

ACCIDENTAL DWELLING FIRES IN BIRMINGHAM SOUTH

Analysis of Fire and Casualty data to identify geographical areas and groups of the population most at risk of accidental dwelling fires in Birmingham South Command Area

April 2011 to March 2014

Data Intelligence Hub
2014

Introduction

The following document presents the results of the analysis of Accidental Dwelling Fires (ADF) in Birmingham South. Its aim is to assist in identifying geographical areas and groups of the population which are most at risk of ADF.

Three years of accidental dwelling fire and accidental dwelling fire casualty data were analysed: from April 2011 to March 2014.

In each section of this document, a box summarises the main features highlighted in the section.

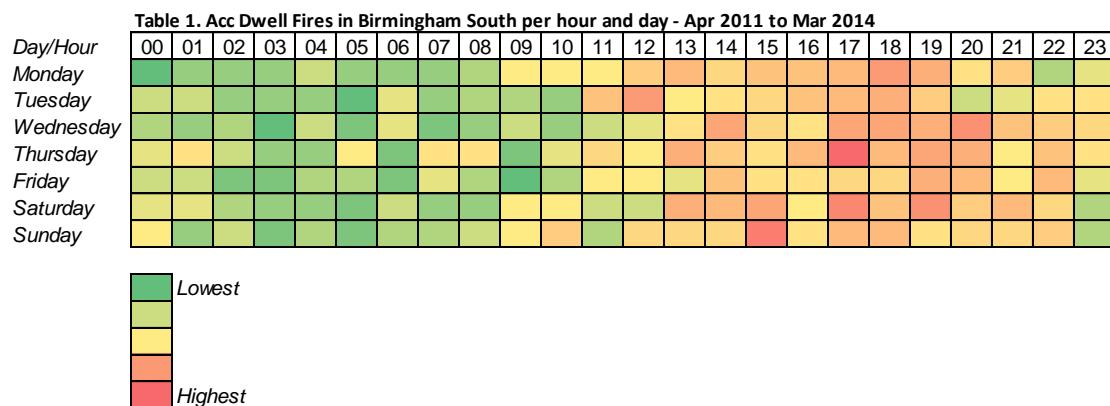
The maps are also available in PDF format, including lower level maps focusing on the areas most at risk in the Data Hub Alfresco site's library.

The results of this analysis are also available as a 'mind map' linking all main features together. This is also available in the Data Hub Alfresco site's library.

NB The border between Birmingham North and Birmingham South follows Ward boundaries. However, Lower Super Output Areas (a geographic hierarchy designed to improve the reporting of small area statistics) are not organised to match exactly with Wards. Therefore, if more than half of an LSOA area falls into one of the two Command Areas it has been deemed to be part of that Command Area

Temporal analysis

Table 1 illustrates the temporal distribution of accidental dwelling fires in Birmingham South.



It shows that, over the course of a week, the four hours between 17:00 and 21:00 are the busiest, with 29.8% of ADF occurring during this time frame.

Chart 1 is the seasonality chart for accidental dwelling fires in Birmingham South. If the column is a positive number (above the 0) then the number of incidents in that month is higher than expected, if the column is a negative number then the number of incidents in that month is lower than expected (the values on the vertical (y) axis are relative values).

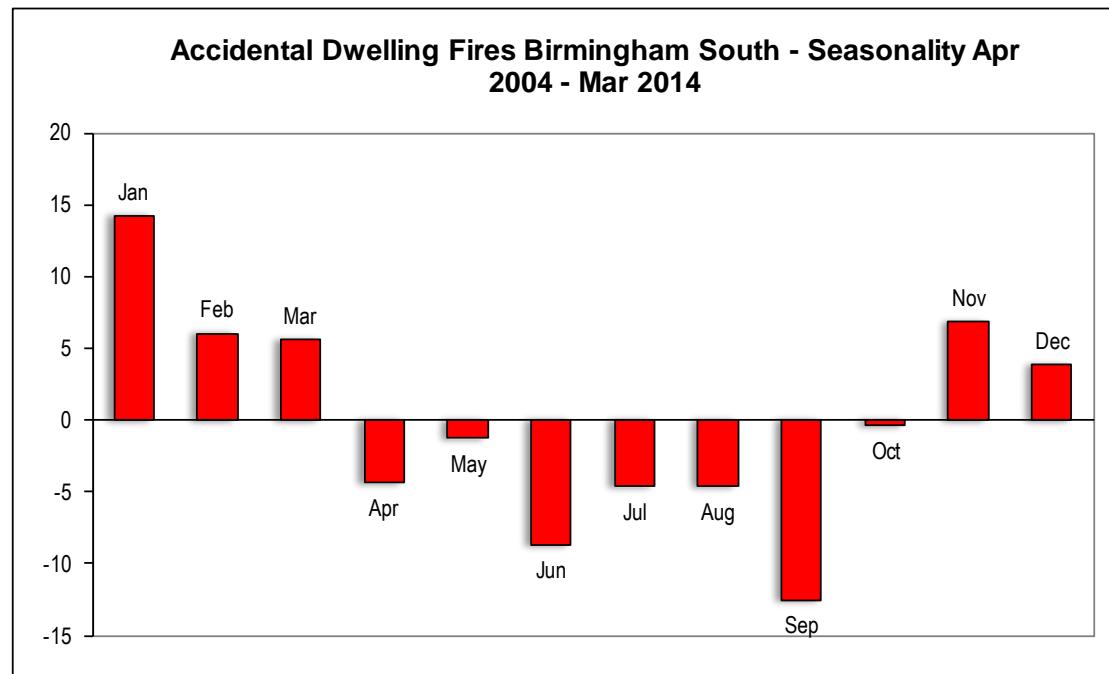
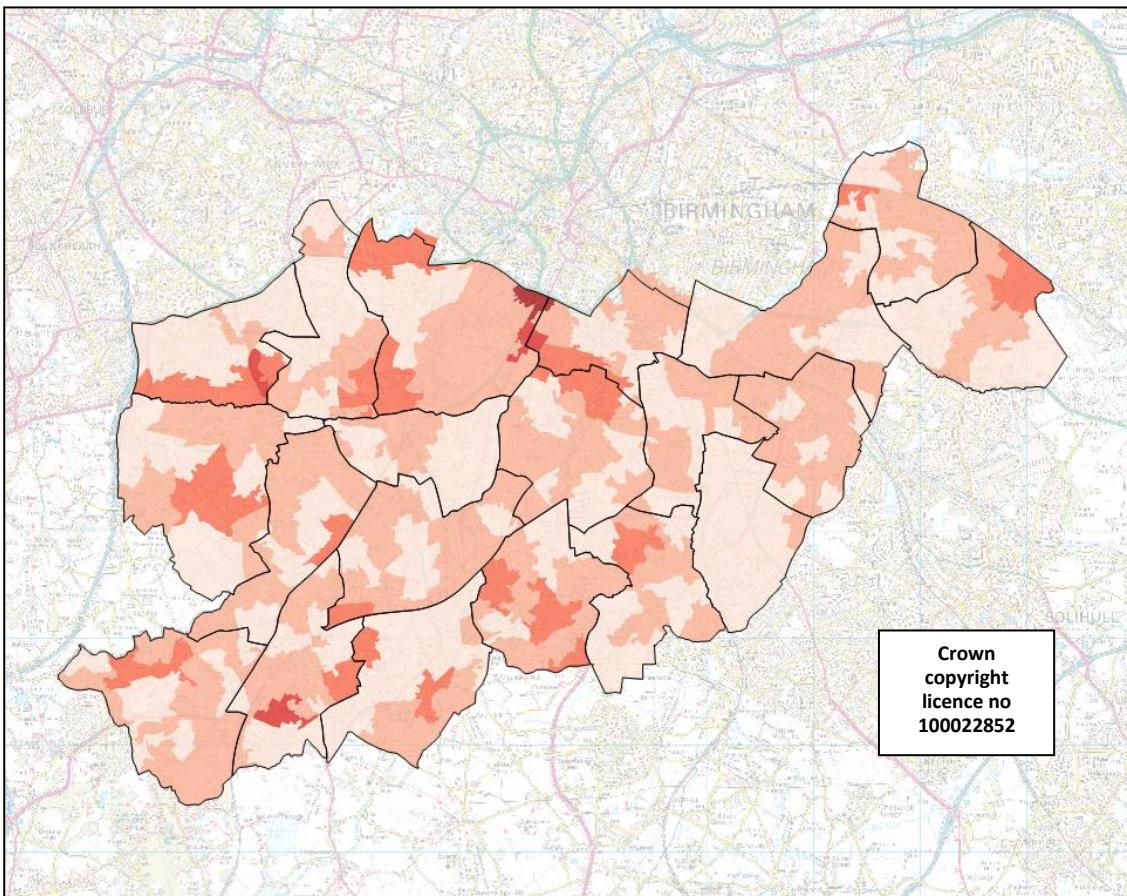


Chart 1. Seasonality - Accidental Dwelling Fires in Birmingham South

It shows that, overall, accidental dwelling fires are most likely in the winter months

Location

In the map below, LSOAs (Lower Super Output Areas) are highlighted according to a calculated risk score based on the correlation between the number of accidental dwelling fires in each LSOA and various other datasets (please see Appendix A for a list of datasets used): the darker the LSOA, the greater the score and therefore the risk of accidental dwelling fires.



Map 1. Accidental Dwelling Fire calculated risk score in Birmingham South

The map shows that areas of Edgbaston, Quinton and Northfield Wards in Birmingham South presented the highest risk.

There is a strong correlation with the number of residents in all **single person households** but particularly where the occupant is <65. 38.0% of ADFs in the period reviewed occurred in single person households (21.9% where the person was <65). Census 2011 data shows that single person households made up 32.2% of all households within Birmingham South

Correlation analysis suggests that the number of accidental dwelling fires has a strong correlation with the number of residents of **black and Afro-Caribbean ethnicities**. This

link also emerges when analysing the ethnicity recorded in the ADF data (whether for the person present during the fire/owner occupier or the casualties)

There is also a strong correlation between ADFs and the number of **socially rented households** in the LSOA. Accidental dwelling fires also show correlations to a lesser extent with **mixed ethnicity, those receiving incapacity benefit/severe disability allowance, households in general and the employment deprivation index,**

It should be noted that correlation is only an indicator that two variables fluctuate together; it however does not necessarily imply causation.

Mosaic

Mosaic groups the UK population into 15 broad groups and 69 more detailed types according to their demographic and lifestyle traits

The Mosaic types below incurred the greatest number of Accidental Dwelling Fires in Birmingham South:

I42	South Asian communities experiencing social deprivation	
N60	Tenants in social housing flats on estates at risk of serious social problems	
O68	Families with varied structures living on low rise social housing estates	
M59	People living in social accommodation designed for older people	
H37	Young owners and rented developments of mixed tenure	

Correlation analysis shows that N66 had a stronger correlation to ADF while N65, M57, N64 and G33 showed a moderate correlation:

N66	Childless, low income tenants in high rise flats	
N65	Young singles in multi-ethnic communities, many in high rise flats	
M57	Old people in flats subsisting on welfare payments	
N64	Diverse homesharers renting small flats in densely populated areas	
G33	Transient singles, poorly supported by family and neighbours	

Source of ignition

The top three sources of ignition for accidental dwelling fires in Birmingham South are **cooking appliances** (50.9% of accidental dwelling fires), **electricity supply** (14.1%), and **other domestic style appliance** (8.7%).

Cooking appliances fires:

Cooking fires accounted for over half of accidental dwelling fires, and resulted in over a half of all accidental dwelling casualties (55.1%)

Chart 2 is the seasonality chart for cooking accidental dwelling fires in Birmingham South. If the column is a positive number (above the 0) then the number of incidents in that month is higher than expected, if the column is a negative number then the number of incidents in that month is lower than expected (the values on the vertical (y) axis are relative values).

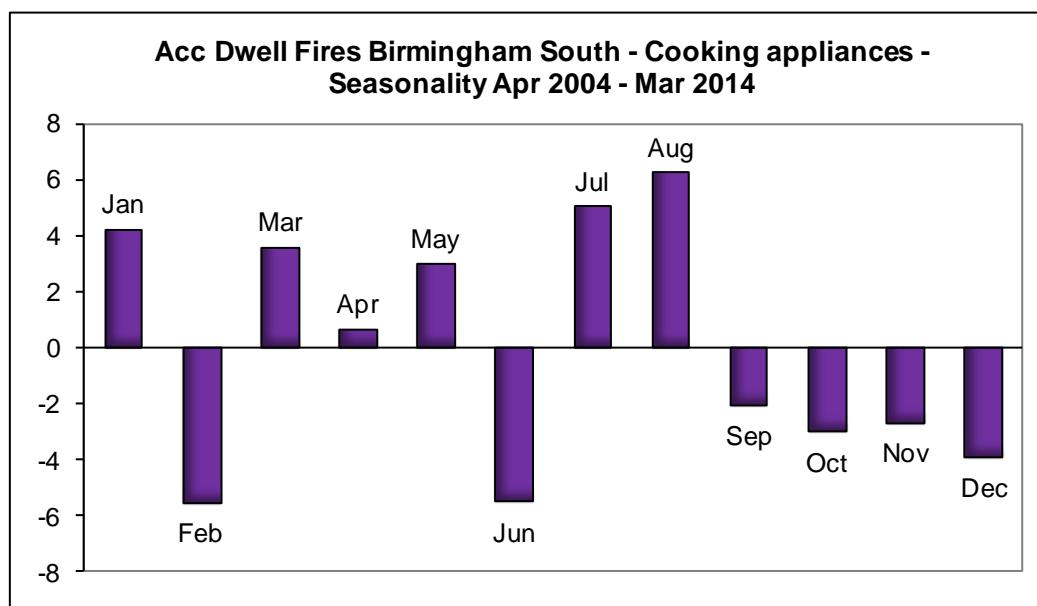
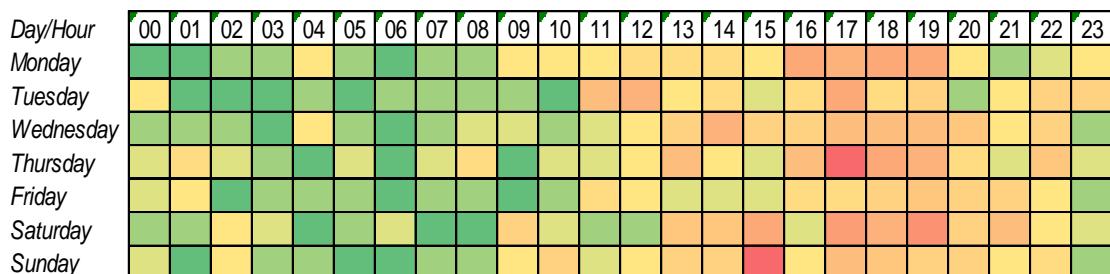


Chart 2. Seasonality – Cooking Appliance Accidental Dwelling Fires in Birmingham South

This shows that accidental dwelling fires are most likely to occur in **July** and **August** and to a lesser extent in **January, March and May**

Table 2 shows that the temporal distribution of cooking fires is very similar to the spread of all accidental dwelling fires in general:

Table 2. Cooking Acc Dwell Fires Birmingham South per hour and day – Apr 2011 to Mar 2014



40% of incidents took place between **16:00 and 20:00** and almost a quarter took place between **12:00 and 16:00** (to be expected as these hours cover meal times) Saturday and Sunday had **31.5%** of all incidents.

12.1% of cooking fires were alcohol- or drug-related, which is higher than the average of 8.1% for all accidental dwelling fires in Birmingham South.

Cooking fires all casualties are most likely to be between the ages **45-64** although 9 casualties (5.4%) were children under 10. PI casualties are more likely to be **25-44**

Compared with the 2011 Census, where they represent 5.6% of Birmingham South's population, people of **black and Afro-Caribbean ethnicities** were over-represented as the owner occupier or person present during accidental dwelling fires (9.2%). People of **White ethnicity** were also over-represented as PI casualties: 71.9% compared with 65.8% of the population.

Human factors were recorded in just over 40% of all ADF. 45.3% of incidents where 'human factors' were recorded, **distraction** was recorded as a factor

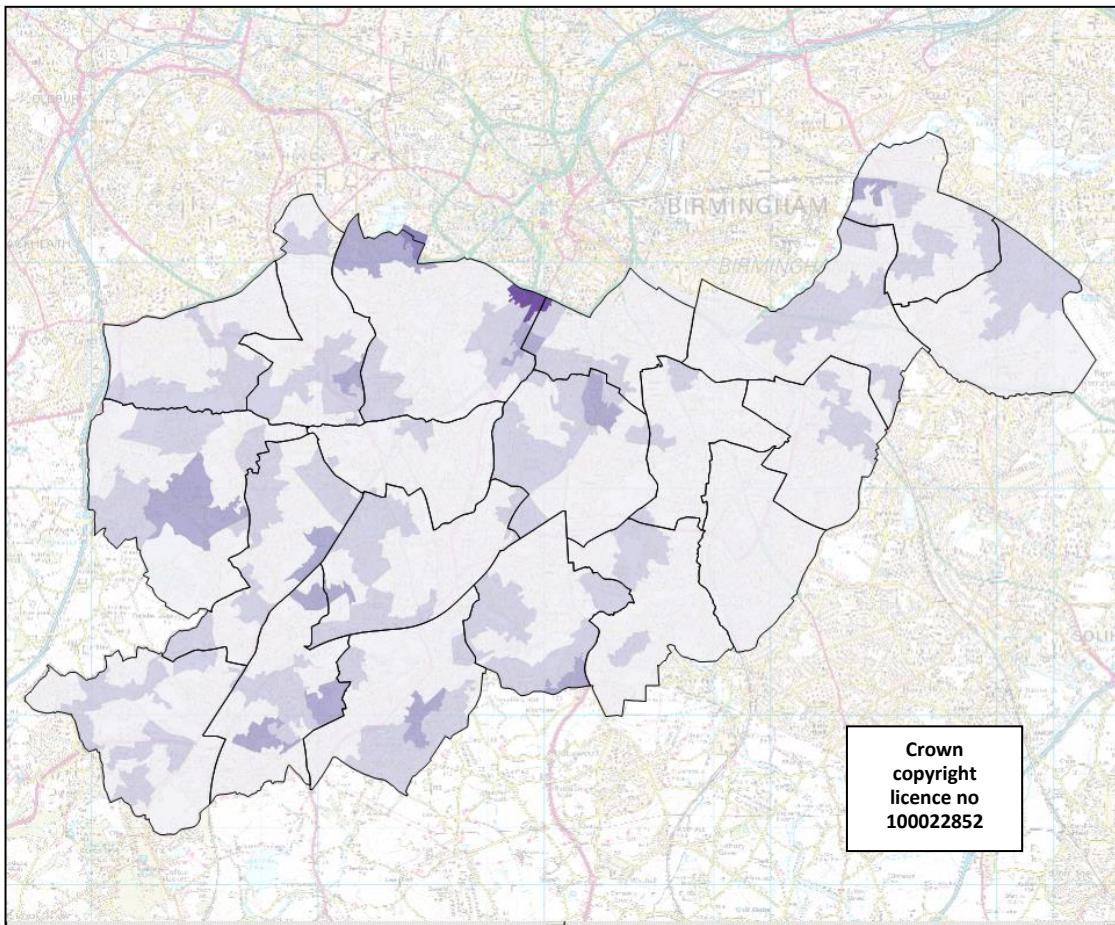
Analysis also showed that the proportion of **single person households** was higher for cooking fires (49.6%) than accidental dwelling fires overall (38.0%).

Properties **rented from the council** accounted for 35.3% of accommodation type where a cooking ADF occurred.

Cooking fires tended to be **caused by adults** aged 18-64 (65.1% of incidents) and the **elderly - 65+** (25.0%). However, according to Census 2011 data, 18-64 year olds account for 62.3% of usual residents in Birmingham South while only 13.4% of people are 65+

As cooking fires make up such a large proportion of ADF, the geographical distribution of the risk of cooking fires is very similar to that of ADF overall, with areas of Edgbaston ward presenting the most risk:

Map 2. Cooking Acc Dwell Fire calculated risk score in Birmingham South



The box below summarises the main features of cooking accidental dwelling fires in Birmingham South:

COOKING FIRES:

- Over half of all Accidental Dwelling Fires
- August, July, January
- 16:00 to 20:00 and 12:00 to 16:00
- 12.1% alcohol- or drug-related
- 25% of PI casualties over 65
- White ethnicities: casualties
- Distraction, especially for those aged 65+
- Single person households
- Rented properties, particularly from the council
- Caused by adults and the elderly

Electricity supply

Between April 2011 and March 2014, accidental dwelling fires caused by electricity supply accounted for 14.1% of all ADFs, and resulted in 26 casualties overall (1 PI injury) which was 8.6% of all casualties, but 3.1% of PI injuries and fatalities).

The seasonality chart below shows that electricity supply accidental dwelling fires are most likely in the **winter months**, which is consistent with more electricity being used for lighting or heating, as daylight diminishes and the weather becomes colder.

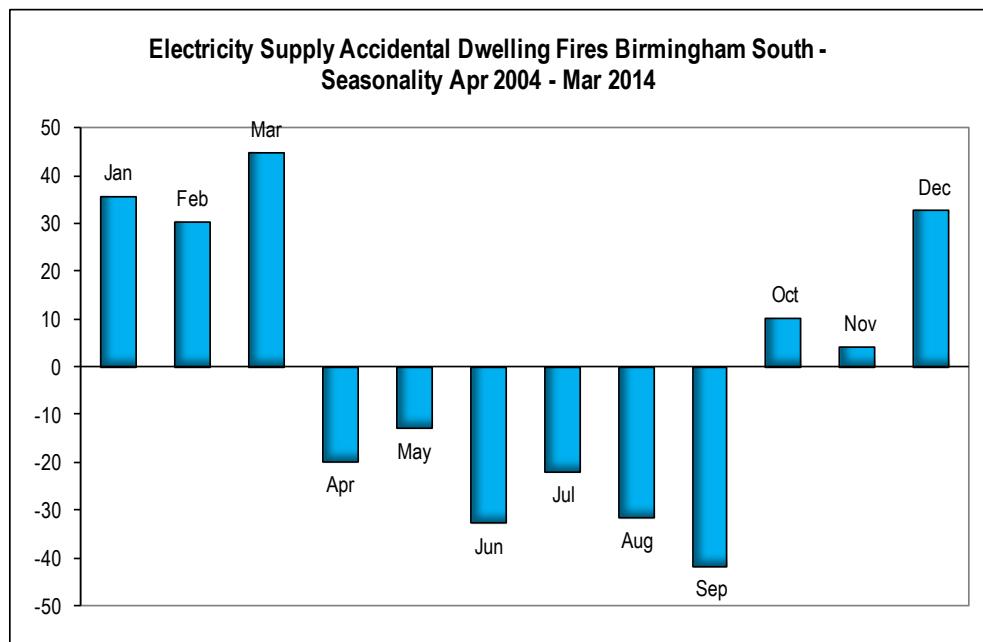


Chart 3. Seasonality - Electricity Supply Accidental Dwelling Fires in Birmingham South

Table 3 shows that electricity supply fires tend to be highest in the afternoons and evenings but there are no particular daily patterns:

Table 3. Electricity supply Acc Dwell Fires in Birmingham South per hour and day – Apr 2011 to Mar 2014

Day/Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Monday																								
Tuesday																								
Wednesday																								
Thursday																								
Friday																								
Saturday																								
Sunday																								

Wiring, cabling and plugs were responsible for 87.2% of electricity supply fires. Current recording practices do not allow for analysis of the type of appliances the wiring, cable and plugs were connected to, although wiring insulation was recorded as the item mainly responsible in 67.7% of incidents.

Those incidents are highest in **owner occupied properties**, with 47.0% of electricity supply incidents at this type of accommodation. Properties rented privately accounted for over 27% of electricity supply ADF.

Electricity supply accidental dwelling fires were most likely to start in a **kitchen** (14.8%), a **corridor/hall** (14.8%) or in the **bedroom** (13.4%).

51.0% of the owner occupier or the person present during the fire were within the **25-44 years** age bracket, which is higher than accidental dwelling fires in general (35.2%).

Correlation analysis did not result in strong enough correlations to enable a calculated risk score and an illustrative map, but the box below summarises the main features of electricity supply accidental dwelling fires in Birmingham South:

ELECTRICITY SUPPLY FIRES:

- Winter months
- Afternoons and evenings
- Wiring, cabling and plugs
- Owner occupied
- Kitchen, corridor/hall and bedroom
- Owner occupiers/person present aged 25-44

Other domestic style appliance

Between April 2011 and March 2014, other domestic style appliance accidental dwelling fires accounted for 8.7% of all accidental dwelling fires, and resulted in 25 of all casualties – including one fatality (8.3% of all casualties, and 6.3% of PI injuries and fatalities).

Temporal analysis shows that 25% of incidents occurred between **1800 and 2100**. **Thursday** has almost double the number of incidents than any other day in the three years reviewed

Table 4. Other domestic appliance Acc Dwell Fires in Birmingham South per hour and day – Apr 2011

Day/Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Monday																								
Tuesday																								
Wednesday																								
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Chart 3 below shows the seasonality of ‘other domestic appliance’ fires over the last three financial years. Incidents are clearly more likely to occur in the winter months

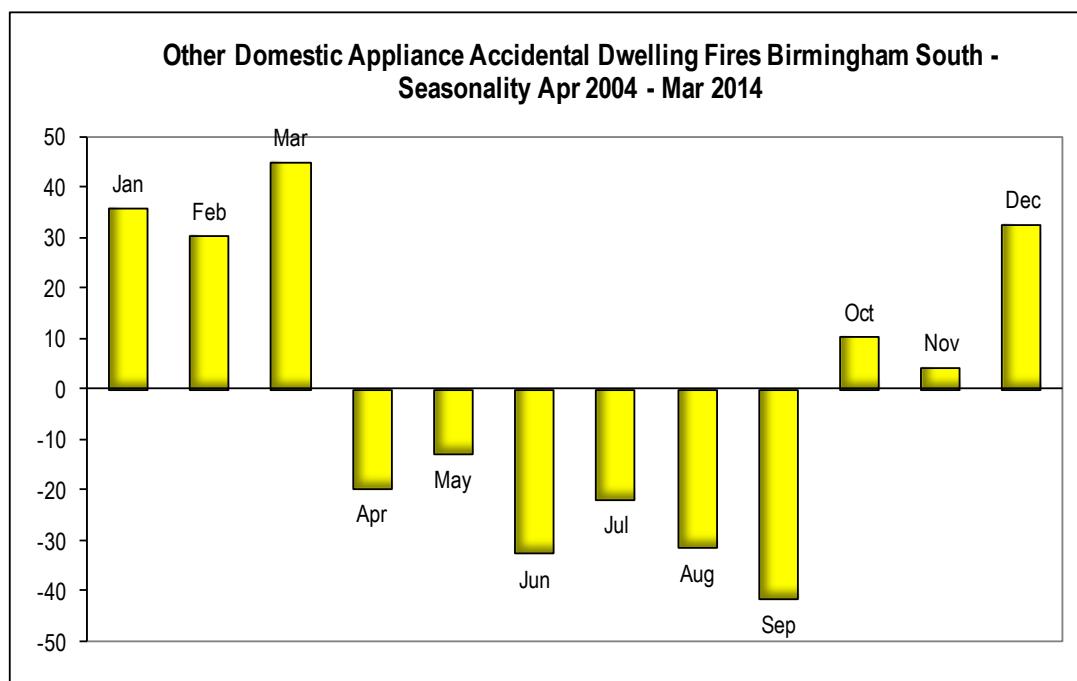


Chart 4. Seasonality – Other Domestic Appliance Accidental Dwelling Fires in Birmingham South

The top three sources of ignition for other domestic appliance ADF are **tumble dryer** (21.7%), **washing machine** (21.7%) and **dishwasher** (15.2%). Although incident numbers are small, 20% of tumble dryers and 25% of washing machine fires were recorded as Indesit models and 35.7% of dishwasher fires were recorded as Hotpoint

Owner occupied properties accounted for 53.3% of other domestic appliance fires

Unsurprisingly, incidents were most likely to start in the **kitchen** (59.8%) although 13.0% occurred in the **bedroom** (13.0%)

Adults **between the ages of 25 and 44** were the most likely **person present during the fire/owner occupier** (47.8%) for other domestic appliance ADF. Those between the ages of both **25 and 44** and **65 and 79** were more likely to be **casualties** in this type of ADF.

Compared with the 2011 Census, where they represent 60.9% of Birmingham South's population, people of **White British ethnicity** were over-represented as the owner occupier or person present during accidental dwelling fires (75.0%).

Correlation analysis did not result in strong enough correlations to enable a calculated risk score and an illustrative map, but the box below summarises the main features of electricity supply accidental dwelling fires in Birmingham South:

OTHER DOMESTIC STYLE APPLIANCES:

- Winter months
- Between 1800 and 2100, Thursday
- Tumble dryer, washing machine, dishwasher
- Owner occupied
- Kitchen and bedroom
- Owner occupiers/person present aged 25-44
- Casualties 25-44 and 65-79
- White British ethnicity

Smoking related (including cigarette lighter)

Between April 2011 and March 2014, smoking related accidental dwelling fires accounted for 8.0% of all accidental dwelling fires, and resulted in 34 of all casualties – including two fatalities (11.3% of all casualties and rescues, and 25.0% of PI injuries and fatalities).

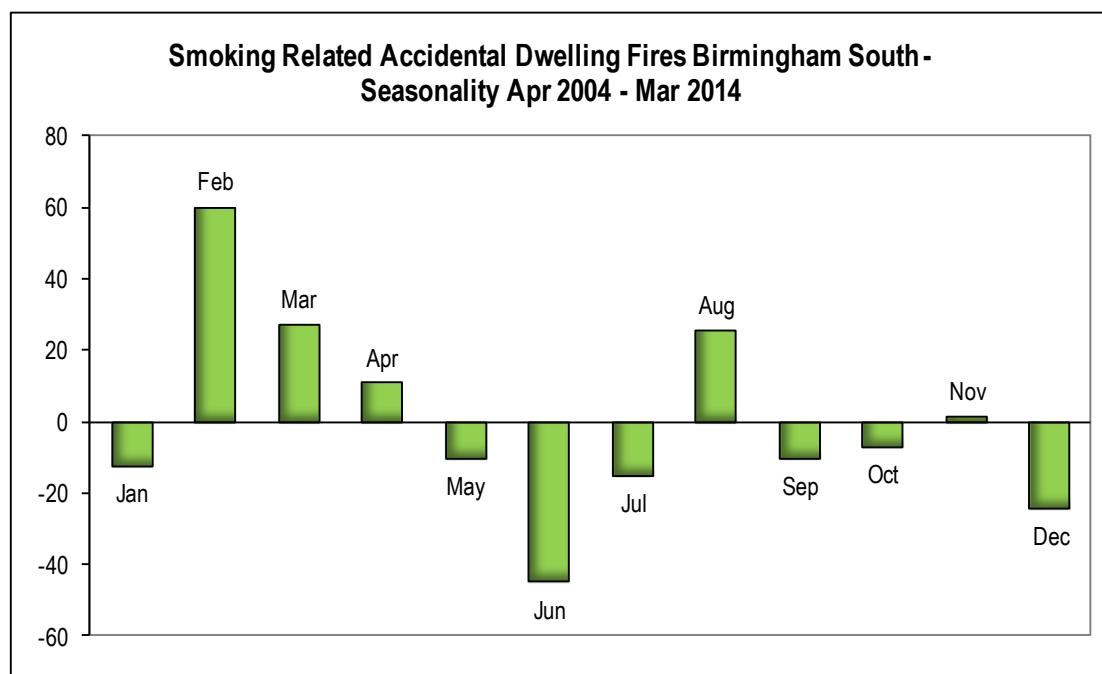
Temporal analysis shows that smoking related accidental dwelling fires are more likely to occur in the evenings between **1800 and 0100** (46.4%), with the hour between midnight and 1am showing the most incidents. There is no pattern in the day of the week

Day/Hour	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23
Monday																								
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Table 5. Smoking Related Acc Dwell Fires in Birmingham South per hour and day – Apr 2011 to Mar 2014

Chart 4 is the seasonality chart for smoking related dwelling fires in Birmingham South. It shows that, in Birmingham South, these types of incidents are more likely in the **early part of the year** and also **August**.

Chart 5. Seasonality - Smoking related Accidental Dwelling Fires in Birmingham South



Smoking related fires had the highest proportion of **alcohol / drug related** incidents, with 16.7% recorded as believed to be linked to alcohol or drug consumption, over double the proportion of overall ADF.

There was also 17.9% of smoking related ADF where **falling asleep** was a contributory factor and 13.1% where **distraction** were deemed a factor.

63.1% of smoking related ADF started either in the **bedroom** (26.2%), **living room** (21.4%) or **kitchen** (15.5%)

Adults **between the ages of 25 and 44** were the most likely **person present during the fire/owner occupier** for smoking related ADF (although 9.5% of incidents had no person recorded), Those between the ages of 45 and 64 were more likely to be **casualties** in smoking related ADF.

While **adults (aged 18-64)** are most likely to cause smoking related ADF, the past three years have seen a reduction of the elderly as a cause of smoking related ADF by 75% (from 8 incidents to 2 incidents)

Rented properties were over-represented compared with ADF overall and also compared with the area's tenure distribution according to the Census 2011, accounting for 67.9% of smoking related fires, compared to 61.8% of all ADF, and 43.1% of households in Birmingham South (Census 2011).

Correlation analysis did not result in strong enough correlations to enable a calculated risk score and an illustrative map, but the box below summarises the main features of smoking related accidental dwelling fires in Birmingham South:

SMOKING RELATED FIRES:

- February, March, August
- Between 18:00 and 21:00, midnight to 01:00
- 16.7% alcohol or drug related
- Falling asleep, distraction
- Rented properties
- Bedroom, living room, kitchen
- Person present/owner occupier: aged 25 - 44
- All Casualties: aged 45-64
- Rented properties
- Caused by Adults (18-64)

Place the fire started

Kitchen fires accounted for 60.2% of all ADF in Birmingham South, which is consistent with cooking appliance being the greatest source of ignition.

Bedroom fires were the second largest place where ADF started (8.4%). They are also more likely to result in larger burn damage than kitchen fire.

Bedroom and **living room** fires resulted in a disproportionately large percentage of PI casualties, while kitchen fires and the resulting proportion of casualties were reversed:

Place where fire started	% of ADF	% of PI Fatalities & Casualties
Kitchen	60.2%	46.9%
Bedroom	8.4%	25.0%
Living room	6.9%	21.9%

It could be possible that the above figures are due to kitchen fires having a larger percentage of alarms operating and raising the alarm in the kitchen (61.1% of incidents) compared with the bedroom or living room (47.2% and 47.9%).

Damage

Burn damage

Where burn damage was recorded, the average damaged area for Birmingham South accidental dwelling fires was 2.2 m².

Fires where the source of ignition was **electric lighting** and **heating equipment** had the greatest average burn damage; however they represented a very small proportion of incidents: (1.9% and 5.3% respectively)

Of the top three source of ignition incidents, **other domestic style appliance** fires had the highest average area of burn damage, with 2.5 m², while **cooking fires** were the most likely to result in no fire damage and had the lowest average burn damage with 0.7 m².

The graph below compares the average area of burn damage, the number of incidents and the number of casualties for the six sources of ignition which resulted in the greatest number of incidents.

The size of the bubbles varies according to the total number of casualties resulting from this source of ignition; the number within it is that of PI casualties (injuries and fatalities).

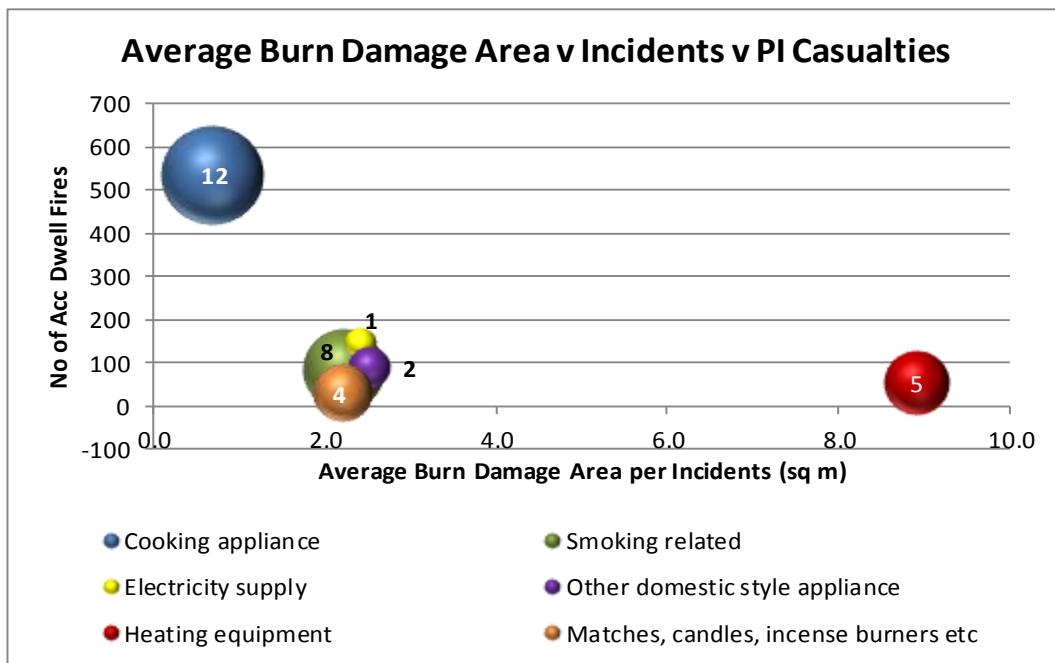


Chart 6. Average Burn Damage and Casualties in Birmingham South

It shows that although cooking fires are more numerous and incur more casualties, the resulting area damaged by fire is relatively small compared to other sources of ignition.

Heating equipment fires are lower in overall volume, but much higher in average burn damage. **Smoking related** fires resulted in two thirds of the PI casualties of cooking fires.

Of recorded alarm data, burn damage was on average greater where **the alarm system operated but did not raise the alarm** and smallest where the **alarm system operated and raised the alarm**

Detached houses tended to suffer greater burn damage, which is perhaps due to being larger than other types of properties.

Average burn damage in high-rises (four floors or more) was slightly **lower** than in other types of properties (2.0 m^2 compared to 2.2 m^2)

Owner occupied properties tended to incur greater burn damage than other property types.

Alcohol or drug related incidents resulted in slightly greater burn damage (2.4 m^2 compared with an overall average of 2.2 m^2). This could be due to a slower reaction from the person impaired by intoxicants, resulting in a longer delay in alerting the Fire Brigade.

Total damage

Average total damage for ADF in the Birmingham South was 10.8 m²

Office equipment, other appliance or equipment and fireworks were the sources if ignition with the largest area damaged.

Of the top three sources of ignition in Birmingham South, **other domestic style appliance** fires had the largest average area damaged of 14.5 m², followed by electricity supply and cooking appliance (8.8m² and 7.5m² respectively)

Unlike burn damage, properties **rented from the council** incurred greater total damage than other property types, although properties where no alarm systems was installed had slightly less average damage overall

The graph below compares the average area of total damage, the number of incidents and the number of casualties for the six sources of ignition which resulted in the greatest number of incidents.

The size of the bubbles denotes the total number of casualties resulting from this source of ignition; the number is that of PI casualties (injuries and fatalities).

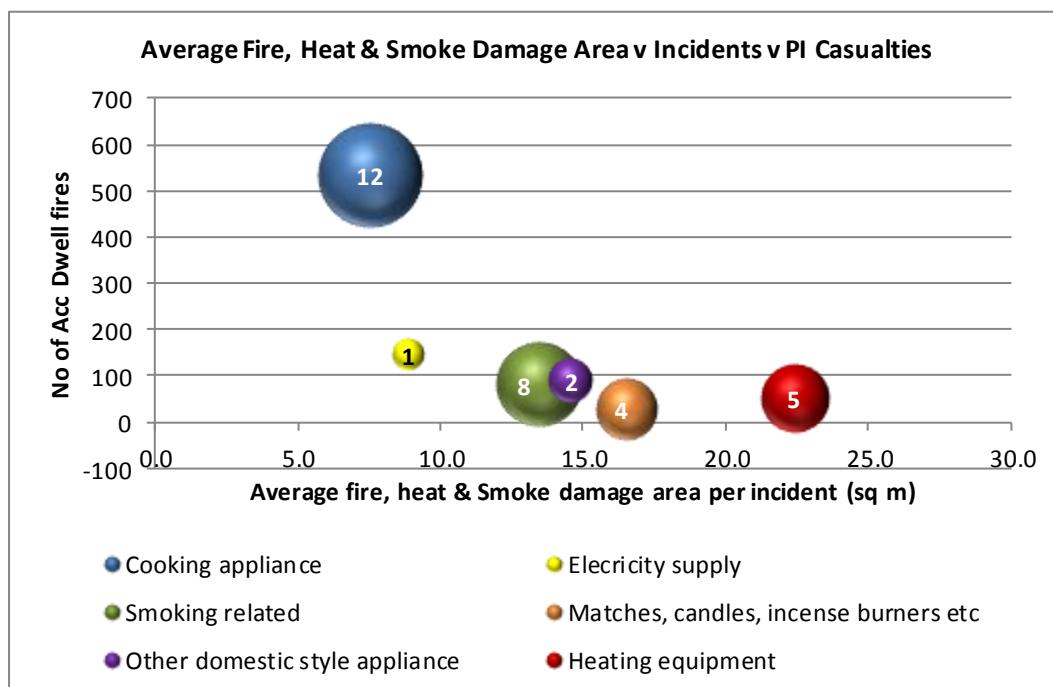


Chart 7. Average Total Damage and Casualties in Birmingham South

Like burn damage, it suggests that cooking fires resulted in minimal damage, while for example, heating equipment fires resulted in 5 PI casualties and the highest average damaged area, despite the smaller number of incidents.

Like burn damage, alcohol or drug related incidents tended to result in greater overall damage, (an average of 15.3m² compared with 10.7 m²)

Property

61.8% of accidental dwelling fires in Birmingham South occurred in **rented properties**, while representing only 41.8% of households according to Census data¹.

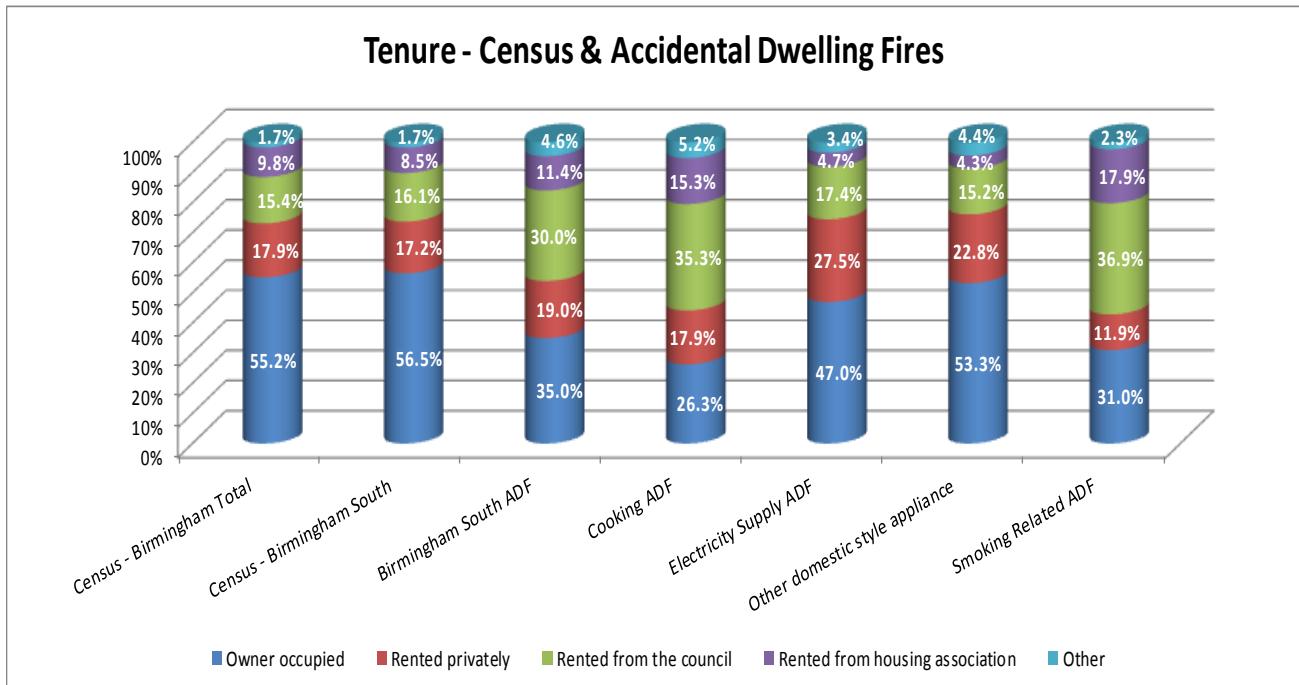


Chart 8. Tenure types in Birmingham South : Accidental Dwelling Fire and Census 2011

Properties **rented from the Council** in particular were over-represented when comparing accidental dwelling fires and Census data. This is likely to be linked to the correlations between ADF and the income and employment deprivation indices.

Purpose built flats/maisonettes accounted for the greatest proportion of accidental dwelling fires, with 29.5%. Alcohol or drug related show the largest percentage in converted flats/maisonettes (18.9%), although the number of incidents is fairly small (53).

¹ Tenure Census data also includes a “living rent free” category which is included in ‘Other’. Tenure Census data does not contain categories for unknown tenure type or “rented, landlord not known”.

Demographics

Person present during the fire/owner occupier

There was no great disparity between men and women with regards to the person present at the fire or owner occupier (where recorded) for accidental dwelling fires as a whole, with 46.4% and 47.3% respectively.

However, some types of ADF showed differences in the distribution (please note the percentages in the table may not add up to 100% due to incidents where the gender is “unknown” or was left blank):

Table 1. Gender distribution of person present during fire / owner occupier for Accidental Dwelling Fires in Birmingham South

Gender	Cooking appliance	Electricity supply	Heating equipment	Matches, candles, incense burners etc.	Other domestic style appliance	Smoking Related (incl. cigarette lighters)
Male	50.2%	51.0%	39.3%	39.3%	57.6%	35.7%
Female	47.2%	38.3%	57.1%	57.1%	40.2%	53.6%

In general, the person present at the fire / owner occupier was more likely to be **aged between 25 and 44**.

8.1% of accidental dwelling fires were believed to be linked to alcohol or drug use; 70.6% of those took place in single person households.

In 38.0% of accidental dwelling fires the owner occupier or person present during the fire was recorded as “lone person”, while Census data shows that in 2011 32.2% of households in Birmingham South were **single person households**, suggesting that people living on their own are slightly more at risk of accidental dwelling fires.

Compared with accidental dwelling fires as a whole, incidents where the owner occupier or the person present during the fire was recorded as a lone person were more likely to:

- be due to cooking appliances, smoking materials and electricity supply
- involve someone aged 65 or over
- be related to alcohol or drugs (21.3%)

Analysis shows that, in Birmingham South, the aspects of deprivation which align most with the risk of accidental dwelling fires are **income and employment deprivation**.

Cause of the fire

Overall, adults (18 – 64) were the greatest cause of the fire, causing 47.3% of accidental dwelling fires in the Birmingham South.

Table 2. Cause of Accidental Dwelling Fires in Birmingham South

Caused By	% of ADF
Adult (18 - 64)	47.3%
Faults in system or appliance	25.0%
Elderly (65 plus)	15.8%
Youth (10 - 17)	2.8%
Person, unknown age	2.5%
Child (0 - 9)	2.2%
Other	2.0%
Not known	1.3%
Animal	0.5%
Natural occurrences (e.g. light)	0.5%

Over the three years analysed, the annual figure for total ADF in Birmingham South has remained very constant over the last two: (2011/12- 383, 2012/13- 337, 2013/14- 334)

80.2% of the ADF caused by the **elderly (65+)** were **cooking appliance fires**, followed by **smoking related** (9.0%) fires. The percentage of cooking fires has increased over the three years analysed to a maximum of 89.8% in 2013/14

Proportionally, accidental dwelling fires caused by the elderly tended to result in a greater number of casualties:

Caused by	% of All casualties	% of PI casualties
Adult (18 - 64)	50.8%	59.4%
Child (0 - 9)	2.3%	12.5%
Elderly (65 plus)	22.3%	18.8%
Faults in system or appliance	18.3%	6.3%
Not known	0.7%	0.0%
Other	1.7%	0.0%
Person, unknown age	0.3%	0.0%
Youth (10 - 17)	3.7%	3.1%

The most common human factor recorded as believed to have been contributory to the cause, spread or resulting injuries from the fire was **distraction**, with 18.7% of accidental dwelling fires in Birmingham South.

Falling asleep was recorded as a factor in 8.6% of accidental dwelling fires overall. It was a human factor in 17.9% of smoking related ADF, 13.1% of cooking appliance ADF and 9.7% of matches, candles, incense burners etc fires.

66.7% of incidents where **mental health** was a contributory factor were caused by **Adults (18-64)**.

Casualties

Casualties were more likely to result from **cooking and smoking related** fires:

Source of ignition	% of all % of ADF		% of PI % of casualtie
	S	S	S
Cooking appliance	50.9%	55.1%	37.5%
Smoking Related (incl. cigarette lighters)	8.0%	11.3%	25.0%
Heating equipment	5.3%	5.6%	15.6%
Matches, candles, incense burners etc.	2.9%	4.0%	12.5%
Other domestic style appliance	8.7%	8.3%	6.3%
Electricity supply	14.1%	8.6%	3.1%

Smoking related fires resulted in more fatal casualties than any other types, with three (both in 2012/13). There were no fatalities in 2013/14

Accidental dwelling fires from **heating equipment** only accounted for 5.3% of incidents but resulted in 15.6% of PI casualties. ADFs with source of ignition as **smoking related materials** only accounted for 8.0% of incidents, yet resulted in 25.0% of PI casualties, including two fatal casualties.

The elderly (65+) accounted for 36.0% of PI casualties from accidental dwelling fires, while they made up 13.4% of Birmingham South's population according to the 2011 Census.

Those **over 80** in particular were over-represented as PI casualties, accounting for 16.0% of casualties but only 4.0% of the population. This part of the population was most at risk of being a casualty in fires due to cooking appliances and to other domestic style appliance fires

Single person households accounted for 43.2% of all casualties and 34.3% of PI casualties

In contrast with the person present at the fire / owner occupier, men and women were unequal as casualties, with **men** accounting for 58.6% of PI casualties and women 41.4%. In the majority of age brackets, the number of male PI casualties exceeded the number of female PI Casualties

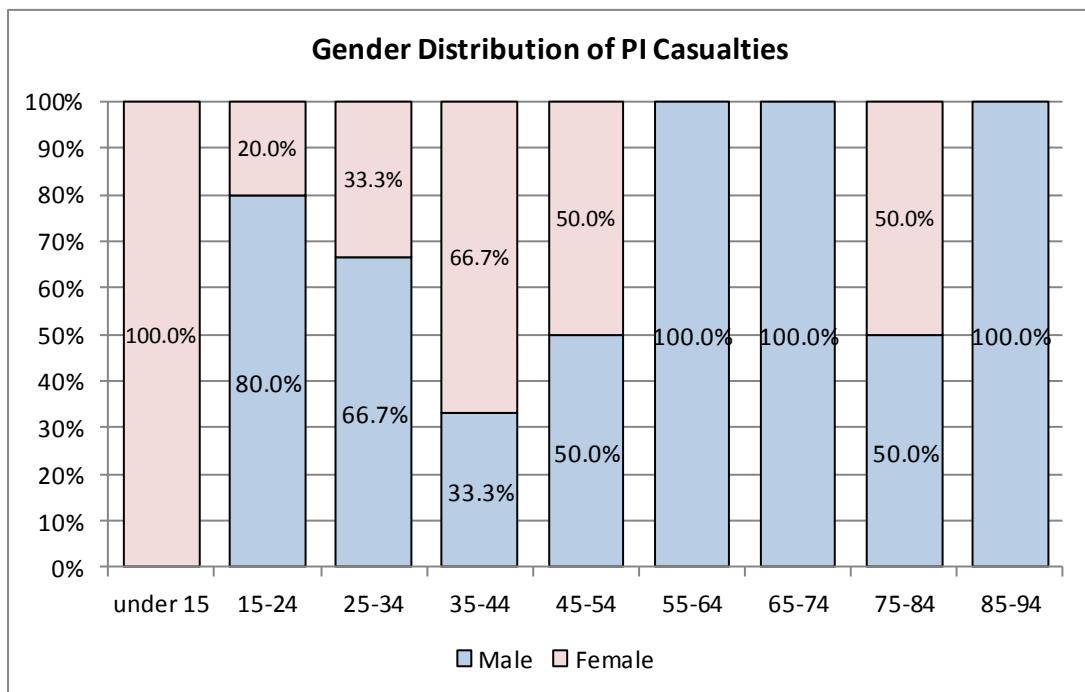


Chart 9. Gender distribution of PI casualties of Accidental Dwelling Fires in Birmingham South

When looking at all casualties the picture changes slightly and there are more female than male casualties in the **15-54**, and **75+** age ranges:

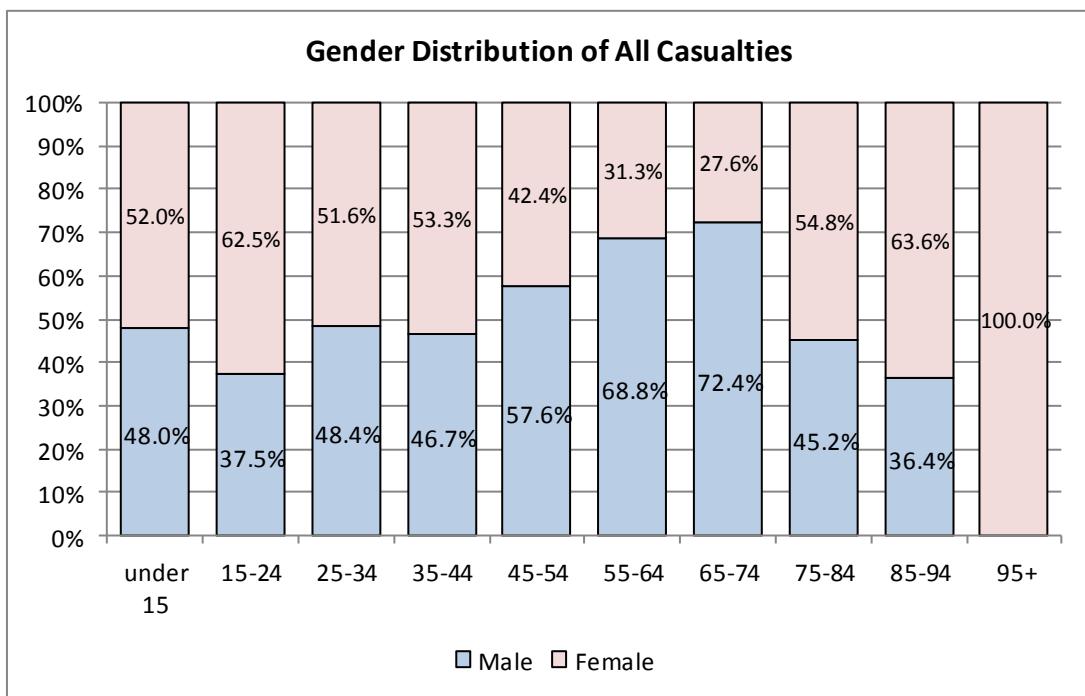


Chart 10. Gender distribution of ALL casualties of Accidental Dwelling Fires in Birmingham South

The majority of casualties were of **white ethnicities** (70.4% of all casualties and 71.9% of PI casualties). **Asian ethnicities** make up only 14.3% of all casualties but 21.9% of PI casualties, suggesting that they are more likely to have a serious injury when they are involved in an ADF

Alcohol or drugs was a factor in 8.1% of accidental dwelling fires, yet resulted in 15.6% of all casualties. In particular, 33.3% of fatalities and 21.9% of PI injuries resulted from fires where alcohol or drug was a factor.

The box below summarises the main features of casualties and rescues of accidental dwelling fires in the Birmingham South:

CASUALTIES:

- Cooking fires for volume, heating equipment for severity
- Over 65 and especially over 80 for PI casualties
- Smoking related materials 25% of PI casualties
- Single-person households
- More males than females, and males sustain more serious injuries
- Male injured linked to fighting fire
- White ethnicities for volume

APPENDIX A – Correlation analysis: datasets used

The datasets used for this analysis were as follows (all were broken down into LSOAs):

- The number Accidental Dwelling Fires (Apr 2011 to Mar 2014)
- The number of households (Census 2011)
- Income Deprivation Index
- Employment Deprivation Index
- The number of children aged 0 to 16 (Census 2011)
- The number of elderly residents (aged 65 and over) (Census 2011)
- The number of single parent households (Census 2011)
- The number of households socially renting (Census 2011)
- The number of Disability Living Allowance claimants (as of May 2013, NOMIS)
- The number of people not in employment (Census 2011)
- The number of Accidental Dwelling Fires casualties, both fatal and non-fatal (Apr 2011 to Mar 2014)
- The number of Incapacity Benefit/Severe Disability Allowance (as of August 2013, NOMIS)
- The number of single person households where the resident is aged under 65 (Census 2011).
- The number of residents of all Black and Afro-Caribbean ethnicities (Census 2011)
- The number of residents of all mixed ethnicities (Census 2011)
- The number of addresses for each of the 69 Mosaic types

All of the above were included in the overall Accidental Dwelling Fires calculated risk score; other datasets were also included in the initial correlation analysis, but showed weak or no correlation, and so were not included in the risk scoring.

Correlation analysis showed a moderate to strong correlation between Accidental Dwelling Fires and all other datasets, although the number of elderly residents showed a negative correlation:

	ADF Bham S
ADF	1
Households	0.326388192
Employment deprivation index	0.322105727
Socially Rented	0.463388662
IB/SDA claimants	0.376877835
Single Person aged <65 HH	0.484656283
Afro/Caribb all (no)	0.471664447
Mixed all (no)	0.380256894
single person HH	0.471899295

Strong correlations are highlighted in red down to moderate correlations in light orange.

Please note, the ‘number of people not in employment’ dataset differs from Employment deprivation in that it refers to the count of people who were not in employment at the time of the Census, while the Employment Deprivation index measures employment deprivation in an area conceptualised as involuntary exclusion of the working age population from the labour market.

Cooking fires showed no or weak correlation to the number of households, the Income deprivation index, the Employment deprivation index, single parents, single person households aged over 65, those not in employment, the number of IB/SDA claimants, the number of Disability Living Allowance claimants, those of White, Asian or Other ethnicities, or the number of elderly residents or Children <16, and so these datasets were not included in the scoring for this type of accidental dwelling fires.

Electricity supply fires, other domestic style appliances and smoking related fires showed only weak correlations to any of the datasets used.

It should be noted that correlation analysis is only intended as an indicator that two variables fluctuate together; it does not imply causation and may in some instances show no correlation where analysis of fire data demonstrates a link.