

AFAC STREAM PAPER

PAPER TOPIC: RESIDENTIAL FIRE FATALITIES AND OTHER RESEARCH
– GETTING THE FULL PICTURE

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The Queensland Fire and Rescue Service (QFRS), like other national and international fire agencies, is placing increasing emphasis on preventative strategies as a means of further reducing the loss of life, level of injury and loss of property due to fires. Over the past eight years, Queensland firefighters have strongly promoted fire safety messages, such as the need for smoke alarms, to the Queensland community. Numerous community education programs have been initiated to increase the community's fire safety awareness and preparedness for fire-related emergencies.

In order to ensure that community education programs and initiatives are meeting the safety needs of the people of Queensland, QFRS has been undertaking a number of research projects. Building on the success of the "Fire Fatalities: Who's at Risk?" Research Report in 1998, QFRS has continued with research into fatal fires in Queensland. The findings of this current research into fire fatalities in structures confirm:

- that the elderly, the very young and adults affected by alcohol and/or drugs are at great risk of dying in the event of a fire;
- that the majority of fatal fires are accidental/preventable;
- that residential properties were the most frequently cited property in which fatal fires occurred (in particular rental properties);
- that the majority of fatal fires occur in the cooler months of June, July, August and September;
- that most of the fatal fires occur at night when people are asleep and unable to detect the early stages of a fire; and
- that the absence of smoke alarms appear to contribute to the increased risk of death in the event of a fire.

Not only has QFRS focused its research on identifying those people most 'at risk' of dying in structural fires. Additional research projects have been undertaken to gain greater insight into the level of awareness of fire safety measures in the home, the importance the community places on taking steps to avoid house fires and the behavioural patterns and motivations of the community in relation to the fire safety. Research of this nature has enabled QFRS to better understand the community and to develop strategies to motivate behavioural change in individuals and encourage them to actively take-up fire safety measures/behaviours in the home.

Targeted research has also commenced with 'at risk' and priority groups (ie. Indigenous youth, people with a disability) to gain an in-depth understanding of their motivations and the factors that may inhibit their levels of fire safety behaviour.

STRUCTURAL FIRES IN QUEENSLAND

1. Introduction

In 1998, the “Fire Fatalities: Who’s at Risk?” Research Report was released. This report represented a critical step in the development of enhanced strategies to reduce the number of fire fatalities in Australia and hence, the overall cost of fires to the community.

Building on the success of this research, Queensland Fire and Rescue Service (QFRS) has continued with its investigation of fatal fires. The “Structural Fire Fatalities in Queensland” represents the next step in fire fatality research, giving Queensland a body of fire fatality data that spans across nine years.

2. Project Overview

The “Structural Fire Fatalities in Queensland” project aimed to:

- examine any common contributing factors to fire fatalities;
- collect demographic and socio-economic characteristics of fire victims in order to assist QFRS with the targeting of fire education campaigns to groups in the community who were most ‘at risk’ of fire; and
- make recommendations with the aim of reducing the incidence of deaths in structural fires.

The research project examined fire fatality data relating to all structural fires including mobile properties such as mobile homes, caravans, campervans and transportable buildings that have occurred in both urban and rural areas of Queensland between 1 July 1996 and 30 June 2000. In terms of fire categories, all fatal structural fires whether deliberate, accidental/preventable or underdetermined, were examined and incorporated into the analysis.

Several data sources were used to compile this report including the Australian Incident Reporting System, Fire Investigation Reports, Australian Bureau of Statistics data and Coronial files.

The structure of the data in this report takes the following format. Firstly, data from 1 July 1996 to 30 June 2000 will be analysed in its own right. Comparisons will then be drawn between the findings from the new research and that from the “Fire Fatalities: Who’s at Risk?” Research Report that examined fire fatalities between 1 July 1991 and 30 June 1996. Finally, where possible, data from both research projects will be combined to give an overall picture of structural fire fatalities in Queensland between 1 July 1991 and 30 June 2000.

One consideration that must be taken into account when reviewing this research is the impact that the Childers Backpacker fire (23 June 2000, 15 lives lost) may have on the data over the research period. Most of the analysis in this report includes data from the

Childers fire. It is advised that the reader keeps in mind that the inclusion of this data may sometimes skew the results. For example, the number of deaths recorded in June is a lot higher than other months because the Childers fire occurred in this month. In some instances, additional analysis has been carried out to give the reader an idea of what the situation would be without the inclusion of Childers data.

3. Fire Fatalities

3.1 Overview

There were 74 fire fatalities resulting from 55 structural fires in Queensland between 1 July 1996 and 30 June 2000. The information on these 74 fire fatalities was drawn from data on all 127 fire fatalities (includes structural and non-structural fires) that occurred in Queensland during the research period. Only those fires for which a structure was positively identified have been included in this report. In some cases, the place of fire was not well specified in the data and therefore, some instances of structural fire fatalities may be missing from this report.

Table 2.1 shows the number of fire fatalities in each of the financial years investigated, with the research period 1 July 1996 to 30 June 2000 highlighted in the table. The 1999/2000 financial year recorded the most fire fatalities with 40. This is partly due to the Childers fire, however even when the effect of Childers is removed it still returned the highest level of deaths for the period. Removing the effect of Childers, 26 people died in 1999/2000 representing 0.74 deaths per 100,000 of the population.

Table 3.1 - Number of Victims (1/7/1991 – 30/6/2000)

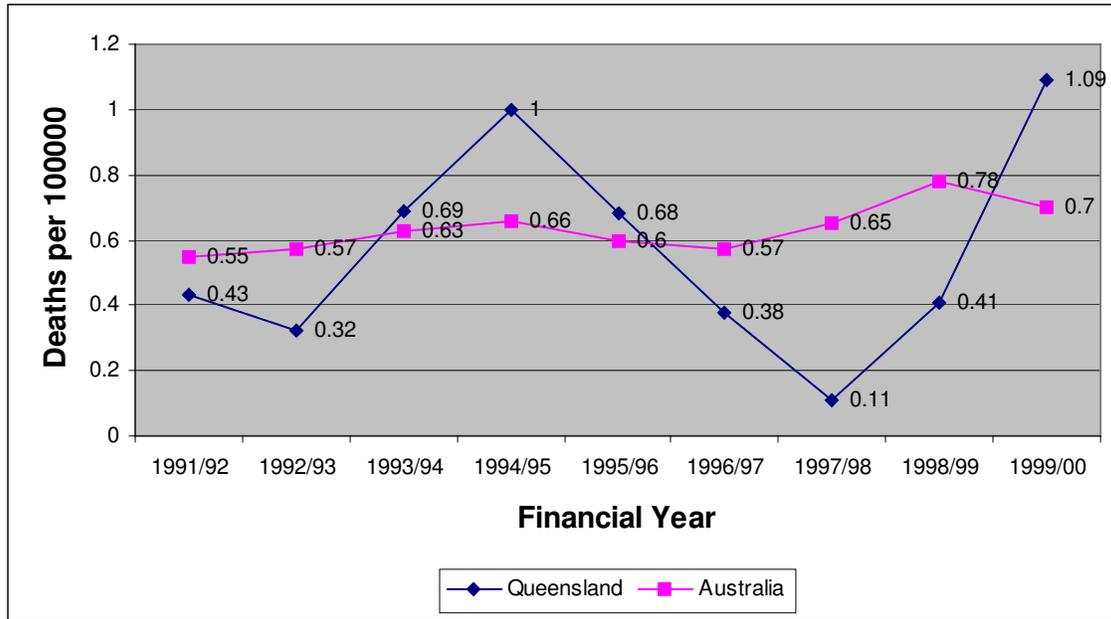
Financial Year	1991/92	1992/93	1993/94	1994/95	1995/96	1996/97	1997/98	1998/99	1999/2000
Number of Victims	13	10	22	33	23	14	4	15	41
Deaths per 100,000	0.43	0.32	0.69	1	0.68	0.38	0.11	0.41	1.09

3.1.1 Fire Fatalities 1 July 1991 – 30 June 2000

Figure 3.1 combines the data from both the current and previous research in order to illustrate the number of deaths per 100,000 population in Queensland for the nine years from 1 July 1991 to 30 June 2000. It can be seen that from 1994/95 the number of fire fatalities per 100,000 dropped to a low point of 0.11 in 1997/98. However, since that time the number of fatalities has risen in the next two years to a similar level of around one death per 100,000.

Comparing the Queensland fire death rate with the national trend, it can be seen that the national average has remained fairly constant between 0.5 and 0.8 fire deaths per 100,000, while the Queensland average has fluctuated between 0.11 and 1.09 fire deaths per 100,000.

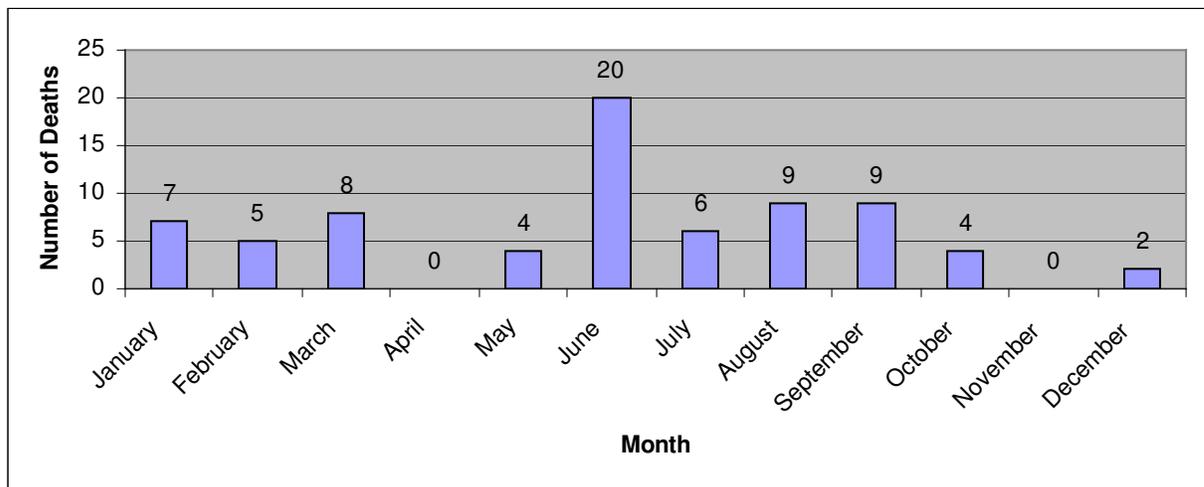
Figure 3.1 – Fire Deaths per 100,000 (compared to national trend)



3.2 Month of Year

Figure 3.2 displays the number of fire fatalities that occurred in each month of the year for the current research period (1/7/96 – 30/6/00). The month of June had the highest number of deaths for the period with 20, however 15 of the fatalities occurred in Childers. If the effect of Childers is removed, then August and September had the highest number of fire deaths, each with nine (15%) victims.

Figure 3.2 – Date of Death by Month (1/7/1996 – 30/6/2000)



Removing the effect of Childers, the colder months of June, July, August and September accounted for 29 (49%) of the fire deaths for the research period. Smoking materials such as cigarettes and matches (24%), electrical accidents (17%), including the misuse of

electrical equipment (such as leaving a wall oven on) and candles being left burning (10%) were the main causes of fatal winter fires in Queensland.

3.2.1 Comparison with “Fire Fatalities: Who’s at Risk?” Research Report

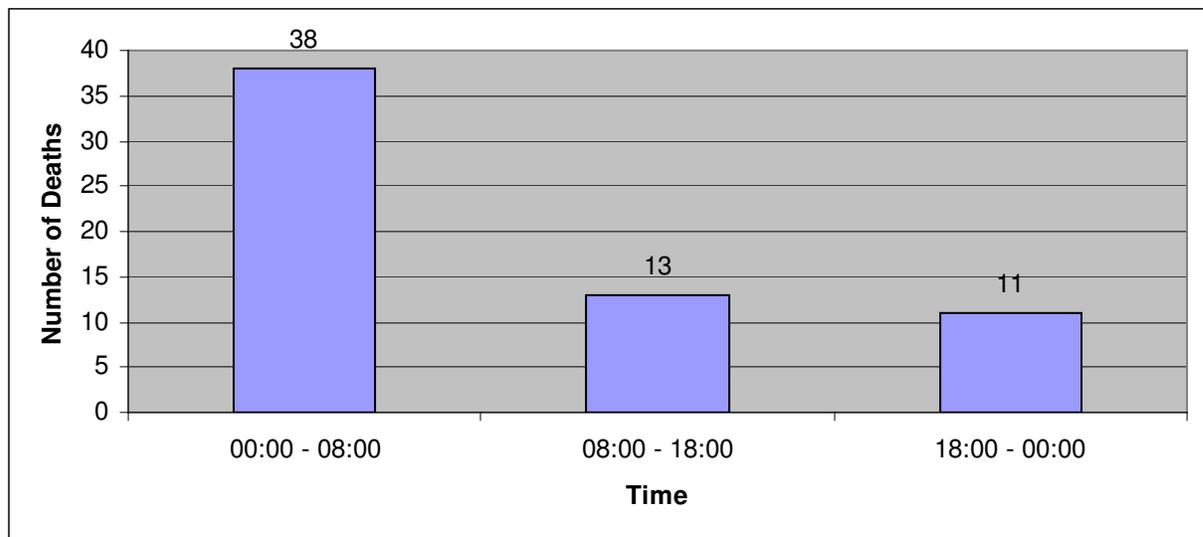
The “Fire Fatalities: Who’s at Risk?” Research Report (1/7/91 – 30/6/96) also found that the majority of fatal fires occurred in the winter months of June, July, August and September. The major cause of these fires was identified as being electrical accidents, including electrical faults and the overloading of power outlets.

The report also found that December recorded the highest number of deaths for a single month, with alcohol cited as a contributing factor. The results of the current research (1/7/96 – 30/6/00) showed that two fatalities occurred in December, which is quite a contrast to the 17 fire deaths that occurred in the 1 July 1991 – 30 June 1996 research period.

3.3 Time of Day

An alarm time was not listed in the available data for 12 of the fatalities. In the remaining 62 cases, 38 (61%) of fatalities occurred between midnight and 8.00 am, 13 (21%) deaths occurred between 8.00 am and 6.00 pm and 11 (18%) deaths occurred between 6.00 pm and midnight.

Figure 3.3 – Deaths by Time of Day (1/7/1996 – 30/6/2000)



3.3.1 Comparison with “Fire Fatalities: Who’s at Risk?” Research Report

The “Fire Fatalities: Who’s at Risk?” Research Report (1/7/91 – 30/6/96) found that the majority (67%) of fire fatalities occurred between midnight and 8.00 am. The current research confirms this finding as the majority (61%) of fire fatalities occurred between midnight and 8.00 am.

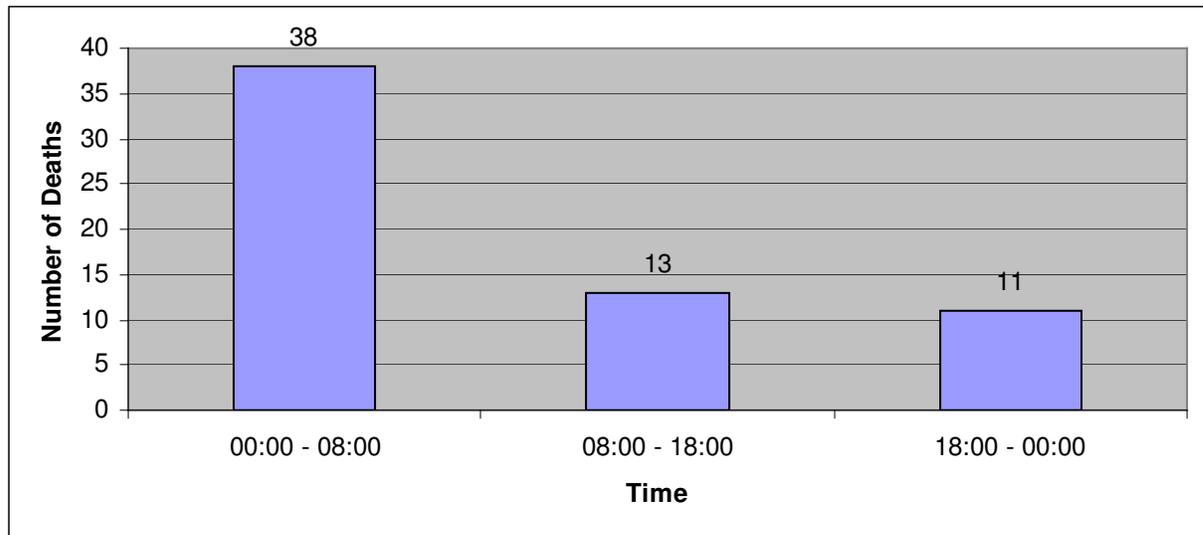
3.3.2 Fire Fatalities 1 July 1991 – 30 June 2000

The time of death could only be established for 119 (68%) of fire deaths that occurred between 1 July 1991 and 30 June 2000. The majority (64%) of fire fatalities occurred between midnight and 8.00 am, the time when people are most likely at home, asleep and unlikely to notice the early stages of a fire.

3.4 Time of Day

An alarm time was not listed in the available data for 12 of the fatalities. In the remaining 62 cases, 38 (61%) of fatalities occurred between midnight and 8.00 am, 13 (21%) deaths occurred between 8.00 am and 6.00 pm and 11 (18%) deaths occurred between 6.00 pm and midnight.

Figure 3.4 – Deaths by Time of Day (1/7/1996 – 30/6/2000)



3.4.1 Comparison with “Fire Fatalities: Who’s at Risk?” Research Report

The “Fire Fatalities: Who’s at Risk?” Research Report (1/7/91 – 30/6/96) found that the majority (67%) of fire fatalities occurred between midnight and 8.00 am. The current research confirms this finding as the majority (61%) of fire fatalities occurred between midnight and 8.00 am.

3.5 ‘At risk’ groups 1 July 1996 - 30 June 2000

3.5.1 Children aged between 0 and 4 years

Six (8%) of the fire death victims in Queensland were aged in the 0-4 years age group, with the majority (83%) of these victims being male. Smoke inhalation was the major cause of death in this age group.

Where a fire category was identified, it was found that four of the fire fatalities in this age group occurred in accidental/preventable fires. In four of the cases, the child had been left unattended when the fire occurred. Three of the deaths in this age group were positively identified as being a result of child fire play.

In four of the cases it was possible to determine the time when the fire started, in three of the cases the fire occurred during the day (ie. Early afternoon).

No smoke alarms were reported in any of the premises involving the deaths of children aged between 0 and 4 years.

3.5.2 People aged 60 years and older

16 (22%) of the fire victims were aged 60 years and over. Just over half of these victims were male (56%). In two of the cases, no marital status was reported for the victims. In the remaining 15 cases, 12 of the victims were not married, being either single, separated, widowed or divorced. The occupation was reported for 14 of the victims in this age bracket, with 13 of the victims being retired or on the pension. In 12 cases the dwelling type was reported, with ten of the victims living in one/two family dwellings at the time of their deaths.

The majority (90%) of the fires were classified as accidental/preventable. Burns and/or incineration was the major cause of death for people in this age category, with a number of the victims dying in hospital some time after being rescued from the fire. Some of the victims had been in close proximity to the fire, and as a result suffered severe burns.

Only limited information was available about the cause of the fatal fires involving people aged 60 years and over. It was positively identified that accidents involving electrical equipment was the cause of four of the fatal fires. For example, damaged power leads and accidentally knocking over an electric lamp were some of the causes of these fires.

In 12 of the cases it was possible to determine the time when the fire occurred. It is likely that 67% of the fatal fires involving people aged 60 years and over occurred when the victims were awake and carrying out their everyday tasks.

No smoke alarms were present in any of structures where people aged 60 years and over died.

3.5.3 Alcohol-related fire deaths

In Queensland, 64 of the fire victims were over the legal drinking age of 18 years. Of these 64 victims, 13 (20%) of the victims were positively identified as having alcohol in their bloodstream at the time of their death. The majority (62%) of these victims were male. The age group of these victims varied and is not considered a common factor across the group. Only three of the victims were married, with the remainder of the victims being either single, separated or divorced.

An occupation was listed for nine of the 13 victims. The victims came from a variety of employment areas including skilled labour/trades (three victims), managerial and professional positions (two victims). Three of the victims were either pensioners or had their occupation listed as home duties at the time of their deaths.

Ten of the victims had blood-alcohol readings at the time of their deaths that was above 100mg/100ml, twice the legal driving limit of 50mg/100ml, with five of the victims recording blood alcohol readings over 200mg/100ml. In some cases, it was noted that the high levels of alcohol in the victims' blood stream would have undoubtedly affected the capacity of the victims to either recognise the presence of a fire and/or their ability to respond to the fire. Smoke inhalation was the major cause of death for alcohol-related fire death victims.

The majority (77%) of these fires were classified as being accidental/preventable. Two of the fatalities were probable murders. The majority of the alcohol-related fires occurred at night, particularly between the hours of 9.30 pm and 5.00 am. Bedrooms and lounge rooms were the most common areas where fires originated. Accidents involving electrical equipment, discarded smoking materials, such as a smouldering cigarette on a lounge and unattended candles were the most common causes. The majority (46%) of these fatal fires occurred in privately owned rental properties.

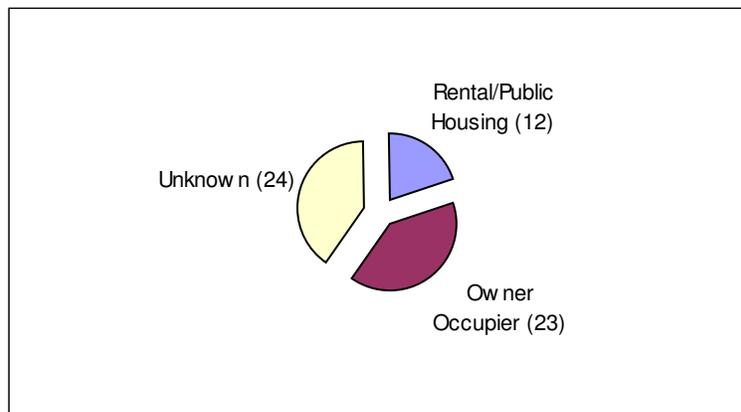
A combination of alcohol and drugs was found in the blood stream of 69% of alcohol-related fire victims.

No smoke alarms were reported in any of these properties.

3.6 Property Type and Ownership

In 12 (16%) of the cases the property type was not recorded. 36 (49%) deaths occurred in one or two family dwellings. 16 (22%) of the fatalities were in hotel complexes, with the majority of these deaths occurring at Childers.

Figure 3.5 – Property Type (excluding Childers) (1/7/1996 – 30/6/2000)



Property ownership was able to be clearly determined in 50 (68%) fire fatality cases. Discounting the Childers fire, of those properties identified, 23 were found to be owner-occupier premises, nine were identified as private rental properties and three were identified as public housing.

3.6.1 Comparison with “Fire Fatalities: Who’s at Risk?” Research Report

With respect to property type, the results of both research projects indicate that one or two family dwellings are the main property type where fire fatalities occur.

The “Fire Fatalities: Who’s at Risk?” Research Report found that there were more than twice as many deaths in rental properties as there were in owner-occupier dwellings. The current research shows that there has been a decrease in the number of fire deaths that occurred in rental properties.

3.6.2 Fire Fatalities 1 July 1991 – 30 June 2000

For the period 1 July 1991 – 30 June 2000, the property type was established for 112 (64%) victims. For the purposes of this analysis, the victims of the Childers fire have been excluded from the analysis. Of the 97 fatalities it was found that 55 (57%) of the deaths occurred in rental properties, with the remaining 43 (44%) of fatalities occurring in owner-occupier dwellings.

It was found that of the 55 deaths that occurred in rental properties, the majority (87%) of fatalities occurred in private rental properties, with the remaining 13% of deaths occurring in public housing.

3.7 Fire category

Using Australian Bureau of Statistics data categorisations, the fire category was identified for 69 (93%) of fire death victims. From this data it was possible to determine whether a death was due to intentional or non-intentional reasons. Intentional reasons include assault by fire and flames and self-harm/suicide. As shown in Table 3.4, 26 (35%) of the fire fatalities were due to intentional reasons. This finding suggests that a number of these fire fatalities that would not be prevented by fire safety education and collaboration with other human service agencies may be required to further discuss the issue of intentional fire fatalities.

Of those deaths that were intentional, eight of the fatalities were classified as suicide and 18 of the deaths were as a result of assault, 15 of which occurred in the Childers fire. There were five cases where there was undetermined intent.

Table 3.2 – Fire category (Intentional or Unintentional)

Cause of Death	Total	%	Total (excluding Childers)	%
Unintentional	43	58%	43	73%
Intentional (Self-harm and assault)	26	35%	11	19%
Undetermined intent	5	7%	5	8%
	74		59	

3.7.1 Comparison with “Fire Fatalities: Who’s at Risk?” Research Report

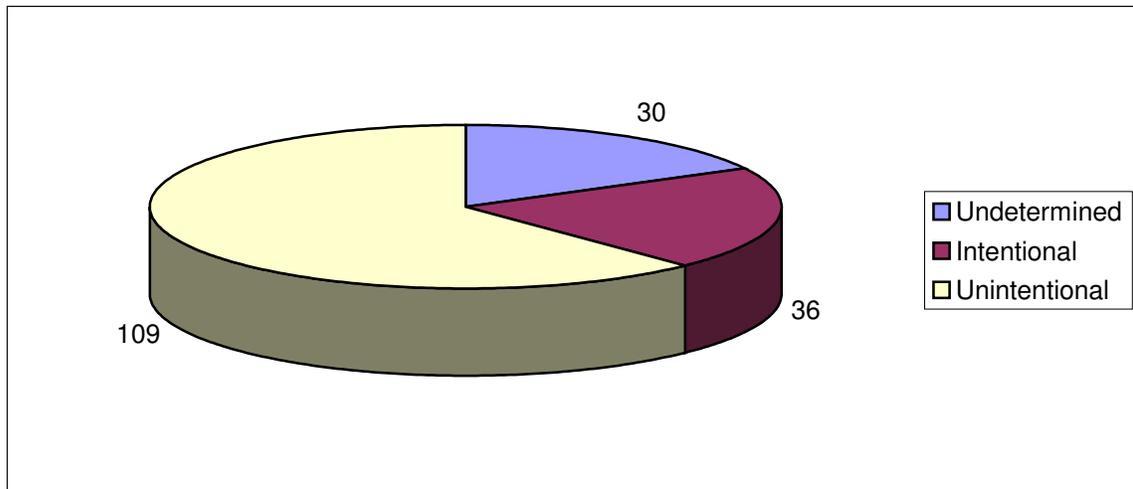
While it has been possible to determine the fire category for the majority of fire fatalities in the current research, some 25 (25%) cases in the 1/7/91 – 30/6/96 research period were unable to be categorised. The “Fire Fatalities: Who’s at Risk?” Research Report found that, where a fire category classification was able to be determined, 87% of fires were accidental/preventable (ie. unintentional) and 13% were deliberately lit with the intention to cause harm either to the person who lit the fire or to others.

When comparing the two research periods, there has been an increase in the proportion of intentional fire fatalities in structures. Even with exclusion of those people who died in the Childers fire, there has been a considerable increase in the proportion of deaths caused by intentional/deliberate means.

3.7.2 Fire Fatalities 1 July 1991 – 30 June 2000

The category of fire could not be determined for 30 (17%) of fire fatalities. Of the remaining 145 cases, it was found that 109 (75%) of fire fatalities occurred in unintentional (ie. accidental/preventable) fires. A third (33%) of fire fatalities were the result of intentional fires (ie. assault/suicide).

Figure 3.6 – Fire Category (1/7/1991 – 30/6/2000)



3.8 Smoke Alarms

It was possible to determine if a smoke alarm was present in the properties at the time of the fire for 50 (68%) of the fire fatality victims.

Excluding the Childers fire, in three of the cases, the fire was within the designed range of a smoke alarm. In two cases where a smoke alarm was present, the cause of death was intentional (ie. murder or suicide). Therefore, it was probably the case that the operation or non-operation of the smoke alarm would not have determined the outcome. There was one fatality where the smoke alarm operated and the occupant was alerted but died as a result of injuries sustained when exiting the building.

3.8.1 Comparison with “Fire Fatalities: Who’s at Risk?” Research Report

The current research confirms the findings from the “Fire Fatalities: Who’s at Risk?” Research Report where smoke alarms were generally not present in the majority of fatal fire incidents.

NOTE TO CONFERENCE DELEGATES

For a full copy of the Structural Fire Fatalities in Queensland Research Report or for further information on other research projects mentioned in the presentation, please contact Judy Newton on jnewton@emergency.qld.gov.au or telephone (07) 3247 8157.