less likely to always know who was staying over. So, for 7% of the Bay of Plenty households and 17% of non-flatting Lincoln area households, there would be times when all household members would not know who was staying over. That might occur where people held regular parties with party guests staying over night and where teenagers lived – as they might stay away over night or have friends to stay.

In flatting situations householders were far less aware of others movements and who was staying over and away. In almost two thirds of flatting households, members would not always know each others comings and goings. A few of those interviewed pointed out that they made an active choice not to keep abreast of each others activities. In many circumstances, any 'keeping up' would be impossible anyway, given the multiplicity of householders' activities. Indeed, they often considered it inappropriate to know. In addition, in almost three quarters of flatting situations there would be times when people did not know who was staying – typically household members' girlfriends, boyfriends and others would stay on a regular basis or household members would stay away at their girlfriends', boyfriends' and others places.

As the next section shows, in most households there was at least one person who took responsibility for checking that people had arrived home, for inviting people to stay, and so on. Nevertheless, there was still some degree of uncertainty about household composition at any one time, especially in flatting situations. Whether that uncertainty is linked to fire risk is as yet insufficiently understood – most householders focused on the risk of a fire occurring rather than the risk of injury or death in the event of a fire. Indeed, they were more likely to see themselves as invincible in such as event. So, the physical aspects of their dwelling, rather than the ways that its members lived in, used and moved in and out of the dwelling, were seen to be far more of a risk factor.

4.12 Household management

Most householders were fairly systematic about how their households were managed and organised overall. They were also generally systematic about how key responsibilities that directly and indirectly relate to fire risk were organised. These key responsibilities related to the organisation of household members - inviting people to stay, organising where they might sleep, knowing when people had left, ensuring that people had arrived home and organising childcare. These responsibilities also related to cooking – buying household groceries and doing the cooking - and to maintaining the dwelling and ensuring that fire safety equipment was purchased and maintained.

Usually, households had a person or persons who specifically took responsibility for overall household organisation. However, that did not occur in 12% of the Bay of Plenty households surveyed and 26% of those in the area covered by the Lincoln Fire District (that proportion reflects the third of households surveyed that were flatting situations).

It was also usually the case, in family-based households, that one or more people in particular took responsibility for organisational activities like inviting people to stay overnight, organising away from home recreational activities and checking that people had arrived home from work, school, and so on. Also, where applicable, there was usually somebody who took specific responsibility for childcare arrangements (but not always).

However, it was also the case that, in some households, there would not be a particular person (or persons) who would take responsibility for these tasks. That was especially the case in flatting situations. These findings suggest that there is a small proportion of households (maybe around one in ten) where responsibility for some key tasks is rather haphazard. That proportion is greater amongst flatting households. In these households, systems do not seem to be in place to ensure that someone knows who is in, and where they are, at any one time. In a small proportion of households that lack of knowledge also extends to children in that no person (or people) has specific responsibility for organising childcare. Households seem to be more systematic about ensuring someone has specific responsibility for house maintenance and, in some cases, for purchasing and maintaining fire safety equipment.

Other risk factors for student flats identified in the literature include that students are often not educated about what they should do to prevent a fire or respond to protect themselves. In addition, they are less likely to have working smoke alarms, more likely to carelessly dispose of cigarette butts and other smoking material, live in substandard rental accommodation (and crowded accommodation), use candles and overload extension cords and power outlets.

In those households where management of key tasks was rather more haphazard, household members were unlikely to see this as a fire risk. There seems to be little research that considers the impact of household disorder on fire risk. There is research, however, to suggest that there is increased fire

risk in physical areas of greater disorder (Office of the Deputy Prime Minister, 2004).

4.13 Unsafe behaviours

Research shows excessive alcohol consumption and drug abuse are implicated in increased fire risk. However, it was reasonably uncommon for householders interviewed to identify these as a risk factor: in the Bay of Plenty, no one identified alcohol or drug use, and in the Lincoln Fire District only 10% identified drinking or drug use. People in flatting situations were more likely to be concerned about the potential risk that fellow drinking flatmates posed. Their concern echoes research findings that alcohol consumption is a risk factor for student households.

The most commonly identified risk factors identified by households of all types were cooking related – mainly unattended cooking and unsupervised children cooking. They also attributed risk to physical aspects of their homes and appliances. More than 60% of householders interviewed in each area stressed the need for behavioural changes around cooking, as well as smoking, the use of matches and lighters, and appliance use. Others talked about household maintenance and rewiring, installing fire safety equipment and developing a fire escape plan.

4.14 Current and preferred assistance and sources of assistance

In their consideration of what advice or help they might need to increase their fire safety and from where that could best come, householders gave some strong and fairly consistent messages. Most householders wanted information about fire risk and what appropriate responses to these risks they should take. The Bay of Plenty householders had been in the fortunate position of having had access to expert advice, and they almost always valued this highly. So they almost always identified the Fire Service and, in particular, Fire Ambassadors, as their preferred source of information. Lincoln households also identified the Fire Service as their preferred source of assistance and advice. A small group of Lincoln households also wanted access to cheap or free fire safety equipment. The Bay of Plenty households had had free smoke alarms installed.

Other current information sources reported were dominated by television, although schools were an important source for family-based households with school children. Work based training was also an important source of advice, training and information.

4.15 Conclusions, implications for NZFS and recommendations

Interview findings showed some link between household stability, familiarity of household members with each others activities and systematic household management. The flatting households in the Lincoln case study area stand out from other households in both the Bay of Plenty and the Lincoln area in this regard. The extent to which this more haphazard household organisation

poses increased fire risk still needs further exploration. Nevertheless, there seems to be a link between the circumstances of these households and some of the individual risk factors implicated in increased fire incidence.

Although, within family-based households, there is also some degree of uncertainty amongst some members about who is where, when and who might be staying, in flatting situations that is significantly more likely. In family-based households, there are usually special reasons why all members would not know: some people are on call and away from home for long periods; children are too young to be aware; teenagers bring friends home or stay away.

In flatting situations, people had more independent lives and lived together for financial reasons as much as companionship or mutual care. Household members in a flatting situation generally did not know each others comings and goings, reported that they sometimes did not know who was sleeping in the dwelling overnight and did not have amongst them someone who took specific responsibility for household organisation and management. In a small number of family-based households there was similarly haphazard household management systems.

These findings have a number of implications for the NZFS:

- In terms of fire prevention, in flatting situations and some other family-based households there are no obvious household members to target that would ensure comprehensive dissemination of advice and information. The same problem occurs around the installation and maintenance of fire alarms and the development of safety plans. Because householders indicate that no particular members take responsibility for these tasks, it is difficult for NZFS and others to target individuals.
- Because the composition of these households is changeable, households may not retain the members who do have the awareness and knowledge necessary to ensure fire safety. For instance, in student flatting households, membership is more fluid at the start and end of the academic year and composition is likely to change in holiday breaks.
- Fire safety messages intended for flatting households and others with changing composition may be best channelled through landlords and others with indirect contact with the household groups.
- Householders' non-awareness of others whereabouts and the presence of visitors raises obvious problems for fire-fighters responding decisively when a fire occurs, and may put them at unnecessary risk. While a search is mandatory, fire fighters' cannot necessarily place any reliance on householders' advice when they ask 'who is in the house'.
- Householders respond well to NZFS staff, including Fire Ambassadors, because they are not threatening, come from the local community, and provide their messages in an informal, friendly and 'story-based' way. Their uniform and the Fire Service branded car may also help. People also respond well to television campaigns, messages through school programmes and work-based training.
- The vehicles that NZFS have used to provide fire safety messages are effective (e.g. television). The research findings suggest that messages

need to be refocused, for instance, to address fire risks associated with the use of auxiliary buildings and other structures as living quarters and to address the potential risks associated with more haphazard household management.

Given these research findings, and their implications for NZFS, we make the following recommendations:

- That NZFS, at a local level, build up some collateral knowledge about their communities, as resources allow. This may include, for instance, compiling information about the proportion of households that are flatting situations or households of high deprivation. NZFS could work with community groups, local government and other key agencies as it carries out this community ‘scanning’ process.
- That NZFS work at a community level to identify at risk households, and to provide information and advice to targeted households in a more intensive way. This may include targeting flatting situations and some other family-based households that use other building as sleeping quarters, or where household management might be more haphazard. Effective dissemination of advice and information in these households may require some duplication of effort – for instance, working with more than one member. The same problem occurs around the installation and maintenance of fire alarms and the development of safety plans. Because householders indicate that no particular members take responsibility for these tasks, it may be necessary for NZFS target several individuals.
- That NZFS provide information and advice to some types of at-risk households (as identified above) on an on-going basis in recognition that household composition is likely to be in a constant state of flux.
- That NZFS channel information and advice through various sources to ensure effective dissemination at a household level. Landlords are an obvious channel. Because accessing landlords can be difficult, several avenues need to be taken. One is through Tenancy Services, where landlords lodge bonds. However, because it is not compulsory for them to lodge bonds with this body, other avenues will also be required. Other means to access landlords may include through leasing agents, property managers and property investment magazines.
- That NZFS continue to work closely with student associations and tertiary education providers, given the risk factors that student households face. Awareness-raising is particularly important at the start of study semesters, which continue throughout the calendar year. That English may be a second language for some student households needs to be accounted for in any information provision.
- That NZFS continue to both deploy fire-fighters and other staff to fire prevention activities and create dedicated public awareness and education positions. These people should build on the high regard that the NZFS has at a community level by being clearly identifiable as NZFS staff through uniforms and marked vehicles.
- That NZFS continue its use of multiple media sources, including television as a means to raise public awareness.

- That NZFS shift the focus of its messages to raise awareness of the potential risks associated with the use of auxiliary buildings and other structures as living quarters and to promote the need for particular people in households to take responsibility for tasks relating to fire safety.

5. TOOL FOR IDENTIFYING AT RISK HOUSEHOLDS AND HOUSEHOLD CAPACITY

Part of the research has involved the identification of household indicators of fire risk and fire safety capacity. These were developed from a mixture of literature review and consultation with key New Zealand Fire Service personnel. These indicators formed the basis of the development of the survey instrument, or questionnaire², used to interview the households included in the Bay of Plenty and Lincoln Fire District samples. As described in the research approach section, the survey instrument development went through several iterations after input from NZFS staff, including Fire Ambassadors, and community members.

The questionnaire was further reviewed at the completion of field work and data analysis. It has been redesigned with more closed-ended questions, for ease of administration and data entry and analysis. Content analysis of responses to previously open-ended questions provided the basis for developing variable labels for these questions.

The resulting questionnaire, included in this section, is intended for use by communities and/or NZFS to identify at-risk households, in terms of fire risk, and capacity building needs and opportunities.

² The questionnaire is attached in Appendix 1.

ID: _____

HOUSEHOLD FIRE SAFETY

This questionnaire will help identify households at risk, so that better ways can be developed to work with communities and households to prevent fires and prevent injury or death if fires happen.

Information from this research could be used by the New Zealand Fire Service, community organisations and others to help develop effective fire prevention and fire safety activities.

Your answers will be treated with complete confidentiality. No names or personal details that could identify any individual will be used in any reports written on this research. If you are concerned about any particular questions, you do not have answer them.

We appreciate you taking the time to be part of this research.

DESCRIPTION OF HOUSE/DWELLING/PROPERTY

1. What type of dwelling/building do you live in? Tick one box only. By that we mean either:

- Detached house or town house (NOT joined to any other)
- House, flat, unit or apartment joined to ONE or more houses, flats, units, apartments, businesses or shops
- Bach, crib or holiday home
- Other. Write what it is: _____

2. Which of these best describes the make-up of your household? Tick one box only.

- One family/whanau - single parent with children
- One family/whanau - two parents with children
- More than one family/whanau with children
- Extended family/whanau – grandparents, parents, children
- Couple without children
- Flatting situation
- Single person
- Other. Write what it is: _____

3. What other places on your property do people regularly sleep in? Tick as many boxes as needed.

- | | |
|---|---|
| <input type="checkbox"/> There are none | <input type="checkbox"/> Car |
| <input type="checkbox"/> Garage | <input type="checkbox"/> Tent |
| <input type="checkbox"/> Shed | <input type="checkbox"/> Other. Write what it is: _____ |
| <input type="checkbox"/> Sleepout | <input type="checkbox"/> Don't know |
| <input type="checkbox"/> Caravan | |

4. What other places on your property do people sleep temporarily in? Tick as many boxes as needed.

- | | |
|---|---|
| <input type="checkbox"/> There are none | <input type="checkbox"/> Car |
| <input type="checkbox"/> Garage | <input type="checkbox"/> Tent |
| <input type="checkbox"/> Shed | <input type="checkbox"/> Other. Write what it is: _____ |
| <input type="checkbox"/> Sleepout | <input type="checkbox"/> Don't know |
| <input type="checkbox"/> Caravan | |

5. Which of these rooms (not bedrooms) in your main dwelling have beds that people regularly sleep in?

- | | |
|--|---|
| <input type="checkbox"/> Living room/TV room | <input type="checkbox"/> Dinning room |
| <input type="checkbox"/> Hallway | <input type="checkbox"/> Other. Write what it is: _____ |

6. Are there times when you are unsure about how many people are sleeping in your dwelling?

- Yes No

7. Where does cooking happen on a regular basis in your dwelling? Tick as many boxes as needed.

- | | |
|---|----------------------------------|
| <input type="checkbox"/> Kitchen of main dwelling | <input type="checkbox"/> Caravan |
| <input type="checkbox"/> Shed/garage | <input type="checkbox"/> BBQ |
| <input type="checkbox"/> Other. Specify _____ | |

8. Do you, or anyone else who lives with you, rent or own (or partly own), your dwelling?

- Rent Own Other. Write what it is: _____

9. Which of the following are ever used to heat rooms in your dwelling? Tick as many boxes as needed.

- | | |
|--|--|
| <input type="checkbox"/> Never use any form of heating | <input type="checkbox"/> Electricity |
| <input type="checkbox"/> Mains gas (from street) | <input type="checkbox"/> Bottled gas |
| <input type="checkbox"/> Wood | <input type="checkbox"/> Coal |
| <input type="checkbox"/> Solar heating system | <input type="checkbox"/> Other fuel(s). Specify: _____ |

10. Does anyone in your dwelling use an electric blanket? Yes No Don't know
11. Are there portable heaters used in any of the bedrooms? Yes No Don't know
12. Are there any naked flames used for lighting in any of the bedrooms? Yes No Don't know
13. Is there anyone who smokes living in the dwelling? Yes No Don't know
14. Which of these is available in your dwelling? Don't count anything that is disconnected or broken:
- | | |
|---|--|
| <input type="checkbox"/> Cell phone (that is, most of the time) | <input type="checkbox"/> Telephone |
| <input type="checkbox"/> Fax access | <input type="checkbox"/> Internet access |
| <input type="checkbox"/> None of these | |
15. Do you have one or more working smoke alarms in your dwelling? Yes (go to 17) No Don't know
16. If not, what is the main reason for not having a working smoke alarm? Tick as many boxes as needed.
- | | |
|--|--|
| <input type="checkbox"/> Consider myself/my household not to be at risk of fire | <input type="checkbox"/> Do not know where to buy smoke alarms |
| <input type="checkbox"/> Do not know how or where to install smoke alarm | <input type="checkbox"/> Cannot afford to buy a smoke alarm |
| <input type="checkbox"/> Think that they look unsightly | <input type="checkbox"/> Batteries are missing or dead |
| <input type="checkbox"/> Haven't got around to getting one/keep forgetting | <input type="checkbox"/> Have never considered getting one |
| <input type="checkbox"/> Worried about damage to other household fixtures and fittings | <input type="checkbox"/> Live in rented accommodation |
| <input type="checkbox"/> Dislike false alarms/they are annoying and go off unnecessarily | <input type="checkbox"/> Don't know |
| <input type="checkbox"/> Other _____ | |

17. What other fire safety equipment do you have?

- | | |
|--|---|
| <input type="checkbox"/> None | <input type="checkbox"/> Garden hose |
| <input type="checkbox"/> Fire extinguisher | <input type="checkbox"/> Other. Write what it is: _____ |
| <input type="checkbox"/> Fire blanket | <input type="checkbox"/> Don't know |
| <input type="checkbox"/> Fire hose | |

HOUSEHOLD COMPOSITION

These questions aim to collect information about who lives in the household.

18. Including yourself, how many people usually stay in your dwelling? _____

19. Do you have child household members? Tick as many boxes as needed.

- No Yes (0-4 years) Yes (5-16 years)

20. Is anybody in your household 70 or more years of age?

- Yes No

21. How many full time students (including you) are living in this household? _____

22. How may people regularly leave the household to do the following?

Activity	Number
Work	
School/other education/training	
Sport/recreation	
Helping on the marae	
Other voluntary work	
Evening socialising	
Shopping	
Other:	

23. Does everybody in the household have an idea of each other comings and goings? Yes (go to 25) No

24. If no, why?

- Household members have independent lives
- Busy household where people come and go frequently (e.g. work, socialising, sport)
- Large number of household members
- This is a flatting household
- We have teenagers (e.g. come and go often, don't always say what they are up to)
- Other. Write what it is: _____
- Don't know

25. Is anyone currently staying in your dwelling temporarily? Yes No (go to 27) Don't know (go to 27)

26. Which of these describes why they are staying?

- Family/friends on holiday
- Family members staying for temporary period
- Partner/girlfriend/boyfriend staying over
- Party guest staying over
- Children/teenager's friends staying over
- Other. Write what it is: _____
- Don't know

27. How often would people stay temporarily?

- More than once a week Yearly
- Weekly Other. Write what it is: _____
- Fortnightly Never
- Monthly Don't know
- Six monthly

28. Does everyone in the household know there are currently people staying temporarily? Yes No N/A

29. How many people in the household have a disability/long-term health problem? _____

Please specify type of impairment(s):_____

30. Is there anybody in your household who doesn't speak English as their first language? Yes No

31. Do you have pets? Yes No

RESPONSIBILITY FOR HOUSEHOLD DECISION-MAKING

In this set of questions, we are interested in who does what in running your household.

32. Is there a person (or people) in the household who takes major responsibility for organising the household?

- Yes No

33. Who takes responsibility for the following?

	At least one household member	No-one in particular	N/A
Household shopping/supplies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Inviting people to stay overnight	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Organising where people sleep	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Household cooking	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Away from home recreation activities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Purchasing fire safety equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Other fire safety activities. Describe _____	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Maintaining fire safety equipment	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Childcare	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Checking that people have arrived home from school, work, etc	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
House/dwelling maintenance	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

FIRE HISTORY

34. In the last 2 years, have you or any of your household experienced any sort of unintended or accidental household fires (including very minor fires)?

- Yes No (go to 36)

35. If yes, what was the cause of the fire/s? Tick as many boxes as needed.

- | | |
|--|---|
| <input type="checkbox"/> Arson | <input type="checkbox"/> Accident while cooking |
| <input type="checkbox"/> Accident with matches or cigarette lighter | <input type="checkbox"/> Cigarette, cigars or pipe |
| <input type="checkbox"/> Children playing with fire (not matches or cigarette lighter) | <input type="checkbox"/> Candle |
| <input type="checkbox"/> Electrical equipment/wiring (including electric blankets) | <input type="checkbox"/> Vehicle fire (wiring) |
| <input type="checkbox"/> Heating appliance or fires (including chimney fire) | <input type="checkbox"/> Blow lamp |
| <input type="checkbox"/> Natural occurrence (e.g., lightening) | <input type="checkbox"/> Bonfire/other outside fire |
| <input type="checkbox"/> BBQ | <input type="checkbox"/> Other _____ |

36. Has anyone in your household (including you) ever had experience of a house fire (other than the one just described)?

- Yes No

HOUSEHOLD FIRE RISK

In this next set of questions, we are interested in your views about fire risks in your dwelling and how you are (or could) respond to them.

37. What do you see as the main risks that might lead to a fire happening in your dwelling? Tick as many boxes as needed

- | | |
|--|--|
| <input type="checkbox"/> Arson | <input type="checkbox"/> Smoking |
| <input type="checkbox"/> Accident while cooking (including BBQ) | <input type="checkbox"/> Bonfire/other outside fire |
| <input type="checkbox"/> Electrical equipment/wiring (including electric blankets) | <input type="checkbox"/> Lack of smoke alarm |
| <input type="checkbox"/> Heating appliance or fires (including chimney fire) | <input type="checkbox"/> Lack of other fire safety equipment |
| <input type="checkbox"/> Old home (dry timber) | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Poor access to and from house | <input type="checkbox"/> There is no risk |
| <input type="checkbox"/> Alcohol or drug related | |
| <input type="checkbox"/> Careless use of matches, cigarette lighter, candle, other naked flame | |
| <input type="checkbox"/> Children playing with fire (including matches or cigarette lighter) | |

38. What do you see as the main risks that might lead to people being hurt if a fire occurred in your dwelling? Tick as many boxes as needed

- | | |
|--|--|
| <input type="checkbox"/> Lack of smoke alarm | <input type="checkbox"/> Old home (dry timber) |
| <input type="checkbox"/> Lack of other fire safety equipment | <input type="checkbox"/> Alcohol or drug use |
| <input type="checkbox"/> Lack of escape plan | <input type="checkbox"/> Other _____ |
| <input type="checkbox"/> Poor access to and from house | <input type="checkbox"/> There is no risk |

39. What would you need to do to reduce these risks? Tick as many boxes as needed

- Supervise children
- Maintain dwelling (rewiring etc)
- Replace, service and check appliances
- Install fire safety equipment
- Develop escape plan
- Practice responsible fire safety behaviour (e.g. not leaving cooking unattended)
- Keep an eye on drunken or drug impaired household members
- Stop people smoking inside dwelling
- Other _____
- Nothing
- Don't know

40. What assistance can outside organisations provide to increase your fire safety? Tick as many boxes as needed

- Home-based assistance to identify/reduce fire risks
- Home-based assistance to develop escape plan
- Home-based demonstration of fire-safety equipment
- TV based safety campaign
- Other media based safety campaign
- Demonstrations/advice/assistance outside of home (e.g. at work, school etc)
- Don't know
- Provision of free smoke alarms
- Provision of low cost smoke alarms
- Provision of low cost or free other fire safety equipment
- Other: _____
- No assistance

41. Where are you most comfortable seeking help and information from? Tick as many as 3 boxes.

- Fire Service
- Fire Ambassadors
- Local and/or Regional Council
- Police
- Community group, Church, Club, Marae
- School, University, Community Education
- Insurance company
- Family, friends, neighbours
- The Internet
- Other: _____

42. Have you thought about what you would need to do in a fire? Yes No (go to 44)

43. Have you spoken to other members of your household about this? Yes No

44. Does your household have an escape plan in case of a fire? Yes (go to 46) No

45. If no, why not?

- Haven't got around to it Other _____
- Don't think there is a risk Don't know
- Dwelling design doesn't require plan
- Single person household

46. What encouraged you to have an escape plan? (for those who answered 'Yes' to question 44) Tick as many boxes as needed.

- Concern for my family Children brought information home from school
- Experience of house fire Workplace experience/training
- TV/fire safety campaign Other _____
- Fire Service visit Don't know
- Fire safety conscious

47. Up until now, where have you got the most useful safety information, advice and/or assistance?

Tick as many boxes as needed.

- Schools Friends and relations Never received information
- TV Local council
- Fire Ambassadors Community groups. Describe _____
- Fire-fighters Other. Describe _____

48. Which of these would describe your household income level?

- Low
- Medium
- High

49. Which of these best describes your ethnicity?

- European/paean
- Māori
- Pacific Island
- Asian
- Other: _____

50. Are you?

- Male
- Female

Thank you for participating in this survey.

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