Historical Analysis of Fatalities in Accidental Dwelling Fires between 2006/07 and 2015/16

AUDIENCE

TO BE PRESENTED TO:
The Authority and
The Strategic Management Group

COMMUNITY RISK MANAGEMENT
STRATEGY & PERFORMANCE DIRECTORATE

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Document Control

Amendment History

Version / Issue No.	Date	Author	Remarks / Reason for Change
1.0	15/06/2016	J Fielding	First Draft
1.1	17/06/2016	J Fielding	Following Comments as per D Appleton
1.2	28/09/2016	J Fielding	Addition of Time of Call analysis

Sign-Off List

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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 1st April 2015 and 31st March 2016	J Fielding	1.4 02/06/2016

Ownership

Has it been agreed with the client that this is a publicly owned document?

Yes/~~No~~

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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 Area Manager James Berry and received on 01/04/2016.

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 June 2016, 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 2016.

The final report, which will always be in PDF format, would be produced by June 2016, 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 2006/07 and 2015/16. Fatalities in Accidental Dwelling Fires are relatively rare compared to other incidents that Merseyside Fire and Rescue Service attends, though their impact is most severe to the friends and families of the deceased.

In summary this report presents the following findings:

Victim Summary

- Between 2006/07 and 2015/16 there was a total of 84[2] fire deaths as a result of an accidental dwelling fire; these deaths are attributed to 80 actual fire incidents.
- Between 2006/07 and 2010/11, the general trend for fatalities was gradually falling, with a low of 5 deaths during both 2010/11 and 2011/12. However since 2012/13 the count of fatalities has increased year on year leading to a high of 16 during 2015/16.
- The 16 deaths during 2015/16 is the highest number recorded, since 2001/02, when 17 deaths took place.
- When analysed by district, Wirral had the greatest overall number of fire deaths with 29, closely followed by Liverpool with 26. When compared proportionally to incidents per 100,000 population, Wirral has the greatest number of deaths with 9.04 deaths per 100,000 population, compared to Liverpool's 5.50 per 100,000 population.
- Concerning racial profile, the vast majority of victims were White British – accounting for 79 victims or 94.0%.
- Concerning the demographic of fire fatalities, there is little bias towards gender with 40 female fatalities and 44 male fatalities. The risk of death in accidental dwelling fires increases with age, with the 40-49 and particularly the 75 and above age groups being at greatest risk.
- The majority of people who died in Accidental Dwelling Fires were the sole occupants in 54 out of 84 fire fatalities. In combination, 62 victims were alone at the time of the fire that claimed their lives.

Incident Summary

- Concerning Deprivation and the use of Community and Local Government's (CLG) Indices of Multiple Deprivation (IMD) 2015, 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.
- Concerning Smoke Alarm actuation, in 47 cases a smoke alarm was fitted and actuated, there were 6 occasions where smoke alarms were fitted and did not actuate. There were 16 occurrences where a smoke alarm was <u>not</u> fitted and a further 5 incidents where the fitted smoke alarm was inoperable (i.e. no batteries) - therefore meaning that the

[2] Please note: due diligence should be applied when drawing conclusions from such a small data set. It is entirely possible that increases in fatalities over the past five years could be coincidental, but conversely could also be part of a larger issue.

resident had no means of early warning. There were 6 occurrences where it was unknown whether the smoke alarm actuated.

- 48 Home Fire Safety Checks (HFSC) were completed with victims prior to the incidents in which they died. 28 did not have a HFSC and in 4 cases it was were unknown whether they had received an HFSC.
- When analysing Ignition Sources it has been found that of the 80 fatal incidents, 42 were as a result of *Smokers Materials*. However since 2009/10, where 7 deaths were the result of Smokers materials, there was a gradual reduction with only 1 death attributable to this ignition source during both 2011/12 and 2012/13. However since 2013/14, victims as a result of Smokers Materials increased to a high of 8 during 2015/16.
- 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 a high number of deaths involving *Smokers Materials* in the *Bedroom* also involved the consumption of alcohol (10 out of 24). Concerning fires that started in the *Living Room* the same principle does not apply.
- When analysing incidents by month the greatest number of deaths occurred during the autumn / winter months; between November and February. The month of April also tends to have high counts of fire deaths.
- Concerning fire deaths and day of week, deaths are most likely to occur on Fridays and Mondays.
- The majority of fire deaths occur between Morning and Evening (07:00 to 21:59), accounting for 43 fatal incidents, or 65% overall.
  Peaks in incidents occur between 07:00 to 08:59 and 02:00 to 03:59, with secondary peaks during 15:00 – 15:59 and 21:00 – 21:59

3. Introduction

The purpose of this report is to analyse fatalities from Accidental Dwelling Fires (ADF) between 2006/07 and 2015/16; 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 DC12 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
- The calculation for fatalities per 100,000 population is:
  (Count of Fatalities / Population) * 100,000
- Population figures are based on Mid 2014 estimates published by the Office for National Statistics.
- Indices of Multiple Deprivation (IMD) 2015 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 DC12[4] - *Number of fatalities from Accidental Dwelling Fires*.

Concerning the Long Time Series Analysis, counts have been obtained from the following:

- Between 1991/1992 – 1999/2000: Freedom of Information Request from Department for Communities and Local Government
- Between 2000/2001 – present: MF&RS Incident Investigation Team archives

The time of call analysis is based on incidents which were **NOT** late calls, this accounts for 66 incidents within the entire dataset.

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.

[3] Uses IMD 2015 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 Fatal Victims of Accidental Dwelling Fires

The following section is based on the details of victims who died as a result of an accidental dwelling fire. In total between 2006/07 and 2015/16 there were **84** victims and as such the following tables and charts all equate to this figure.

5.1.1 Comparison of Fatalities by District

Chart 1: Breakdown of fatalities in Accidental Dwelling Fires between 2006/07 and 2015/16 by District

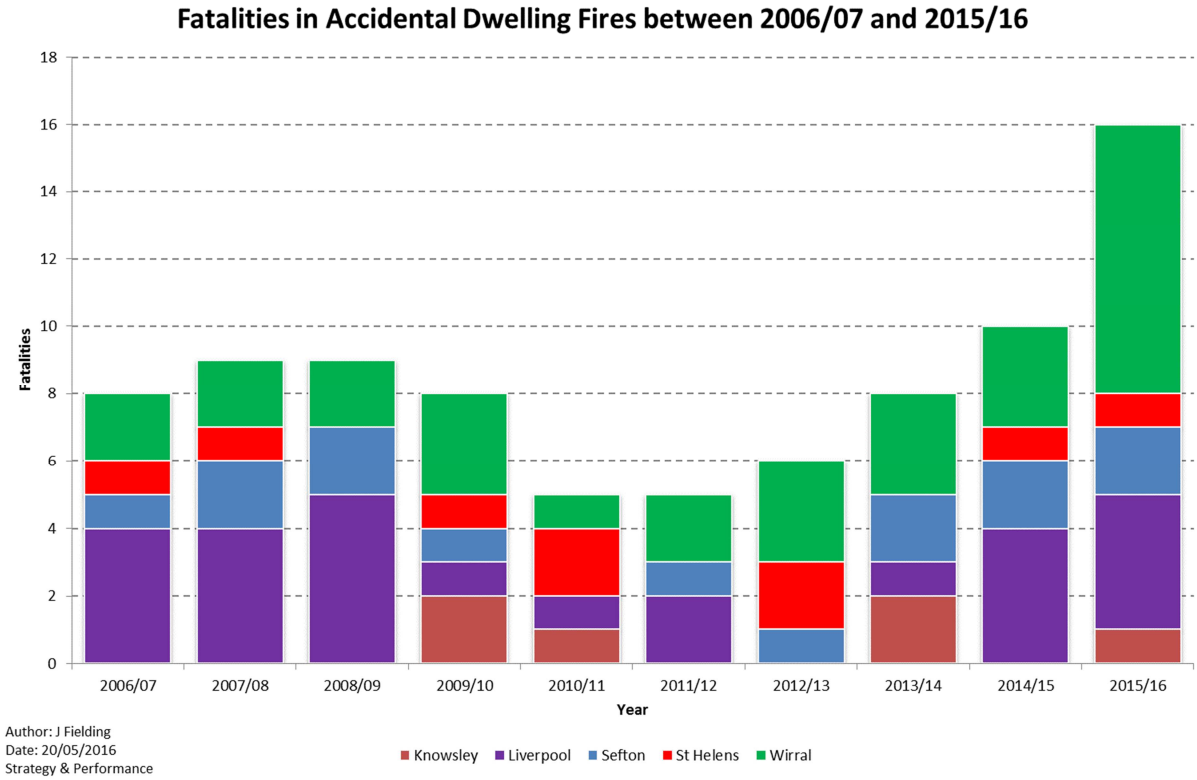

Chart 1 provides a retrospective of fatalities in accidental dwelling fires over the past 10 years. The table identifies that over this period fatalities have fluctuated, however based on the figures there is evidence of an upward trend in activity from 2011/12, where there have been year on year increases in deaths to a high of 16 during 2015/16.

Table 1: Comparison of total fatalities by district and population

Counts	Knowsley	Liverpool	Sefton	St Helens	Wirral	Total
Fatalities	6	26	14	9	29	84
Rate per 100,000 population	4.10	5.50	5.12	5.08	9.04	6.04
Population	146,407	473,073	273,531	177,188	320,914	1,391,113
Fatal Incidents	6	26	12	9	27	80

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 for direct comparison.

The table shows that there have been 29 fatal fire victims in Wirral, closely followed by Liverpool with 26. When overall population counts are taken into consideration – Wirral proportionally has had the greatest number of fatalities with 9.04 per 100,000 population; with Liverpool having a much lower ratio of 5.50 fatalities per 100,000 population, therefore (*proportionally*) the Wirral has the greatest likelihood[5] of a fire death occurring.

The table also identifies the count of Fatal Incidents by district, it identifies that of the 80 incidents; 4 incidents (2 in each of Sefton and Wirral) involved two victims.

5.1.2 Long Time Series Analysis

Chart 2: Long Time Series of fatalities in Accidental Dwelling Fires between 1991/92 and 2015/16

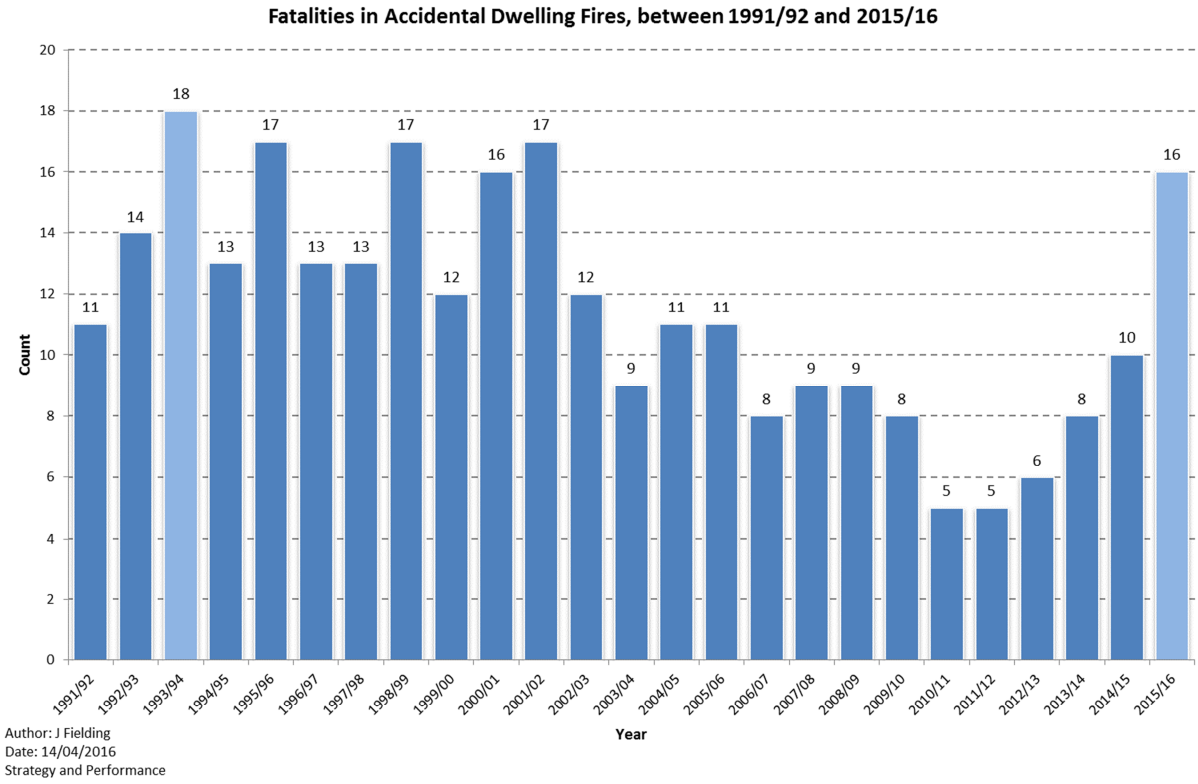

Chart 2 provides a count of accidental dwelling fire fatalities between 1991/92 and 2015/16. The chart identifies that 2015/16 resulted in the greatest number of fire fatalities within recent years, but in the past there were higher figures. Over the 25 year period, 1993/94 had the highest number of fatalities with 18, followed by 1995/96, 1998/99 and 2001/02 with 17 each.

[5] An additional piece of analysis was conducted analysing the link between age and fatality in Wirral, as such there is very little link (R^2 value of 0.33) between the age of victims in Wirral and the likelihood of perishing in an accidental dwelling fire.

5.1.3 Demographic Analysis

Table 2: Fatalities by Age and Gender (with fatalities per 100,000 population ratio)

Age group	Male		Female		Total	
5-9	0	*(0.0)*	1	*(2.7)*	1	*(1.3)*
25-29	0	*(0.0)*	2	*(4.2)*	2	*(2.1)*
35-39	1	*(2.6)*	0	*(0)*	1	*(1.3)*
40-44	4	*(9.3)*	2	*(4.4)*	6	*(6.8)*
45-49	2	*(4.3)*	8	*(15.9)*	10	*(10.3)*
50-54	5	*(10.3)*	2	*(3.9)*	7	*(7.0)*
55-59	3	*(7.0)*	3	*(6.6)*	6	*(6.8)*
60-64	4	*(10.2)*	1	*(2.5)*	5	*(6.3)*
65-69	2	*(5.3)*	3	*(7.6)*	5	*(6.5)*
70-74	2	*(7.3)*	2	*(6.4)*	4	*(6.8)*
75-79	8	*(35.9)*	2	*(7.1)*	10	*(19.8)*
80-84	3	*(19.6)*	9	*(40.8)*	12	*(32.2)*
85+	10	*(93.4)*	5	*(23.2)*	15	*(46.5)*
Total	44	*(6.5)*	40	*(5.6)*	84	*(6.0)*

Table 2 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 four age groups at greatest risk from a fatality in an accidental dwelling fire, including the: 45-49, 75-79, 80-84 and 85+ age groups. When the ratio of deaths to proportion of population is taken into account it is apparent that with age the risk of mortality as a result of an accidental dwelling fire increases significantly. 8 of the 10 fatalities in the 45-49 age group had consumed alcohol prior to the incident. Applying a regression analysis to the available data a R^2 value of 0.57 is achieved indicating a moderate statistical link between age and fire related mortality.

Concerning gender there is little bias towards either sex, with 40 (47.6%) female victims and 44 (52.4%) male victims.

Concerning racial profiling of the deceased; 79 victims were described as *White – British*, 1 was described as *White – Irish* and 4 from the category "*Other*". When analysed proportionally 94.0% of victims were White British which is slightly higher than the Census 2011 population ratio of 91.8%.

5.1.4 Habitation and Carer Status

Table 3: Habitation and carer status

Status	Lived alone		Cohabited		Other Circumstance		
Carer	Alone at Time	Accompanied	Alone at Time	Accompanied	Alone at Time	Accompanied	Total
Yes	21		1	7			29
No	27	1	5	13	2	1	49
Unknown	5		1				6
Total	53	1	7	20	2	1	84

Table 3 identifies that the majority of victims (53 from 84 or 63.1%) *Lived Alone* and were *Alone at the Time* of the incident. Of the victims who *Cohabited*, 7

were Alone at the Time and 20 were *Accompanied*. In combination 62 of the 84 victims (73.8%) were alone at the time of the incident.

Concerning whether a victim had need of a carer or not, the majority of victims did not have a carer (49 of 84, or 58.3%). Many of the victims who *Lived Alone* (21 of 53, or 39.6%) had need of a carer.

Table 4: Habitation and carer status– OVER 60 Age Group Only

Status	Lived alone		Cohabited		Other Circumstance		
Carer	Alone at Time	Accompanied	Alone at Time	Accompanied	Alone at Time	Accompanied	Total
Yes	19		1	5			25
No	15		1	5	1		22
Unknown	4						4
Total	38	0	2	10	1	0	51

Table 4 identifies that the majority of victims above the age of 60 (38 of 51 or 74.5%) *Lived Alone* and were *Alone at the Time* of the incident. Of the victims above the age of 60 who *Cohabited*, 10 were *Accompanied* with 2 being *Alone at the Time.* Overall, 41 of the 51 fatalities (or 80.4%) were *Alone at the Time* of the incident.

In the age group analysed, 49% (25) of the victims had access to carers. The majority of **all** victims who *Lived Alone* required carers, but amongst those aged over 60 this figure is much more pronounced - with 19 victims out of 38 requiring carers (or 50%).

5.2 *Incident Related Analysis*

The following analysis is based on the count of incidents, not the count of victims – as in the previous sections. Therefore the following series of tables' total **80** as this is the count of actual incidents.

5.2.1 Comparison of Fatalities and Deprivation

Chart 3: Fatalities in Accidental Dwelling Fires between 2005/06 and 2014/15 linked to deprivation[6]

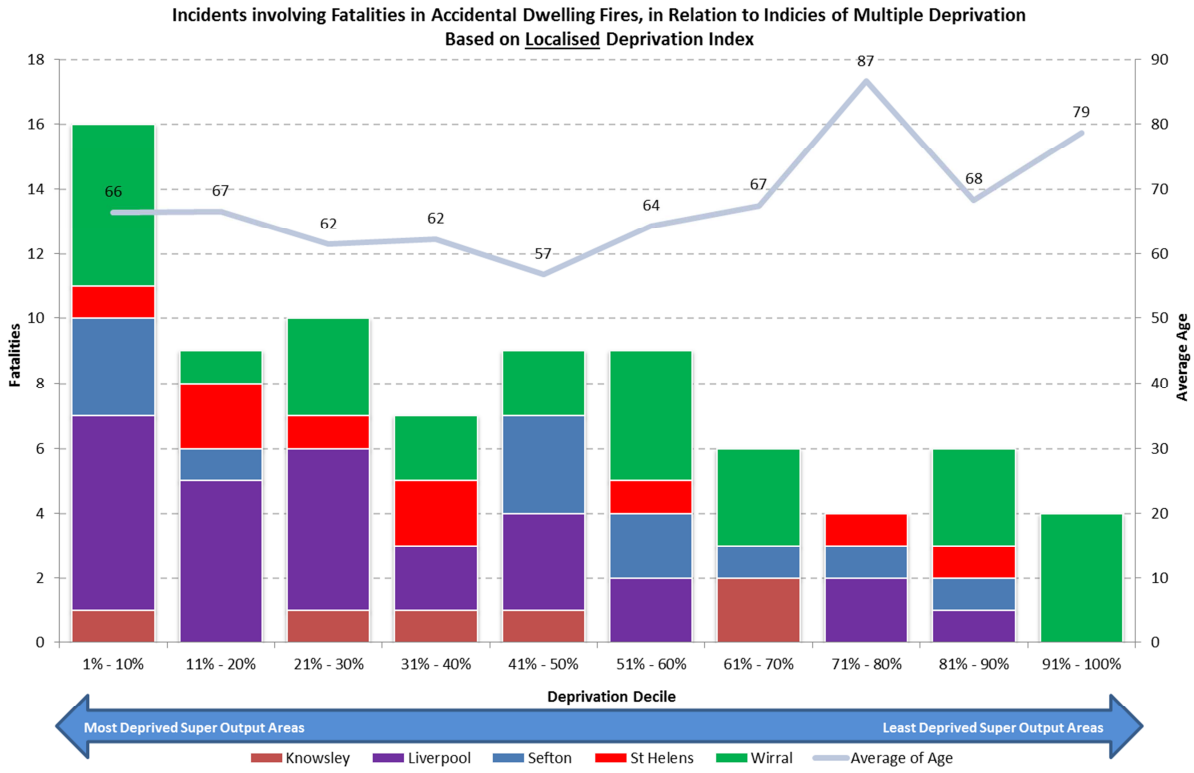

Chart 3 ranks the location of fire fatalities to the level of deprivation in the area in which the incident took place using Indices of Multiple Deprivation 2015 (IMD). Concerning the localised[7] deprivation index, the chart demonstrates that as deprivation increases the number of fire deaths gradually increase.

When analysed at a district level;

- The fire deaths in Liverpool have, on the whole, been in the relatively deprived areas.
- Wirral has a sporadic pattern, though it has had the greatest number of fire fatalities in the least deprived 81–90% and 91-100% deciles.
- St Helens and Knowsley have generally had fatalities within the more deprived 50% of deciles.

[6] As per the CLG document Indices of Multiple Deprivation 2015
[7] Please refer to Appendix A to view a comparison of fatalities based on the localised deprivation index and against the National (English) index.

- Sefton has a different pattern with the majority of their fatalities occurring in the deprived 1-10% decile and intermediate 41-50% and 51-60% deciles.

The chart also identifies the average ages of the victims by each deprivation decile group. In general 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 57. By contrast, in the less deprived areas victims tend to be older with an average age of 87 in the 71-80% and 79 in the 91-100% decile.

5.2.2 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 does save lives; however this is not always the case, as personal mitigating circumstances like: mobility, prescription medicines and alcohol consumption can prevent a victim escaping regardless of the actuation of a smoke alarm.

The following section analyses the performance of smoke alarms.

Table 5: Smoke Alarm Functionality & HFSC Status

	HFSC				
Status	Yes	No	Unknown	Total	%
Fitted & Operated	39	5	3	47	58.8%
Fitted Did Not Operate	4	2		6	7.5%
Fitted No Batteries		5		5	6.3%
None Fitted		14	1	15	18.8%
None Fitted - Refused HFSC	1			1	1.3%
Fitted Unknown if Operated	4	2		6	7.5%
Grand Total	48	28	4	80	

Table 5 identifies that in the majority of properties (47 or 58.8%) a smoke alarm was fitted and operational. In 6 cases the smoke alarm was fitted and failed to operate, though this is possibly due to the nature / severity of the fire itself or the positioning of the smoke detector.

In 5 (6.3%) 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 16 cases (20.1%) there was no smoke alarm fitted meaning no early warning system being available in the property.

When analysing smoke alarm functionality against HFSC status, 60% (48/80) of properties had previously had a HFSC. Of these properties; 39 had a smoke alarm which was fitted and operated. This is compared with 28 (35%) properties that did not have a HFSC prior to the incident.

There were 16 properties where no smoke alarm was fitted, in one case the occupier refused the HFSC and smoke alarm, though it should be noted that though the individual refused the visit; MF&RA still had contact with that person.

5.2.3 Ignition Source

Table 6: List of Fatal Incident Ignition Sources

Ignition Source	Detail	Total
Smokers Materials	Smokers Materials	42
	Subtotal	42
Cooking	Cooking - unattended food left on hob	4
	Cooking - Accidental Ignition Of Clothing	4
	Combustible Materials Left on Hob	1
	Chip Pan Left Unattended in Kitchen	1
	Cooking - Misuse of Microwave	1
	Subtotal	11
Careless Use Of Heating Appliance	Careless Use Of Heating Appliance	11
	Subtotal	11
Electrical Fault	Electrical - Fridge burning out	3
	Overloaded Multi-tap	1
	Overloaded E-Cigarette Battery leading to rupture	1
	Mains Electric Fault Overload	1
	Subtotal	6
Candles	Candles	6
	Subtotal	6
Radiated Heat	Heat Lamp Igniting Combustible Materials	1
	Radiated Heat - from table top lamp	1
	Subtotal	2
Collapsed Onto Gas Fire	Collapsed Onto Gas Fire	1
	Subtotal	1
Explosion Of Leaking Gas	Ignition Of Gas From Cooker - Gas Leak	1
	Subtotal	1
Grand Total		80

Table 6 lists the generic Ignition Sources along with additional detail concerning these incidents. During the ten year period analysed *Smokers Materials* account for 42 incidents, equating to 52.5% of fire death incidents, this is followed by *Careless use of Heating Appliances*[8] and *Cooking*, with 11 deaths (or 13.8%) respectively.

[8] Usually involves the ignition of clothing when either placed or standing too close to a piece of heating equipment, for example a gas fire.

5.2.4 Room of Origin and Ignition Source

Table 6: Room of Origin and Ignition Source with whether the victim had consumed alcohol prior to the incident

			Of which involved consumption of Alcohol		
Room Of Origin	Ignition Cause	Total	Yes	No	Unknown
Living Room	Smokers Materials	22	11	8	3
	Careless Use Of Heating Appliance	7	2	5	
	Candles	3	1	2	
	Radiated Heat - from table top lamp	1		1	
	Collapsed Onto Gas Fire	1		1	
	Sub Total	34	14	17	3
Bedroom	Smokers Materials	15	8	5	2
	Careless Use Of Heating Appliance	4		4	
	Candles	2	1	1	
	Overloaded Multi-tap	1	1		
	Overloaded E-Cigarette Battery leading to rupture	1		1	
	Heat Lamp Igniting Combustible Materials	1		1	
	Sub Total	24	10	12	2
Kitchen	Smokers Materials	3	2	1	
	Electrical - Fridge burning out	3		2	1
	Cooking - Accidental Ignition Of Clothing	4		3	1
	Cooking - unattended food left on hob	3	2		1
	Cooking - Misuse of Microwave	1	1		
	Chip Pan Left Unattended in Kitchen	1	1		
	Combustible Materials Left on Hob	1		1	
	Ignition Of Gas From Cooker - Gas Leak	1		1	
	Sub Total	17	6	8	3
Hallway	Smokers Materials	1		1	
	Mains Electric Fault Overload	1		1	
	Sub Total	2		2	
Bathroom	Candles	1	1		
	Sub Total	1	1		
Bedsit (Open plan sleeping and living area)	Smokers Materials	1	1		
	Sub Total	1	1		
Caravan	Cooking - unattended food left on hob	1		1	
	Sub Total	1		1	
Grand Total		80	32	40	8

Table 6 provides a breakdown of the fire's room of origin, its respective ignition source and whether a victim was under the influence of alcohol[9] 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; 32 (40%) of fatal incidents are linked to the consumption of alcohol. Where alcohol consumption is combined

[9] 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.

with *Smokers Materials* then 68.8% (22 out of 32) of incidents are linked to this combination of factors.

Proportionally the influence of alcohol and fatal incidents taking place within the *Living Room* or *Bedroom* is very similar with approximately 41% of incidents in each room being linked to alcohol consumption.

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

5.2.5 Fatalities by Year and Ignition Source

Chart 4: Breakdown of Ignition Source by Year

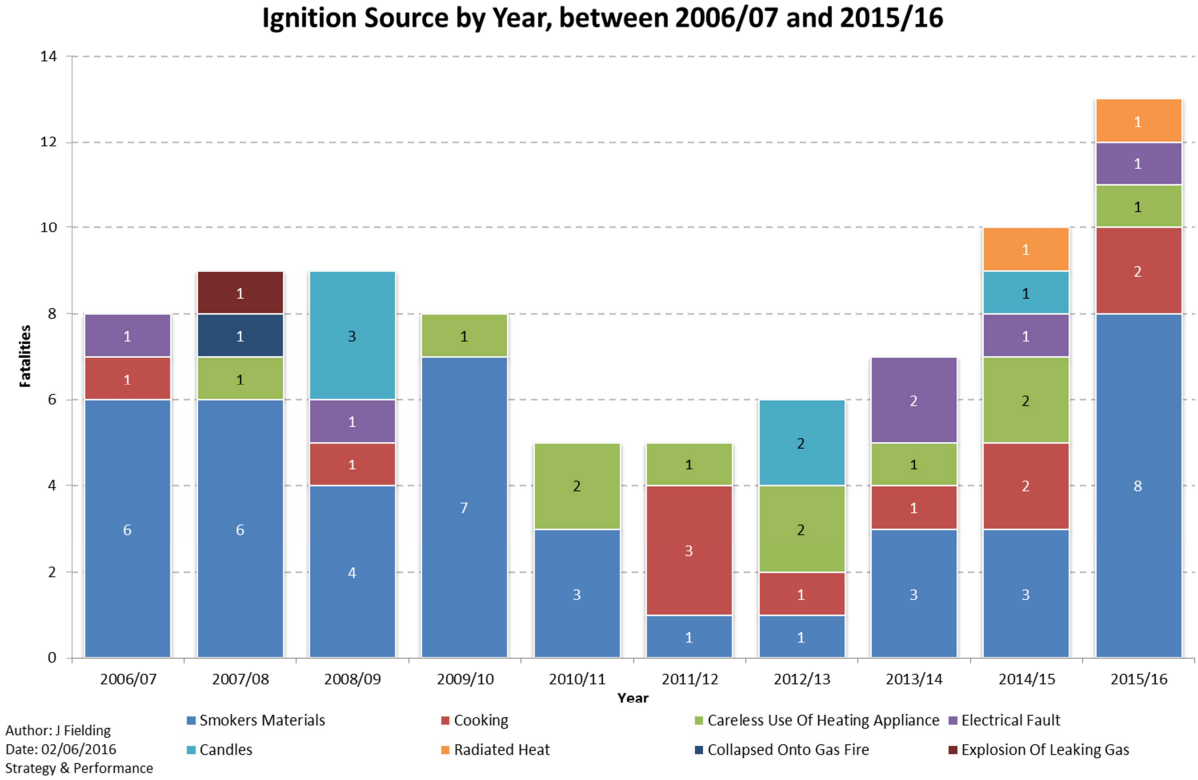

Chart 4 provides a breakdown, by year of the ignition sources involved in fatal fires. The chart identifies that deaths involving *Smokers Materials* (blue) had been consistently high between 2005/06 and 2009/10, after this period fire deaths fell markedly until 2013/14, when they begin to rise again. In the last year (2015/16) *Smokers Materials* rose to the highest level during the time frame under consideration, with 8 deaths attributed to this cause. Incidents involving *Heating Appliances* (green) have remained relatively consistent.

Fatal incidents linked directly to cooking and cooking practices (red) 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.

5.2.6 Fatalities by Month and Ignition Source

Chart 5: Fatal Incidents by Month

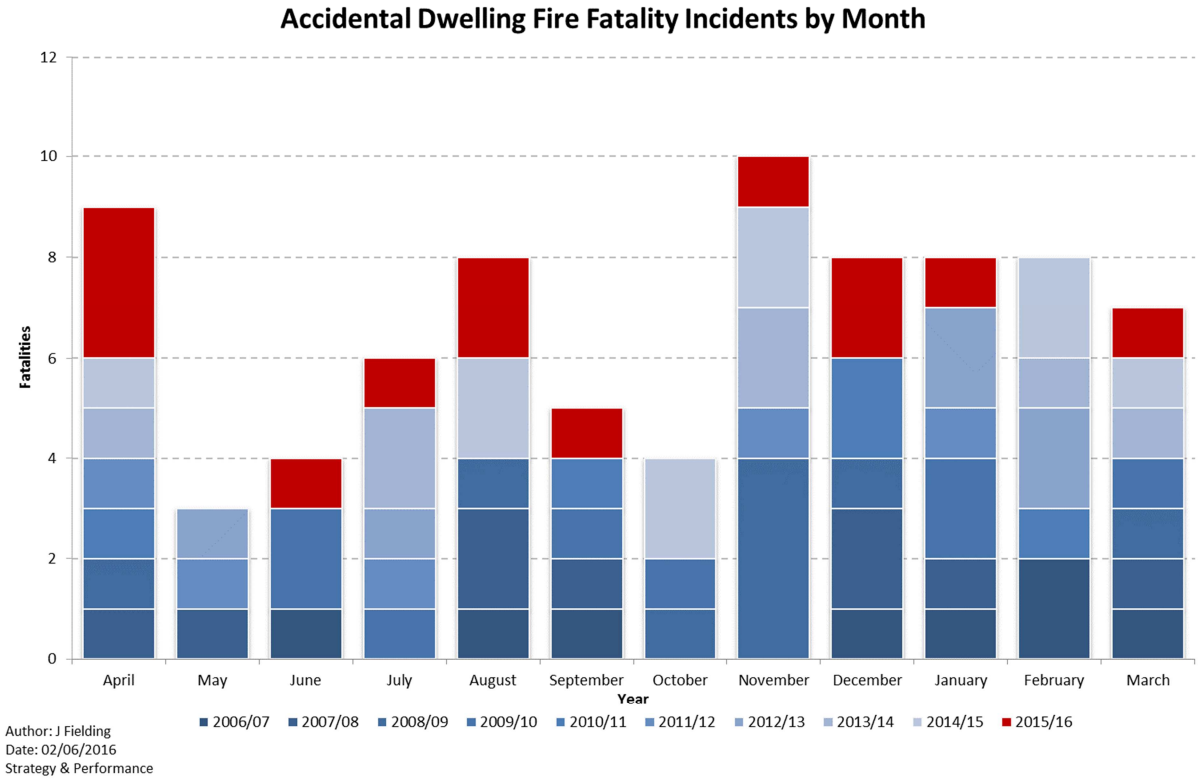

Chart 5 identifies that there is a strong link between fatalities in Accidental Dwelling Fires and seasonality with the winter months of: November and February in particular seeing high fatality numbers. An oddity is the month of April where 3 fatalities occurred during 2015/16, April has historically had high death numbers of fire death (along with March).

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

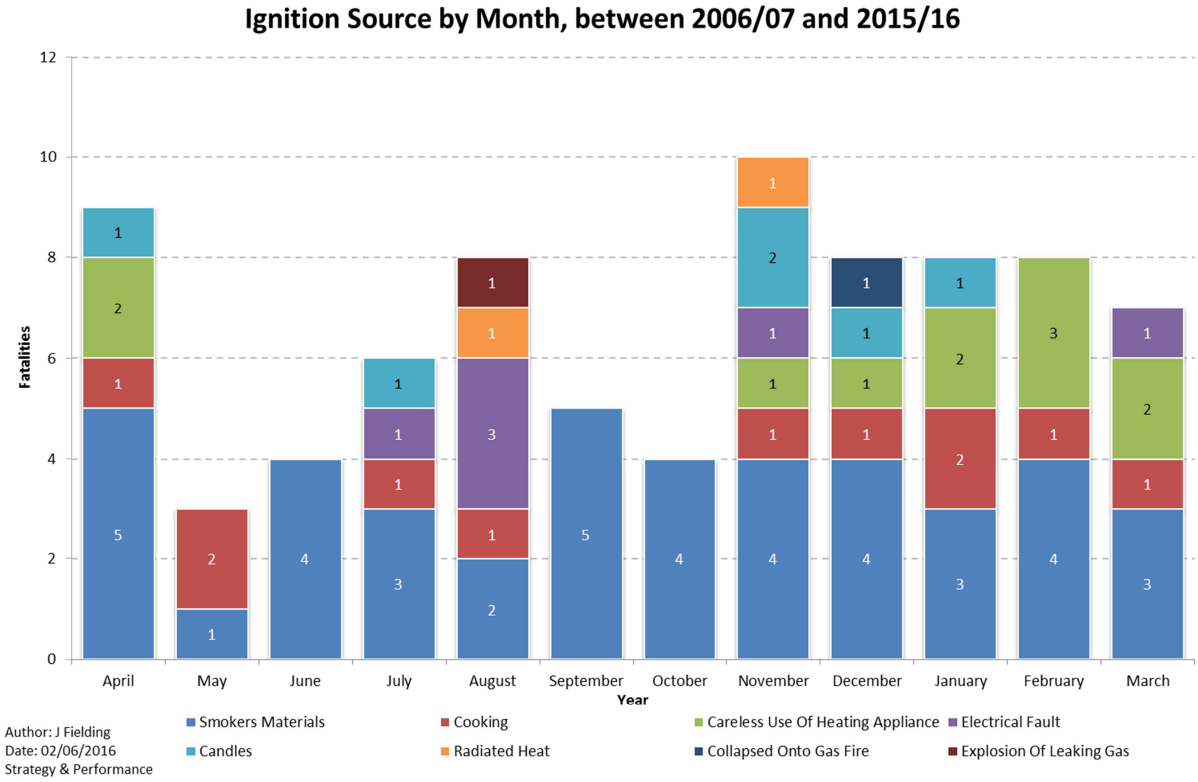

Chart 6 analyses ignition source by month for the period between 2006/07 and 2015/16. The chart identifies little evidence of seasonal trends in connection with an Accidental Dwelling Fire's ignition source.

Fatalities involving *Smokers Materials* have relatively low levels of death during the spring and summer months especially during May and August.[10]

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

During winter / early spring; where the weather is most inclement - *Careless Use of Heating Appliance* is more common.
Cooking related deaths tend to occur more often during autumn and winter.

[10] The following comments are hypothetical and should not be interpreted as truth: *August* tends to be peak month for holiday activity, also given the generally clement weather conditions people tend to spend more time outdoors. May has two bank holidays which may encourage people to be more active, again spending more time away from their homes.

5.2.7 Fatalities by Day of Week and Ignition Source

Chart 7: Fatalities between 2006/07 and 2015/16 by day of week

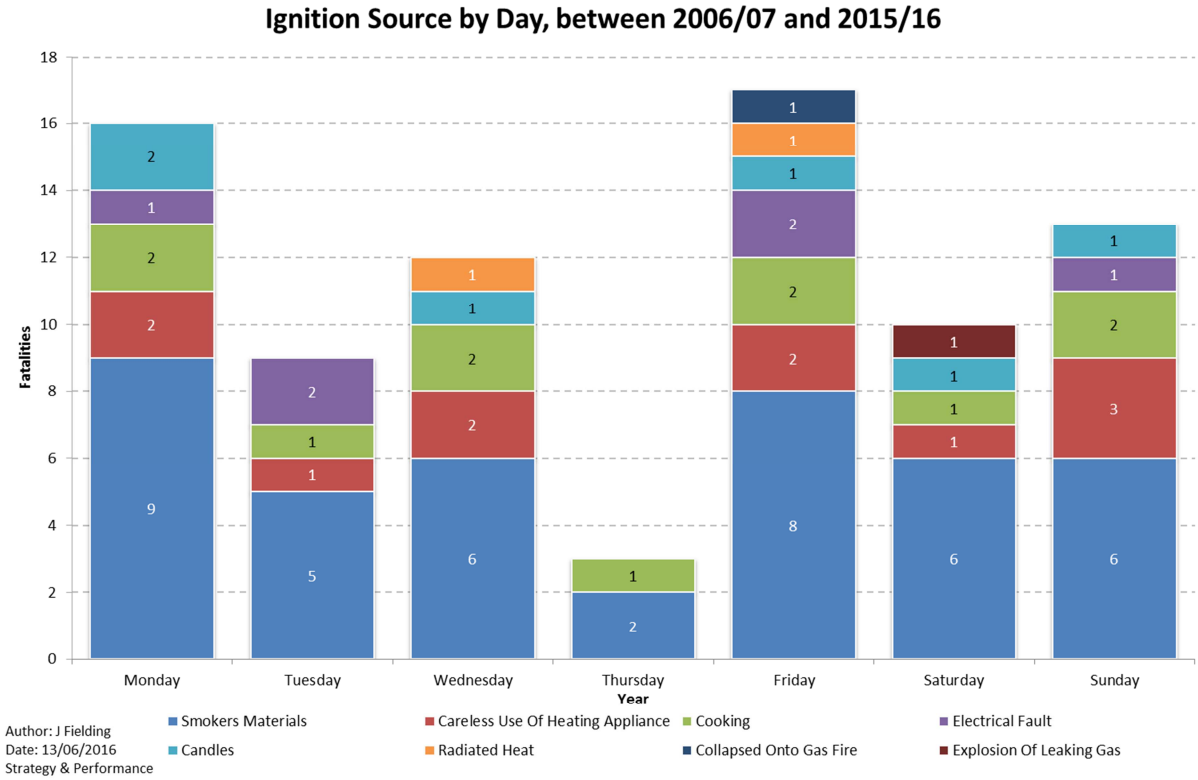

Chart 7 provides an analysis of fatalities in Accidental Dwelling Fires by day of week. The chart identifies two peaks, with 16 deaths occurring on Mondays and 17 deaths on Fridays.

As mentioned throughout this report, Smokers Materials are the most common cause of accidental dwelling fires. Chart 7 identifies that on each day, Smokers Materials were responsible for the simple majority of fatal incidents.

Fatalities occurring over the weekend period (Friday, Saturday, Sunday and Monday) can be anecdotally explained by behaviours associated with revelry - possibly leading to unintended side effects, including intoxication and unsafe cooking practices.

Concerning fatal incidents taking place on a Monday, 9 from 16 incidents involved alcohol consumption as a contributory factor. On a Friday however, only 4 of the 17 incidents, listed alcohol consumption as being a contributory factor. Therefore it is not possible to link the high numbers of deaths on a Friday to alcohol consumption.

The oddity within the above chart is Thursday where 3 fatal incidents took place over the ten year period, this however is a curio within the data. When fatality data is extended back a further two years, Thursdays see 11 fatal incidents, and though it is still the day of the week to have the fewest deaths, it is no longer significantly different from the rest.

5.2.8 Analysis of Incidents by Time of Call

Chart 8: Fatalities by hour and whether Alcohol Consumption was involved during the incident

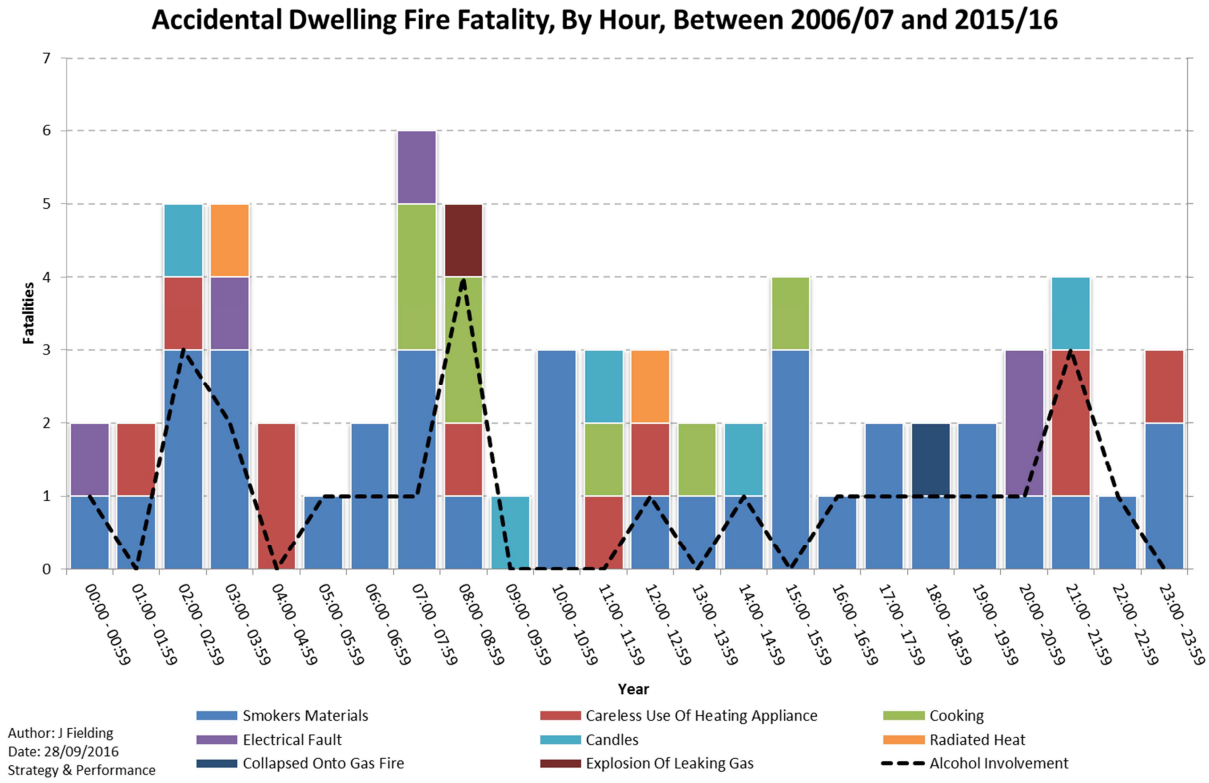

Chart 8 provides an overview by hour[11] of when a fire fatality has taken place. The chart also details the ignition source and whether alcohol consumption had taken place.

In summary the chart provides the following findings:

- The majority of fire deaths occur between Morning and Evening (07:00 to 21:59), accounting for 43 fatal incidents, or 65% overall.
- Peaks in incidents occur between 07:00 to 08:59 and 02:00 to 03:59, with secondary peaks during 15:00 – 15:59 and 21:00 – 21:59.
- Alcohol consumption and fire death tend to occur in the early hours (02:00 – 03:59), the morning (08:00 – 08:59) and the evening (21:00 – 21:59).
- Between 07:00 and 08:59, cooking is a common source of ignition; as such, 3 of the 4 incidents involved alcohol consumption as a possible causal factor.
- Between 02:00 and 03:59; 5 incidents were related to alcohol consumption, with 3 being related to Smokers Materials, 1 related to Candles and 1 due to an Electrical Fault.
- During 21:00 – 21:59; 3 incidents were related to alcohol consumption, with: Smokers Materials, Candles and Careless Use of Heating Appliance being responsible for 1 fatality each.

[11] Does not include late calls

6. Appendices

6.1 Appendix A

Chart 9: Comparison of Fatalities by Deprivation using Localised Deprivation and National IMD Indexes

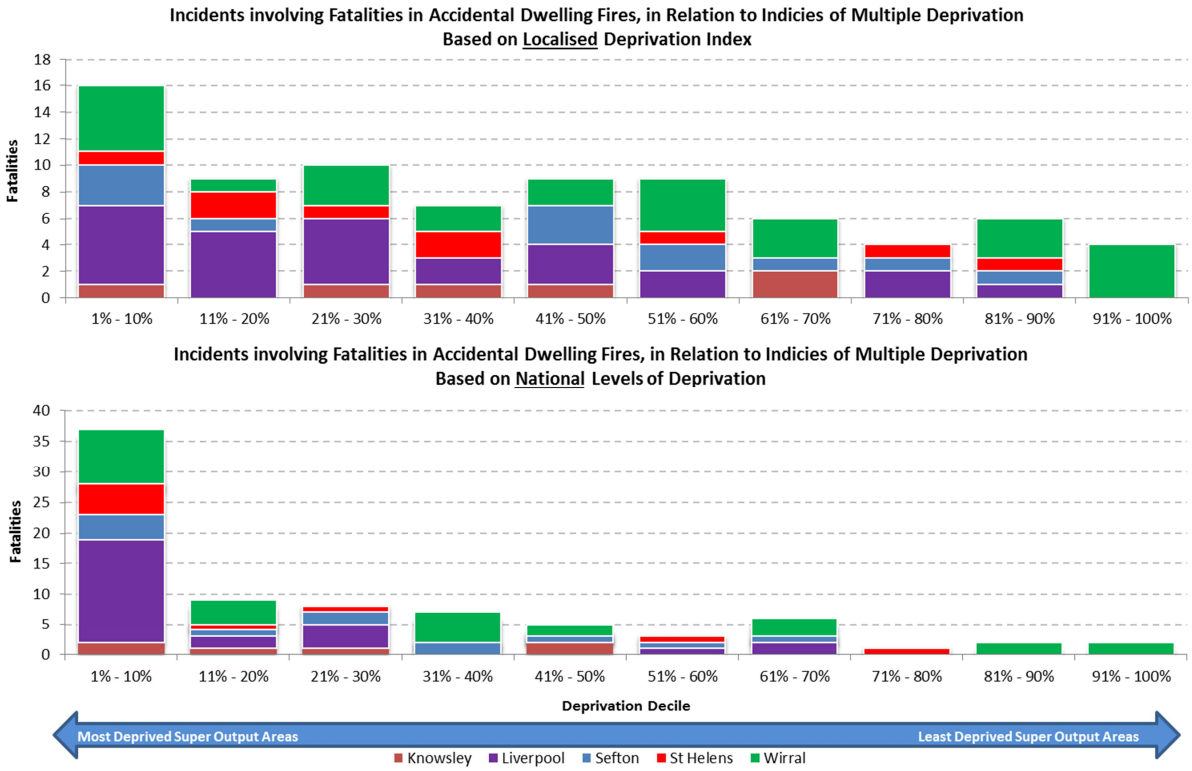

Chart 8 ranks the location of fire fatalities to the level of deprivation in the area the incident took place in, using Indices of Multiple Deprivation 2015 (IMD). Concerning the localised deprivation index, the chart demonstrates that as deprivation increases the number of fire deaths gradually increase. When the same data is placed into the context of National Deprivation, the chart clearly shows that the 1-10%[12] deprivation decile has disproportionately high levels of fire death

[12] This skewing is likely due to that Merseyside does have a high number of Super Output Areas within the 10% most deprived areas of England