



"An Excellent Authority"

Analysis of Fatalities in Accidental Dwelling Fires between 2007/08 and 2011/12

AUDIENCE

TO BE PRESENTED TO:

**Strategic Management Group
Authority**

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**STRATEGIC PLANNING DIRECTORATE
PREVENTION & PROTECTION**

Document Control

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1.1	16/04/2012	R Hanson	As per M Rasdale's comments
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Strategic Management Group		
Authority		

Related Documents

Reference No.	Title	Author	Version & Date
1	Analysis of Fatalities in Accidental Dwelling Fires between 1 April 2011 and 31 March 2012	M Rasdale	TBC
2	Customer Insight Risk Profile – Knowledge Transfer Partnership – Risk Assessment Machine Methodology	E Higgins	13/09/2010

Ownership

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If No please state reason why:

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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 Prevention and Protection and received on 08/04/2011.

The Manager¹ 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 30/04/2012, and would be sent electronically to the Director of Strategic Planning Directorate and Client for comment.

The Manager / Client agreed that their comments would be received back by 30/04/2012.

The final report, which will always be in PDF format, would be produced by 30/04/2012, subject to receiving comments.

¹ Deb Appleton

2. Summary

The purpose of this report is to provide a high level analysis of fatalities as a result of an Accidental Dwelling Fire. In summary the report presents the following findings:

- Between 2007/08 and 2011/12 there has been a downward trend in the number of fatalities in Accidental Dwelling Fires, from 9 to 5.
- Liverpool has witnessed the greatest number of fire fatalities over the five year period, with 13.
- When analysing incidents per 100,000 population, Wirral is the district at most risk with 3.2 fatalities per 100,000 population over the 5 year period.
- Deprivation links heavily to fatalities according to the IMD analysis, with the top 40% most deprived areas (IMD) accounting for 61% (22) of all fatalities over the last 5 years, and the top 40% most affluent areas accounting for 25% (9) of fatalities.
- Females over the age of 75 account for 25% (9) of fatalities during the last 5 years, while males under the age of 60 account for 8% (3).
- Using Customer Insight data there is an additional link to deprivation, with a large proportion (31%) of fatalities in Accidental Dwelling Fires having occurred in the Customer Insight group 10 which is "Younger, urban population living in high levels of deprivation." This group is linked to lower levels of affluence.

3. Introduction

The purpose of this report is to analyse fatalities from Accidental Dwelling Fires (ADF) between 2007/08 and 2011/12, the report statistically analyses the number and socio demographic background of such occurrence.

Fatalities are reported in Merseyside Fire and Rescue Service's Service Plan as Local Performance Indicator 47 which is reported quarterly and annually.

4. Methodology

The software used in this report includes:

- Microsoft Excel 2007 to interpret and graphically represent figures.
- MapInfo Professional 11 in conjunction with Customer Insight Risk Profile². (Customer Insight Risk Profile developed by MRFS in

² Please note: at the time of writing this report the Customer Insight Risk Profile is at Pilot Stage, with a successful pilot taking place in the Wirral. The Profile is yet to go live across Merseyside. The Customer Insight Risk Profile 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.

conjunction with Liverpool Johns Moores University to identify groups most at risk).

- Indices of Multiple Deprivation (IMD) 2010 were used to analyse the deprivation of where fatalities took place.³
- Data used in this report has been used in agreement with the Incident Investigation Team. It is based on incidents where the motive for the incident is judged to have been accidental in accordance with BVPI 143(ii)/LPI45. The data contained within this report contains data which is still awaiting coroner agreement and as such the figures are subject to change.

5. Results

5.1 Retrospective

Chart 1: Fatalities in Accidental Dwelling Fires for the past five fiscal years (2007/08 – 2011/12)

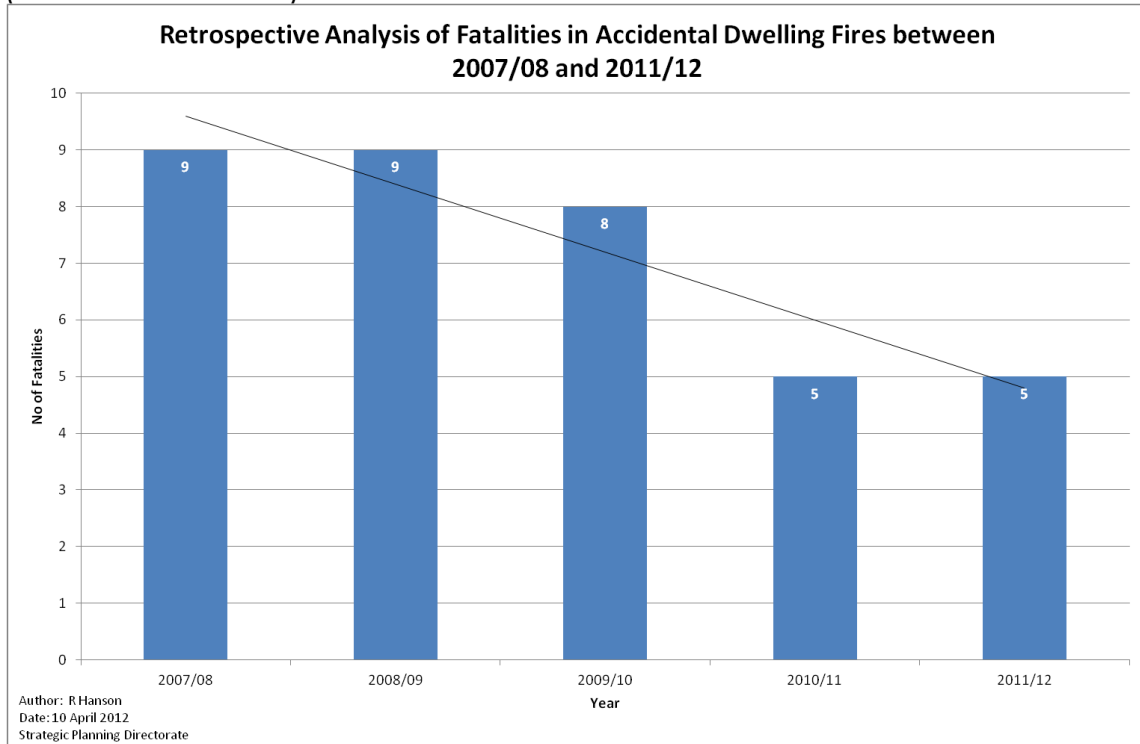


Chart 1 identifies that over the 5 year retrospective there has been an overall reduction of 4 fire fatalities between 2007/08 (9 fatalities) and 2011/12 (5 fatalities).

2010/11 was previously reported as the lowest number of fatalities in Accidental Dwelling Fires attended; during 2011/12 this performance was equalled.

³ Uses IMD 2010 to create a localised deprivation index, in essence grouping deprivation by 10% groupings

5.2 Temporal Analysis

Chart 2: Fatalities in Accidental Dwelling Fires between 2007/08 and 2011/12, by Month

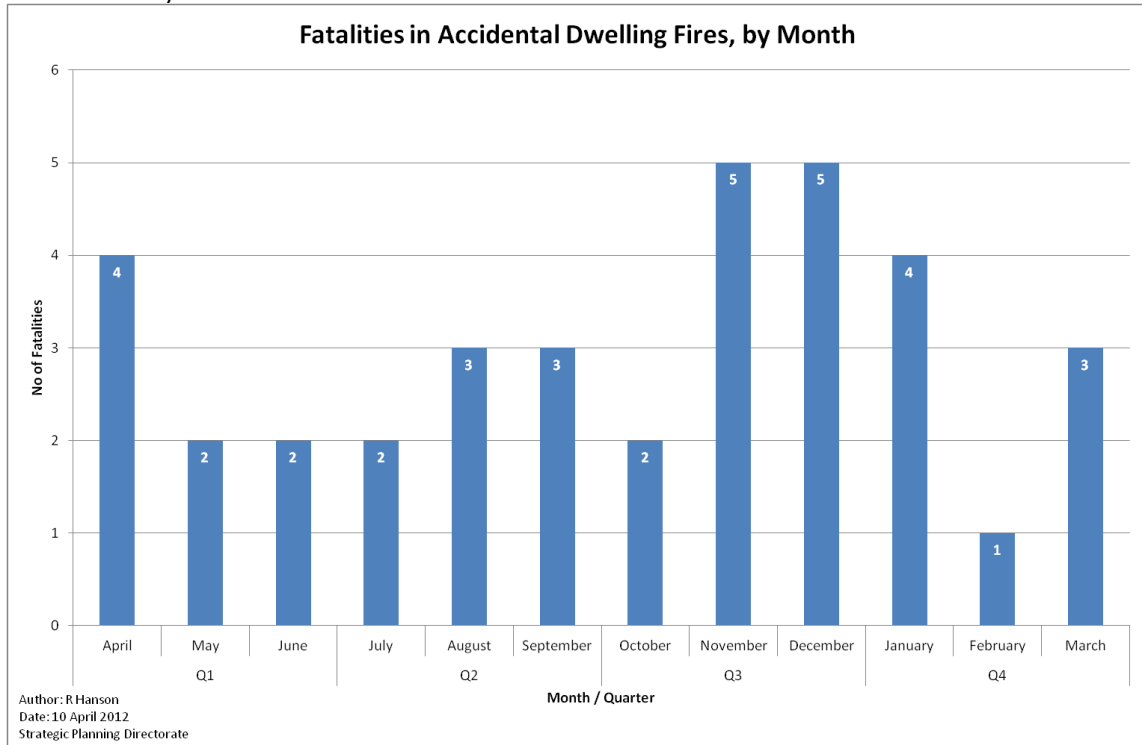
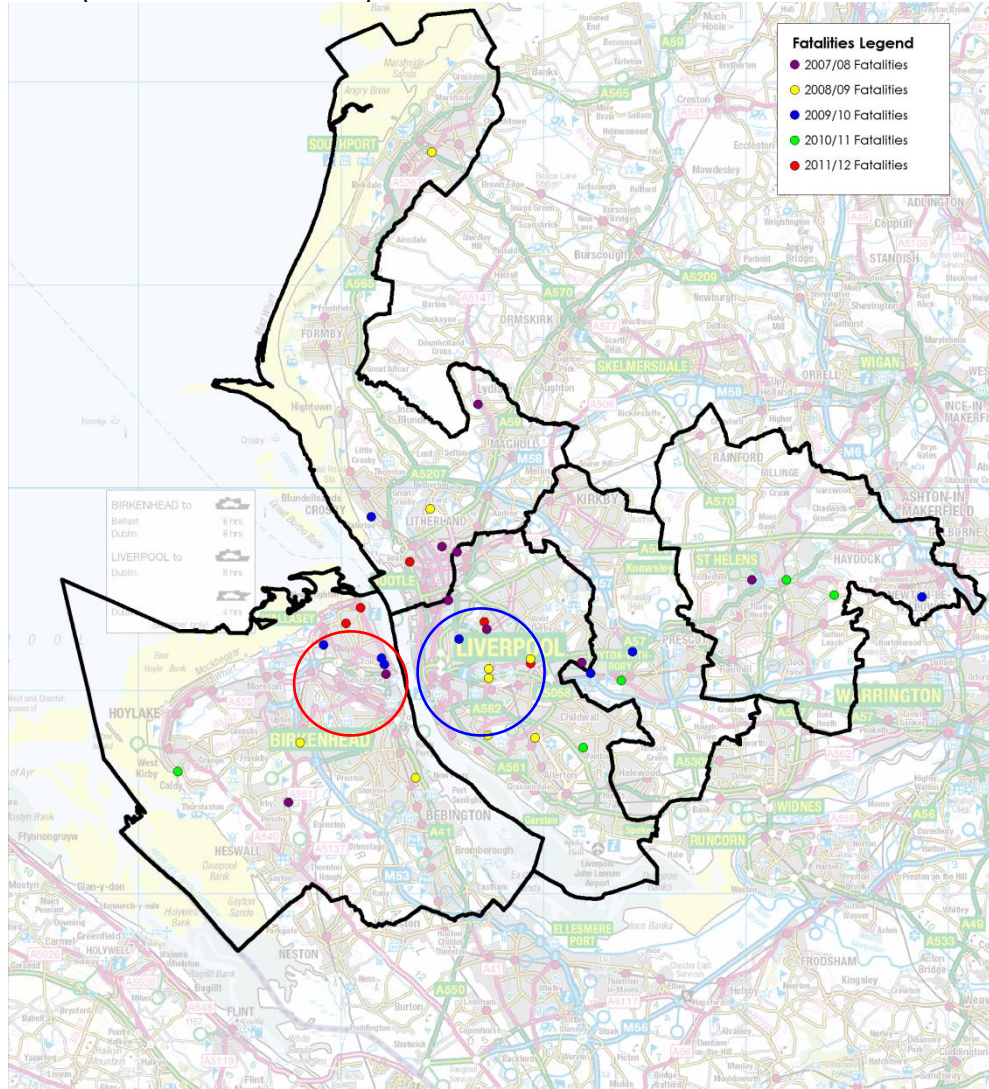


Chart 2 highlights that the winter months of November and December accounted for the greatest number of Accidental Dwelling Fire fatalities, with 5 incidents respectively. Quarter 3 accounted for the greatest number of fatalities (12); by contrast the other three quarters individually total 8 fatalities each throughout the last 5 years.

The month of February witnessed the fewest Accidental Dwelling Fire fatalities throughout the last 5 years, with 1.

5.3 Spatial Analysis of Fatalities in Accidental Dwelling Fires

Map 1: Dot Map Illustrating Locations of Accidental Dwelling Fire Fatalities (2007/08 – 2011/12)



Accidental Dwelling Fire Fatalities
(2007/08 - 2011/12)



Author: R Hanson Date: 11/04/2012
Produced Using MapInfo
Knowledge and Information Management

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Map 1 identifies locations of Accidental Dwelling Fire fatalities over each of the past 5 years. During 2011/12 there were 2 fatalities in Wirral in the adjacent wards of “New Brighton” and “Wallasey”. Over the 5 year duration, there appears to be a clustering of fatalities in the north eastern corner of Wirral, with a total of 6 ADF fatalities, ranging from 1 fatality in 2007/08, 3 in 2009/10 and 2 in 2011/12 (red circle).

In the district of Liverpool, 2 fatalities in ADFs during 2011/12 occurred in close proximity to previous fatalities, 1 in the ward of “Old Swan” and the other in the wards of “Tuebrook and Stoneycroft” / “Anfield”.

Table 1: Fatalities by district between 2007/08 and 2011/12 (with incidents per 100,000 population⁴)

District	2007/08	2008/09	2009/10	2010/11	2011/12	Grand Total
Knowsley	0 (0.0)	0 (0.0)	2 (1.3)	1 (0.7)	0 (0.0)	3 (2.0)
Liverpool	4 (0.9)	5 (1.1)	1 (0.2)	1 (0.2)	2 (0.4)	13 (2.9)
Sefton	2 (0.7)	2 (0.7)	1 (0.4)	0 (0.0)	1 (0.4)	6 (2.2)
St Helens	1 (0.6)	0 (0.0)	1 (0.6)	2 (1.1)	0 (0.0)	4 (2.3)
Wirral	2 (0.6)	2 (0.6)	3 (1.0)	1 (1.0)	2 (0.6)	10 (3.2)
Merseyside Total	9 (0.7)	9 (0.7)	8 (0.6)	5 (0.4)	5 (0.4)	36 (2.7)

Overall between 2007/08 and 2011/12 Liverpool witnessed the highest number of Accidental Dwelling Fire fatalities with 13 overall.

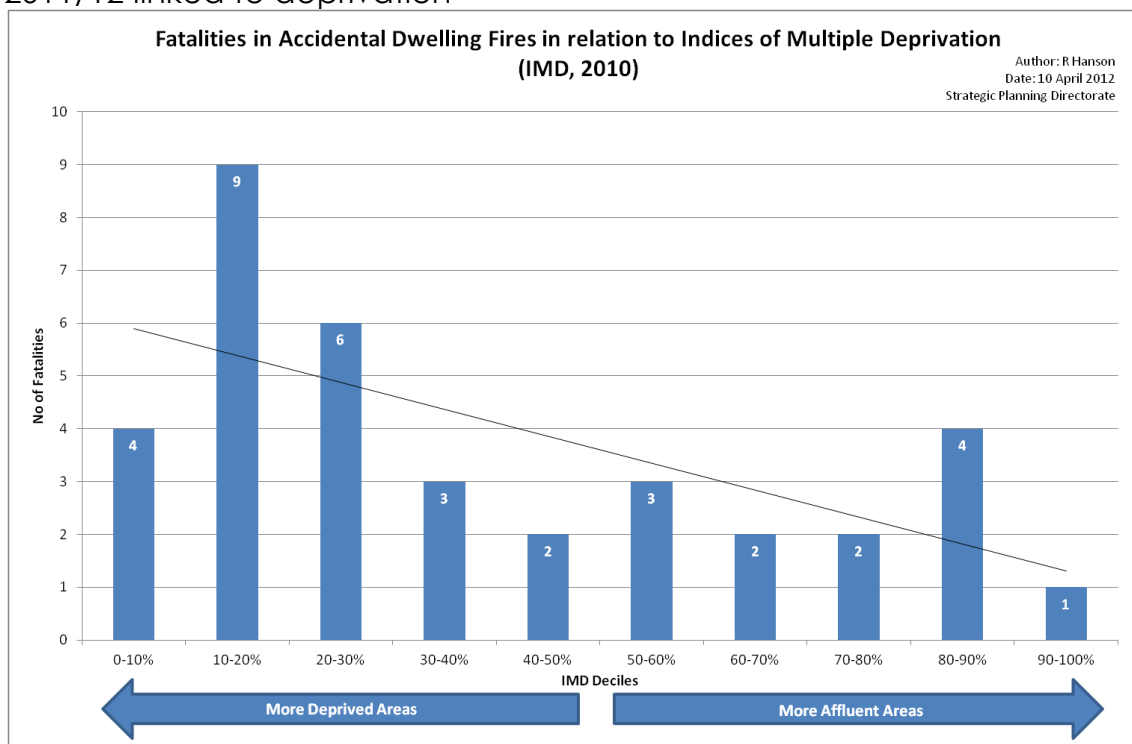
When analysed by incidents per 100,000 population, Wirral was the district at greatest risk from Accidental Dwelling Fire deaths (3.2 deaths per 100,000 population). This was closely followed by Liverpool which has an estimated 2.9 deaths per 100,000 population. Knowsley witnessed 3 Accidental Dwelling Fires deaths (2.0 deaths per 100,000 population) making it the district at least risk between 2007/08 and 2011/12.

Merseyside wide there were 36 Accidental Dwelling Fire fatalities between 2007/08 and 2011/12, which equates to 2.7 deaths per 100,000 population. Two districts, Wirral and Liverpool both experienced more deaths per 100,000 population compared to the Merseyside wide level, at 3.2 deaths per 100,000 and 2.9 deaths per 100,000 respectively.

⁴ Based on the number of fatalities; divided by the district population as of 2010/11; multiplied by 100,000. Data from ONS mid 2010 estimate.

5.4 Lifestyle Analysis of Fatalities in Accidental Dwelling Fires

Chart 3: Fatalities in Accidental Dwelling Fires between 2007/08 and 2011/12 linked to deprivation⁵



The trend-line in Chart 3 identifies that fatalities in Accidental Dwelling Fires tend to occur in the more deprived areas of Merseyside. It is shown that the 40% most affluent areas of Merseyside (60%-100% deciles combined) accounted for 25% (9) of total fatalities over the last 5 fiscal years. By comparison the 40% most deprived areas of Merseyside (0%-40% deciles combined) witnessed 61% (22) of overall fire fatality incidents.

It is hypothesised that there is a relationship between the amount of deprivation and the number of fire fatalities in the Merseyside area, with an increase in fatalities the more deprived an area is. Following a regression analysis, a R^2 value of 0.42 was achieved, therefore there is a statistically moderate link between high levels of deprivation and fatalities.

Since 2007/08, the 0-10% most deprived areas have seen 11% (4) of fatalities overall, the same as the second most affluent areas (80-90% deciles). The second most deprived areas (10-20% deciles) witnessed the greatest number of ADF fatalities between 2007/08 and 2011/12, with 9 (25% of the total).

⁵ As per the document Indices of Multiple Deprivation 2010

Table 2: Breakdown of fatalities according to Customer Insight⁶ group profiles between 2007/08 and 2011/12

Customer Insight Profile Description	2007/08	2008/09	2009/10	2010/11	2011/12	Grand Total
1 - Wealthy over 50 population living in semi-rural locations	1	0	0	2	0	3
2 - Wealthy retirees	0	0	0	0	0	0
3 - Middle income residents living in privately owned properties	0	3	1	2	2	8
4 - Average income older residents	1	0	1	0	0	2
5 - Students living in city centre locations	0	0	0	0	0	0
6 - Young families living in privately owned semi-detached homes	1	2	1	0	0	4
7 - Young families with high benefit need	3	1	2	1	1	8
8 - Residents living in social housing with high need for benefits	0	0	0	0	0	0
9 - Transient population living in poor quality housing	0	0	0	0	0	0
10 - Younger, urban population living in high levels of deprivation	3	3	3	0	2	11
Grand Total	9	9	8	5	5	36

An analysis using Customer Insight⁷ offers a different perspective in analysing the socio-demographic characteristics of incidents. Whilst the previous technique as demonstrated in chart 3 concentrates solely on overall deprivation, Customer Insight is based on people's socio-demographic backgrounds.

As indicated by Table 2, Customer Insight group "10 – Younger, urban population living in high levels of deprivation" accounts for a large proportion, 31% (11), of fatalities which occurred between 2007/08 and 2011/12. This Customer Insight group profile is characterised by those who are on lower incomes and high levels of benefit need. Following this were the Customer Insight groups "3 - Middle income residents living in privately owned properties" and "7 – Young families with high benefit need" with 22% (8) of the total fatalities each – again these are profiles linked to deprivation.

Furthermore, as outlined in table 2, there were no (zero) fatalities in Customer Insight groups "2 – Wealthy retirees", "5 – Students living in city centre locations", "8 – Residents living in social housing with high need for benefits", and "9 – Transient population living in poor quality housing".

⁶ Customer Insight classifies Merseyside into 10 groups in terms of their socio-demographics, lifestyles, culture and behaviour.

⁷ As noted in Methodology (Page 5) the Customer Insight Risk Profile is currently in Pilot Stage

5.5 Demographic Analysis

Table 3: Gender of fatalities in Accidental Dwelling Fires between 2007/08 and 2011/12

Year	Female	Male	Grand Total
2007/08	7	2	9
2008/09	7	2	9
2009/10	4	4	8
2010/11	3	2	5
2011/12	1	4	5
Grand Total	22	14	36

Table 3 identifies that more females (22, 61% of the total) have died as a result of Accidental Dwelling Fires than males (14, 39% of the total). This was mainly due to the large numbers of female fatalities during the years 2007/08 and 2008/09 with 7 incidents each (5 fatalities more than males in both years). This disparity began to level out in 2009/10 when there were 4 fatalities. However in 2011/12, there was a rise in male fatalities, with 4 compared to 1 female fatality, therefore bucking the female dominated trend.

Table 4: Age groups in Accidental Dwelling Fires 2007/08 – 2011/12 (with incidents per 100,000 population⁸)

Age Group	2007/08	2008/09	2009/10	2010/11	2011/12	Grand Total
0-4	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
5-9	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
10-14	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
15-19	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
20-24	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
25-29	0 (0.0)	2 (2.1)	0 (0.0)	0 (0.0)	0 (0.0)	2 (2.1)
30-34	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)
35-39	0 (0.0)	0 (0.0)	1 (1.2)	0 (0.0)	0 (0.0)	1 (1.2)
40-44	0 (0.0)	1 (1.1)	0 (0.0)	0 (0.0)	0 (0.0)	1 (1.1)
45-49	2 (2.0)	0 (0.0)	1 (1.0)	0 (0.0)	1 (1.0)	4 (4.0)
50-54	2 (2.2)	1 (1.1)	0 (0.0)	0 (0.0)	0 (0.0)	3 (3.3)
55-59	0 (0.0)	0 (0.0)	2 (2.5)	2 (2.5)	0 (0.0)	4 (4.9)
60-64	1 (1.2)	0 (0.0)	1 (1.2)	0 (0.0)	0 (0.0)	2 (2.4)
65-69	1 (1.6)	0 (0.0)	0 (0.0)	0 (0.0)	0 (0.0)	1 (1.6)
70-74	0 (0.0)	1 (1.7)	0 (0.0)	1 (1.7)	0 (0.0)	2 (3.4)
75-79	0 (0.0)	0 (0.0)	2 (4.2)	0 (0.0)	2 (4.2)	4 (8.3)
80-84	2 (5.7)	2 (5.7)	0 (0.0)	0 (0.0)	2 (5.7)	6 (17.1)
85+	1 (3.5)	2 (7.0)	1 (3.5)	2 (7.0)	0 (0.0)	6 (21.1)
Grand Total	9 (0.7)	9 (0.7)	8 (0.6)	5 (0.4)	5 (0.4)	36 (2.7)

Table 4 shows that over the last 5 years the greatest number of fatalities occurred in the 80-84 and 85+ age groups, each with 6 incidents. This was closely followed by the 45-49, 55-59 and 75-79 age groups, with 4 Accidental Dwelling Fire deaths in each.

⁸ Based on the number of fatalities; divided by the age group population as of 2010/11; multiplied by 100,000. Data from ONS mid 2010 estimate.

When analysing the number of Accidental Dwelling Fires deaths proportionally per 100,000 population it is clear that the 85+ age group experienced the greatest number per 100,000 population (21.1) and also the greatest number of actual fire deaths (6). This was closely followed by the 80-84 age group with 17.1 deaths per 100,000 population and 6 actual fire deaths.

There have been no fatalities in Accidental Dwelling Fires below the age of 34 during the last 3 years.

Table 5: Age and Gender of victims in Accidental Dwelling Fires 2007/08 – 2011/12

Age Group	Gender	2007/08	2008/09	2009/10	2010/11	2011/12	Grand Total
25-29	Female	0	2	0	0	0	2
	Male	0	0	0	0	0	0
30-34	Female	0	0	0	0	0	0
	Male	0	0	0	0	0	0
35-39	Female	0	0	0	0	0	0
	Male	0	0	1	0	0	1
40-44	Female	0	1	0	0	0	1
	Male	0	0	0	0	0	0
45-49	Female	2	0	1	0	0	3
	Male	0	0	0	0	1	1
50-54	Female	2	1	0	0	0	3
	Male	0	0	0	0	0	0
55-59	Female	0	0	1	2	0	3
	Male	0	0	1	0	0	1
60-64	Female	0	0	0	0	0	0
	Male	1	0	1	0	0	2
65-69	Female	0	0	0	0	0	0
	Male	1	0	0	0	0	1
70-74	Female	0	1	0	0	0	1
	Male	0	0	0	1	0	1
75-79	Female	0	0	1	0	0	1
	Male	0	0	1	0	2	3
80-84	Female	2	1	0	0	1	4
	Male	0	1	0	0	1	2
85+	Female	1	1	1	1	0	4
	Male	0	1	0	1	0	2
Grand Total		9	9	8	5	5	36

Table 5 combines the results from Tables 3 and 4 and identifies that the risk demographic are females in the 80-84 and 85+ age groups as they consist of a contributed 8 fatalities over the 5 years. Furthermore, according to the table, females between the ages of 45 and 59 are at risk due to a total of 9 fatalities between these ages over the 5 years. When analysing the male demographic, there have only been 3 fatalities under the age of 60 in the past 5 years. These deaths have occurred in the age groups 35-39, 45-49 and 55-59.

5.6 Cost Analysis⁹

Table 6: Estimated Cost of Accidental Dwelling Fire Fatalities, by Year

Year	Total	Cost of Fire
2007/08	9	£13.7 million
2008/09	9	£13.7 million
2009/10	8	£12.1 million
2010/11	5	£7.6 million
2011/12	5	£7.6 million
Grand Total	36	£54.7 million

Table 6 identifies that over the last 5 years there has been a total of 36 Accidental Dwelling Fire fatalities which has cost the economy £54.7 million. Between 2007/08 and 2011/12, the number of Accidental Dwelling Fire fatalities has reduced from 9 to 5, a reduction of 4, which has resulted in a decrease in the cost of these fatalities over the years, with a notional saving of £6.1 million when comparing 2007/08 with 2011/12.

6. Conclusion

In conclusion the report presents the following findings:

- Between 2007/08 and 2011/12 there has been a downward trend in the number of fatalities in Accidental Dwelling Fires, from 9 to 5.
- Liverpool has witnessed the greatest number of fire fatalities over the five year period, with 13.
- When analysing incidents per 100,000 population, Wirral is the district at most risk with 3.2 fatalities per 100,000 population over the 5 year period.
- Deprivation links heavily to fatalities according to the IMD analysis, with the top 40% most deprived areas (IMD) accounting for 61% (22) of all fatalities over the last 5 years, and the top 40% most affluent areas accounting for 25% (9) of fatalities.
- Females over the age of 75 account for 25% (9) of fatalities during the last 5 years, while males under the age of 60 account for 8% (3).
- Using Customer Insight data there is an additional link to deprivation, with a large proportion (31%) of fatalities in Accidental Dwelling Fires having occurred in the Customer Insight group 10 which is "Younger, urban population living in high levels of deprivation." This group is linked to lower levels of affluence.

⁹ The cost of a fire fatality is £1.52 million according to Cost of Fires, 2006, CLG.

7. Action Plan

ACTION PLAN								
	Link to IRMP / Service Plan							
	Title of Initiative / Activity (where applicable)	Brief description of Initiative/Activity (where applicable)	IRMP Task ref: / Performance Indicator:	How does this task support the IRMP / Service Plan	What information/data will be used to measure this activity	Anticipated target for Performance	Task Owner	Date of Review
1	Local Measurement and review of Performance		LPI 45: Fatalities from accidental dwelling fires per 100,000 population	Safer Stronger Communities	Data obtained from the Incident Investigation Team	6 Fatalities during 2012/13	Prevention & Protection, Ops Performance, Strategic Planning	Quarterly in Service Plan. Annual Fatality report
2	Home Fire Safety Risk Reduction	From 2012/13 each station will take ownership of delivering performance against target locally targeted issues. MF&RS will also assist people with home and business security as part of our overall community safety approach.	NI49c: Fatalities from Primary Fires (Merseyside Wide)	Safer Stronger In line with views expressed during our pre-IRMP consultation forums.	Data obtained from the Incident Investigation Team		Community Safety	Monthly by performance monitoring and Strategic Management Group.