

Not Protected



*“An Excellent Authority”*

## **Historical Analysis of Fatalities in Accidental Dwelling Fires between 2004/05 and 2012/13**

### **AUDIENCE**

**TO BE PRESENTED TO:  
Authority  
Strategic Management Group**

This is an unpublished work, the Copyright in which vests in Merseyside Fire & Rescue Service. All rights reserved. The information contained herein is the property of Merseyside Fire & Rescue Service, and is supplied without liability for errors or omissions. No part may be reproduced or used except as authorised by Contract or other written permission. The Copyright and the foregoing restriction on reproduction and use extend to all media in which information may be embodied ©

**STRATEGIC PLANNING DIRECTORATE  
PREVENTION & PROTECTION**

**Date work received: 01/04/2013**

**Date work completed: 17/04/2013**

Page 1 of 20

X:\Data & Projects\Projects\Fatalities 9 Years\9 Year Fatality Trend Analysis v1.2.docx

## Document Control

### Amendment History

Version / Issue No.	Date	Author	Remarks / Reason for Change
1.0	12/04/2013	J Fielding	
1.1	15/04/2013	J Fielding	Following feedback as per D Appleton and M Platt
1.2	16/04/2013	J Fielding	Following feedback as per J Crimmins

### Sign-Off List

Name	Position
DCFO P Garrigan	Deputy Chief Fire Officer
D Appleton	Director of Strategic Planning
AM M Platt	Director of Prevention & protection

### Distribution List

Name	Position	I / R
Strategic Management Group		
Authority		

### Related Documents

Reference No.	Title	Author	Version & Date
1.0	Analysis of Fatalities in Accidental Dwelling Fires between 1 <sup>st</sup> April 2012 and 31 <sup>st</sup> March 2013	R Hanson	17/04/2013

### Ownership

Has it been agreed with the client that this is a publicly owned document?      Yes/~~No~~

If Yes please state URL: <http://www.merseyfire.gov.uk>

If No please state reason why:

<b>1.</b>	<b>AGREEMENT</b> .....	<b>4</b>
<b>2.</b>	<b>SUMMARY</b> .....	<b>5</b>
<b>3.</b>	<b>INTRODUCTION</b> .....	<b>6</b>
<b>4.</b>	<b>METHODOLOGY</b> .....	<b>7</b>
<b>5.</b>	<b>RESULTS</b> .....	<b>8</b>
<b>5.1</b>	<b>Location and Lifestyle Analysis</b> .....	<b>8</b>
5.1.1	Comparison of Fatalities by District .....	8
5.1.2	Comparison of Fatalities and Deprivation .....	9
5.1.3	Analysis of Fatalities using Customer Insight Profiling.....	10
<b>5.2</b>	<b>Causal Factor Analysis</b> .....	<b>12</b>
5.2.1	Ignition Source.....	12
5.2.2	Room of Origin and Ignition Source .....	13
5.2.3	Habitation and Carer Status.....	14
<b>5.3</b>	<b>Demographic Analysis</b> .....	<b>15</b>
<b>5.4</b>	<b>Temporal Analysis</b> .....	<b>16</b>
5.4.1	Fatalities by Month .....	16
5.4.2	Fatalities by Day of Week.....	18
<b>6.</b>	<b>CONCLUSION</b> .....	<b>18</b>
<b>7.</b>	<b>APPENDICES</b> .....	<b>20</b>

## **1. Agreement**

For the purpose of this report the following agreement was made between the client and the Strategic Planning Directorate.

This work was requested by Deputy Chief Fire Officer and received on 01/04/2013.

The Manager<sup>1</sup> has approved this report/ piece of work can be undertaken by the Strategic Planning 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 12/04/2013, and would be sent electronically to the Director of Strategic Planning and Client for comment.

The Manager / Client agreed that their comments would be received back by 22/04/2013.

The final report, which will always be in PDF format, would be produced by 23/04/2013, subject to receiving comments.

---

<sup>1</sup> Deb Appleton

## 2. Summary

The purpose of this report is to analyse the circumstances and contributing factors to accidental dwelling fires attended between 2004/05 and 2012/13. Fatalities in accidental dwelling fires are comparatively rare compared to other incidents that Merseyside Fire and Rescue attend, though their impact is most severe to friends and loved ones of the deceased.

In summary this report presents the following findings:

- Since 2004/05 when 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 the past year (2012/13) there were 6 reported Accidental Dwelling Fatalities.
- Concerning the demographic of fire fatalities, there is no bias towards gender with 36 fatalities in each gender. When age is analysed the risk of fatality in accidental dwelling fires increases with age. The three age groups at greatest risk are the: 45-49, 75-79 and 80-84 groups.
- When analysed by district, Liverpool had the greatest overall number of fire deaths with 23, closely followed by Wirral with 22. When compared proportionally to incidents per 100,000 population, Wirral is in fact at greatest risk with 6.88 deaths per 100,000 head of population, compared to Liverpool's 4.93 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 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 are 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 19 of the 72 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

## Not Protected

- Segmentation 10 - Younger, urban population living in high levels of deprivation
- When analysing Ignition Sources it has been found that of the 72 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 2012/13.
- 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 13). 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, 49 out of 72 fire fatalities.
- When analysing incidents by month the winter months of December and January have seen the greatest number of fire deaths.
- Concerning fire deaths and day of week, Merseyside fire & Rescue Service are most likely to attend such an incident on a: Saturday, Sunday and especially Monday.

### **3. Introduction**

The purpose of this report is to analyse fatalities from accidental dwelling fires (ADF) between 2004/05 and 2012/13; 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 Service (MF&RS) 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 Local Performance Indicator (LPI)<sup>47</sup> which is reported to Authority on a quarterly and annual basis.

## 4. Methodology

The software used in this report includes:

- Microsoft Excel 2010 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<sup>2</sup> data. (Customer Insight Community Profiles has been developed by MF&RS 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 Census 2011 overall population figures.
- Indices of Multiple Deprivation (IMD) 2010 was utilised to analyse levels of deprivation in the areas where fire deaths took place.<sup>3</sup>

Data used in this report has been supplied by the Merseyside Fire & Rescue Service 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 Service measure this as LPI45<sup>4</sup> - *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.

---

<sup>2</sup>Please note: at the time of writing this report the Customer Insight Community Profiles are at a Pilot Stage, with a successful pilot taking place in the Wirral. The Community Profiles are currently live in both Liverpool and Wirral districts. The Customer Insight Community Profiles uses 130 sourced datasets (both local and national) aggregated to Output Area geography. The system analyses these sources and collates the information into ten risk based profiles.

<sup>3</sup> Uses IMD 2010 to create a localised deprivation index, in essence grouping deprivation by 10% bands

<sup>4</sup> 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 2004/05 and 2012/13 by District

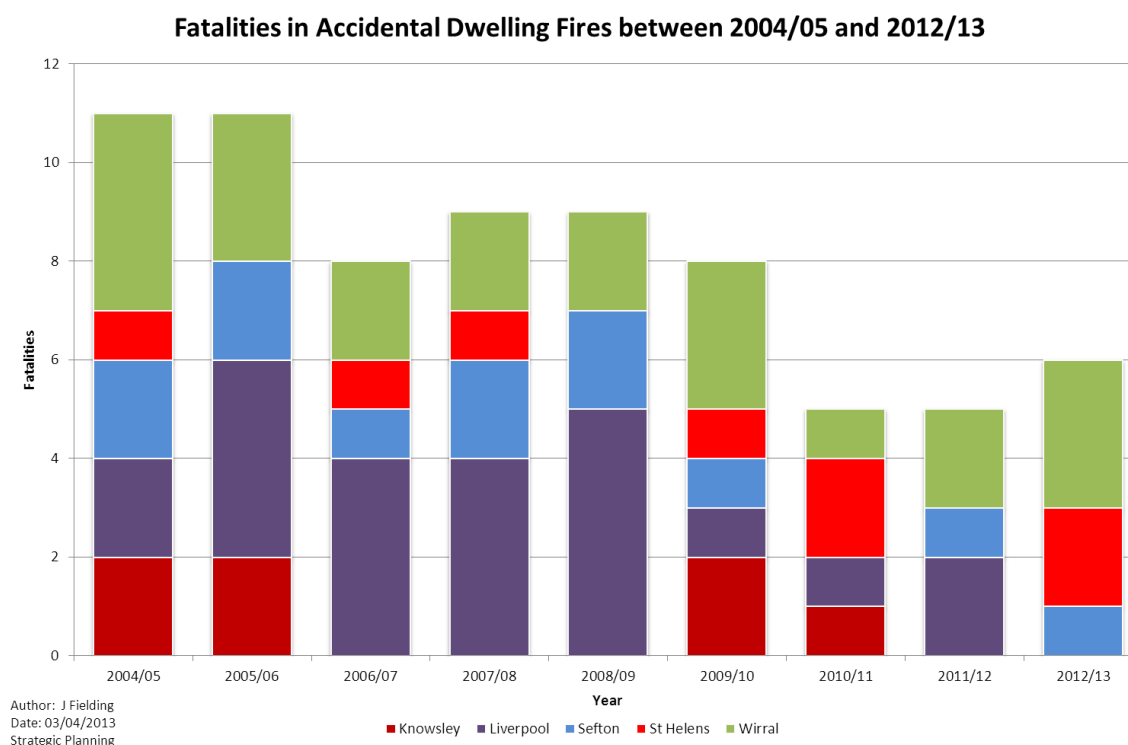


Chart 1 identifies that the number of fatalities in accidental dwelling fires attended by Merseyside Fire and Rescue Service has fallen from a high of 11 for both 2004/05 and 2005/06 to a low of 5 during 2010/11 and 2011/12. In the past year (2012/13) a total of 6 fire fatalities took place.

Table 1: Comparison of total fatalities by district and populations

Counts	Knowsley	Liverpool	Sefton	St Helens	Wirral	Merseyside
Overall Fatalities	7	23	12	8	22	72
Rate per 100,000 population	4.80	4.93	4.38	4.56	6.88	5.21

Table 1 allows a direct comparison of fatality numbers between the five Merseyside districts by aggregating the data to incidents per 100,000 head of population. The table shows that overall Liverpool has witnessed the greatest number of incidents with 23, followed by Wirral with 22. When overall population counts are taken into consideration – Wirral has in fact proportionally witnessed the greatest number of fatalities with 6.88 per 100,000 population, though Liverpool had the highest actual number of victims the district had a lower ratio of 4.93 fatalities per 100,000 population.



## 5.1.2 Comparison of Fatalities and Deprivation

Chart 2: Fatalities in Accidental Dwelling Fires between 2004/05 and 2012/13 linked to deprivation<sup>5</sup>

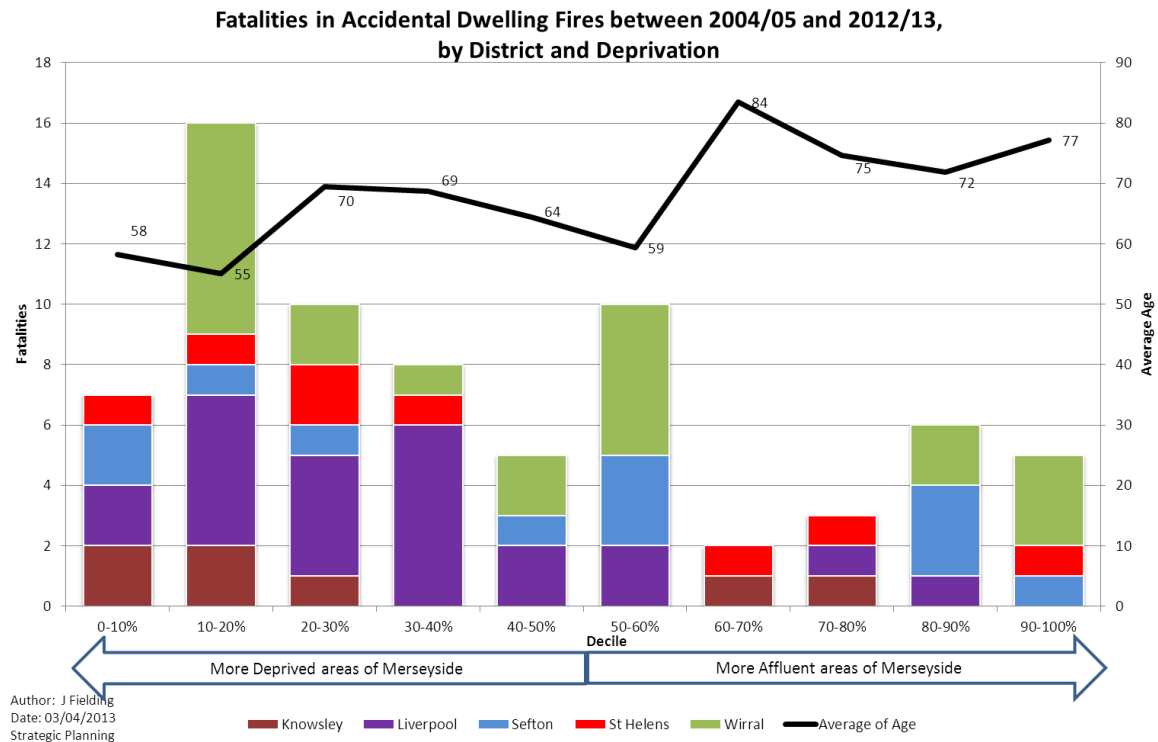


Chart 2 ranks the location of fire fatalities to the level of deprivation in the area the incident took place in, using Indices of Multiple Deprivation 2010 (IMD). The chart demonstrates that as a general rule - fire fatalities tend to occur within deprived areas with fewer fire deaths occurring within affluent areas. Applying a regression analysis to the available data a R<sup>2</sup> value of 0.67 is achieved indicating a moderate statistical link between deprivation and fire fatality.

When analysed at a district level;

- Liverpool on the whole has witnessed fire deaths in the relatively deprived areas particularly within the 30-40% decile.
- Wirral has a more sporadic pattern with the district witnessing 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 90-100% decile.
- St Helens and Knowsley both tend to match the general Merseyside pattern of fire fatalities occurring in deprived areas.
- Sefton has a different pattern with the majority of their fatalities occurring in the affluent 80-90% decile and the intermediate 50-60% decile.

<sup>5</sup> 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 simple terms the chart identifies that fatal fire victims in deprived areas tend to be younger; particularly in the 10-20% decile where the average age is 55. By contrast in the more affluent areas victims tend to be older with an average age of 77 in the 90-100% decile.

### 5.1.3 Analysis of Fatalities using Customer Insight Profiling

Table 2: Breakdown of fatalities according to Customer Insight<sup>6</sup> Community Profiles between 2004/05 and 2012/13

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)	77			2		2	4
2 - Wealthy retirees (4.8% of Merseyside)	57	1					1
3 - Middle income residents living in privately owned properties (17.3% of Merseyside)	70	1	4	1	4	9	19
4 - Average income older residents (11.9% of Merseyside)	81		1	2		1	4
5 - Students Living in City Centre Locations (1.8% of Merseyside)	0						0
6 - Young families living in privately owned semi-detached homes (11.5% of Merseyside)	67		1		1	3	5
7 - Young families with high benefit need (16.7% of Merseyside)	58	1	7	2	2	1	13
8 - Residents living in social housing with high need for benefits (6.3% of Merseyside)	61	4	1	2			7
9 - Transient population living in poor quality housing (3.6% of Merseyside)	50			1		3	4
10 - Younger, urban population living in high levels of deprivation (13.7% of Merseyside)	62		9	2	1	3	15
<b>Total</b>	<b>65</b>	<b>7</b>	<b>23</b>	<b>12</b>	<b>8</b>	<b>22</b>	<b>72</b>

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) in combination have the greatest number of fire fatalities. The most affluent segmentations (1 and 2) witness 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 19 fatalities; 9 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 types that the two tools use, described as follows:

<sup>6</sup> 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.

## Not Protected

- 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 much 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 fatalities is 70, 5 more than the Merseyside Average of 65.<sup>7</sup>

In conclusion the segmentations at greatest risk 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

---

<sup>7</sup> A further breakdown of this information is located in the Appendices of this report

## 5.2 Causal Factor Analysis

### 5.2.1 Ignition Source

Chart 3: Breakdown of Ignition Source by year

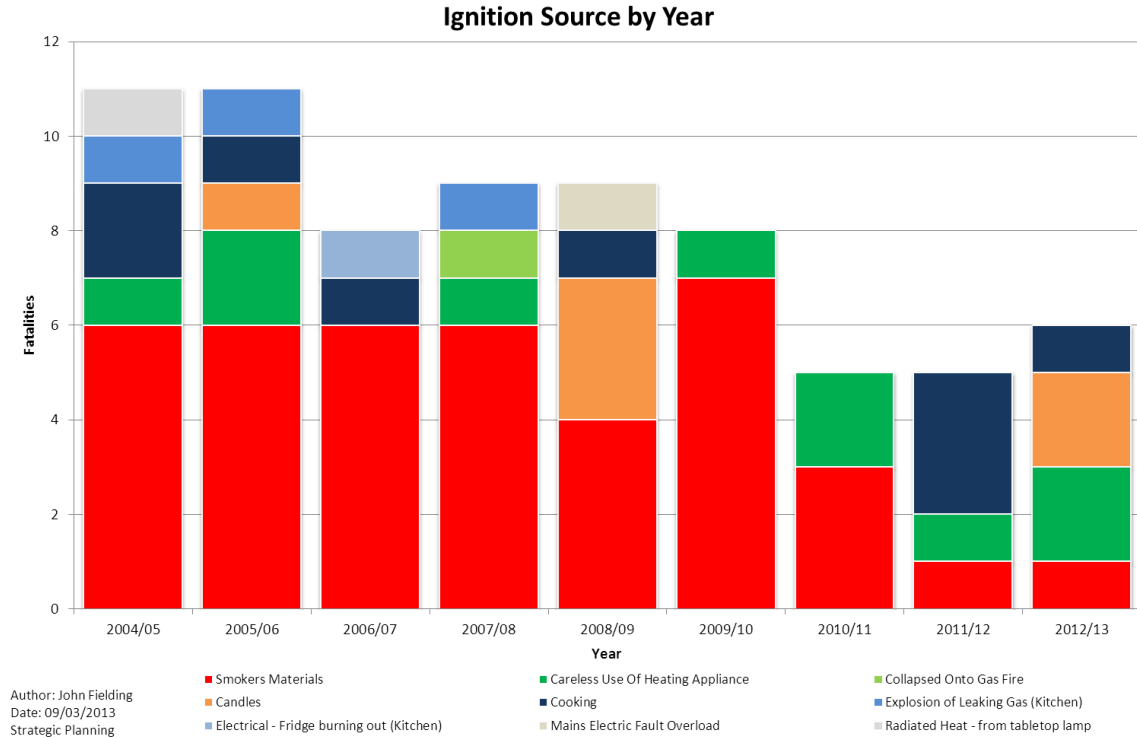


Chart 3 provides a breakdown, by year of the ignition sources involved in fatal fires. The chart identifies that deaths involving “Smokers Materials” (red) had been consistently high between 2004/05 and 2009/10, after this period fire deaths involving “Smoking Materials” have fallen markedly. Fatalities involving Heating Appliances (green) have remained relatively consistent. Fatalities linked directly to cooking and cooking practices (dark blue) have fluctuated between the years, other than a peak of 3 incidents during 2011/12, however following this peak MF&RS personnel have used targeted campaigns, promoting fire awareness in the kitchen.

A breakdown of the ignition sources is contained in the following table (3).

Table 3: Causal factors involved in Accidental Dwelling Fatalities

Ignition Source		Total
Smokers Materials		40
Careless Use Of Heating Appliance		10
Collapsed Onto Gas Fire		1
Candles		6
Cooking	Cooking - Accidental Ignition Of Clothing	3
	Cooking - Chip Pan	2
	Cooking - Unattended food left on hob	2
	Cooking - Misuse of Microwave	1
	Cooking - Residual Fat Ignited in Frying Pan	1
Explosion of Leaking Gas	Ignition Of Gas From Cooker - Gas Leak	1
	Spark From Fridge/Freezer - Ignition of gas mistakenly left on	1
	Electric Spark - Ignition of Gas from faulty cooker installation	1
Electrical - Fridge burning out		1
Radiated Heat - from table top lamp		1
Mains Electric Fault Overload		1
Total		72

## 5.2.2 Room of Origin and Ignition Source

Table 4: Room of Origin and Ignition Source with whether the victim had consumed alcohol prior to the incident

Room	Cause	Total	Of Which Involved Alcohol		
			Yes	No	Unknown
Living Room	Smokers Materials	22	7	12	3
	Careless Use Of Heating Appliance	7	3	4	
	Candles	2		2	
	Collapsed Onto Gas Fire	1		1	
	<i>Sub Total</i>	32	10	19	3
Bedroom	Smokers Materials	13	8	2	3
	Candles	3	2	1	
	Careless Use Of Heating Appliance	3		3	
	Radiated Heat - from table top lamp	1		1	
	<i>Sub Total</i>	20	10	7	3
Kitchen	Smokers Materials	3	2	1	
	Cooking - Accidental Ignition Of Clothing	3		2	1
	Cooking - Chip Pan Fire	2	2		
	Cooking - Unattended food left on hob	2	1		1
	Cooking - Residual Fat Ignited in Frying Pan	1			1
	Cooking - Misuse of Microwave	1	1		
	Electric Spark - Ignition of Gas from faulty cooker installation	1		1	
	Spark From Fridge/Freezer - Ignition of gas mistakenly left on	1		1	
	Electrical - Fridge burning out	1			1
	Ignition Of Gas From Cooker - Gas Leak	1		1	
<i>Sub Total</i>	16	6	6	4	
Bedsit (Open Plan)	Smokers Materials	2	2		
	<i>Sub Total</i>	2	2		
Bathroom	Candles	1	1		
	<i>Sub Total</i>	1	1		
Hallway	Mains Electric Fault Overload	1		1	
	<i>Sub Total</i>	1		1	
Total		72	29	33	10

Table 4 provides a breakdown of the fire's room of origin, its respective ignition source and whether the victim was under the influence of

alcohol 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.

The influence of alcohol is greatest in the “Bedroom” where 8 of the 13 fire deaths involved alcohol consumption. Regarding deaths in the “Living Room”, alcohol was not as significant a contributory factor with 7 of the 22 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 5: Habitation status at time of incident and whether deceased was known to have a carer

Status	Lived Alone		Cohabited		Other <sup>9</sup>		Total
	Alone at Time	Accompanied	Alone at Time	Accompanied	Alone at Time	Accompanied	
Had a Carer	25	0	2	5	0	0	32
Did not have a Carer	23	0	6	8	1	1	39
Unknown	1	0	0	0	0	0	1
<b>Total</b>	<b>49</b>	<b>0</b>	<b>8</b>	<b>13</b>	<b>1</b>	<b>1</b>	<b>72</b>

Table 5 identifies that the majority of victims (49 of 72 or 68%) “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 58 of the 72 fatalities (or 81%) involved in the incident were alone.

Concerning whether a victim had the requirement for a carer or not, the majority of victims did not have a carer (39 of 72, or 54%). The majority of victims who “Lived Alone” (25 of 49, or 51%) had need of a carer.

Table 6: 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		Total
	Alone at Time	Accompanied	Alone at Time	Accompanied	Alone at Time	Accompanied	
Had a Carer	20	0	2	2	0	0	24
Did not have a Carer	10	0	2	3	1	0	16
Unknown	1	0	0	0	0	0	1
<b>Total</b>	<b>31</b>	<b>0</b>	<b>4</b>	<b>5</b>	<b>1</b>	<b>0</b>	<b>41</b>

Table 6 identifies that the majority of victims above the age of 60 (31 of 41 or 76%) “Lived Alone” and were “Alone at the Time” of the incident.

<sup>8</sup> 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.

<sup>9</sup>In the above table, two fatalities are reported as “other”. One incident involved the victim perishing whilst performing maintenance in a property which was not their main address of residence. The second fatality involved the victim sleeping over in a property which was not their main residence.

Of the victims above the age of 60 to have “Cohabited”, 4 were “Alone at the Time” with 5 being “Accompanied”. Overall 36 of the 41 fatalities (or 88%) involved in the incident were alone.

Given the age group analysed the majority of fire deaths did have carers of some sort with 24 victims from a total of 41 or 59%. Again the majority of victims who “Lived Alone” required carers, though given the age range under analysis this figure is much more pronounced - with 20 victims out of 31, (or 65%).

### 5.3 Demographic Analysis

Table 7: Fatalities by Age and Gender (with fatalities per 100,000 population ratio)

Age Group	Female	Male	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	2 (4.8)	0 (0)	2 (2.5)
30 – 34	0 (0)	1 (2.2)	1 (1)
35 – 39	0 (0)	2 (4.1)	2 (1.9)
40 – 44	1 (2)	2 (4.3)	3 (3.1)
45 – 49	6 (13.4)	3 (7.2)	9 (10.4)
50 – 54	3 (6.4)	3 (6.7)	6 (6.6)
55 – 59	4 (10.7)	4 (11.2)	8 (10.9)
60 – 64	1 (2.7)	3 (8.9)	4 (5.7)
65 – 69	1 (2.9)	3 (9.6)	4 (6.1)
70 – 74	5 (15)	1 (3.8)	6 (10.1)
75 – 79	2 (7.1)	7 (37.8)	9 (19.3)
80 – 84	6 (30.6)	3 (29)	9 (30)
85 – 89	3 (24.5)	2 (42.1)	5 (29.4)
90 +	2 (31.3)	2 (119.1)	4 (49.6)
<b>Total</b>	<b>36 (5)</b>	<b>36 (5.6)</b>	<b>72 (5.3)</b>

Table 7 identifies that over the time frame analysed there is no bias in gender towards fire fatalities in accidental dwelling fires. Three age groups are at greatest risk from a fatality in an accidental dwelling fire, including the: 45-49, 75-79 and 80-84 age groups.

When broken down into fatalities per 100,000 population the table identifies that as age increases the risk of fire fatality increases. Applying a regression analysis to the available data a R<sup>2</sup> value of 0.67 is achieved indicating a strong statistical link between age and fire related mortality.

Concerning racial profiling of victims; 69 victims were described as “White – British”, 1 was described as “White – Irish” and 2 were from Black and Minority Ethnic Groups (BME). When analysed proportionally 95.8% of victims were White British just slightly higher than the Census 2011 population ratio of 91.8%.

## 5.4 Temporal Analysis

### 5.4.1 Fatalities by Month

Chart 4: Fatalities in Accidental Dwelling Fires by Month

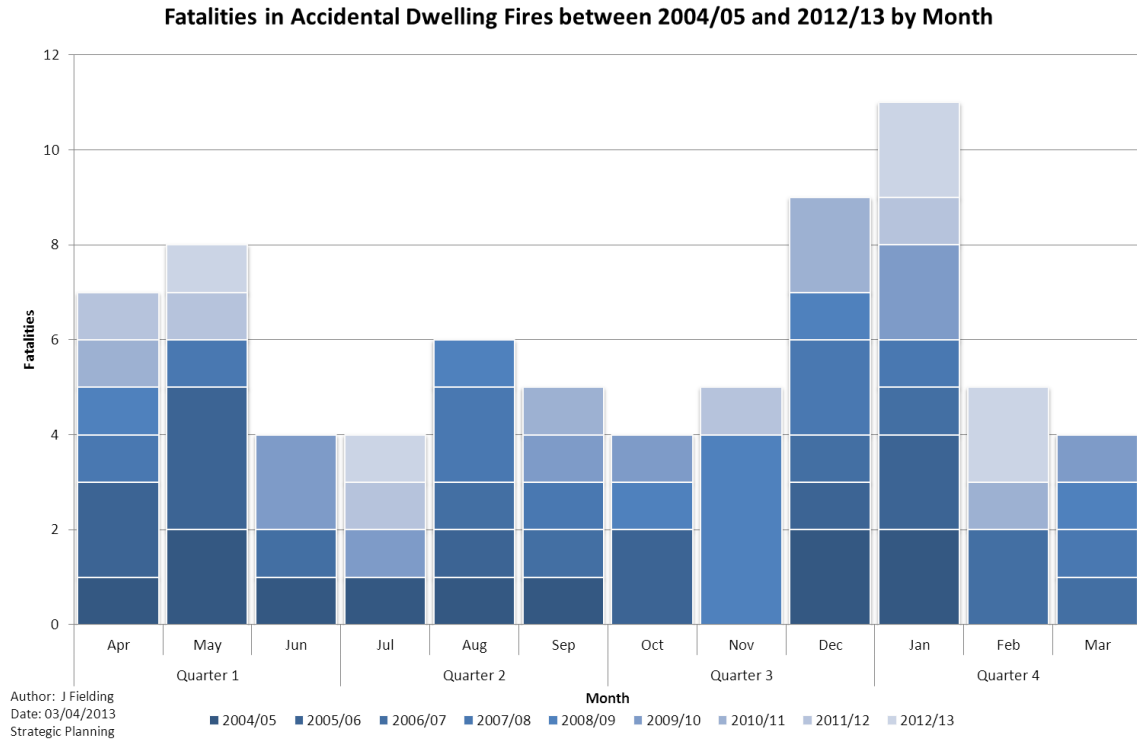


Chart 4 identifies that there is a strong link between fatalities in accidental dwelling fires and seasonality with the winter months of: December and January in particular witnessing high fatality numbers.

A secondary seasonal fluctuation occurs during the spring, particularly during April and May before dropping back again until December<sup>10</sup>.

<sup>10</sup> Please note an additional piece of analysis was conducted into accidental dwelling fires by month between 2009/10 and 2012/13. By ranking the average number of accidental dwelling fires there was little of note within its findings. For information: April was the month to witness the 6<sup>th</sup> highest count of accidental dwelling fire with May being 8<sup>th</sup>



Chart 5: Fatalities in Accidental Dwelling Fires by Month and Ignition Source

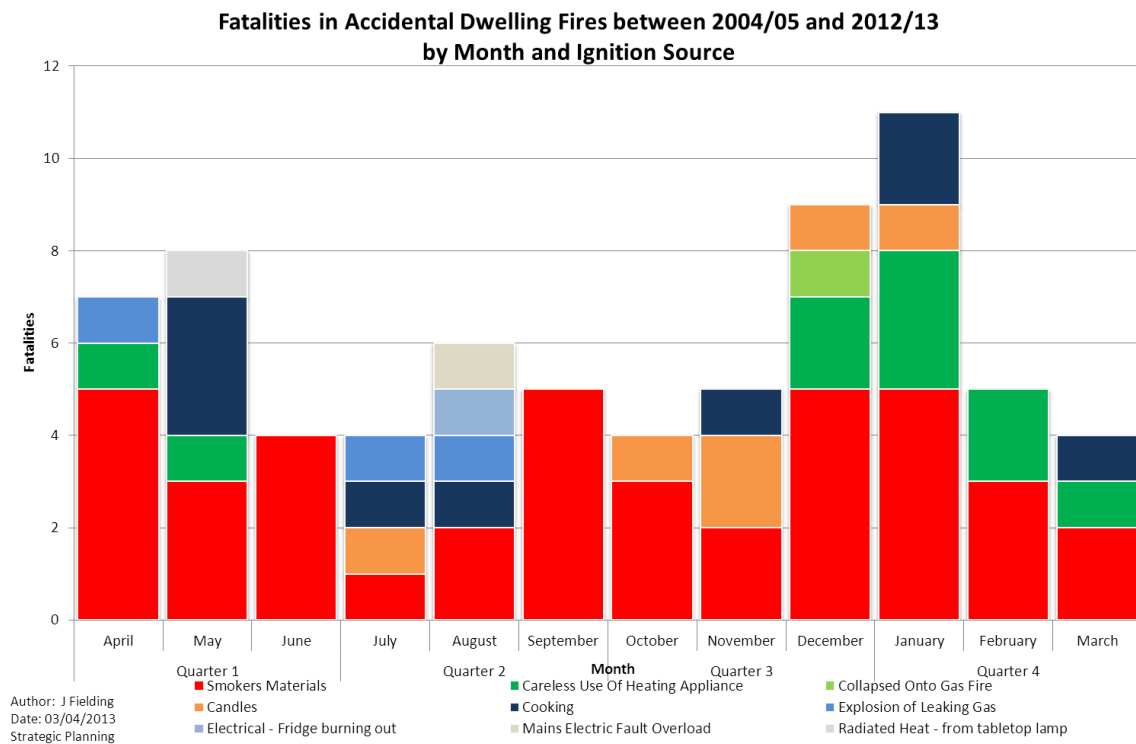


Chart 5 analyses ignition source by month for the period between 2004/05 and 2012/13. The chart identifies evidence of seasonal trends in connection with an accidental dwelling fire's ignition source.

Fatalities involving “Smokers Materials” have low levels of activity during the summer months of: July and August with secondary lulls during the months of: March and November<sup>11</sup>.

When “Smoking Materials” are analysed by quarter the overall numbers of fatalities are relatively consistent with: 12 fatalities in Quarter 1, 8 in quarter 2, 10 in quarter 3 and 10 in quarter 4.

During winter and spring months, particularly between December and May where the weather is most inclement “Careless Use of Heating Appliance” is common.

“Cooking” and other cooking related behaviours (blue) occur mainly during the Months of: May, August and January- the significance of this fluctuation is difficult to determine given the small scale of the dataset used.

<sup>11</sup> 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). *November* is a month where Fire and Rescue Service campaigns target harden the most vulnerable to coincide with the annual bonfire period.

## 5.4.2 Fatalities by Day of Week

Chart 6: Fatalities between 2004/05 and 2012/13 by day of week

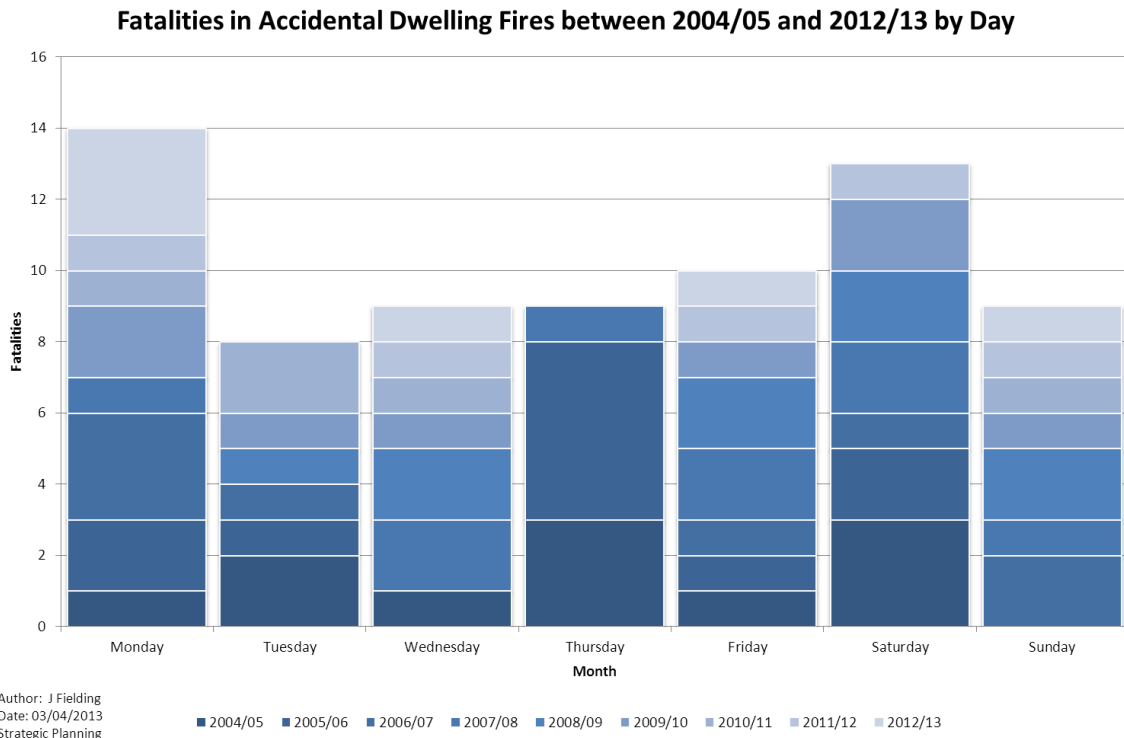


Chart 6 provides an analysis of fatalities in accidental dwelling fires by day of week. The chart identifies two peaks, with 14 deaths occurring on Mondays and 13 deaths on Saturdays.

Fatalities occurring over the weekend period (Saturday, Sunday and Monday) can be explained to an extent by behaviours associated with going out and its unintended side effects including intoxication and unsafe cooking practices.<sup>12</sup>

## 6. Conclusion

The purpose of this report is to analyse the circumstances and contributing factors to accidental dwelling fires attended between 2004/05 and 2012/13.

In conclusion the report presents the following findings:

- Since 2004/05 when 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 the past year (2012/13) there were 6 reported Accidental Dwelling Fatalities.
- Concerning the demographic of fire fatalities, there is no bias towards gender with 36 fatalities in each gender. When age is

<sup>12</sup> Please note that of "late fire calls" i.e. incidents MF&RS attend after the initial fire took place, only one incident took place on a Monday.

analysed the risk of fatality in accidental dwelling fires increases with age. The three age groups at greatest risk are the: 45-49, 75-79 and 80-84 groups.

- When analysed by district, Liverpool had the greatest overall number of fire deaths with 23, closely followed by Wirral with 22. When compared proportionally to incidents per 100,000 population, Wirral is in fact at greatest risk with 6.88 deaths per 100,000 head of population, compared to Liverpool's 4.93 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 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 are 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 19 of the 72 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
- When analysing Ignition Sources it has been found that of the 72 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 2012/13.
- 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 13). 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, 49 out of 72 fire fatalities.
- When analysing incidents by month the winter months of December and January have seen the greatest number of fire deaths.
- Concerning fire deaths and day of week, Merseyside fire & Rescue Service are most likely to attend such an incident on a: Saturday, Sunday and especially Monday.

## 7. Appendices

Table 8: Breakdown of age and Customer Insight Community Profile.

Segmentation	Total	Average Age	25-29	30-34	35-39	40-44	45-49	50-54	55-59	60-64	65-69	70-74	75-79	80-84	85-89	90-95
1 - Wealthy over 50 population living in semi-rural locations	4	77					1						1		1	1
2 - Wealthy retirees	1	57							1							
3 - Middle income residents living in privately owned properties	19	70				1	1	3	1			3	5	3	1	1
4 - Average income older residents	4	81										1	1	1		1
5 - Students Living in City Centre Locations	0	0														
6 - Young families living in privately owned semi-detached homes	5	67		1				1						2	1	
7 - Young families with high benefit need	13	58	1			1	3	1	1	2		1	1	2		
8 - Residents living in social housing with high need for benefits	7	61				1	1		2		1	1			1	
9 - Transient population living in poor quality housing	4	50			1		1		1	1						
10 - Younger, urban population living in high levels of deprivation	15	62	1		1		2	1	2	1	3		1	1	1	1
<b>Total</b>	<b>72</b>	<b>65</b>	<b>2</b>	<b>1</b>	<b>2</b>	<b>3</b>	<b>9</b>	<b>6</b>	<b>8</b>	<b>4</b>	<b>4</b>	<b>6</b>	<b>9</b>	<b>9</b>	<b>5</b>	<b>4</b>

Table 8 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 three risk age groups: 45-49, 75-79 and 80-84 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 11 fatalities. There is a secondary peak within this segmentation group particularly within the 50-54 age groups with 3 fatalities.

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