



Home Office



Detailed analysis of fires attended by fire and rescue services, England, April 2017 to March 2018

Statistical Bulletin 17/18

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Further information

This release contains statistics about incidents attended by fire and rescue services (FRSs) in England. The statistics are sourced from the Home Office's online Incident Recording System (IRS), which allows FRSs to complete an incident form for every incident attended, be it a fire, a false alarm or a non-fire (also known as a Special Service) incident. The online IRS was introduced in April 2009. Previously, paper forms were submitted by FRSs and an element of sampling was involved in the data compilation process.

Fire and Rescue Incident Statistics and other Home Office statistical releases are available from the [Statistics at Home Office](#) pages on the GOV.UK website. The dates of forthcoming fire and rescue and other Home Office publications are pre-announced and can be found via the [Statistics: release calendar](#). For further information about the statistics in this publication, email firestatistics@homeoffice.gov.uk.

Data tables linked to this release and all other fire statistics releases can be found on the Home Office's 'Fire statistics data tables' page. The sections below state the most relevant tables for each section. The tables can be found here:

<https://www.gov.uk/government/statistical-data-sets/fire-statistics-data-tables>

Guidance for using these statistics and other fire statistics outputs is available on the fire statistics guidance page, found here:

<https://www.gov.uk/government/statistical-data-sets/fire-statistics-guidance>

The information published in this release is kept under review, taking into account the needs of users and burdens on suppliers and producers, in line with the Code of Practice for Statistics. If you have any comments, suggestions or enquiries, please contact the team via email using firestatistics@homeoffice.gov.uk or via the user feedback form on the [fire statistics collection page](#).

Media enquiries via Home Office news desk:

Office hours: 020 7035 3535; 7am-8pm Monday-Friday

Out of hours: 07659 174240

Statistical or public enquiries:

The responsible statistician for this publication is Deborah Lader.

To contact the Fire Statistics team:

Email: FireStatistics@homeoffice.gov.uk

This statistical bulletin is produced to the highest professional standards and is free from political interference. It has been produced by statisticians working in the Home Office Analysis and Insight Directorate in accordance with the Home Office's [statement of compliance](#) with the Code of Practice for Official Statistics, which covers Home Office policy on revisions and other matters. The Chief Statistician, as Head of Profession, reports to the National Statistician with respect to all professional statistical matters and oversees all Home Office National Statistics products with respect to the Code, being responsible for their timing, content and methodology.

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1 Key facts

This release presents detailed statistics on fire incidents which covers the financial year 2017/18 (1 April 2017 to 31 March 2018) for fire and rescue services (FRSs) in England. These statistics cover the tragic events at Grenfell Tower on 14 June 2017.

The results show:

- There were **564,827 incidents attended** by FRSs in 2017/18. Of these **incidents, 167,150 (30%) were fires**. This is an increase of three per cent since 2016/17 but a 43 per cent decrease compared with ten years ago (293,920 in 2007/08). The total number of fires attended by FRSs has been broadly stable since 2012/13.
- In 2017/18 there were **334 fire-related fatalities** and **7,290 non-fatal casualties** in fires. For every million people in England, there were 6.0 fire-related fatalities in 2017/18. The fatality rate for older people was higher than for the total population: 8.8 per million people for those aged 65 to 79 and 19.5 per million people for those aged 80 years and over.
- In 2017/18, 52 (6%) of the 801 fires in purpose-built high-rise flats **spread beyond the room of origin**.
- **Cooking appliances** were by the far the largest ignition category in accidental dwelling fires and non-fatal casualties from accidental dwelling fires, accounting for 48 per cent of these incidents respectively. In contrast, cooking appliances were the source of ignition in only seven per cent of accidental dwelling fire-related fatalities.
- Smokers' materials (such as lighters, cigarettes, cigars or pipe tobacco) were the source of ignition in **seven per cent of accidental dwelling** fires and nine per cent of accidental dwelling fire non-fatal casualties in 2017/18. In contrast, smokers' materials were the source of ignition in 20 per cent of fire-related fatalities in accidental dwelling fires in 2017/18. 'Other electrical appliances' were by far the largest ignition category in fire-related fatalities this year due to the Grenfell Tower fire. This is in contrast to previous years, when it has been smokers' materials.
- Fires where a **smoke alarm** was not present accounted for 25 per cent (7,807) of all dwelling fires and 21 per cent (54) of all dwelling fire-related fatalities in 2017/18. This is in the context of 10 per cent of dwellings not having a working smoke alarm in 2016/17 (the latest year for which data are available).
- **Mains powered smoke alarms** continue to have a lower "failure rate" than battery powered smoke alarms. Twenty-two per cent of mains powered smoke alarms and 38 per cent of battery powered smoke alarms failed to operate in dwelling fires in 2017/18.

2 Introduction

Headline figures on incidents attended by fire and rescue services (FRSs) in England in 2017/18, fire-related fatalities and non-fatal casualties in those incidents, were published in '[Fire and rescue incident statistics](#)' on 9 August 2018.

This release provides more detailed analysis of fire incidents attended by FRSs in 2017/18, including detailed breakdowns of fire-related fatalities, non-fatal casualties, the causes of fires, the functioning of smoke alarms in fires and the seasonality and temporality of fires.¹

This is the first detailed analysis of fires publication to cover the tragic events at Grenfell Tower on 14 June 2017. [Fire and rescue incident statistics](#) publications (quarterly releases on headline statistics on incidents attended, fire-related fatalities and non-fatal casualties) have covered the Grenfell Tower fire for the last four releases.²

Previously, detailed statistics on all types of incidents attended by FRSs were published in '[Fire Statistics: England](#)'. This has now been replaced by this release, the second of its kind covering fire incidents, and a new [detailed analysis of non-fire incidents](#) release first published on 25 January 2018 covering non-fire incidents with an update for 2017/18 data due for publication in winter 2018.

This release covers data for England only. Commentary on national comparisons (England, Scotland and Wales) can be found in the [Fire and rescue incident statistics: England, July 2016 to June 2017](#) release. The latest statistical releases on the Scottish and Welsh fire and rescue services can be found on the following websites:

<http://www.firescotland.gov.uk/about-us/fire-and-rescue-statistics.aspx>

<http://gov.wales/statistics-and-research/fire-statistics/?lang=en>

Each time a fire and rescue service (FRS) attends an incident in England, details of that incident are uploaded to the Home Office's Incident Recording System (IRS) by the FRS.

As the Incident Recording System (IRS) is a continually updated database, the statistics published in this release may not match those held locally by FRSs and revisions may occur in the future. This may be particularly relevant for fire-related fatalities where a coroner's report could lead to revisions in the data some time after the incident.

From the Grenfell Tower fire for example, on 29 January 2018, a further victim, who had initially survived the fire, passed away in hospital. As a result, a figure of 72 fatalities from the fire has been widely cited in the media and the Grenfell Tower inquiry honoured her memory at the commemoration hearings. However, at the time of writing the Metropolitan Police had not yet added her to the official list of fatalities from the fire pending the results of a coroner's report which will determine whether her death was a direct result of the fire or caused by her pre-existing medical condition. She, therefore, remains counted in the list of non-fatal casualties.

¹ For more information about historical trends in fires and fire-related fatalities and a discussion of factors that may have contributed to the trends see our [focus on trends in fires and fire-related fatalities](#) publication.

² Detail on the fatalities and non-fatal casualties from the Grenfell Tower fire can be found in Box 1: The Grenfell Tower Fire in chapter 4 here: <https://www.gov.uk/government/statistics/fire-and-rescue-incident-statistics-england-year-ending-march-2018>

The figures in this release refer to records of incidents which had reached the IRS by 10 June 2018, when a snapshot of the database was taken for the purpose of analysis. More information on the IRS can be found at:

<https://www.gov.uk/government/statistical-data-sets/fire-statistics-guidance>

This publication is accompanied by reference data tables. All fire statistics tables can be found at:

www.gov.uk/government/statistical-data-sets/fire-statistics-data-tables

The following tables have been updated as part of this publication:

Dwelling fires attended: [0203, 0204](#)

Non-dwelling fires attended: [0304, 0305, 0306](#)

Fatalities and non-fatal casualties: [0503, 0504, 0505, 0506](#)

Cause of fire: [0601, 0602, 0603, 0604, 0605](#)

Smoke alarms: [0701, 0702, 0703, 0704, 0705, 0706, 0707, 0708](#)

Temporal and seasonal: [0801, 0802](#)

The following table has been created as part of this release:

Fatalities and non-fatal casualties: [0511](#)

3 Overview of incidents attended

The [Fire and Rescue Incident Statistics](#) publication provides information on a quarterly basis on types of and trends in fires, non-fire incidents and fire false alarms attended by fire and rescue services (FRSs). Key points are included here for background to the following chapters.

Trends in all incidents

In 2017/18, FRSs in England attended around 565,000 incidents, one per cent more than in 2016/17 (560,000) and eight per cent more than five years ago in 2012/13 (521,000). The number of incidents has been on a general downward trend since the peak of around 1,016,000 incidents attended in 2003/04, levelling off between 2012/13 and 2014/15, then increasing in the last three years. These increases were mainly driven by higher numbers of non-fire incidents attended and to a lesser extent the number of fires attended, in particular secondary fires. (Source: FIRE0102).

Of the total incidents attended in 2017/18 around 167,000 (30%) were fires, around 226,000 (40%) were fire-false alarms and around 172,000 (30%) were non-fire incidents (also known as special service incidents). Non-fire incidents attended in England decreased by one per cent since 2016/17 (175,000) but have increased by 37 per cent since 2014/15. (Source: FIRE0102).

Box 1: Types of fire as recorded in the Incident Recording System

- Primary – potentially more serious fires that cause harm to people or damage to property. To be categorised as primary these fires must either: be a fire that occurred in a (non-derelect) building, vehicle or some outdoor structure, be a fire that involved fatalities, non-fatal casualties or rescues, or be a fire that was attended by 5 or more pumping appliances.
- Secondary – are generally small outdoor fires, not involving people or property.
- Chimney fires – are fires in buildings where the flame was contained within the chimney structure, and did not meet any of the criteria for primary fires.

The IRS also captures the motive for a fire, which is recorded as either accidental, deliberate or unknown. Those recorded as unknown are included in the accidental category for the purposes of this report. Accidental fires are therefore those where the motive for the fire was presumed to be accidental or is unknown. Deliberate fires include those where the motive was ‘thought to be’ or ‘suspected to be’ deliberate and includes damage to own or other’s property. These fires are not the same as (although include) arson, which is defined under the Criminal Damage Act of 1971 as ‘an act of attempting to destroy or damage property, and/or in doing so, to endanger life’.

Fires attended

The total number of fires attended by FRSs decreased for around a decade, falling from a recent peak of around 474,000 in 2003/04 to the series low of around 154,000 in 2012/13. Since then the total number of fires has slowly increased, with an increase of three per cent in the last year from around 162,000 in 2016/17 to around 167,000 in 2017/18.

Specifically:

- There were **89,017 secondary fires** attended in 2017/18. This was an increase of seven per cent compared with the previous year in 2016/17 (82,842) and drove the increase in fires attended. This was also an increase of 23 per cent compared with five years ago in 2012/13 (72,497) but a decrease of 48 per cent compared with ten years ago in 2007/08 (172,306).
- There were **30,744 dwelling fires** attended in 2017/18. This was an increase of one per cent since 2016/17 (30,343), a decrease of eight per cent compared with five years ago in 2012/13 (33,295) and a decrease of 26 per cent compared with ten years ago in 2007/08 (41,336). (Source: FIRE0102)

4 Fire-related fatalities, non-fatal casualties, rescues and evacuations

As the Incident Recording System (IRS) is a continually updated database, the statistics published in this release may not match those held locally by FRSs and revisions may occur in the future (see the Introduction for further detail). This may be particularly relevant for fire-related fatalities where a coroner's report could lead to revisions in the data sometime after the incident.

In 2017/18, there were 334 fire-related fatalities³ and around 7,300 non-fatal casualties⁴ in fires, an increase of 71 fatalities and around 200 non-fatal casualties since 2016/17. The majority of fire-related fatalities in 2017/18 occurred in single occupancy dwellings⁵ (255; 76%, including 71 fire-related fatalities from the Grenfell Tower fire) with the next largest category being road vehicles (31; 9%). Single occupancy dwelling fires accounted for 72 per cent of non-fatal casualties in 2017/18 but, in contrast to fire-related fatalities, the next largest category was other buildings (14%) (Source: FIRE0501, FIRE0502, FIRE0503).

Specifically:

- The majority, **263 (79%) of fire-related fatalities**, were in **dwelling fires** in 2017/18. This compares with 214 (81%) in 2016/17, 210 (73%) five years previously in 2012/13 and 275 (77%) ten years previously in 2007/08.
- There were **20 fire-related fatalities in other buildings** in 2017/18, up two from 18 fire-related fatalities in 2016/17.
- **Seventy-five per cent (5,447) of non-fatal casualties** were in **dwelling fires** in 2017/18. This compares with 5,365 (76%) in 2016/17, 6,738 (80%) five years previously in 2012/13 and 8,424 (82%) ten years previously in 2007/08.
- **Non-fatal casualties requiring hospital treatment comprised 45 per cent (3,306)** of all non-fatal casualties in 2017/18, similar to the 44 per cent in 2016/17.
- The number of **non-fatal casualties in other buildings increased by 11 per cent** to 994 in 2017/18 from 897 in 2016/17. Non-fatal casualties in other buildings has fluctuated over the last five years. Before this, the number of non-fatal casualties in other buildings was on a downward trend.

³ For the purpose of publications, a fire-related fatality includes the number of fatal casualties that were recorded as 'fire-related' or 'don't know' and only excludes those that were recorded as 'not fire-related'.

⁴ For more detailed definitions of fire-related non-fatal casualties, see the [Fire Statistics Definitions](#) document. A further breakdown of the different types of non-fatal casualties are available in the published fire data tables.

⁵ Single occupancy includes: Bungalow, Flat/Maisonette (Purpose-Built and Converted), House and Self-contained Sheltered Housing.

Fire-related fatalities and non-fatal casualties by gender and age

The likelihood of dying in a fire is not uniform across all age groups or genders. Generally, the likelihood increases with age, with those aged 80 and over by far the most likely to die in a fire. Men are nearly twice as likely to die in a fire as women for all ages from 25 and above⁶, while men in the 65 to 79 years old bracket are 1.6 times as likely as women in the same age bracket.⁷ While the overall number of fire-related fatalities are relatively low, and so prone to fluctuation, these are general patterns seen in the online IRS data since 2009/10. The spread of ages among the fire-related fatalities from the Grenfell Tower Fire was wider than is usually observed in fire-related fatalities, meaning the general patterns are less pronounced this year. (Source: FIRE0503).

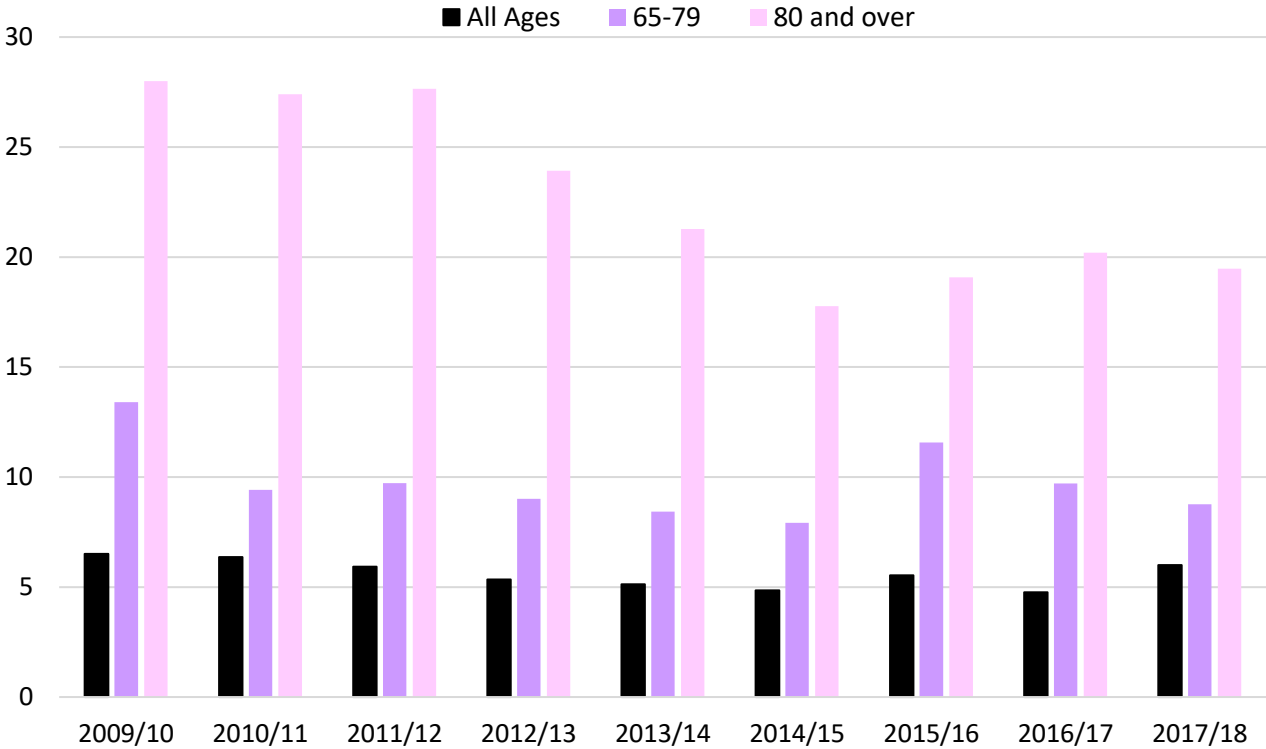
Specifically:

- **Thirty-five per cent** of all fire-related fatalities in England were **65 years old and over** in 2017/18, compared with 19 per cent of all non-fatal casualties. This proportion is similar to the previous year for non-fatal casualties (22% in 2016/17) but is lower for fire-related fatalities (47% in 2016/17) due to the Grenfell Tower fire, as a large proportion of the fatalities from the fire were people under the age of 65.
- In dwelling fires, **40 per cent of all fire-related fatalities were 65 years old and over** in 2017/18, compared with 23 per cent of non-fatal casualties. This proportion is again similar to the previous year for non-fatal casualties (26% in 2016/17) but is lower for fire-related fatalities (54% in 2016/17) due to the Grenfell Tower fire, as a large proportion of the fatalities from the fire were people under the age of 65.
- For every million people in England, there were **6.0 fire-related fatalities** in 2017/18. The fatality rate was highest among older people: 8.8 people per million for those aged 65 to 79 years old and 19.5 for those aged 80 years and over. (Figure 4.1) The fatality rates for age bands within 54 years and younger vary, but were typically below 5 fatalities per million population (except for under 1 year old which was 6.1 per million).
- **Men are at a greater likelihood of dying in a fire than women.** The fatality rate per million population for men was 7.2 while the equivalent rate for women was 4.7 per million. For men aged 65 to 79 the fatality rate was 10.9 per million while the equivalent rate for women was 6.8 per million. For those aged 80 years and over, the rate for men was 24.9 per million and for women was 15.9 per million. (Figure 4.2)

⁶ Numbers for age bands below 24 are too small to compare.

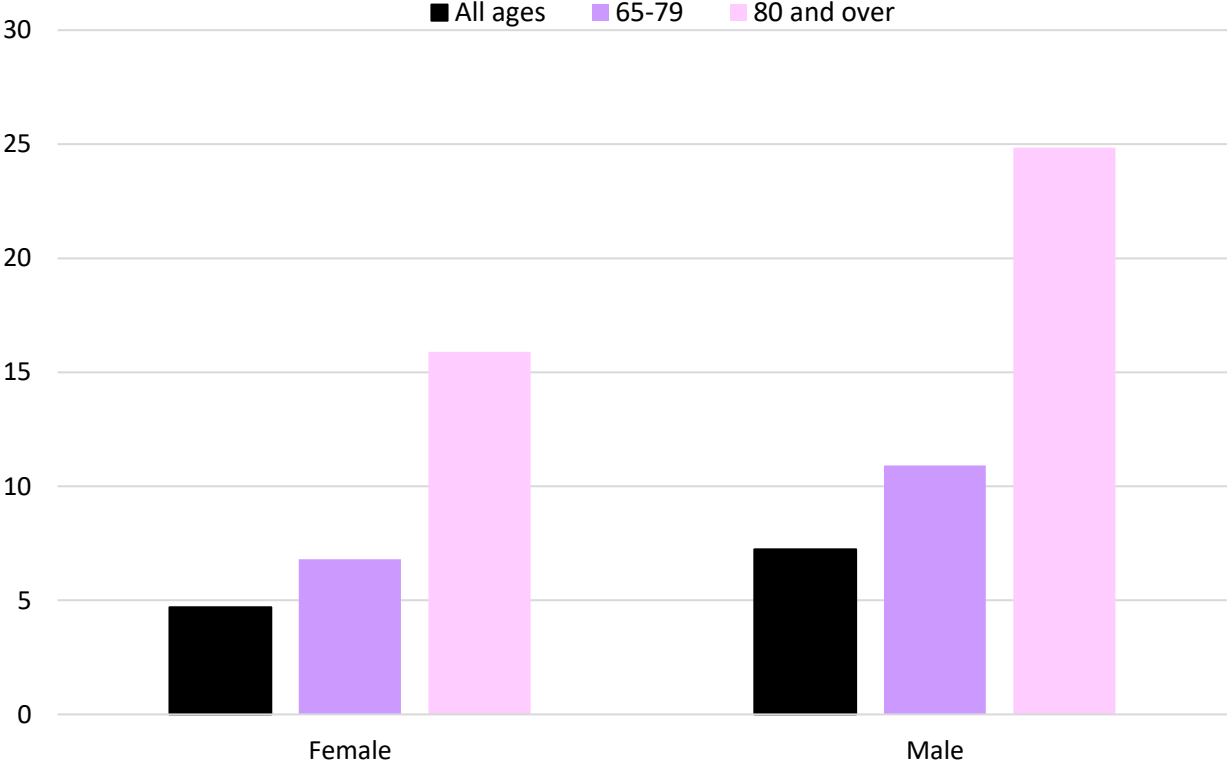
⁷ Further detail on fatalities by age and gender can be found in table FIRE0503 on the Home Office's 'fire statistics data tables' page [here](#).

Figure 4.1. Fatality rate (fatalities per million people) for all ages and selected age bands, England; 2009/10 to 2017/18



Source: Table FIRE0503a

Figure 4.2. Fatality rate (fatalities per million people) for all ages and selected age bands by gender, England; 2017/18



Source: Table FIRE0503a

Causes of deaths and injuries

The IRS records the cause of death or nature of injury for fire-related fatalities and non-fatal casualties in fires. As for almost every year since the start of the online IRS in 2009/10, the most common cause of death for fire-related fatalities in 2017/18, where known, was 'overcome by gas or smoke'.

Specifically:

- The most common cause of death for fire-related fatalities in 2017/18 (where the cause of death was known) was '**overcome by gas or smoke**', given in 30 per cent (99 fire-related fatalities) of fire-related fatalities. This was lower as a proportion compared with 2016/17 (38%). This was followed by 'burns alone' (24%; 80 fire-related fatalities) and the combination of 'burns and overcome by gas and smoke' (15%; 50 fire-related fatalities) in 2017/18. The 'unspecified' category was higher for 2017/18 (28%) compared with last year (14%) due to the Grenfell Tower fire where a large proportion of the fatalities are recorded as 'unspecified' while the public inquiry into the fire is still ongoing. (Source: FIRE0504).
- There were **4,805 non-fatal casualties from accidental dwelling fires** in 2017/18, including those who received first aid (1,541) and who were advised to seek precautionary checks (1,208). When these two groups are removed and non-fatal casualties requiring hospital treatment are looked at, the largest category of injury was 'overcome by gas or smoke' (962; 47%) followed by 'burns' (415; 20%) and 'other breathing difficulties' (310; 15%). All other categories combined⁸ comprised the remaining 18% of injuries. (Source: FIRE0506)

Rescues and evacuations

The IRS records the exact number of rescues⁹ from primary fires attended by FRSs. The number of rescues from primary fires attended by FRSs has been on a downward trend since the online IRS was introduced, decreasing from around 4,400 in 2009/10 to around 3,100 in 2017/18 (figure 4.3). This decrease has been driven by rescues from primary dwelling fires.

For evacuations from fires attended by FRSs,¹⁰ the IRS records how many there were in eight separate bands (e.g. 6-20 means there were between 6 and 20 evacuations from a fire, 21-50 means between 21 and 50 evacuations). The number of primary fires attended that involved an evacuation has also been on a downward trend (see figure 4.4) decreasing from around 9,300 in 2009/10 to around 6,200 in 2017/18. This decrease has been mainly driven by those in primary other building fires but also by primary road vehicle and dwelling fires.

Specifically:

- In 2017/18, there were **3,122 rescues** from primary fires. This was a decrease of three per cent compared with 2016/17 (3,207) and a decrease of ten per cent from five years ago in 2012/13 (3,466). In 2017/18, over three quarters (78%) of rescues

⁸ For a full list of injury categories, see the [Fire Statistics Definitions](#) document.

⁹ A rescue is where a person has received physical assistance to get clear of the area involved in the incident.

¹⁰ An evacuation is the direction of people from a dangerous place to somewhere safe.

were from primary dwelling fires with other building, road vehicle and other outdoor fires accounting for 16 per cent, four per cent and one per cent respectively.

- In 2017/18, there were **6,228 primary fires that involved an evacuation**. This was a decrease of five per cent compared with 2016/17 (6,588) and a decrease of 15 per cent from five years ago in 2012/13 (7,333). The most common evacuation band was '1 to 5' (i.e. there were 1 to 5 evacuations from the incident), accounting for 87 per cent of primary fires that involved an evacuation.

Figure 4.3. Number of rescues from primary fires, England; 2010/11 to 2017/18



Source: Table FIRE0511

Figure 4.4. Number of incidents with an evacuation from primary fires, England; 2010/11 to 2017/18



Source: Table FIRE0511

5 Extent of damage and spread of fire

The IRS also records the extent of damage and the spread of fire. The extent of damage (due to smoke, heat, flame and water etc.) to dwellings and other buildings is recorded by the area in square metres broken down into thirteen categories, from 'None' up to 'Over 10,000' square metres.¹¹ The spread of fire in dwellings and other buildings is recorded according to the extent the fire reached different parts of the building based on eight categories from 'no fire damage' to 'fire spread to the whole building'.

Extent of damage

The average extent of damage to dwellings has generally fallen since 2003/04 though it has levelled off over the last few years. The average extent of damage to other buildings has fluctuated since 2009/10 (when the average extent of damage to other buildings has been more accurately recorded).¹²

Specifically:

- In 2017/18, the **average area of damage to dwellings** (excluding those over 5,000m²) in England **decreased by five per cent** to 16.2m² compared with 17.1 m² the previous year. This was a decrease of 16 per cent from five years ago (19.4m² in 2012/13) and 30 per cent from ten years ago (23.3m² in 2007/08). (Source: FIRE0204)
- The **average area of damage to other buildings** (excluding those over 1,000m²) **decreased by seven per cent** to 27.1m² compared with 29.2 m² in 2016/17. This was a decrease of 11 per cent from five years ago (30.6m² in 2012/13) and a decrease of eight per cent from ten years ago (29.3m² in 2007/08). (Source: FIRE0305)

Calculations for averages that include dwelling fires with more than 5,000m² of damage and other buildings fires with more than 1,000m² of damage can skew the averages; however, for completeness, other calculations are available in tables FIRE0204 and FIRE0305, which accompany this release. It should be noted that excluding these area categories removes around 0.02 per cent of dwelling fires and around 0.2 per cent of other building fires for 2017/18.

Spread of fire

In 2017/18, six per cent of fires in purpose-built high-rise flats¹³ spread beyond the room of origin¹⁴, compared with seven per cent for purpose-built medium-rise flats, eight per cent for

¹¹ For a list of the damaged area size bands, see the [Fire Statistics Definitions](#) document.

¹² For detail on the discontinuity between 2008/09 and 2009/10 please see page 17 in this report:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/6759/21721295.pdf

¹³ In the IRS low-rise is defined as 1 to 3 storeys, medium rise 4 to 9 storeys and high rise as 10 storeys or more. These IRS definitions are different to those from the English Housing Survey which defines low rise as a flat in a purpose-built block less than 6 storeys high. This includes cases where there is only one flat with independent access in a building which is also used for non-domestic purposes. High rise is defined as a flat in a purpose-built block of at least six storeys high.

¹⁴ Fire spread beyond the room of origin is comprised of the following IRS categories: where the spread of fire was limited to the floor of origin, where the spread of fire was limited to 2 floors, where the spread of fire was affecting more than 2 floors and where the fire spread to the whole building.

purpose-built low-rise flats and 11 per cent for house, bungalow, converted flat and other dwellings, all of which were similar to previous years.

In 2017/18, the proportion of fires affecting the 'whole building' in primary other building fires was 15 per cent, which is similar to previous years. Since 2010/11 to 2017/18 the proportion of primary other building fires that were 'limited to item 1st ignited' has increased from 26 per cent to 29 per cent. Over the same time period, the percentage of fires that had no fire damage has decreased from 27 per cent to 22 per cent.

Specifically:

- In 2017/18, **52 (6%) of the 801 fires in purpose-built high-rise flats spread beyond the room of origin** compared with 56 (8%) in the previous year in 2016/17 and 52 (6%) five years ago in 2012/13. (Source: FIRE0203)
- In 2017/18, **2,282 (15%) of the 15,577 primary other building fires affected the 'whole building'** compared with 2,170 (14%) of the 15,859 primary other building fires in the previous year in 2016/17 and 2,020 (12%) of the 16,506 primary other building fires five years ago in 2012/13. (Source: FIRE0304)

6 Causes of dwelling fires and fire-related fatalities

The IRS collects information on the source of ignition (e.g. 'smokers' materials'), the cause of fire (e.g. 'fault in equipment or appliance'), which item or material was mainly responsible for the spread of the fire (e.g. 'clothing/textiles'), as well as other factors, including ignition power (e.g. gas).¹⁵

Sources of ignition in accidental dwelling fires

Since 2010/11, the number of accidental dwelling fires has decreased by 13 per cent. This is in part due to a 16 per cent decrease (between 2010/11 and 2017/18) in fires where the ignition source was "cooking appliances", as these make up around half of all accidental dwelling fires. Other ignition types that have contributed to the decrease include "space heating appliances" and "central and water heating appliances" (a decrease of 27% and 26% over the same time period, respectively). (Source: FIRE0602).

Figure 6.1 shows the proportion of accidental dwelling fires, and their resulting non-fatal casualties and fire-related fatalities, attributable to different sources of ignition.¹⁶ It shows that while some ignition sources cause many fires, they often result in relatively few fire-related fatalities, and vice versa.¹⁷

Specifically:

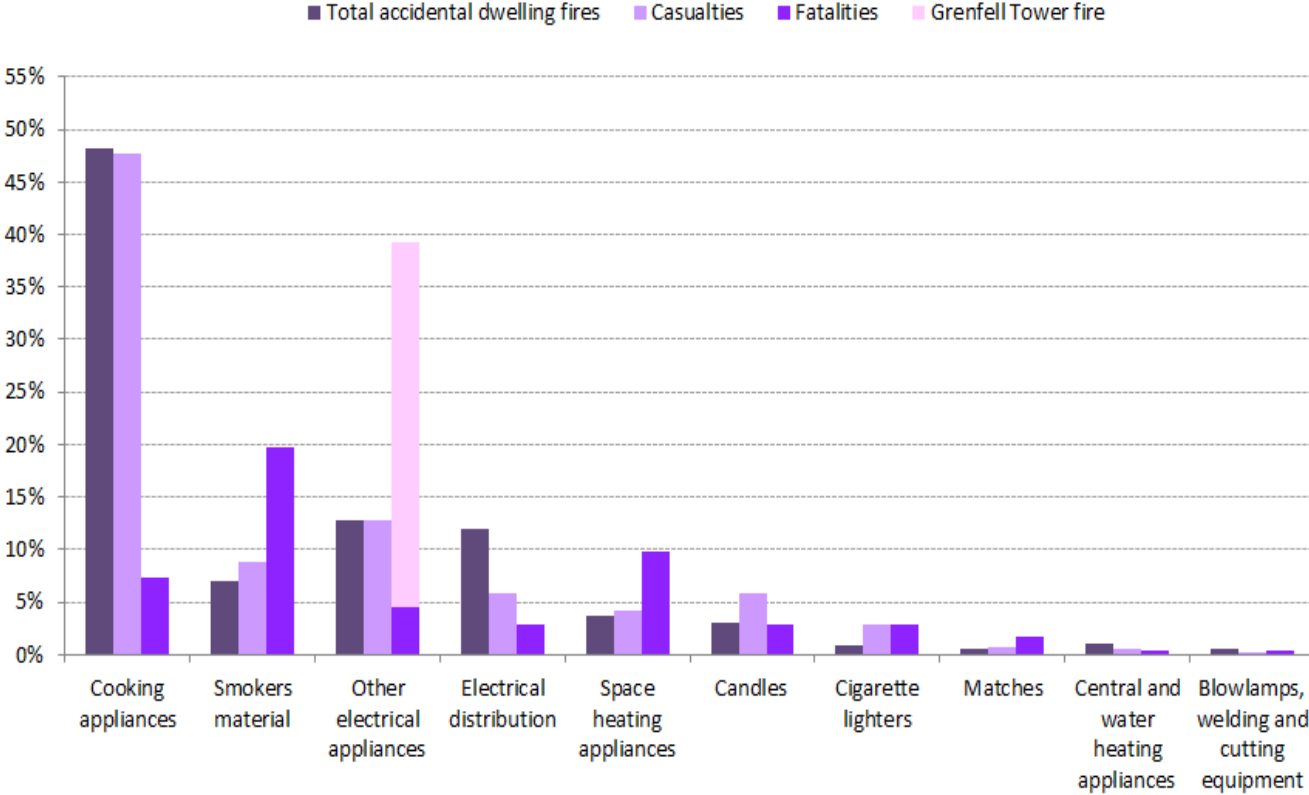
- **Cooking appliances** were by far the largest ignition category for accidental dwelling fires and non-fatal casualties from accidental dwelling fires, accounting for **48 per cent** of these incidents each in 2017/18. In contrast, cooking appliances were the source of ignition in only seven per cent of accidental dwelling fire-related fatalities.
- **Smokers' materials** (such as lighters, cigarettes, cigars or pipe tobacco) were the source of ignition in **seven per cent of accidental dwelling fires** and nine per cent of accidental dwelling fire non-fatal casualties in 2017/18. In contrast, smokers' materials were the source of ignition in 20 per cent of fire-related fatalities in accidental dwelling fires in 2017/18.
- In previous years, smoker's materials have been by far the largest ignition category involved in accidental dwelling fire-related fatalities. However, '**Other electrical appliances**' was the largest category in 2017/18 due to the Grenfell Tower fire (specifically a fridge freezer which was recorded as the source of ignition for the fire) accounting for **34 per cent of fire-related fatalities in accidental dwelling fires**. (Source: FIRE0602).

¹⁵ For a more detailed definition on the different types of cause of fire, see the [definitions document](#).

¹⁶ This excludes 'Other/Unspecified'.

¹⁷ Further detail on these figures can be found on the Home Office's 'fire statistics data tables' page. The relevant tables are FIRE0601 to FIRE0605. The tables can be found [here](#).

Figure 6.1. Percentage of fires, non-fatal casualties and fire-related fatalities in accidental dwelling fires by selected sources of ignition, England; 2017/18



Source: Table FIRE0602

Main cause of, and material mainly responsible for, dwelling fires

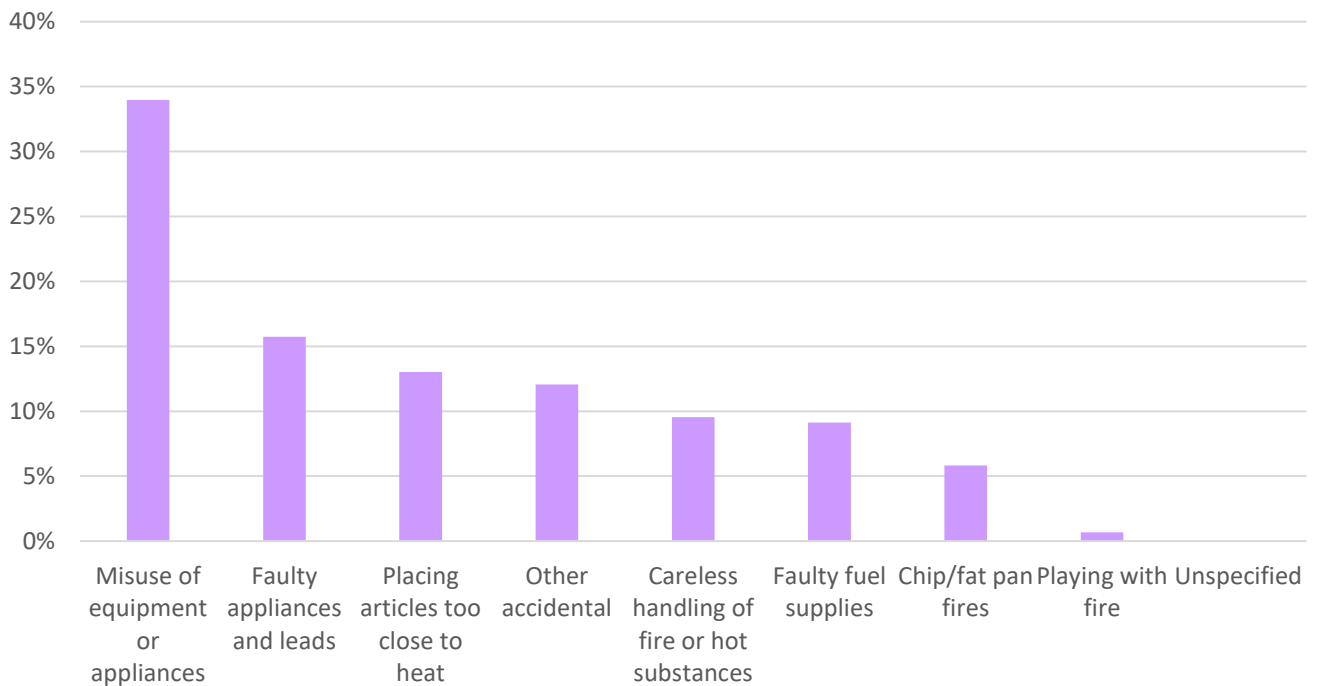
Exactly how a fire originated, and then the material which was mainly responsible for it spreading, are both important determinants in the outcomes of fires. Notably, and similarly to sources of ignition, above, the most common causes and materials responsible for the spread of fires are not those that lead to the greatest proportion of fire-related fatalities.

Specifically:

- Of the 27,621 accidental dwelling fires in 2017/18, **34 per cent were caused by “misuse of equipment or appliances”** (see figure 6.2 below), similar to the 35 per cent in 2016/17. The second largest cause category was “faulty appliances and leads” which caused 16 per cent of all accidental dwelling fires. (Source: FIRE0601).

- The material mainly responsible for the development of the fire in **25 per cent** of all dwelling fires and the item first ignited in **26 per cent** of all dwelling fires in 2017/18 was **“Textiles, upholstery and furnishings”**. The former caused 46 per cent of all fire-related fatalities in dwellings. This proportion is normally higher (64 per cent in 2016/17) however it is lower this year due to the Grenfell Tower Fire where 32 per cent of fire-related fatalities in dwellings were where the material mainly responsible for the development of the fire was “not known”. (Source: FIRE0603, FIRE0604).
- **“Food”** was the material mainly responsible for the development of the fire in **21 per cent** of all dwelling fires and the item first ignited in **29 per cent** of all dwelling fires. However, it was the material mainly responsible for the development of the fire in only two per cent, and item first ignited in only three per cent, of all dwelling fire-related fatalities.

Figure 6.2. Percentage of fires in accidental dwelling fires by cause of fire England; 2017/18



Source: Table FIRE0601

7 Smoke alarm function

The IRS records information on whether a smoke alarm was present at the fire incident, as well as the type (mains or battery powered) and whether or not it functioned as intended i.e. if it operated and if it raised the alarm.

Box 2: Reasons alarms did not function as expected

Did not operate: alarm battery missing; alarm battery defective; system not set up correctly; system damaged by fire; fire not close enough to detector; fault in system; system turned off; fire in area not covered by system; detector removed; alerted by other means; other; not known.

Operated but did not raise the alarm: no person in earshot; occupants did not respond; no other person responded; other; not known.

Smoke alarms in dwelling fires

Fires where a smoke alarm was present but either did not operate or did not raise the alarm accounted for just under a third (32%) of all dwelling fires in 2017/18, similar to the 31% in 2016/17. Mains powered alarms continued to have a lower “failure rate” than battery powered alarms: 22 per cent of mains powered smoke alarms and 38 per cent of battery powered smoke alarms failed to operate in dwelling fires in 2017/18 in England. These rates have been virtually unchanged since 2010/11. (Source: FIRE0702, FIRE0703)

Table 7.1: Reason smoke alarms did not operate in dwelling fires and dwelling fires resulting in casualties, by type of alarm, England, 2017/18

| Reason for failure | Battery powered | | Mains powered ¹⁸ | |
|-------------------------------------------|-----------------|------------------------------|-----------------------------|------------------------------|
| | Fires | Fire resulting in casualties | Fires | Fire resulting in casualties |
| Missing battery | 12% | 16% | 1% | 6% |
| Defective battery | 10% | 11% | 1% | 3% |
| Other act preventing alarm from operating | 2% | 7% | 8% | 19% |
| Fire products did not reach detector(s) | 45% | 11% | 51% | 11% |
| Fire in area not covered by system | 12% | 9% | 13% | 11% |
| Faulty system / incorrectly installed | 3% | 13% | 5% | 19% |
| Other | 17% | 33% | 22% | 31% |

¹⁸ Mains powered smoke alarms includes those recorded as 'mains and battery' in the IRS, therefore there are a small number of mains powered smoke alarms where the reason for failure is 'missing battery' or 'defective battery'.

'Fire products did not reach detector(s)'¹⁹ and 'fire in area not covered by system' accounted for 64 per cent of mains powered smoke alarm failures and continued to be the principal reasons mains powered smoke alarms failed to operate in dwelling fires in 2017/18, as in previous years (Table 7.1). Similarly, the main reasons battery powered smoke alarms failed to operate in dwelling fires were due to 'fire products did not reach detector(s)' and 'fire in area not covered by system' (57% of dwelling fires in 2017/18). These have also been the principal causes of battery powered smoke alarm failures in previous years. (Source: FIRE0704).

Fire-related fatalities and non-fatal casualties by smoke alarm function

Fires where a smoke alarm was not present accounted for 25 per cent (7,807) of all dwelling fires and 21 per cent (54) of all fire-related fatalities from dwelling fires in 2017/18. This is in the context of 10 per cent of households not having a working smoke alarm in 2016/17²⁰. (Source: FIRE0701, FIRE0702).

Fires where a smoke alarm was present but either did not operate or did not raise the alarm accounted for 57 per cent (150) of all fire-related fatalities in dwelling fires in 2017/18; an increase from 41 per cent in 2017/18. This increase is due to the Grenfell Tower fire in which there were 71 fatalities where a smoke alarm was present but did not raise the alarm. (Source: FIRE0702).

Smoke alarm failure

As for all years since 2010/11, the most common category of smoke alarm failure in dwelling fires involving any casualties was 'Other' (including 'alerted by other means', 'system damaged by fire', 'other' and 'don't know'), which accounted for 33 per cent of these fires where battery powered smoke detectors were present and 31 per cent where mains powered detectors were present (see table 7.1 above) in 2017/18. (Source: FIRE0704).

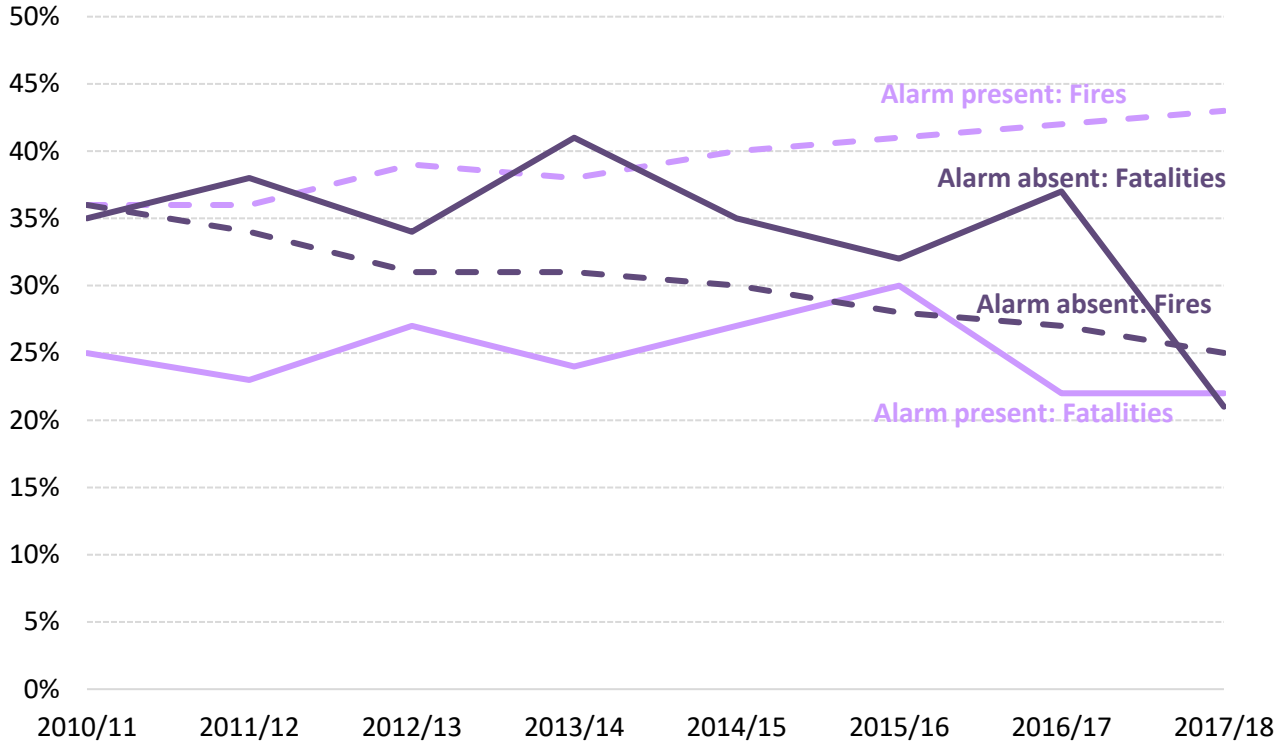
Figure 7.1, below, shows the proportion of dwelling fires and fire-related fatalities in dwelling fires where the alarm was either "present, operated and raised the alarm" or "absent".

It shows that, since the online IRS was introduced, the proportion of dwelling fires where the alarm was present, operated and raised the alarm has been consistently higher than for fire-related fatalities in those fires. When looking at dwelling fires and fire-related fatalities in dwelling fires where the alarm was absent it shows that, generally, the proportion of dwelling fires with a fire-related fatality has been higher than for all dwelling fires.

¹⁹ Fire products did not reach detectors(s) can be where the smoke alarms present were poorly sited (e.g. not on the floor of origin) so the smoke did not reach the detector.

²⁰ [English Housing Survey](#) (2008/09- 2016/17).

Figure 7.1. The proportion of primary dwelling fires and dwelling fire-related fatalities by smoke alarm operation, England; 2010/11 to 2017/18



Source: Table FIRE0702 - Totals do not add to 100 per cent due to the exclusion of two smoke alarm operation categories: “present, operated but did not raise the alarm” and “present, but did not operate”.

Smoke alarms in primary other building fires

Fires where a smoke alarm was not present accounted for 46 per cent of all primary other building (i.e. buildings that are not dwellings) fires. This has been stable since 2012/13. (Source: FIRE0706).

Fires where a smoke alarm was not present accounted for 34 per cent of all primary other building fire-related fatalities and non-fatal casualties (combined) in 2017/18, a decrease of three percentage points from 2016/17 and a decrease of four percentage points since 2012/13. (Source: FIRE0706).

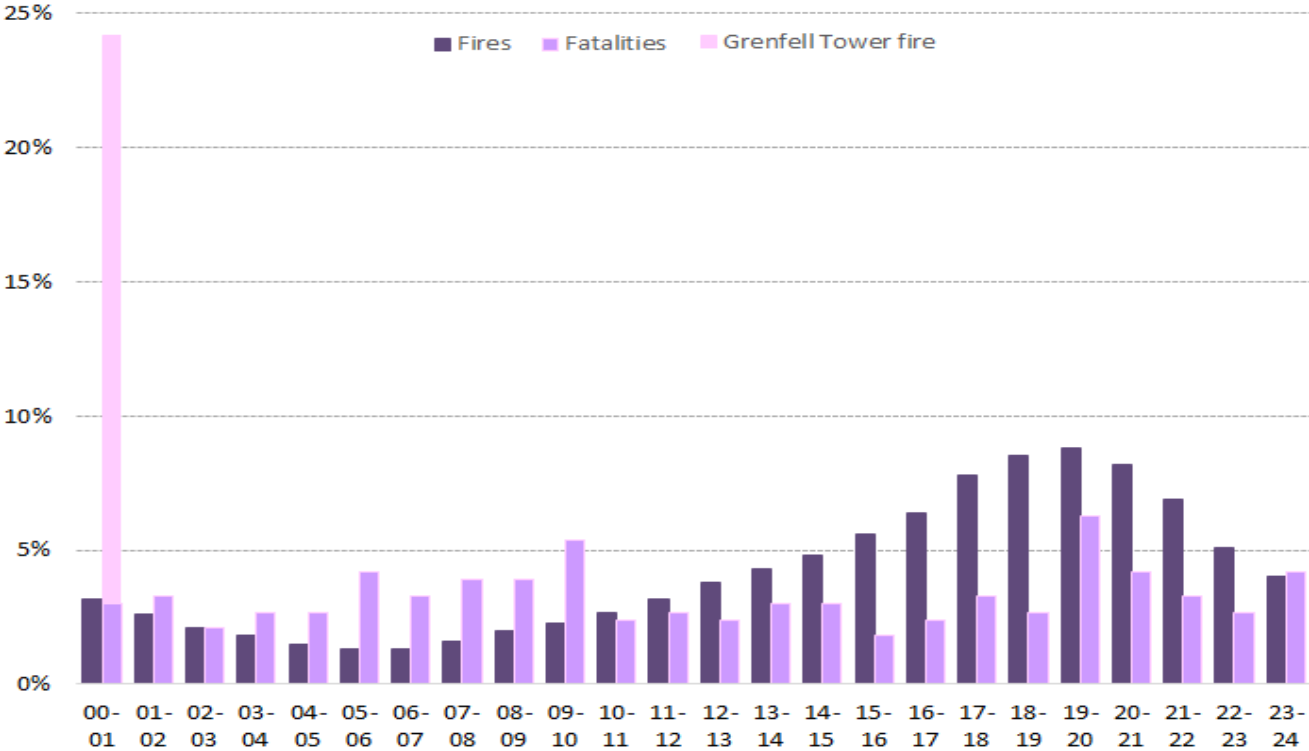
8 Temporal and seasonal fire analyses

Fires and fire-related fatalities are affected by both seasonality and time of day. Similar to previous years, generally there are fewer fires where the time of call was between midnight and 11am, but the number of fire-related fatalities remained relatively high despite lower incidence of fires and with no strong temporal pattern. This difference is also found for accidental dwelling fires.

Temporal fire analyses

- Forty-seven per cent** of all fires in 2017/18 occurred where the time of call was between **16:00 and 22:00** (Figure 8.1). These six hours were the six individual hours where the highest proportion of the time of call for the fire took place, which is unchanged since 2016/17. The peak was between 19:00 and 20:00 and accounted for nine per cent of fires in 2017/18, similar to previous years. (Source: FIRE0801).
- In contrast to the number of fires, the hourly number of fire-related fatalities showed less of a pattern across the day in 2017/18. There were slightly **more fire-related fatalities during the morning and evening hours** when compared to during the day. The peak was between 00:00 and 01:00, accounting for just over 24 per cent of all fire-related fatalities. This is due to the Grenfell Tower Fire in which there were 71 fire-related fatalities where the time of call was between 00:00 and 01:00. (Figure 8.1)

Figure 8.1. Percentage of fires and fire-related fatalities by hour of the day, England; 2017/18



Source: Table FIRE0801

Seasonal fire analyses

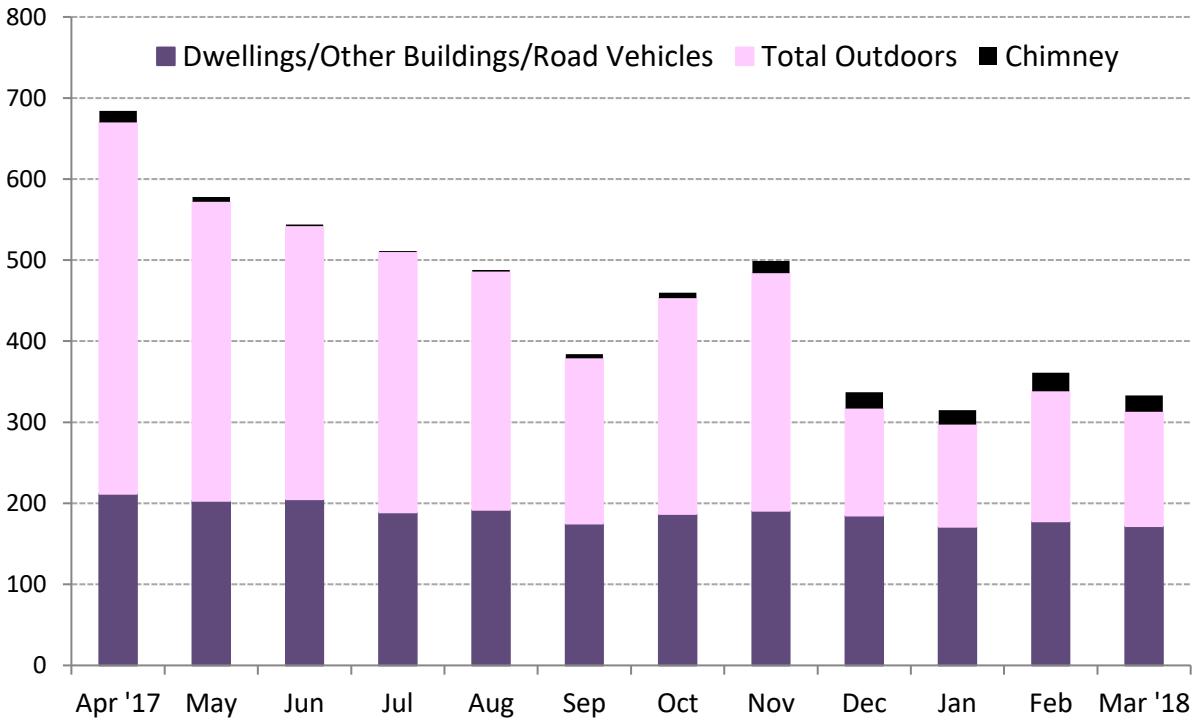
Very little seasonality was evident in dwelling, other building and road vehicle fires, however outdoor fires and chimney fires showed much stronger seasonal effects. There tends to be more grassland, refuse and other outdoor fires in the summer months and these seem to reflect weather patterns. Conversely, chimney fires are more numerous in the winter months. These seasonal effects are broadly similar each year but are affected by changes in weather patterns specific to that year, e.g. in 2016/17 the higher values were skewed towards the late summer with a peak in August, while in 2017/18 they were skewed towards spring/early summer with a peak in April.

Specifically:

- **April experienced the most fires per day** attended by FRSs in 2017/18 (an average of 683), whilst **January had the fewest** (316 fires per day on average). This is a different pattern to 2016/17 when August experienced the most fires per day (580 fires) and February the fewest (340 fires). (Source: FIRE0802).
- The daily rate of all fires for 2017/18 was **458 fires per day**. Fifty-six per cent (258) of these were all types of outdoor fires.
- Fires in dwellings, other buildings and road vehicles showed relatively little seasonality, with the daily rate of these fires attended varying between **171 and 212 per month** in 2017/18.

Figure 8.2, below, shows the average daily number of dwelling/other building/road vehicle, outdoor, and chimney fires in 2017/18 across the year. It shows how stable dwelling/other building/road vehicle fires are across months, compared with seasonal outdoor fires and, to a lesser extent, chimney fires.

Figure 8.2. Average daily fire incidents by month and location, England; 2017/18



Source: Table FIRE0802

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<https://www.gov.uk/government/organisations/home-office/about/statistics>

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