



Home Office

## **Focus on trends in fires and fire-related fatalities**

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# Summary

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## Introduction

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. This includes fires, fire false alarms and non-fire incidents (29 per cent, 40 per cent and 31 per cent respectively in [2016/17](#)). This report focuses on the trends in fire incidents and fire-related fatalities up to March 2017 and examines a number of factors which may have influenced these trends.

The overall trends in fires and fire-related fatalities have been sustained long term declines. A wide range of factors have exerted an influence on the trends, some of which will have decreased the number of incidents whilst others will have increased numbers. This report outlines a number of the major factors which have influenced these trends, however, no attempt to quantify the impact of these factors on the numbers of fires or fire-related fatalities has been made. This is because it would be impossible to isolate and quantify the impact of any one lone factor that is likely to be influencing trends using the data that are available. The report is set out in two parts:

- Part One: sets out the overarching trends and patterns within fires which will provide context and background for the rest of the report
- Part Two: looks in greater depth at a number of factors which may have influenced the overall trends.

## Part One: Overall trends in fire incidents and fire-related fatalities

The number of fires attended by FRSs has been on a steady downwards trend, falling from a peak of around 473,000 in 2003/04 to around 162,000 in 2016/17, a decline of 66 per cent. Fires are categorised as primary fires (more serious fires involving damage to property or harm to people), secondary fires (generally smaller outdoor fires) and chimney fires (where the fires was contained to the chimney structure only). Primary fires have shown a steady decline, whilst secondary fires have shown a downward trend but with greater fluctuation. Fires are also classified as accidental or deliberate, the majority of primary fires are accidental whilst the majority of secondary fires are deliberate (please see page 9 for definitions).

The number of fire-related fatalities has also declined from 454 in 2003/04 to 261 in 2016/17. The majority of fatalities (approximately 80 per cent) occur in dwelling fires, and the majority of dwelling fires (approximately 80 per cent) begin accidentally. Previous research<sup>1</sup> has demonstrated that older people, people with disabilities, those living in single parent households, males aged 46-60 who live alone and drink and smoke in the home, and young people aged 16-24 (including students) are at a greater risk of dying in fires.

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<sup>1</sup> DCLG (2006) Learning lessons from real fires. Available at: <http://webarchive.nationalarchives.gov.uk/20120919132719/http://www.communities.gov.uk/publications/fire/researchbulletin09>

## Part Two: Factors influencing the trends

This part of the report discusses some of the key factors which may have influenced the overall trends in fires and fire-related fatalities. This is not an exhaustive list of all the factors which have contributed to the decline in fires and other factors will also have played a part in these trends.

### Downwards pressures

**There has been a large decline in the use of chip pans.**

In 1994 chip pans fires accounted for 20 per cent of accidental dwelling fires declining to around 6 per cent in 2016/17. A small number of fatalities are linked to chip pan fires (6 in 2016/17). Changing cooking habits, 'the rise of the oven chip' and preventative work by FRSs have reduced the use of chip pans in homes.

**The proportion of households with a working smoke alarm has increased.**

The proportion of households with a working smoke alarm has increased, reaching 89 per cent in 2015/16. This is an important factor as in 2016/17 36 per cent of fire-related fatalities occurred when there was no alarm present in the dwelling. The likelihood of a household having a smoke alarm depends on a number of factors including household occupants (e.g. households with children are more likely to have smoke alarms) and tenure (housing association households are more likely to have a smoke alarm and private renters are less likely).

**There has been a long term downward trend in the proportion of the adult population who are smokers.**

Since 2001 the proportion of the population (aged 16 and over) in Great Britain who smoke has declined from 27 per cent to 16 per cent in 2016. The number of fires in Great Britain involving smoking materials has declined to 2,400 in 2015/16, a decline of almost 40 per cent since 2000/01. The highest proportion of accidental dwelling fire-related fatalities (36 per cent in 2016/17) occur where the source of ignition is smoking materials. The World Health Organisation predict smoking habits will continue to decrease, and a continued decline in smoking materials fires can be anticipated.

**There has been a downward trend in drug and alcohol use amongst adults.**

Drugs and alcohol are a risk factor in fires due to incapacity, however there has been a reduction in the use of drugs in the adult population, and also a reduction in alcohol consumption. In 2016/17 there were 1,782 fires and 34 fire-related fatalities where impairment due to suspected drug or alcohol use was recorded as a contributory factor. The number of these types of fires has reduced by 32 per cent since 2010/11.

**Arson and deliberate fires have showed a declining trend.**

Arson and deliberate fires have declined by 56 per cent and 73 per cent respectively since 2002/03. Deliberate fires result in approximately 15 per cent of the fire-related fatalities occurring each year and the majority of these happen in dwelling fires. FRSs have conducted prevention work which includes educating children about the dangers of fires, and also working with offenders.

**Since 1981/82 improved safety standards have been introduced, including regulations for furniture, furnishings and buildings.**

A number of safety standards have been introduced, for example, fire resistant furnishings, mains wired smoke alarms, escape windows, electrical standards and general product standards. There is little research to evaluate the success of these regulations but it is likely that they contributed to the reduction in fires and fire-related fatalities.

**FRSs provide a wide range of preventative work and fire safety education.**

FRSs have provided many initiatives including Home Fire Risk Checks, Firesetter and arson prevention schemes, youth diversion schemes and visits to schools. These interventions show overlap with many of the other factors mentioned and it is difficult to isolate the impact of these interventions alone, however, it is likely they will have furthered the overall downward trend in fire and fire-related fatalities.

### Upwards pressures

**Life expectancy has been increasing and therefore an ageing population is expected to be a significant challenge.**

Those aged 80 and over have a higher fire-related fatality rate, accounting for 5 per cent of the population but 20 per cent of all fire-related fatalities in 2016/17. The majority of dwelling fires linked to these victims were related to the misuse of equipment or appliances. Due to the increasing elderly population it is estimated that the number of fatalities for those aged 70 and over may increase.

**The proportion of dwellings experiencing overcrowding has shown a long term upwards trend.**

Overcrowding is a fire risk and figures from the English Housing Survey have shown an increase in overcrowding over the past two years. The IRS does not collect information about housing occupancy which means that additional investigation of this issue is still required.

# Introduction

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Data from the Incident Recording System (IRS) show a sustained long term declining trend in fires attended by fire and rescue services (FRSs) in England. It is likely that a wide range of factors have exerted an influence on the trends, some of which will have decreased the number of incidents, whilst others will have increased numbers. However, the cumulative impact appears to be that the downward pressures have exerted the most influence, resulting in an overall reduction over the last decade.

The purpose of this report is to examine the trends in fire incidents and fire-related fatalities in detail<sup>2</sup>, drawing on additional publically available data and evidence. Fire incidents make up one third (29 per cent) of all incidents attended by FRSs and this paper focuses on these incidents only. Therefore, it does not include fire false alarms (which make up 40 per cent of incidents) or non-fire incidents (31 per cent).<sup>3</sup> This paper is intended to move towards a better understanding of the factors which have influenced the trends, how these trends relate to wider societal patterns and whether there is any scope for influence over the identified factors. It also considers potential pressures which may slow or reverse the long-term downward trend.

The objective of this report is not to prove which factors are causally linked to the decline in fires incidents and fire-related fatalities, or what has driven particular types of fires, since in many cases this would not be possible. For example, the overall decline in accidental dwelling fires where the source of ignition is smokers' materials may be due to a combination of the decline in the prevalence of smoking among adults, improvements in flame retardant furniture, and changing attitudes towards safety due to Fire Kills messaging. Likewise, a decline in chip pan fires could have been a result of improvements in kitchen equipment, general changes in eating habits and diets, fire safety campaign messaging and FRS prevention activities, and the rise of the oven chip.

Within the overall trends, there is some year-on-year fluctuation, predominantly driven by the weather and random events. The effect of the weather is stronger for secondary fires than for primary fires (for definitions, see Box 1 on page 7), for example the hot dry summer of 2003 was associated with a spike in secondary fires in 2003/04, whereas the wet summer of 2012 showed a decline in secondary fires. To some extent, fire incidents and fire-related fatalities are random events and even if the underlying risk of fire or fire-related fatalities were unchanged, we would expect some variation year-on-year. As the number of fire-related fatalities is relatively small (around 300 per year) these figures are particularly prone to fluctuation. This work does not attempt to look at these year-on-year variations, but instead at the longer-term upwards or downwards trends up until the end of March 2017. The period included in this report does not cover the tragic event at Grenfell Tower in June 2017 and discussion of this event is not included. It is hoped that this report stimulates debate about the factors driving the trends in fire incidents and fire-related fatalities.

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<sup>2</sup> The fire and fire-related fatality data used in this report is published by the Home Office, available at: <https://www.gov.uk/government/statistics/fire-and-rescue-incident-statistics-england-april-2016-to-march-2017>

<sup>3</sup> Non-fire incidents are other incidents attended by fire and rescue services, such as road traffic collisions and medical responding.

This report is divided into two parts:

- Part One: sets out the overarching trends and patterns within fire incidents to provide context and background for the rest of the report
- Part Two: looks in greater depth at a number of factors which may have influenced the overall trends and where possible provides an indication of whether these trends are likely to continue into the future.

# 1 Overall trends in fire incidents and fire-related fatalities

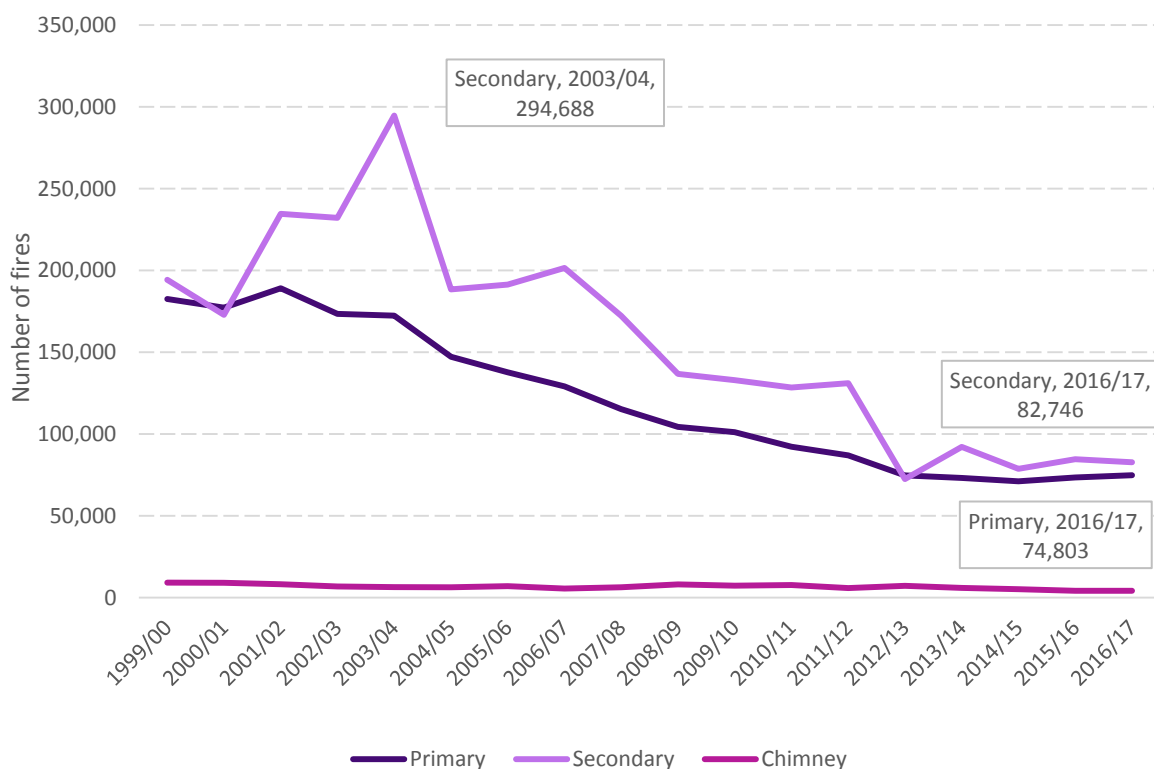
This part of the report outlines some of the overall trends in fire incidents,<sup>4</sup> and fire-related fatalities in England. More detailed IRS data became available when it moved from paper to electronic forms from 2010/11 and therefore the analysis within this report focuses on 2010/11 to 2016/17. However, where longer term data is available this has been included. The factors that may have influenced these trends are discussed in Part Two of the report. Overall both fires and fire-related fatalities have declined over recent years.

## Total fires

### Type of fire

The number of fires attended by Fire and Rescue Services (FRSs) has been on a steady downward trend since the early 2000s. Since 1999/00 (the earliest year for which all fires were recorded) the highest number of fires attended in a year was around 473,600 (in 2003/04). In 2016/17, the number of fires had declined to around 162,000, a decline of 66 per cent since 2003/04 and of 52 per cent over the past decade. Figure 1 outlines the overall trend in fires.

**Figure 1: Trends in fires, IRS, England; 1999/00 to 2016/17**



<sup>4</sup> Data relating to fire incidents are taken from the Incident Recording System (IRS) which collects information provided by FRSs on all fires they attend.



### Box 1 – Fires are categorised as

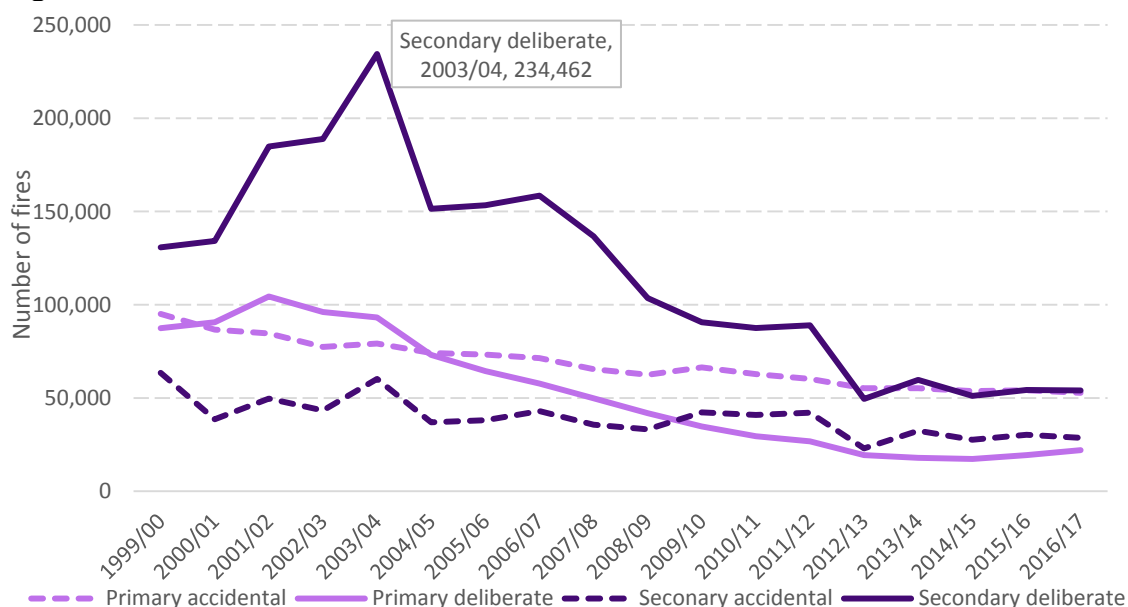
- Primary – more serious fires that cause harm to people or damage to property. To be categorised as primary these fires must either: be a fire that occurred in a (non-delict) building, vehicle or outdoor structure, be a fire that involved fatalities, casualties or rescues, or be a fire that was attended 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.

As shown in Figure 1 above, primary fires have experienced a slow and steady decline over the last 15 years. Secondary, fires which make up the highest proportion of all fires (51 per cent in 2016/17), have also shown a general downward trend, however with greater fluctuation. The weather has a stronger impact on the number of secondary fires than primary fires, for example there was a hot dry summer in 2003 and a corresponding spike in secondary fires in 2003/04, whereas the wet summer of 2012 showed a decline in secondary fires. There are a relatively small number of chimney fires, which have also been declining to around 4,200 in 2016/17.

### Motive for fire

The IRS also breaks down fires into accidental and deliberate fires.<sup>5</sup> Figure 2 outlines the overall trends in primary and secondary fires broken down into these additional categories.

**Figure 2: Primary and secondary fires by accidental and deliberate motive, IRS, England; 1999/00 to 2016/17**



Accidental and deliberate fires have both declined, however deliberate fires have shown a greater decline than accidental fires (a decrease of 77 per cent since the peak in 2003/04

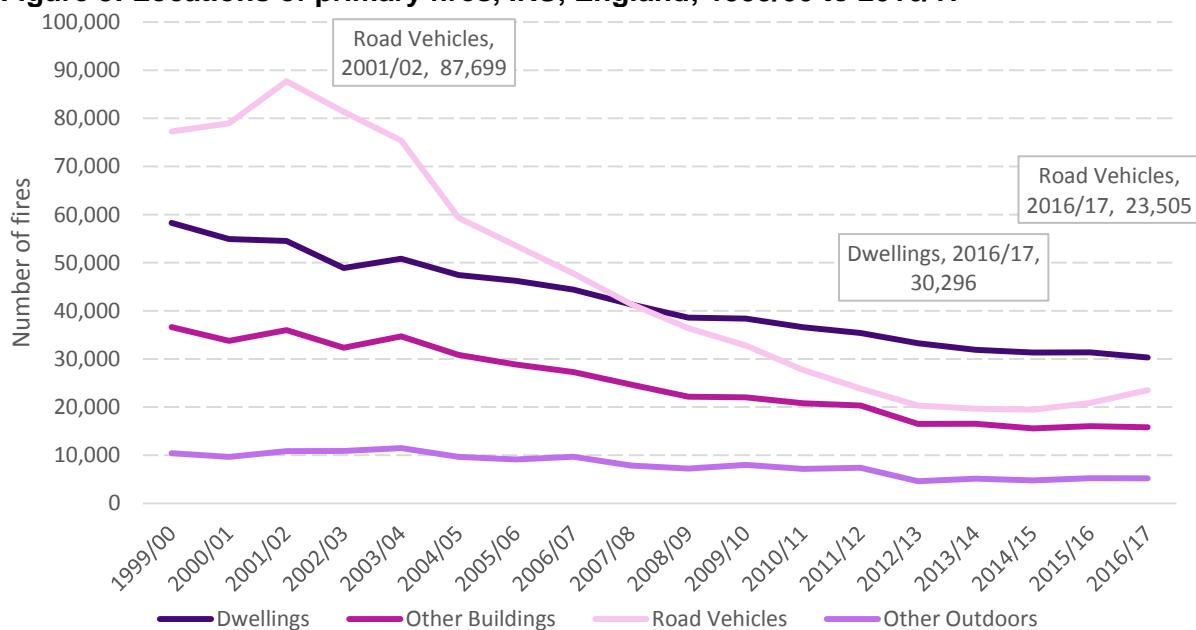
<sup>5</sup> Accidental fires are those where the motive for the fire was presumed to be accidental or is unknown. Deliberate fires include those where the motive was 'thought to be' or 'suspected to be' deliberate and includes damage to own or other's property. These fires are not the same as arson 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'.

compared with a 42 per cent decline for accidental fires over this period). The majority of primary fires are accidental (71 per cent in 2016/17), whereas the majority of secondary fires are deliberate (65 per cent in 2016/17).

### Location of fire

Primary fires, as set out in Box 1, are those fires which are more serious and Figure 3 shows the locations of these types of fires.

**Figure 3: Locations of primary fires, IRS, England; 1999/00 to 2016/17**



Since 1999/00, dwelling, other building and outdoor primary fires have declined by around half (48 per cent, 57 per cent and 50 per cent decreases respectively). Road vehicle primary fires have declined by the largest amount at 70 per cent, and from the mid-2000's were no longer the most common type of primary fire, although the number of these fires has started to increase in the past two years from 19,473 in 2014/15 to 23,505 in 2016/17. In 1999/00 road vehicle fires were the largest category of primary fires, however, currently the largest category of primary fires is dwelling at 30,296 in 2016/17.

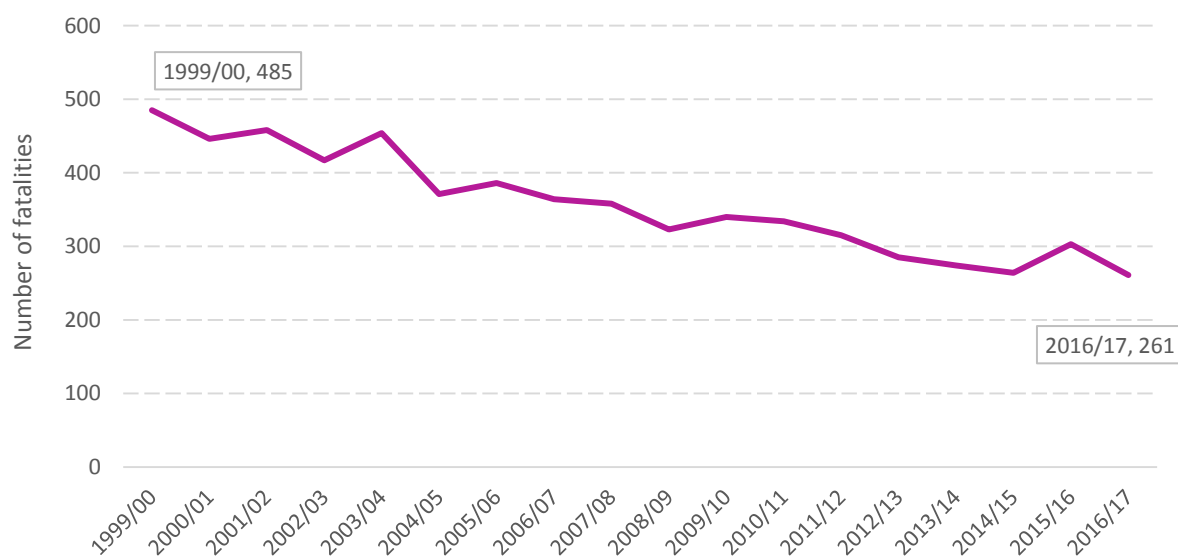
Secondary fires are more minor fires and by definition do not involve people or property, therefore these are most commonly outdoor fires. The IRS collects less detailed information about these fires but location information demonstrates that the majority (around 60 per cent) of these fires take place in refuse or refuse containers (over 49,000 in 2016/17).

### Total fire-related fatalities

Fire-related fatalities<sup>6</sup> have also been on a downward trend for many years, from a peak of 485 fatalities in 1999/00 down to a low of 261 in 2016/17, see Figure 4.

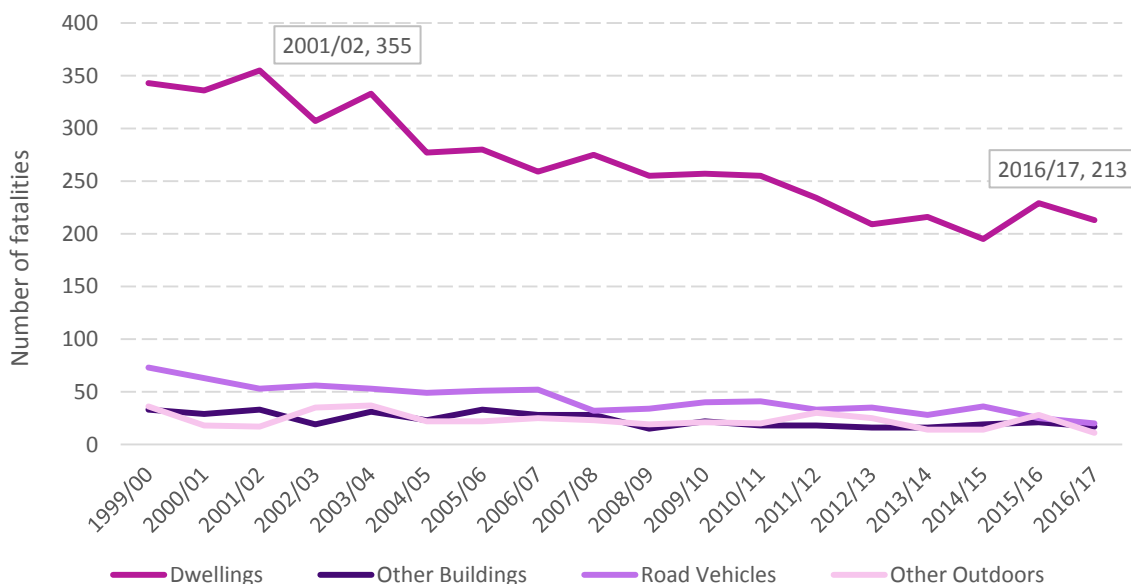
<sup>6</sup> In this paper, as in Home Office statistical fire bulletins, the fatalities figures include the number of fatal casualties which were either recorded as 'fire-related' or 'don't know', grouped together as fire-related fatalities; thus excluding only those that were recorded as 'not fire-related'. For a variety of reasons some records (including fire-related fatalities) take longer than others for FRSs to upload to the IRS and therefore totals are constantly being amended (by relatively small numbers). Please note that one fire can lead to more than one fire-related fatality.

**Figure 4: Number of fire-related fatalities, IRS, England; 1999/00 to 2016/17<sup>7</sup>**



As the number of fire-related fatalities is relatively low this means that the figures are susceptible to year on year fluctuations and any changes may be due to one-off variation rather than a reversal of the trend, for example the number of fatalities in 2015/16 increased to 303, however in 2016/17 decreased to an historical low of 261. The relatively low numbers also means that additional breakdowns of fatalities data cannot always be provided, however, these are included in this report where possible.

**Figure 5: Fire-related fatalities by location of fire, IRS, England; 1999/00 to 2016/17**



The majority of fire-related fatalities occur in dwellings, around 80 per cent in 2016/17 (213 fire-related fatalities), with very low numbers of fire-related fatalities occurring in other locations. Of the fire-related fatalities which occurred in dwellings the majority, 86 per cent in 2016/17 (183 fatalities), of these occurred in accidental fires.

<sup>7</sup> As stated previously, please be aware that this report covers the period up to the end of March 2017, and therefore Grenfell Tower fire is not included in these figures.

## Key 'at risk' groups

Whilst reading this report, another issue that is useful to keep in mind are the groups of individuals who are most at risk of experiencing a fire or of dying in a fire. Data from the English Housing Survey<sup>8</sup> suggests that there are some households who are more likely to experience a fire within their home, including minor fires when there was no need for the FRSs to attend. The groups more likely to experience a fire were:

- Those living in rented households are more likely than owner occupiers,
- Those living in flats were more likely to than those in a house,
- Those with a respondent under the age of 60 were more likely than those with a respondent over 60,
- Those living in a household with five or more members were more likely than those living in smaller households,
- Those with a long-term illness or disability were more likely than those without.

Research by Department for Communities and Local Government (DCLG) in 2006<sup>9</sup>, which conducted analysis on data collected from FRSs, identified five main groups who were at greater risk of dying in a fire, and subsequent research has reaffirmed these groups:

- Older people,
- People with disabilities,
- Those living in single parent households,
- Males, aged around 40-60 years (who live alone and drink and smoke in the home),
- Young people (aged 16-24, including students).

These two pieces of research suggest there are differences between the people more likely to experience a fire and the people who are most likely to be at risk of dying in a fire.

Recent reports from firefighters<sup>10</sup> have suggested that another group, those individuals with excessive storage, or 'hoarders' may also be at increased risk of experiencing fires or from dying in a fire due to large amounts of flammable materials in their homes. However, this information is not reliably recorded within the IRS and cannot be confirmed from the data available.

### Box 2 – Findings so far

- Fires and fire-related fatalities have been steadily declining since 2003/04.
- There are more secondary fires than primary fires, and these are more likely to be deliberate fires, whereas primary fires are more likely to be accidental.
- Primary fires have been declining in all locations, however primary road vehicle fires have shown the highest rate of decline.
- The majority of fire-related fatalities occur in accidental dwelling fires.
- There are particular groups of people who are more at risk of dying in a fire, and these groups differ from the groups of people who are most at risk from experiencing a fire.

<sup>8</sup> English Housing Survey (2013/14) Fire and fire safety report. Available at: <https://www.gov.uk/government/statistics/english-housing-survey-2013-to-2014-fire-and-fire-safety-report>

<sup>9</sup> DCLG (2006) Learning lessons from real fires. Available at: <http://webarchive.nationalarchives.gov.uk/20120919132719/http://www.communities.gov.uk/publications/fire/researchbulletinno9>

<sup>10</sup> Firefighter reports contained in ITV documentary: Inside London Fire Brigade (2017)

## 2 Factors affecting fire trends

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### Summary of possible factors

This part of the report examines some of the key factors that may have influenced the overall trends in fires and fire-related fatalities. Some of these factors will have reduced the numbers of fires and fire-related fatalities, and some will have increased these figures. As the overall pattern has been of declining fires and fire-related fatalities, it is clear that the downwards factors have had the largest influence on these numbers. It has not been possible to attempt to calculate the proportion of influence that each factor has had on the numbers of fires.

A summary of some of the main factors which may have influenced the upwards or downwards pressure on fire incidents is shown below. This is not an exhaustive list and many others could also be included. These pressures are explained in greater detail below.

#### **Downwards pressures**

- Changing cooking habits
- Increase in smoke alarm ownership
- Reduction in smoking
- Reduction in drug and alcohol use
- Reduced arson
- Improved safety standards (furniture and furnishings) and improved building regulations
- Preventative work and education

#### **Upwards pressures**

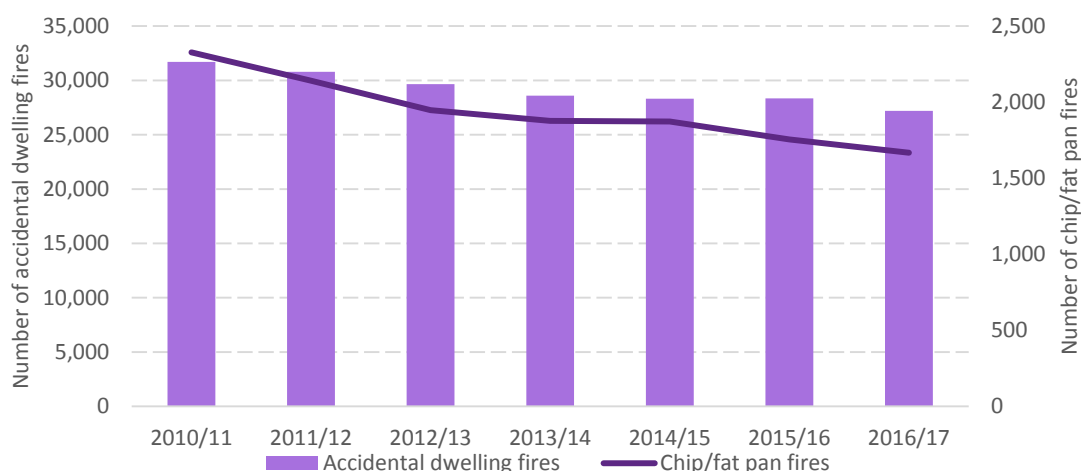
- Ageing population
- Overcrowding / rise in houses in multiple occupation (HMOs)

## Downwards pressures on fires and fire-related fatalities

### Changing cooking habits

In 2016/17, cooking appliances were the largest source of ignition for accidental dwelling fires, accounting for 13,414 or 49 per cent of all accidental dwelling fires in England. Of these fires, chip/fat pan fires were the cause of fire for 1,668 or six per cent of all accidental dwelling fires. In 1994, cooking appliance fires accounted for a similar proportion (53 per cent) of all UK accidental dwelling fires, and chip pan fires accounted for a much larger proportion (20 per cent) of accidental dwelling fires. This demonstrates that the contribution of chip pans to accidental dwelling fires has declined.

**Figure 6: Number of accidental dwelling fires and chip pan fires, IRS, England; 2010/11 to 2016/17**



Cooking appliances account for a small number of fire-related fatalities from accidental dwelling fires, 16 fatalities in 2016/17, and of these six fatalities were linked to chip pan fires. As these numbers are small they are prone to year on year fluctuation and the small numbers mean no statistical analysis to establish at risk groups can be conducted. The proportion of fire-related fatalities occurring from cooking appliances and chip pan fires is under 15 per cent, suggesting that whilst cooking appliances are the most common cause of accidental dwelling fires, these fires are not those which result in the highest proportion of fatalities. However, previous analysis by DCLG in 2006 has suggested one particular group of people who may be a higher risk: males cooking under the influence of alcohol late in the night.<sup>11</sup>

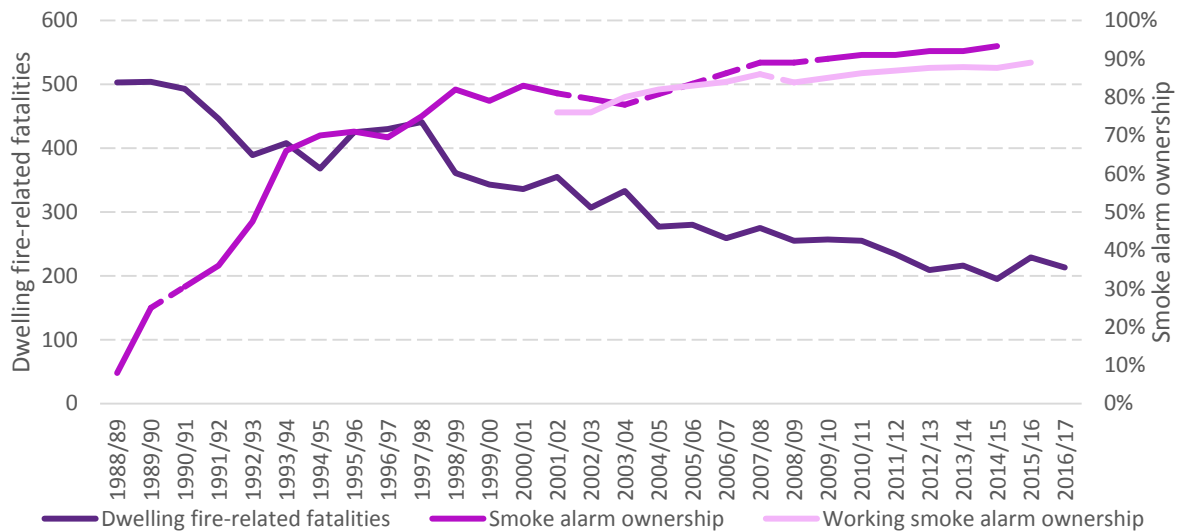
The decline in chip pans fires may be due to a number of factors, such as the increase in popularity of the oven chip and also the prevention work conducted by FRSs around chip pan fires. This decline in chip pan use has improved fire safety, however, as the majority of accidental dwelling fires are started by cooking appliances, cooking behaviour is still an important area for fire prevention. The majority of these cooking appliance fires appear to be more minor fires with a lower risk to life but as shown by the numbers these make up half of the accidental dwelling fires attended by FRSs each year and are therefore a high proportion of the demand on the service.

<sup>11</sup> DCLG (2006) Learning lessons from real fires. Available at: <http://webarchive.nationalarchives.gov.uk/20120919132719/http://www.communities.gov.uk/publications/fire/researchbulletin09>

## Increasing smoke alarm ownership

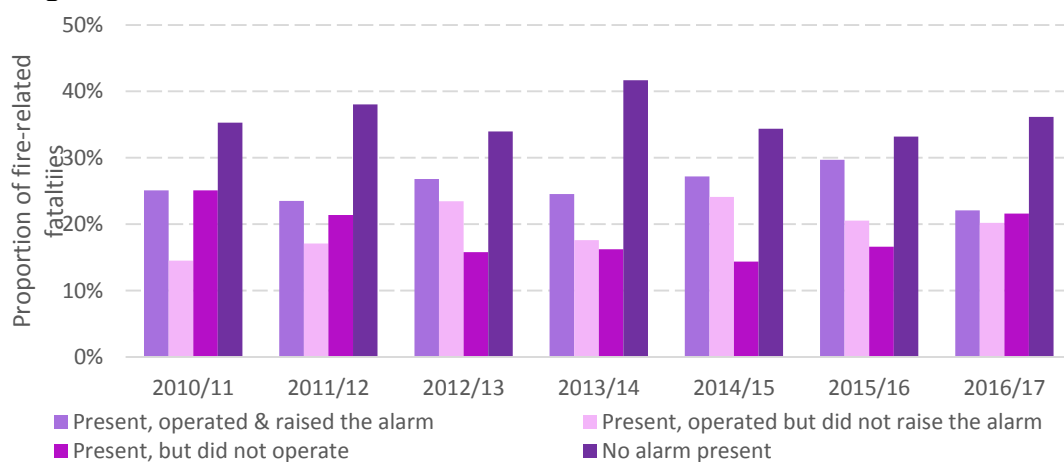
Owning a smoke alarm does not prevent fires, however, it does alert people to the existence of a fire so that they can put out the fire themselves, potentially negating the need to call the fire service, or get out of the building. There has been a long term increase in the proportion of households owning a smoke alarm from eight per cent in 1988 to 93 per cent in 2014/15. The proportion of households with a *working* smoke alarm has also increased to 89 per cent in 2015/16.<sup>12</sup>

**Figure 7: Smoke alarm ownership, working smoke alarm ownership and dwelling fire-related fatalities, 1988/99 to 2016/17<sup>13</sup>**



Between 2010/11 and 2016/17 the category with the highest proportion (ranging from 33 per cent to 42 per cent) of dwelling fire-related fatalities occurred in fires where there was no alarm present, see Figure 8.

**Figure 8: Proportion of fire-related fatalities occurring in dwellings by alarm status<sup>14</sup>, IRS, England; 2010/11 to 2016/17**



<sup>12</sup> English Housing Survey data, available at: <https://www.gov.uk/government/collections/english-housing-survey>

<sup>13</sup> Smoke alarm ownership and working smoke alarm ownership data uses multiple sources from 1988/99 to 2016/17: British Crime Survey (1988, 1992, 1999, 2001, 2002/03), BJM survey commissioned by the Home Office (1989), English House Condition Survey (1991, 2003/04-2007/08), ONS Omnibus Survey (1992-1997), National Community Fire Safety Centre 'Fire Safety Attitude and Behaviour Monitor' (1998-2001) and English Housing Survey (2008/09-2015/16)

<sup>14</sup> 'Raised alarm' means that the smoke alarm operating alerted people to the existence of a fire

In 2016/17, smoke alarms failed to operate in 28 per cent of dwelling fires. The most frequent reason for both mains and battery operated alarms to fail was that the smoke alarm was too far from the fire (50 per cent and 44 per cent respectively). The IRS shows that mains powered alarms have a failure rate of around 20 per cent and battery operated alarms have a failure rate of 40 per cent.

Analysis of the English Housing Survey (EHS) data has shown that the types of households most likely to own a smoke alarm are those living in properties built after 1980, those who are social renters (both local authority and housing association renters), and those households made up of couples with children.<sup>15</sup> Private renters are least likely to own a smoke alarm (Table 1).

**Table 1: Households with at least one working smoke alarm by tenure, EHS, England; 2015/16**

	Proportion of households with at least one working smoke alarm
Private renters	84%
Owner occupiers	89%
Local Authority	93%
Housing Association	95%

The EHS analysis also showed that the households most likely to test their smoke alarms are those made up of couples with children, households in which someone has a disability, or households containing someone receiving benefits.

The increase in smoke alarm ownership is likely to result from the cumulative impact of a number of factors rather than one specific cause. One of these contributing factors is the national smoke alarm campaign which has been running since 1988, now called 'Fire Kills'. This campaign has evolved from encouraging the purchase of a smoke alarm to also encouraging testing smoke alarms. Another reason may be the preventative work conducted by FRSs. In 2015/16, FRSs and their partner agencies conducted 625,752 Home Fire Risk Checks (HFRCs)<sup>16</sup> which can include the fitting of smoke alarms. Continuing to encourage households to own and maintain smoke alarms remains an important area for fire safety.

Research has been conducted internationally to investigate the possibility that smoke alarms have a 10 year life span.<sup>17</sup> However, the findings from this research is inconclusive and smoke alarm failure rates have not been accurately linked to the age of the alarm. Data from the IRS suggest that failure rates have remained stable since 2010/11 however ongoing monitoring of these rates is a key feature in examining this issue.

<sup>15</sup> DCLG (2015) Smoke alarms in English Homes report, using EHS data. Available at: [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/539096/Smoke\\_Alarms\\_in\\_English\\_Homes\\_Full\\_Report.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/539096/Smoke_Alarms_in_English_Homes_Full_Report.pdf)

<sup>16</sup> Fire Statistics table 1201, available at: <https://www.gov.uk/government/statistical-data-sets/fire-statistics-data-tables>

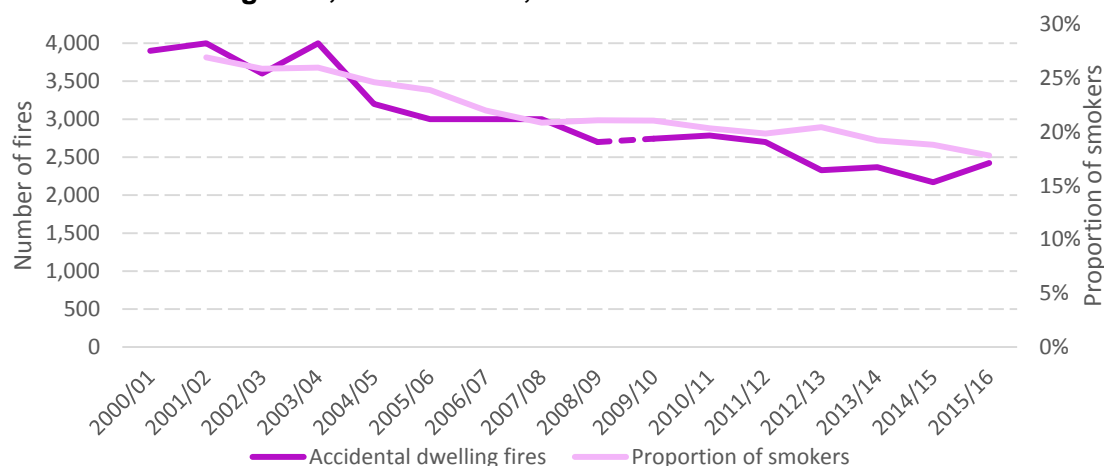
<sup>17</sup> Safelincs Fire Safety Solutions summary of the research, available at: <http://www.safelincs.co.uk/why-should-smoke-alarms-be-replaced-after-ten-years/>



## Reduction in smoking

Since 2001 there has been decline in the prevalence of smoking from 27 per cent to 16 per cent of the adult population of Great Britain in 2016.<sup>18</sup> The number of accidental dwelling fires in Great Britain where the source of ignition was smoker's materials declined to around 2,400 in 2015/16 from 3,900 in 2000/01, a decline of almost 40 per cent (Figure 9).

**Figure 9: Proportion of adult smokers and numbers of fires from smokers' materials in accidental dwelling fires, Great Britain; 2001/02 to 2016/17<sup>19</sup>**



The World Health Organisation forecasts predict that prevalence of smoking in Great Britain will continue to decline to 13 per cent in 2025 and that the number of smoking related fires will also decline.<sup>20</sup> However, these predictions were calculated in 2010 and smoking rates are currently declining at a faster rate than before 2010, therefore these declines may be larger than predicted.

In 2011, fire safe cigarettes were introduced in the EU.<sup>21</sup> This meant that all cigarettes sold within the EU must meet a reduced ignition propensity requirement, so that they will go out if not actively smoked. Data from the IRS shows that accidental dwelling fires in England relating to smokers' materials have declined by 24 per cent since 2010/11 and all primary fires have declined by 19 per cent over this same period. However, it is not possible to quantify the impact of fire safe cigarettes on the decline in fires separately from the impact of the decline in smoking.

Smoking-related fires are especially important to consider in relation to fire-related fatalities. Whilst these fires only accounted for six per cent of accidental dwelling fires in 2016/17, they accounted for 36 per cent of fire-related fatalities (compared with cooking appliance fires which accounted for 49 per cent of accidental dwelling fires but nine per cent of fatalities). The DCLG analysis previously mentioned also highlighted that males aged 40 to 60 years

<sup>18</sup>Adult smoking habits in Great Britain, available at:

<https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/drugusealcoholandsmoking/datasets/adultsmokinghabitsingreatbritain>

<sup>19</sup> Pre 2009/10 Great British data from:

<http://webarchive.nationalarchives.gov.uk/20121103130707/http://www.communities.gov.uk/publications/corporate/statistics/firestatsgb201011> The number of accidental dwelling fires for 2009/10 is not publicly available for Scotland and England and therefore this data point is estimated based on the trend. Scottish data available from: <http://www.firescotland.gov.uk/about-us/fire-and-rescue-statistics.aspx>, and Welsh data from: <http://gov.wales/statistics-and-research/fire-statistics/?lang=en>.

<sup>20</sup> WHO smoking prevalence forecast for UK, available at:

<http://www.who.int/tobacco/publications/surveillance/prevalencetrendsresults2010to2025.xlsx?ua=1>

<sup>21</sup> <http://www.bbc.com/news/uk-15754934>

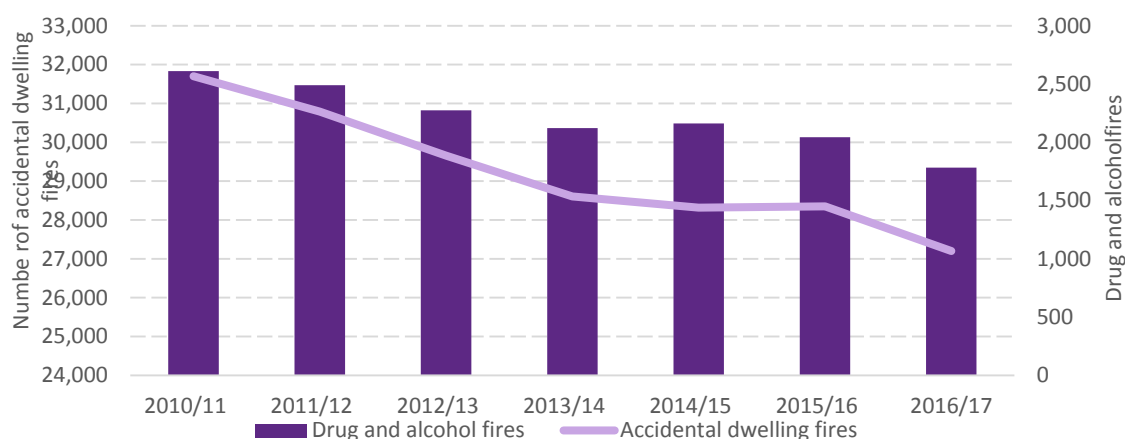
who lived alone and drank and smoked in the home were one of the groups most at risk of dying in a fire.

Although the proportion of the population who smoke is projected to carry on declining this is still an important area to continue to focus prevention activities due to the high fatality rate in this type of fire.

### Reduction in drug and alcohol use

In 2016/17, there were 27,201 accidental dwelling fires in England and in seven per cent (1,782) of these fires, impairment due to drug or alcohol use was recorded as a suspected, although not confirmed, contributory factor by firefighters at the scene of the incident. Accidental dwelling fires have declined by 14 per cent since 2010/11, however drug and alcohol related fires have declined by 32 per cent over this period, from 2,611 when they represented eight per cent of all accidental dwelling fires, see Figure 10.

**Figure 10: Accidental dwelling fires where alcohol/drugs were a contributory factor, IRS, England; 2009/10 to 2016/17**



The number of fatalities in these fires decreased from 56 in 2010/2011 to 34 (19 per cent of fatalities in accidental dwelling fires) in 2016/17, with some fluctuation between years. The demographics of all casualties (including non-fatal and fatal casualties) indicate that more males are victims in these types of fires (over 65 per cent in 2016/17) and the category with the largest proportion were in the age group 40 to 54 years (almost 30 per cent). This is consistent with the DCLG analysis highlighting those people most at risk of dying in a fire.

There has been a historical downward trend in illicit drug use among adults, particularly for some of the most commonly used drugs, e.g. the proportion of people using cannabis in the past year has declined from 9.4 per cent of the population aged 16-59 in 1996 to 6.6 per cent in 2016/17.<sup>22</sup> There has also been a downward trend in alcohol consumption, including a reduction in binge drinking.<sup>23</sup> It is likely that the downward trend in both alcohol and drug habits will have exerted influence on the number of fires where drugs and alcohol are recorded as a suspected contributory factor. If this trend continues, a corresponding decline in this type of fire could also be expected, however, due to these fires resulting in a

<sup>22</sup> Home Office drug misuse data, available at: <https://www.gov.uk/government/statistics/drug-misuse-findings-from-the-2016-to-2017-csew>

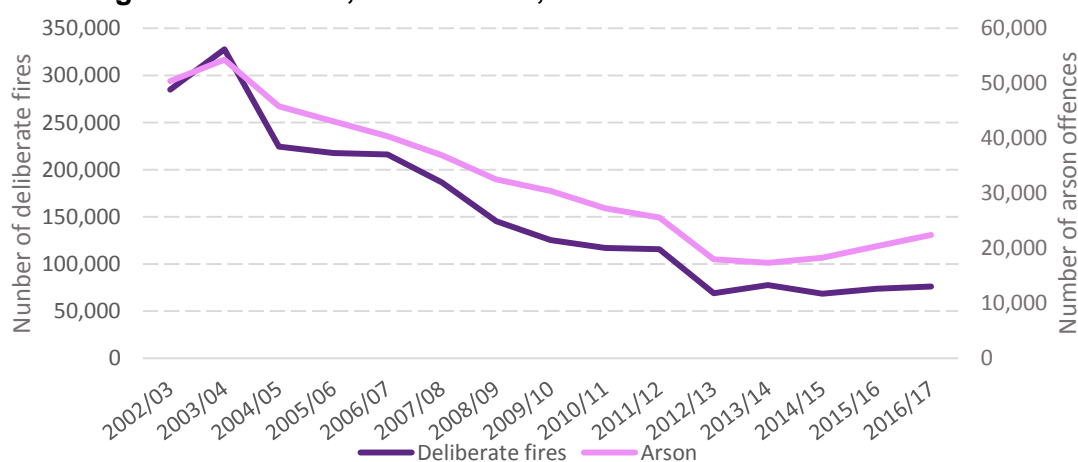
<sup>23</sup> ONS alcohol consumption data, available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/drugusealcoholandsmoking/datasets/aduldrinkinghabits>

disproportionate number of fire-related fatalities, it is still an important area on which to focus prevention activities.

## Reduced offending

From 2002/03 to 2016/17 total fires have declined by 61 per cent, however deliberate fires have declined more than the decline in fires overall, by 73 per cent over this period. Data from the IRS demonstrate that in 2016/17 the majority (around 71 per cent) of deliberate fires were secondary (more minor) outdoor fires, with primary vehicle fires the next most frequent type of deliberate fires (16 per cent). These two groups of fires have declined since 2002/03 (by 71 per cent and 82 per cent respectively). Figure 11 shows the decline in deliberate fires and the decline in police recorded arson.

**Figure 11: Deliberate fires for England, IRS; 2002/03 to 2016/17 and police recorded arson for England and Wales, Home Office; 2002/03 to 2016/17<sup>24</sup>**



Deliberate fires include arson cases but also include additional fires which were started with deliberate intent and this explains why these numbers are much higher than police recorded arson figures.<sup>25</sup> Another consideration is that as many fires are put out without FRSs being required to attend this will not be the full picture of all deliberate fires. However, the number of arson cases has followed a similar trend to that shown by deliberate fires over this period, declining by 56 per cent. Additionally, both sets of figures show a slight increase between 2014/15 and 2016/17.

The overall trend experienced in deliberate fires and arson is also mirrored in the changes in numbers of people reporting that abandoned or burnt out cars is a very or fairly big problem in their area.<sup>26</sup> These figures have fallen from a peak of 24 per cent in 2003/04 to a low of two per cent in 2013/14. This figure has gradually increased over the past 3 years to just over three per cent in 2016/17.

As the majority of deliberate fires are secondary (minor outdoor incidents not involving people) there are no fatalities associated with these fires. A very small proportion of

<sup>24</sup> Home Office crime data, available at: <https://www.gov.uk/government/statistics/police-recorded-crime-open-data-tables>

<sup>25</sup> Deliberate fires include those where the motive for the fire was 'thought to be' or 'suspected to be' deliberate. This is different to 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'.

<sup>26</sup> CSEW data, available at:

<https://www.ons.gov.uk/peoplepopulationandcommunity/crimeandjustice/datasets/crimeinenglandandwalesannualtrendanddemographicstables>

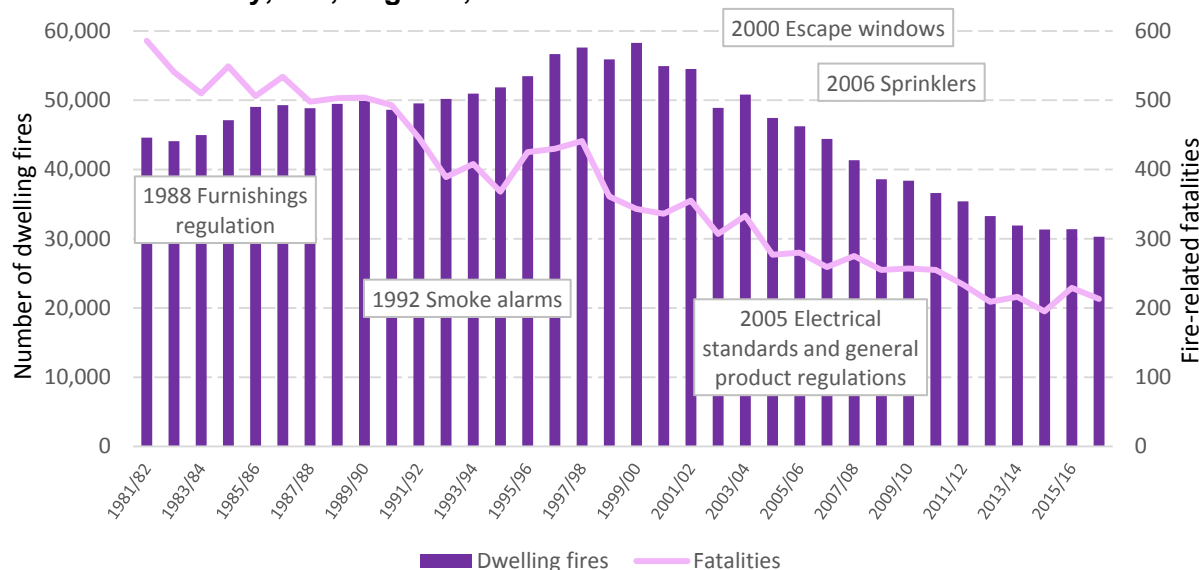
deliberate fires involve dwellings (4 per cent in 2016/17), however these accounted for 14 per cent of dwelling fire-related fatalities (30 individuals).

FRSs have conducted a number of initiatives (discussed in more detail later in the report) in relation to arson and deliberate fires, such as visiting schools to educate young people about fires, intervention programmes for fire-setters and cooperating with other agencies to assist in identifying trouble hotspots and take appropriate actions such as improving the storage of refuse.<sup>27</sup> As the initiatives take place at a local level, with large differences between the initiatives carried out, it is difficult to evaluate the overall effectiveness of prevention work in this area. Additionally, there are also multi-agency initiatives to address arson, including organisations within the criminal justice system, which may have also contributed to the decline in arson.

### Improved safety standards, including building, furnishings and general product regulations

A number of different safety standards have been introduced since the 1980s, relating to buildings and furnishings, and also general products. Figure 12 shows the number of dwelling fires and fire-related fatalities against some of the regulations aimed to improve fire safety over the past 35 years.

**Figure 12: Dwelling fires and fire-related fatalities, shown against regulations aimed to increase fire safety, IRS, England; 1981/82 to 2016/17**



- 1998: Furnishing regulations set levels of fire resistance for domestic upholstery<sup>28</sup>
- 1992: Mains wired smoke alarms required in all new homes
- 2000: Escape windows to be fitted in bedrooms above ground level (and below 4.5m) in new buildings or when replacing windows
- 2005: Electrical work to be completed to minimum safety standards
- 2005: General Product Safety Regulations introduced
- 2006: Sprinklers to be fitted to new blocks of flats over 30 metres high

<sup>27</sup> Arson Prevention Forum (2014) Arson: a call to action. Available at:

<http://www.stoparsonuk.org/documents/resources/DS2014-1156ArsonReportandappendix.pdf>

<sup>28</sup> Regulations available at: <http://webarchive.nationalarchives.gov.uk/http://www.bis.gov.uk/files/file24685.pdf>

Little research has been conducted to evaluate the success of these regulations, however, a Government commissioned evaluation estimated that the 1998 Furnishings regulations saved 54 lives, prevented 780 injuries and prevented over 1,000 fires annually. The report also estimated that savings to health and property were valued at £140m per year.<sup>29</sup> These figures are approximations only as it is very difficult to separate the impacts of these regulations from each other, and also any other factors previously mentioned, from the trends in fires. Additionally, as the majority of these building regulations relate to newly built properties and do not require existing properties to make changes, this means that there is a considerable lag between the regulations being introduced and any impact being observed.

## **Preventative work**

As outlined in many of the factors above, the FRSs have been conducting fire prevention work for a number of years and in a number of different areas. This work became a statutory duty for FRSs in 2004 with the introduction of the Fire and Rescue Services Act.<sup>30</sup> Box 3 outlines some of the larger interventions in prevention work that are undertaken by FRSs, although as each FRS may conduct a variety of initiatives which were started in different years this figure provides an indication of the types of prevention work only.

### **Box 3 – FRS prevention activities**

#### **Home Fire Risk Checks (HFRC)**

This initiative began in 2004 and included providing fire prevention and safety advice, the checking and fitting of smoke alarms, and checking for obstacles and trip hazards when exiting dwellings. In 2015/16 581,364 HFRCs took place in England.<sup>31</sup> Many FRSs have expanded these visits into 'Safe and Well' visits which include additional health advice such as smoking cessation advice, falls risk assessments and providing referrals for individuals to other appropriate agencies where they are identified as needing further support. These visits are now also increasingly targeted at individuals and households who are the most vulnerable.

#### **Safety audits**

A fire safety audit is a planned visit by a fire and rescue authority to carry out a comprehensive assessment of the level of compliance with the requirements of The Regulatory Reform (Fire Safety) Order 2005. The Fire Safety Order requires the individual responsible for a property to conduct and regularly review a fire risk assessment and put in place adequate and appropriate fire precautions to reduce the risk from fire. The Fire Safety Order applies to non-domestic premises and the communal areas in residential buildings, such as stairwells. In 2015/16 63,201 safety audits were conducted in England.

#### **Fire-setter schemes**

Youth initiatives designed to tackle and prevent fire-setting behaviour, involving one-to-one intervention or targeting groups of young people who have been identified as at risk of offending, specifically arson.

<sup>29</sup> Greenstreet Berman Ltd (2009) A statistical report to investigate the effectiveness of the Furniture and Furnishings (Fire) (Safety) Regulations. Available at:

<http://webarchive.nationalarchives.gov.uk/20090609003228/http://www.berr.gov.uk/files/file54041.pdf>

<sup>30</sup> Fire and Rescue Service Act 2004. Available at: <http://www.legislation.gov.uk/ukpga/2004/21/contents>

<sup>31</sup> Numbers of HFRCs and Fire Safety Audits conducted in 2016/17 will be published on 27 October 2017

### **Youth diversion schemes**

These schemes are initiatives designed to divert young people (aged 18 and under) from offending or those at risk of offending. These schemes include:

- Local Intervention Fire Education (LIFE) which is a five day programme based at operational fire stations and includes taking part in using firefighting equipment, and education around fire safety, prevention, consequences and healthy living.
- Cadet schemes which are generally 2 year courses which allow young people (aged 14-16 years) to work alongside the fire service to gain a qualification.

### **Other youth schemes**

Other youth fire safety programmes include information on FRS involvement with schools, including visits to fire stations or school talks.

As these prevention activities complement, and in some cases play into, many of the societal changes discussed in the report, it means that calculating the impact of the FRS prevention work is possibly the most difficult factor to quantify. FRSs have conducted a number of evaluations at a local level, however, due to the differences in interventions being conducted across the country, and the small numbers included in the evaluations, it is not possible to draw any conclusions.

FRSs continue to conduct prevention work and it is important for these organisations to remain vigilant to those factors that present the highest risk to the public, to vulnerable individuals, and to new factors that may develop. This intelligence will then allow prevention activities to be targeted in the most appropriate areas.

### **Box 4 – Downwards pressures: The findings**

There are many factors which could have had a downward pressure on the numbers of fires and fire-related fatalities, however it is not possible to quantify the effect of each of these factors. Some of the main factors are:

- A change in cooking habits – especially a reduction in the use of deep fat fryers or chip pans.
- An increase in smoke alarm ownership, which does not prevent fires but does alert households and allows for quicker escape.
- A reduction in the proportion of people smoking, drinking or using drugs which are all risk factors for experiencing fires.
- A reduction in arson which has contributed mainly to the fall in secondary or outdoor fires.
- Improved safety standards for buildings, furnishings and products. These regulations may have the impact of preventing fires (e.g. electrical and product regulation) and also assist in saving lives when fires have occurred (e.g. smoke alarms and escape windows).
- Improved education about fire safety, and other preventative work conducted by FRSs including visits to the most vulnerable people at home.

## Upwards pressures on fires and fire-related fatalities

Whilst the previous section outlines some factors which have been considered to contribute to the reduction in fires and fire-related fatalities, it is also possible that other factors have been exerting an upwards pressure on the trends. The following factors have been identified as potentially leading to more fires. For some of these factors it could be possible to directly influence, for others, precautions should be taken to mitigate the impact.

This section outlines some of the factors which may have had an upwards pressure on fires and fire-related fatalities. Whilst some of the specific fire types have been declining it may be that this is due to the downwards pressures currently having a larger impact on the numbers of fires than these upward pressures are. However, being aware of the upwards pressures may contribute to a greater reduction in fires and fire-related fatalities in the future.

### Ageing population

The ageing population, resulting from longer life expectancy, is expected to be a significant future challenge across a wide range of areas of public policy. Figure 13 shows the expected changes in the population by age from 1995 to 2015, and the projected population for 2035.

**Figure 13: Population projections, ONS, England and Wales; 1995, 2015 and 2035<sup>32</sup>**

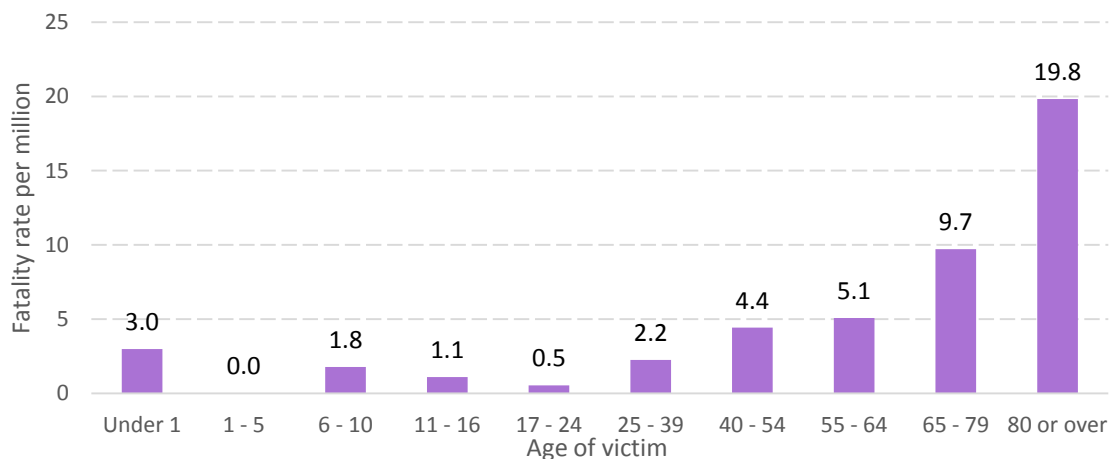


<sup>32</sup> ONS population projections, available at: <https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/lifeexpectancies/adhocs/006398populationestimatesanddeathsbyingleyearofageforenglandandwalesandtheuk1961to2015> and <https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/datasets/tablea23principalprojectionenglandandwalespopulationinagegroups>



Older people, especially those aged 65 and over, have a higher fire-related fatality rate, see Figure 14. According to ONS population projections those aged 80 and over made up five per cent of the population but accounted for 20 per cent of all fire related fatalities in 2016/17 (53 fire-related fatalities).

**Figure 14: Fire-related fatality rate per million of the population, IRS, England; 2016/17**



World Health Organisation projections suggest that there will be a 9.5 per cent decline in fatalities from fire, heat and hot substances across the European region, from 26,217 in 2015 to 23,721 in 2030.<sup>33</sup> These projections assume that the number of fatalities will fall across all age groups, except for those aged above 70, for whom there is expected to be a slight increase. This prediction is supported by data from the IRS which demonstrates that although fire-related fatalities rates fell across all age groups between 2010/11 and 2016/17 this decline was lower for those aged 65 and over compared with other age groups.

As previously outlined, FRs conduct Home Safety Fire Checks<sup>34</sup> which have been increasingly targeted towards those most at risk (through profiling considering: age, living alone, gender and travel time from a fire station). This effective targeting may be having a mitigating influence on the possible increase of fire-related fatalities due to the ageing population. However, as the elderly population is projected to increase this may result in a risk to the overall downwards trends in fires and fire-related fatalities. The largest proportion of dwelling fires involving victims aged 80 and over were related to the misuse of equipment or appliances, such as ovens or microwaves, approximately 45 per cent each year since 2010/11. The proportion of fires with this cause was higher than for other age groups, where equipment misuse only accounted for a quarter of fires, and has been the highest proportion since 2010/11. Therefore, additional focus could be made on addressing this area of risk.

## Overcrowding

Overcrowding of dwellings can result in a fire risk<sup>35</sup> and as mentioned previously the EHS reports that those living in households with five or more members are more likely to experience a fire than those in smaller households. The EHS also collects data about the

<sup>33</sup> WHO projections of mortality and causes of death, available at:

[http://www.who.int/healthinfo/global\\_burden\\_disease/projections/en/](http://www.who.int/healthinfo/global_burden_disease/projections/en/)

<sup>34</sup> Home Fire Risk Checks vary between FRs but generally include fire officers visiting a dwelling, checking for fire risks (just as wiring, obstacles to exits) and that the smoke alarms are functional.

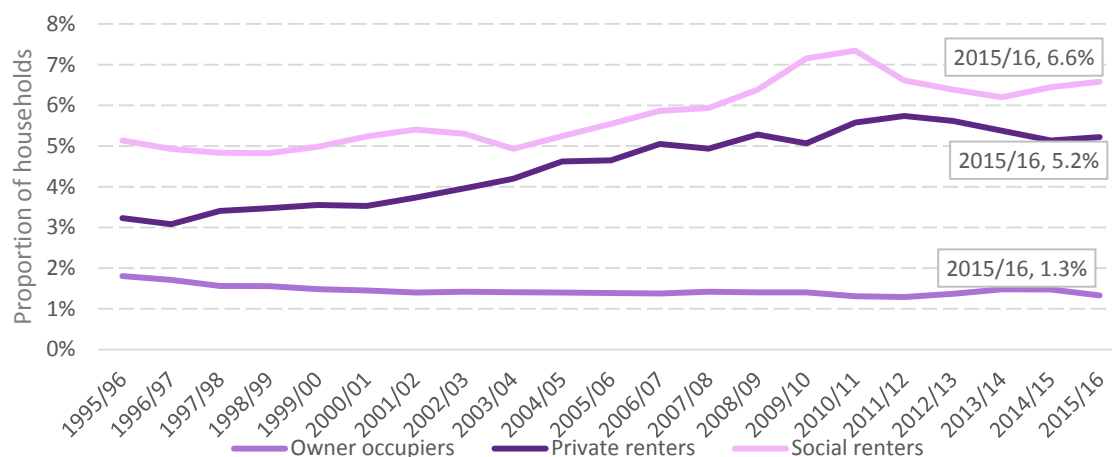
<sup>35</sup> For example see media reports: [http://news.bbc.co.uk/2/hi/uk\\_news/7253678.stm](http://news.bbc.co.uk/2/hi/uk_news/7253678.stm) and

<http://www.independent.co.uk/news/uk/home-news/sports-direct-town-houses-carved-up-police-fire-warning-a6888261.html>



number of people living in dwellings and compares this to the 'Bedroom Standard' used by the government.<sup>36</sup> The proportion of households experiencing overcrowding has shown a long term upwards trend since 1995/96, see Figure 15.

**Figure 15: Proportion of households experiencing overcrowding, EHS, England; 1995/96 to 2015/16<sup>37</sup>**



The IRS data does not collect information about the occupants of the house in line with the Bedroom Standard and therefore the proportion of these households experiencing fires cannot be established. However, this area of overcrowding may be a risk to the long term downward trends of fires and fire-related fatalities.

#### Box 5 – Upwards pressures: The findings

There are also a number of factors which could have had an upwards pressure on the numbers of fires and fire-related fatalities. For a number of these there is little data and therefore clear conclusions cannot be drawn, however, these factors remain risk factors to the overall downwards trend of fires and fire-related fatalities. These include:

- A clear pattern has been shown between age and the rate of fire-related fatalities, with elderly people dying more frequently in fires.
- FRSs have commented on the risk of overcrowding in homes and fires and there has been an increase in the proportion of socially rented households which are overcrowded.

<sup>36</sup> Houses are overcrowded if they have fewer bedrooms than the bedroom standard used by the government. Essentially this standard states that all couples and individuals over the age of 21 should have a bedroom, children aged between 10 and 20 should have their own room or share with one person of the same sex, whereas children under 10 should only share with one other child.

<sup>37</sup> EHS survey data, available at: <https://www.gov.uk/government/statistics/english-housing-survey-2014-to-2015-headline-report> and [https://www.gov.uk/government/uploads/system/uploads/attachment\\_data/file/595785/2015-16\\_EHS\\_Headline\\_Report.pdf](https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/595785/2015-16_EHS_Headline_Report.pdf)

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