Historical Analysis of Fatalities in Accidental Dwelling Fires between 2005/06 and 2014/15

AUDIENCE

TO BE PRESENTED TO:
Authority
Strategic Management Group

STRATEGY & PERFORMANCE DIRECTORATE
PREVENTION & PROTECTION

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Document Control

Amendment History

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1.0	22/05/2015	L Coles	First Draft

Sign-Off List

Name	Position
DCFO P Garrigan	Deputy Chief Fire Officer
D Appleton	Director of Strategy & Performance
G Oakford	Group Manager Prevention & Protection
J Fielding	Business Intelligence Manager

Distribution List

Name	Position	I / R
Strategic Management Group		
Performance and Scrutiny Committee		

Related Documents

Reference No.	Title	Author	Version & Date
1.0	Analysis of Fatalities in Accidental Dwelling Fires between 1st April 2014 and 31st March 2015	J Fielding	Pending

Ownership

Has it been agreed with the client that this is a publicly owned document?
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If No please state reason why:

1. Agreement

For the purpose of this report the following agreement was made between the client and the Strategy & Performance Directorate.

This work was requested by Deputy Chief Fire Officer Garrigan and received on 01/04/2015.

The Manager[1] has approved this report/ piece of work can be undertaken by the Strategy & Performance Directorate.

If the scope of the work changes, authorisation must be again obtained and would be noted within the version control document sheet.

It was agreed that this report would be produced in draft format by May 2015, and would be sent electronically to the Director of Strategy & Performance and Client for comment.

The Manager / Client agreed that their comments would be received back by June 2015.

The final report, which will always be in PDF format, would be produced by June 2015, subject to receiving comments.

[1] Deb Appleton

2. Summary

The purpose of this report is to analyse the circumstances and contributing factors concerning deaths in Accidental Dwelling Fires attended between 2005/06 and 2014/15. Fatalities in Accidental Dwelling Fires are relatively rare compared to other incidents that Merseyside Fire and Rescue attend, though their impact is most severe to friends and families of the deceased.

In summary this report presents the following findings:

- Since 2005/06 where 11 fire fatalities took place there have been gradual reductions in fire deaths, with a low of 5 deaths for the years 2010/11 and 2011/12. In recent years there have been increases in Accidental Dwelling Fire deaths with 10 occurring during 2014/15.
- Concerning the demographic of fire fatalities, there is little bias towards gender with 37 female fatalities and 42 male fatalities. When age is analysed the risk of death in Accidental Dwelling Fires increases with age. The two age groups at greatest risk are the: *80-84* and *85+* groups.
- When analysed by district, Liverpool had the greatest overall number of fire deaths with 26, closely followed by Wirral with 24. When compared proportionally to incidents per 100,000 population, Wirral has the greatest number of deaths with 7.49 deaths per 100,000 population, compared to Liverpool's 5.52 per 100,000 population.
- Concerning Deprivation and the use of Community and Local Government's (CLG) Indices of Multiple Deprivation (IMD) 2010, the general trend is that fatalities tend to occur more often in deprived areas, with fewer fire deaths affecting affluent areas. When the average age of victims is added to the equation it has been found that victims die younger in deprived areas with victims being older in affluent areas.
- A further analysis was conducted into the lifestyles of victims using Customer Insight Community Profiles developed in partnership with Liverpool John Moores University. The Profiles use over 130 different locally derived datasets to create ten lifestyle based groups or segmentations. Though this analysis produced similar results to the IMD analysis, it did identify one disparate segmentation being "*3 - Middle income residents living in privately owned properties*" where 20 of the 79 fatalities took place.
- Overall the Customer Insight Community Profiles identified three segmentations at greatest risk of having a fire fatality:
    - Segmentation *3 - Middle income residents living in privately owned properties*
    - Segmentation *7 - Young families with high benefit need*
    - Segmentation *10 - Younger, urban population living in high levels of deprivation*
- Concerning Smoke Alarm actuation in 45 cases a smoke alarm was fitted and actuated, however there were 20 occurrences where a smoke alarm was not fitted within the property therefore meaning that the resident had no means of early warning.
- In recent years there has been a general trend where in the majority of incidents where a fatality has occurred the smoke alarm was fitted and actuated.

- When analysing Ignition Sources it has been found that of the 79 fire fatalities, 40 were as a result of *Smokers Materials*. However since a peak in fatalities in 2009/10 where 7 deaths were a result of Smokers materials, there has been a gradual reduction with only 1 death attributable to this ignition source during 2011/12 and 2012/13. However during 2013/14 and 2014/15 there were 3 deaths attributable to *Smokers Materials.*
- When analysing the fire room of origin and the ignition source it has been found that *Smokers Materials* were responsible for the majority of fire fatalities in both the *Living Room* and the *Bedroom*. When the influence of alcohol consumption is taken into account it is apparent that the majority of deaths involving *Smokers Materials* in the *Bedroom* also involved the consumption of alcohol (8 out of 14). Concerning the *Living Room* the same principle does not apply.
- The majority of victims to have perished in Accidental Dwelling Fires were the sole occupants of the dwellings they resided in 52 out of 79 fire fatalities. In combination 63 victims out of 79 were alone at the time of the fire.
- When analysing incidents by month the winter months of November and January have seen the greatest number of fire deaths.
- Concerning fire deaths and day of week, Merseyside Fire & Rescue Authority are most likely to attend such an incident on a Friday and especially Monday.

3. Introduction

The purpose of this report is to analyse fatalities from Accidental Dwelling Fires (ADF) between 2005/06 and 2014/15; analysing the circumstances and socio demographic background of such occurrences; identifying business intelligence to target risk and prevention work.

Compared to other incident types that Merseyside Fire & Rescue Authority (MF&RA) attends, fire fatalities are relatively rare, though their impact is most significant to family members, friends and the community of the deceased.

Fatalities in Accidental Dwelling Fires are reported in Merseyside Fire and Rescue Service's Service Delivery Plan as Key Performance Indicator 45 which is reported to Authority on a quarterly and annual basis.

4. Methodology

The software used in this report includes:

- Microsoft Excel 2013 to interpret and graphically represent figures.
- MapInfo Professional 11 was used to tag incidents with geographical information, including the tagging of incidents with Customer Insight Community Profile[2] data. (Customer Insight Community Profiles has been developed by MF&RA in conjunction with Liverpool John Moores University to identify groups most at risk).
- The calculation for fatalities per 100,000 population is:
  (Count of Fatalities / Population) * 100,000
- Population figures are based on Mid 2013 estimates published by the Office for National Statistics.
- Indices of Multiple Deprivation (IMD) 2010 was utilised to analyse levels of deprivation in the areas where fire deaths took place.[3]

Data used in this report has been supplied by the Merseyside Fire & Rescue Authority Incident Investigation Team; with the coroner ultimately determining the cause of death.

Data used within this report is based on fatal incidents occurring in the home where the motive for the incident is judged to have been accidental. Merseyside Fire & Rescue Authority measure this as Key Performance Indicator 45[4] - *Number of fatalities from Accidental Dwelling Fires*.

Data Limitations:

The findings within this report are based on available data. As fire fatalities are a relatively rare occurrence the volume of data is small. Therefore some conclusions based on the data should be approached with due diligence.

[2]The Customer Insight Community Profiles have been developed for the whole of the Merseyside area. The community profiles uses 130 local datasets aggregated to the 'Output Area' geography. These datasets are analysed and the results are a series of 10 profiles describing the characteristics and lifestyles of communities.
[3] Uses IMD 2010 to create a localised deprivation index, in essence grouping deprivation by 10% bands
[4] The data contained within this report contains data which is still awaiting coroner agreement and as such the figures contained are subject to change.

5. Results

5.1 Location and Lifestyle Analysis

5.1.1 Comparison of Fatalities by District

Chart 1: Breakdown of fatalities in Accidental Dwelling Fires between 2005/06 and 2014/15 by District

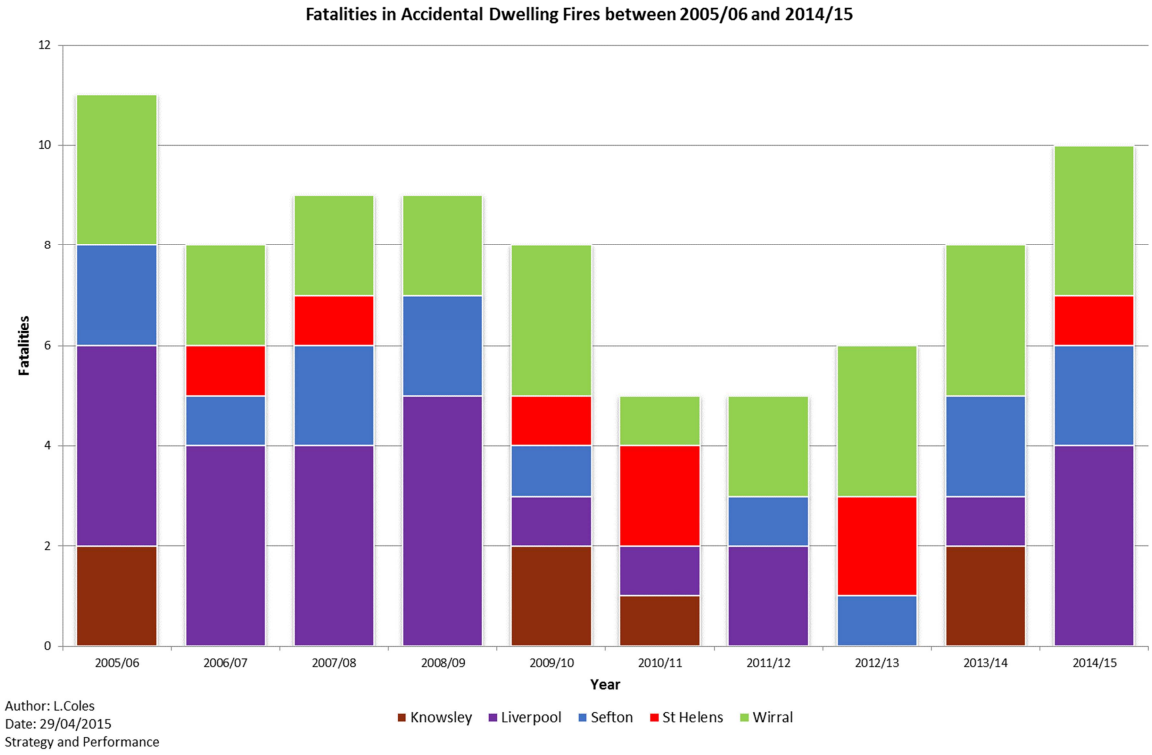


Chart 1 identifies that the number of fatalities in Accidental Dwelling Fires attended by Merseyside Fire and Rescue Service has fallen from a high of 11 for 2005/06 to a low of 5 during 2010/11 and 2011/12. In the past year (2014/15) there were 10 fatalities[5].

Table 1: Comparison of total fatalities by district and populations

Counts	Knowsley	Liverpool	Sefton	St Helens	Wirral	Total
Overall Fatalities	7	26	14	8	24	79
Rate Per 100,000 population	4.79	5.52	5.12	4.54	7.49	5.70
Population	146,086	470,780	273,207	176,221	320,295	1,386,589

Table 1 allows a direct comparison of fatality counts between the five Merseyside districts by aggregating the data to incidents per 100,000 head of population. The table shows that Liverpool has seen 26 fatal fire victims, closely followed by Wirral with 24. When overall population counts are taken into consideration – Wirral proportionally has had the greatest number of

[5]Though the above chart would suggest an upward trend in fatalities since 2012/13; this could be merely coincidental. As fire fatalities are a relatively rare event to base firm conclusions on this data is fraught with difficulty due to that there is not enough data to measure statistical significance.

fatalities with 7.49 per 100,000 population; with Liverpool having a much lower ratio of 5.52 fatalities per 100,000 population.

5.1.2 Comparison of Fatalities and Deprivation

Chart 2: Fatalities in Accidental Dwelling Fires between 2005/06 and 2014/15 linked to deprivation[6]

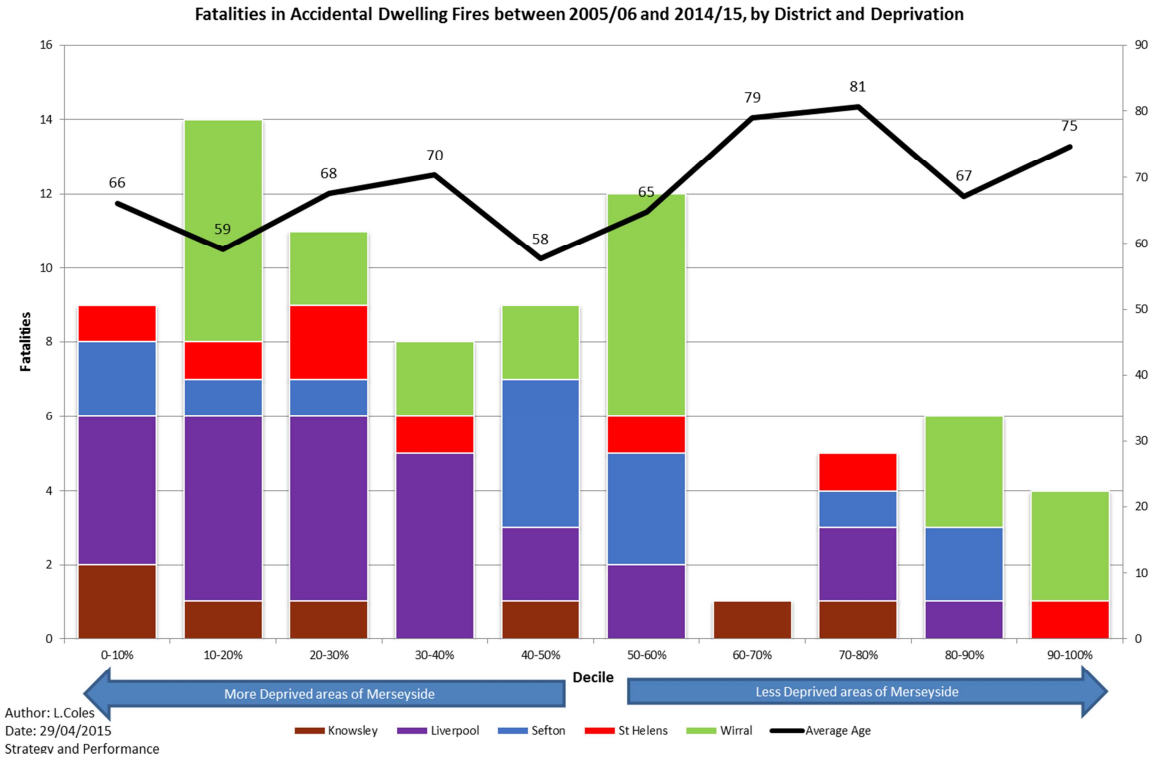


Chart 2 ranks the location of fire fatalities to the level of deprivation in the area the incident took place in, using Indices of Multiple Deprivation 2010 (IMD). The chart demonstrates that as a general rule - fire fatalities tend to occur within deprived areas with fewer fire deaths occurring within affluent areas. Applying a regression analysis to the available data a R^2 value of 0.48 is achieved indicating a moderate statistical link between deprivation and fire fatality.

When analysed at a district level;

- Liverpool on the whole has seen fire deaths in the relatively deprived areas.
- Wirral has a more sporadic pattern with the district having the greatest number of fatalities in the deprived 10-20% decile as well as the moderate 50-60% decile. Wirral also has the greatest number of fire fatalities in the most affluent 80–90% and 90-100% deciles.
- St Helens and Knowsley both tend to match the general Merseyside pattern with fire fatalities occurring in deprived areas.
- Sefton has a different pattern with the majority of their fatalities occurring in the intermediate 40-50% decile and the moderate 50-60% and the affluent 80-90% decile.

[6] As per the CLG document Indices of Multiple Deprivation 2010

The chart also identifies the average ages of the victims by each deprivation decile group. In generic terms the chart identifies that fatal fire victims in deprived areas tend to be younger; particularly in the 40-50% decile where the average age is 58. By contrast in the more affluent areas victims tend to be older with an average age of 81 in the 70-80% decile.

5.1.3 Analysis of Fatalities using Customer Insight Profiling

Table 2: Breakdown of fatalities according to Customer Insight[7] Community Profiles (segmentations) between 2005/06 and 2014/15

Customer Insight Profile Group	Average Age	Knowsley	Liverpool	Sefton	St Helens	Wirral	Total
1 - Wealthy over 50 population living in semi-rural locations *(12.5% of Merseyside)*	74					4	4
2 - Wealthy retirees *(4.8% of Merseyside)*	53	1		2			3
3 - Middle income residents living in privately owned properties *(17.3% of Merseyside)*	68	1	5	1	3	10	20
4 - Average income older residents *(11.9% of Merseyside)*	71	1	1	2		2	6
5 - Students Living in City Centre Locations *(1.8% of Merseyside)*	0						
6 - Young families living in privately owned semi-detached homes *(11.5% of Merseyside)*	78		1	1	1	2	5
7 - Young families with high benefit need *(16.7% of Merseyside)*	63	2	6	2	3	1	14
8 - Residents living in social housing with high need for benefits *(6.3% of Merseyside)*	64	2	1	2			5
9 - Transient population living in poor quality housing *(3.6% of Merseyside)*	55			1		2	3
10 - Younger, urban population living in high levels of deprivation *(13.7% of Merseyside)*	64		12	3	1	3	19
Total	**66**	**7**	**26**	**14**	**8**	**24**	**79**

Table 2 uses the Customer Insight Community Profiles; co-developed in partnership with Liverpool John Moores University. The Community Profiles use locally derived data sources to create a series of customer segmentations - as above.

The table identifies that people living in *deprived* – risk areas (segmentations *7-10*) have the greatest number of fire fatalities - in combination. The most affluent segmentations (*1* and *2*) had the fewest fatalities.

The segmentation at highest risk according to the Customer Insight Community Profiles is *3 – Middle income residents living in privately owned properties* with

[7] The Customer Insight Community Profiles classifies Merseyside into 10 groups in terms of their socio-demographics, lifestyles, culture and behaviour. The titles devised for each segmentation are merely descriptive not prescriptive. *These are used by MF&RA in a similar way that customer segmentation such as MOSAIC or ACORN is used by other organisations.*

20 fatalities; 10 of which occurred in Wirral alone. It is this segmentation where the Customer Insight Community Profiles and Indices of Multiple Deprivation diverge significantly. This is potentially associated with the geography[8] types that the two tools use, described as follows:

- IMD is based on a geography known as "*Lower Layer Super Output Area"* which is an area made up of 400 dwellings or 1600 head of population.
- The Customer Insight Community Profile uses a smaller geography called "*Output Area*" which is 125 properties or 300 head of population. Therefore the Customer Insight Community Profiles are able to identify pockets of this segmentation type in and amongst the larger areas of deprivation and affluence as identified using Indices of Multiple Deprivation.

When the average age of the deceased is analysed, the table identifies that within the more deprived segmentations (7 to 10) the age of victims is generally younger than that of other segmentations, roughly matching the previous Indices of Multiple Deprivation based analysis. Of the most populous segmentation (*3 - Middle income residents living in privately owned properties*) the average age of victims is 68, 2 more than the Merseyside Average of 66.[9]

In conclusion the segmentations with the greatest occurrence of fatalities are:

- 3 - Middle income residents living in privately owned properties
- 7 - Young families with high benefit need
- 10 - Younger, urban population living in high levels of deprivation

[8] There are a variety of Geography types, more common types include: district, ward and postcode. Lower Layer Super Output Area and Output Area are in essence smaller constitutional parts of larger geographies

[9] A further breakdown of this information is located in the Appendices of this report

5.1.4 Smoke Alarm Analysis

Smoke alarms provide an important early warning to residents should a fire occur within a property. It must be emphasised that in the vast majority of incidents the actuation of a smoke alarm can and do save lives; however this is not always the case as personal mitigating circumstances like: mobility, prescription medicines and alcohol consumption can prevent a victim finding safety regardless of the actuation of a smoke alarm.

The following section analyses the performance of smoke alarms.

Table 3: Smoke Alarm Functionality & HFSC Status

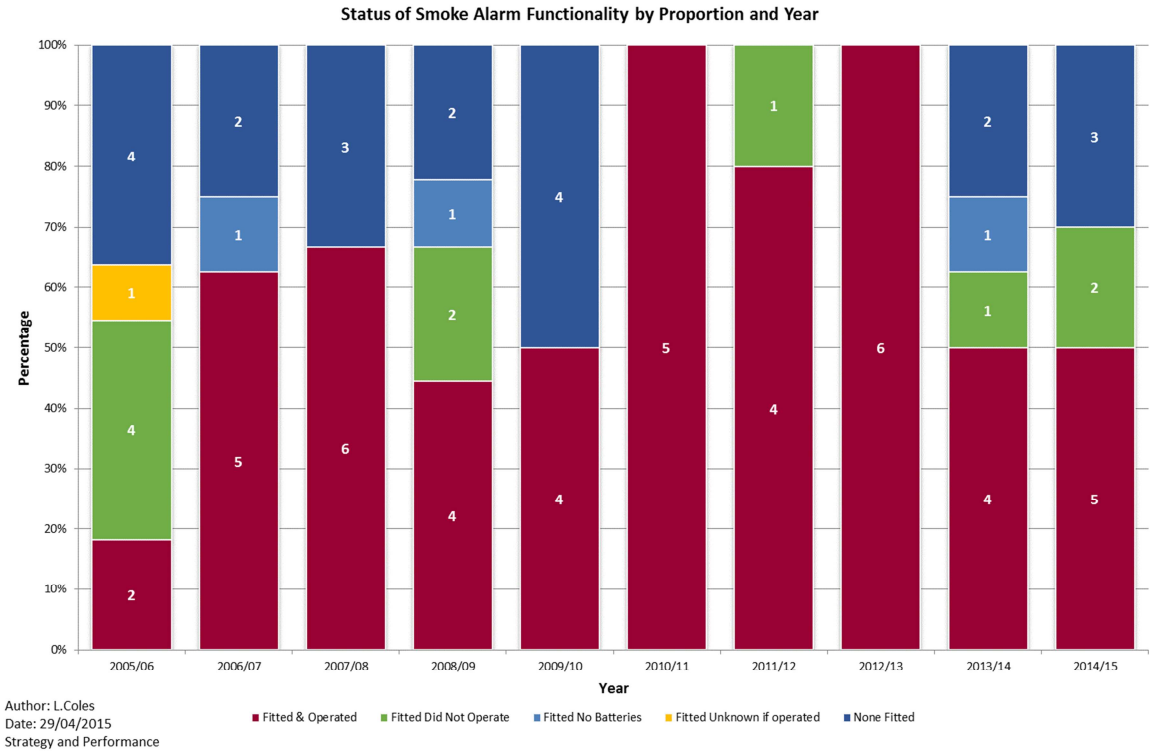
	HFSC				
Smoke Alarm Status	**Yes**	**No**	**Unknown**	**Total**	**%**
Fitted & Operated	37	5	3	45	57.0%
Fitted Did Not Operate	5	4	1	10	12.7%
Fitted No Batteries		3		3	3.8%
Fitted Unknown if operated		1		1	1.3%
None Fitted	1	16	3	20	25.3%
Total	**43**	**29**	**7**	**79**	**100%**

Table 3 identifies that in the majority of occurrences (45 or 57%) a smoke alarm was fitted and operational. In 10 cases the smoke alarm was fitted and yet did not operate, this is possibly due to the nature of the fire itself or the positioning of the smoke detector.

In 3 (3.8%) cases there were smoke alarms fitted, but with no batteries therefore not providing the early warning system a smoke alarm provides. Also of note is that in 20 cases (25.3%) there was no smoke alarm fitted meaning no early warning system being available in the property.

When analysing smoke alarm functionality against HFSC status, 54.4% (43/79) of properties had previously had a HFSC. Of these properties 37 (86%) had a smoke alarm which was fitted and operated. This is compared with 29 (36.7%) properties that had not had a HFSC prior to the incident. Only 17.2% of the properties which had not had a HFSC had a smoke alarm fitted and operated. 55.2% of properties did not have a HFSC or any smoke alarms fitted.

Chart 3: Status of Smoke Alarm Functionality by Proportion and Year



Author: L.Coles
Date: 29/04/2015
Strategy and Performance

Chart 3 graphically identifies that between 2010/11 and 2012/13 there has been a general trend where in the majority of incidents where a fatality has occurred - the smoke alarm was fitted and actuated. Though recently there has been an increase of fire alarms being fitted - but did not operate or occurrences where a smoke alarm not being fitted at all, yet there is too little data available to indicate this a growing trend.

5.2 Causal Factor Analysis

5.2.1 Ignition Source

Chart 4: Breakdown of Ignition Source by Year

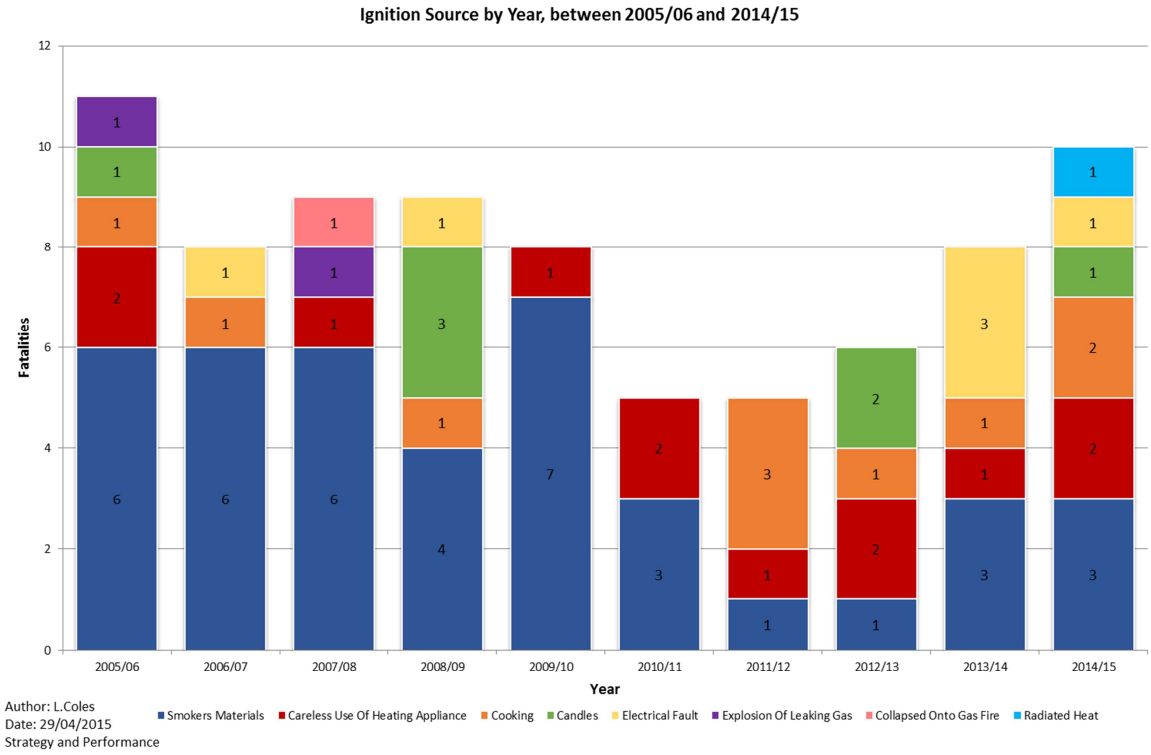


Chart 4 provides a breakdown, by year of the ignition sources involved in fatal fires. The chart identifies that deaths involving Smokers Materials (dark blue) had been consistently high between 2005/06 and 2009/10, after this period fire deaths involving Smoking Materials had fallen markedly until 2013/14. In the last year (2014/15) Smokers Materials accounted for the highest number of fatalities (3).Fatalities involving Heating Appliances (red) have remained relatively consistent.

Fatalities linked directly to cooking and cooking practices (orange) have fluctuated between the years, with the exception of 3 incidents during 2011/12. As a result of this peak Fire and Rescue service personnel have used targeted campaigns promoting fire safety in the kitchen.

During the ten year period analysed Smokers Materials account for 40 deaths equating to 50.6% of total fire deaths, this is followed by Careless use of Heating Appliances with 12 deaths (or 15.2%) then Cooking related fires with 10 deaths (or 12.7%).

A breakdown of the ignition sources is contained in the following table (4).

Table 4: Causal factors involved in Accidental Dwelling Fatalities

Ignition Source		Total
Smokers Materials		40
Careless Use Of Heating Appliance	Careless Use Of Heating Appliance	12
Cooking	Cooking - Accidental Ignition Of Clothing	3
	Cooking - unattended food left on hob	2
	Cooking - Unknown	2
	Chip Pan Left Unattended in Kitchen	1
	Cooking - Misuse of Microwave	1
	Cooking - Residual Fat Ignited in Frying Pan	1
Candles	Candles	7
Electrical Fault	Electrical	4
	Electrical - Fridge burning out	1
	Mains Electric Fault Overload	1
Explosion Of Leaking Gas	Ignition Of Gas From Cooker - Gas Leak	1
	Spark From Fridge/Freezer - Ignition of gas mistakenly left on	1
Radiated Heat	Radiated Heat - from table top lamp	1
Collapsed Onto Gas Fire	Collapsed Onto Gas Fire	1
Grand Total		79

5.2.2 Room of Origin and Ignition Source

Table 5: Room of Origin and Ignition Source with whether the victim had consumed alcohol prior to the incident

			Of Which Involved Alcohol		
Room of Origin	**Ignition Cause**	**Total**	**Yes**	**No**	**Unknown**
Living Room	Smokers Materials	20	8	9	3
	Careless Use Of Heating Appliance	8	3	5	
	Candles	3	1	2	
	Collapsed Onto Gas Fire	1		1	
	Radiated Heat	1		1	
	Sub Total	**33**	**12**	**18**	**3**
Bedroom	Smokers Materials	14	8	3	3
	Careless Use Of Heating Appliance	4		4	
	Candles	3	2	1	
	Electrical Fault	3	2	1	
	Sub Total	**24**	**12**	**9**	**3**
Kitchen	Cooking	9	3	3	3
	Smokers Materials	4	3	1	
	Electrical Fault	2		1	1
	Explosion Of Leaking Gas	2		2	
	Sub Total	**17**	**6**	**7**	**4**
Bedsit (Open plan sleeping and living area)	Smokers Materials	2	2		
	Sub Total	**2**	**2**		
Bathroom	Candles	1	1		
	Sub Total	**1**	**1**		
Hallway	Electrical Fault	1		1	
	Sub Total	**1**		**1**	
Caravan	Cooking	1		1	
	Sub Total	**1**		**1**	
Total		**79**	**33**	**36**	**10**

Table 5 provides a breakdown of the fire's room of origin, its respective ignition source and whether the victim was under the influence of alcohol[10] at the time. The table identifies that *Smokers Materials* have a root cause in the majority of fires in the *Living Room* and *Bedroom*; with *Careless Use of Heating Appliance* also being common to these rooms.

Taking the influence of alcohol into account; 33 or 41.8% of fatalities are linked to the consumption of alcohol. Where alcohol use is combined with *Smokers Materials* then 52.2% deaths are linked to this combination of factors.

The influence of alcohol is greatest in the *Bedroom* where 12 of the 24 fire deaths involved alcohol consumption. Regarding deaths in the *Living Room*,

[10] A further piece of analysis was conducted analysing whether the use of Alcohol was influenced by gender. The analysis identified that the use or not of alcohol was roughly equal between males and females.

alcohol was not as significant a contributory factor with 12 of the 33 involving alcohol use.

Within the *Kitchen*, *Cooking* and its associated activities is the most common cause of fire death with 9 deaths in combination.

5.2.3 Habitation and Carer Status

Table 6: Habitation status at time of incident and whether deceased was known to have a carer

Status	Lived Alone		Cohabited		Other		
Carer	Alone at Time	Accompanied	Alone at Time	Accompanied	Alone at Time	Accompanied	Total
Yes	22	0	1	5	0	0	28
No	24	1	6	8	5	2	45
Unknown	5	0	1	0	0	0	6
Total	**51**	**1**	**8**	**13**	**4**	**2**	**79**

Table 6 identifies that the majority of victims (51 from 79 or 63.8%) *Lived Alone* and were *Alone at the Time* of the incident. Of the victims to have *Cohabited*, 8 were Alone at the Time with 13 being accompanied. In combination 63 of the 79 victims (79.7%) died alone.

Concerning whether a victim had need of a carer or not, the majority of victims did not have a carer (45 of 79, or 57%). Many of the victims who *Lived Alone* (22 of 52, or 42.3%) had need of a carer.

Table 7: Habitation status at time of incident and whether deceased was known to have a carer – OVER 60 Age Group Only

Status	Lived Alone		Cohabited		Other		
Carer	Alone at Time	Accompanied	Alone at Time	Accompanied	Alone at Time	Accompanied	Total
Yes	19	0	1	3	0	0	23
No	12	0	2	3	2	0	19
Unknown	4	0	0	0	0	0	4
Total	**35**	**0**	**3**	**6**	**2**	**0**	**46**

Table 7 identifies that the majority of victims above the age of 60 (35 of 46 or 76.1%) *Lived Alone* and were *Alone at the Time* of the incident. Of the victims above the age of 60 to have Cohabited, 6 were *Accompanied with 3 being Alone at the Time.* Overall 38 of the 46 fatalities (or 82.6%) were *Alone at the Time* of the incident.

Given the age group analysed, 50% or (23) of the victims had access to carers. The majority of victims who *Lived Alone* required carers, though given the age range under analysis this figure is much more pronounced - with 19 victims out of 35, (or 54.3%).

5.3 Demographic Analysis

Table 8: Fatalities by Age and Gender (with fatalities per 100,000 population ratio)[11]

Age Group	Male	Female	Total
0-4	0 (0)	0 (0)	0 (0)
5-9	0 (0)	0 (0)	0 (0)
10-14	0 (0)	0 (0)	0 (0)
15-19	0 (0)	0 (0)	0 (0)
20-24	0 (0)	0 (0)	0 (0)
25-29	0 (0)	2 (4.3)	2 (2.1)
35-39	1 (2.7)	0 (0)	1 (1.3)
40-44	3 (6.7)	1 (2.1)	4 (4.4)
45-49	3 (6.3)	8 (15.6)	11 (11.1)
50-54	5 (10.5)	3 (5.9)	8 (8.1)
55-59	3 (7.1)	4 (9.0)	7 (8.1)
60-64	4 (10.2)	1 (2.5)	5 (6.3)
65-69	2 (5.5)	1 (2.6)	3 (4.0)
70-74	1 (3.8)	4 (13.0)	5 (8.7)
75-79	7 (4.5)	2 (7.2)	9 (18.0)
80-84	4 (26.7)	7 (31.8)	11 (29.7)
85+	9 (89.1)	4 (19.0)	13 (41.7)
Total	**42 (6.2)**	**37 (5.2)**	**79 (5.7)**

Table 8 provides the count of fire deaths by age and gender along with the ratio of fire deaths per 100,000 head of population. The table identifies three age groups at greatest risk from a fatality in an Accidental Dwelling Fire, including the: 45-49, 80-84 and 85+ age groups. When the ratio of deaths to proportion of population is taken into account it is very apparent that with age the risk of mortality as a result of an Accidental Dwelling Fire increases significantly. 10 of the 11 fatalities in the 45-49 age group had alcohol in their system at the time of the incident. Applying a regression analysis to the available data a R^2 value of 0.62 is achieved indicating a moderate statistical link between age and fire related mortality.

Concerning gender there is little bias towards either sex, with 37 (46.8%) female victims and 42 (53.2%) male victims.

Concerning racial profiling of the deceased; 74 victims were described as White – British, 1 was described as White – Irish and 4 from the category “Other”. When analysed proportionally 93.7% of victims were White British just slightly higher than the Census 2011 population ratio of 91.8%.

[11] Value is based on population of each age range by gender opposed to overall population.

5.4 Temporal Analysis

5.4.1 Fatalities by Month

Chart 5: Fatalities in Accidental Dwelling Fires by Month

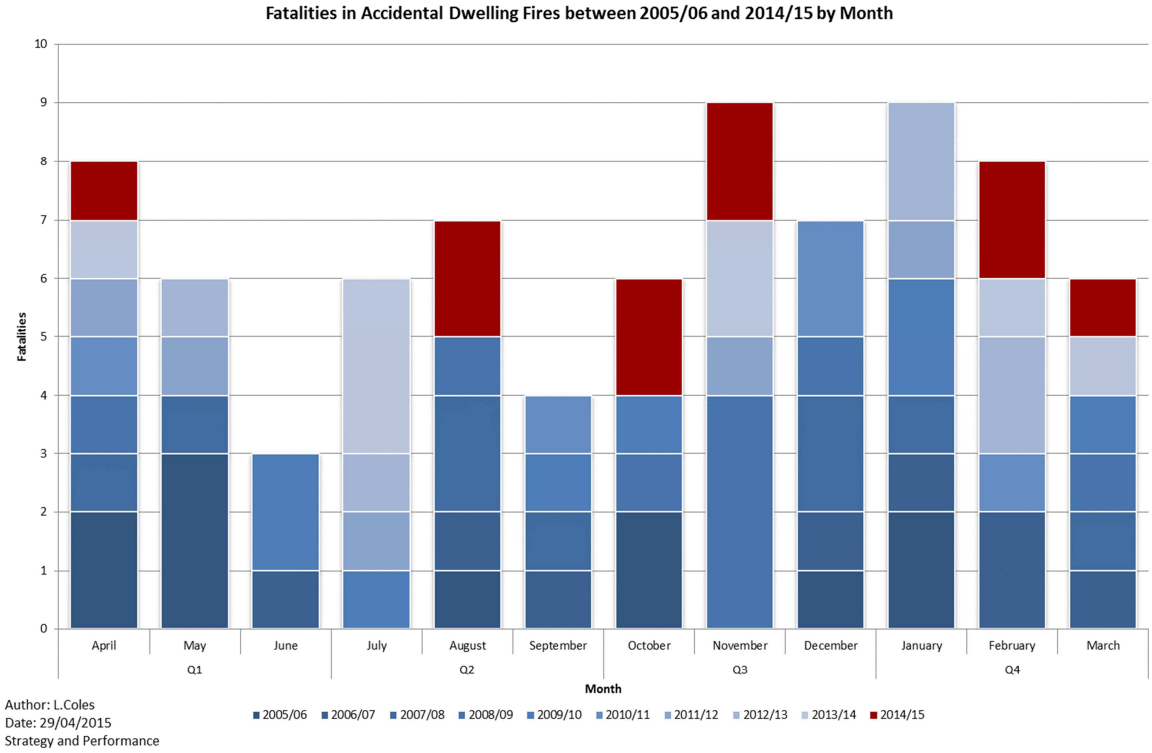


Chart 5 identifies that there is a strong link between fatalities in Accidental Dwelling Fires and seasonality with the winter months of: November and January in particular seeing high fatality numbers.

Chart 6: Fatalities in Accidental Dwelling Fires by Month and Ignition Source

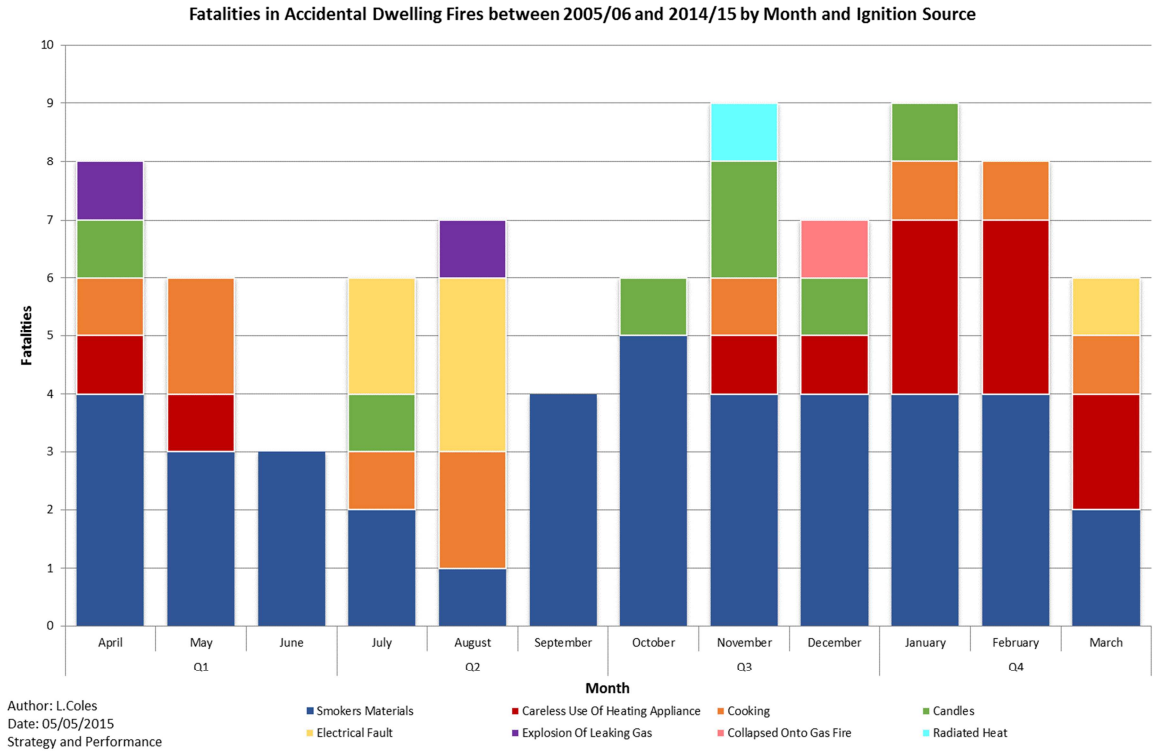


Chart 6 analyses ignition source by month for the period between 2005/06 and 2014/15. The chart identifies little evidence of seasonal trends in connection with an Accidental Dwelling Fire's ignition source.

Fatalities involving *Smokers Materials* have relatively low levels of death during the summer months of July and August with secondary lulls during the month of March.[12]

When *Smokers Materials* are analysed by quarter the overall numbers of fatalities are relatively consistent with: 10 fatalities in Quarter 1, 7 in Quarter 2, 13 in Quarter 3 and 10 in Quarter 4.

During the winter months of January and February where the weather is most inclement *Careless Use of Heating Appliance* is more common.
Cooking related deaths occur mainly during the Months of: May and August - the significance of this fluctuation is difficult to determine given the small scale of the dataset used.

[12] The following comments are hypothetical and should not be interpreted as truth: *July* and *August* tend to be peak months for holiday activity, also given the generally clement weather conditions people tend to spend more time outdoors. *March* is the first month of spring where weather improves, this transition from winter to spring can at least temporarily have a positive impact on individuals behaviours, both physically (gardening, walks etc) and psychologically (Seasonal Affective Disorder).

5.4.2 Fatalities by Day of Week

Chart 7: Fatalities between 2005/06 and 2014/15 by day of week

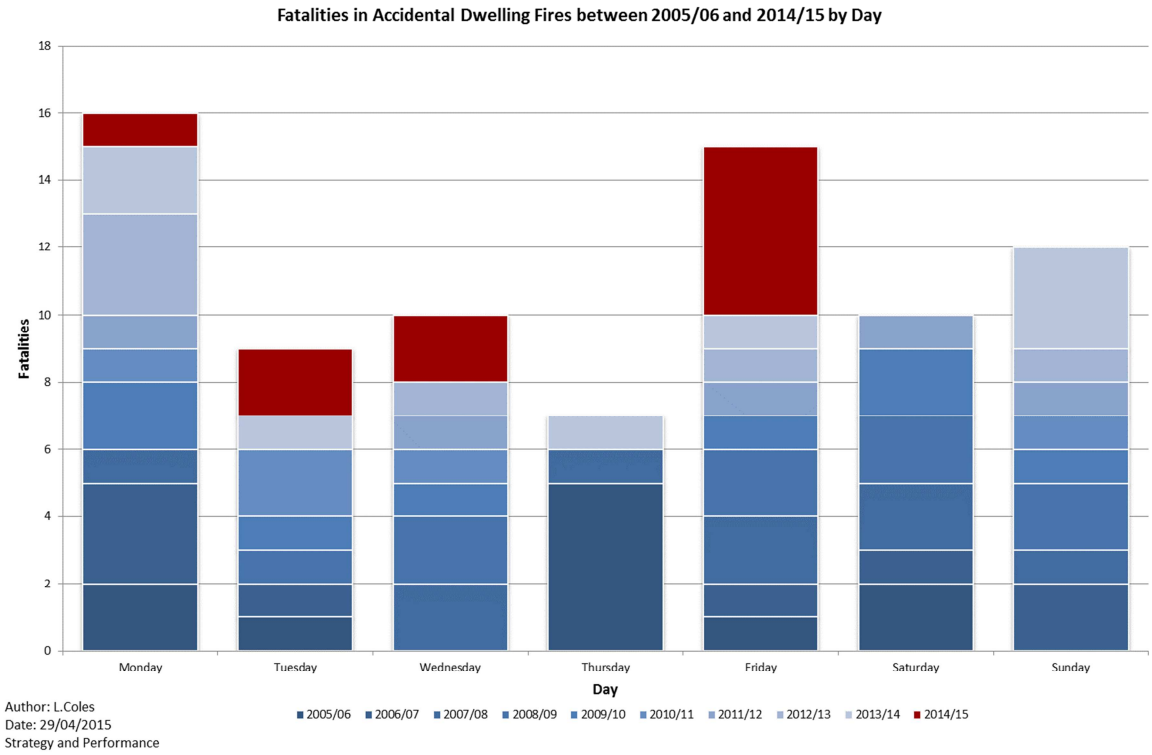


Chart 7 provides an analysis of fatalities in Accidental Dwelling Fires by day of week. The chart identifies two peaks, with 16 deaths occurring on Mondays and 15 deaths on Fridays.

Fatalities occurring over the weekend period (Saturday, Sunday and Monday) can be explained to an extent by behaviours associated with revelry and its unintended side effects including intoxication and unsafe cooking practices.[13]

[13] Please note that of "late fire calls" i.e. incidents MF&RA attend after the initial fire took place, only one incident took place on a Monday.

6. Appendices

Table 9: Breakdown of age and Customer Insight Community Profile.

Segmentation	Total	Average Age	25-29	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85+
1 - Wealthy over 50 population living in semi-rural locations	4	74				1						1		2
2 - Wealthy retirees	3	53				1	1	1						
3 - Middle income residents living in privately owned properties	20	68			2	1	3	1	1		2	4	4	2
4 - Average income older residents	6	71				1	1				1	1	1	1
5 - Students Living in City Centre Locations	0	0												
6 - Young families living in privately owned semi-detached homes	5	78					1						2	2
7 - Young families with high benefit need	14	63	1		1	2	1	1	2		1	2	2	1
8 - Residents living in social housing with high need for benefits	5	64				1		2			1			1
9 - Transient population living in poor quality housing	3	55				1		1	1					
10 - Younger, urban population living in high levels of deprivation	19	64	1	1	1	3	1	1	1	3		1	2	4
Total	**79**	**66**	**2**	**1**	**4**	**11**	**8**	**7**	**5**	**3**	**5**	**9**	**11**	**13**

Table 9 provides a complete breakdown of age group and where the victims perished according to the Customer Insight Community Profile. As previously mentioned within the report there are two risk age groups: 80-84 and 85+ and the profile at greatest risk is segmentation "3 - Middle income residents living in privately owned properties".

When segmentation 3 is analysed in greater detail it identifies clustering between the age groups of 70 - 74 to 80 – 84 with a total of 10 fatalities. There is a secondary peak within this segmentation group particularly within the 50-54 age groups with 3 fatalities.

It must also be noted that within segmentation "10 – Younger, urban population living in high levels of deprivation" the 85+ age group in particular is at greatest risk of fatality in Accidental Dwelling Fire.

The table does identify that younger victims died in the more deprived profiles (segmentations 7 and 10) with particular clustering in the 45-49 age group with 5 fatalities in total for these segmentations.