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# Chapter 1

## Smoke alarms and fire safety measures in the home

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Smoke alarms and other fire safety equipment that are correctly installed and maintained, play a vital role in reducing fire deaths and injuries in the home. For this reason, current building regulations (Part B) require that every new build and major refurbishment must allow for mains wired, interconnected smoke alarms to be installed.

This chapter examines the characteristics of households who have a working smoke alarm in 2012-13 and whether these have changed since 2002-03<sup>1</sup>. Logistic regression analysis is used to illustrate the strongest predictors of working smoke alarm ownership. The chapter also provides information on the presence of other fire safety measures in the home and whether provision of these has changed over time.

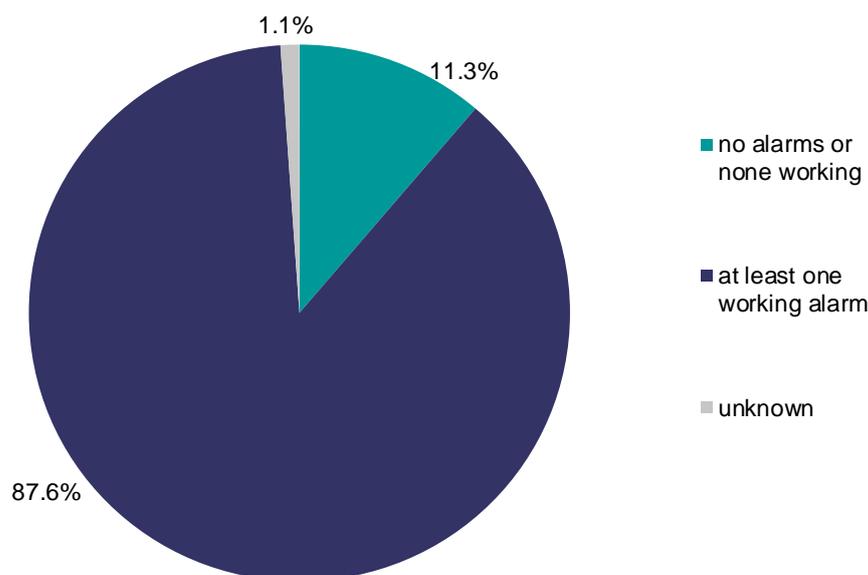
### Smoke alarm ownership

- 1.1 In 2012-13, 92% of all households in England had one or more smoke alarms installed in their home, Annex Table 1.7. However, not all of these alarms were working at the time of the survey. Overall, 88% of all households had at least one working smoke alarm in their home, 11% of households either did not have a smoke alarm or it was not working, whilst a small proportion (1%) did not know if their smoke alarm was working or not, Figure 1.1.

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<sup>1</sup> The household's response to the presence and working order of their fire safety equipment was taken as correct. None of the fire safety measures have been checked as present or tested as working.

**Figure 1.1: Smoke alarm ownership, 2012-13**



**Base: all households**

**Note: underlying data are presented in Annex Table 1.1**

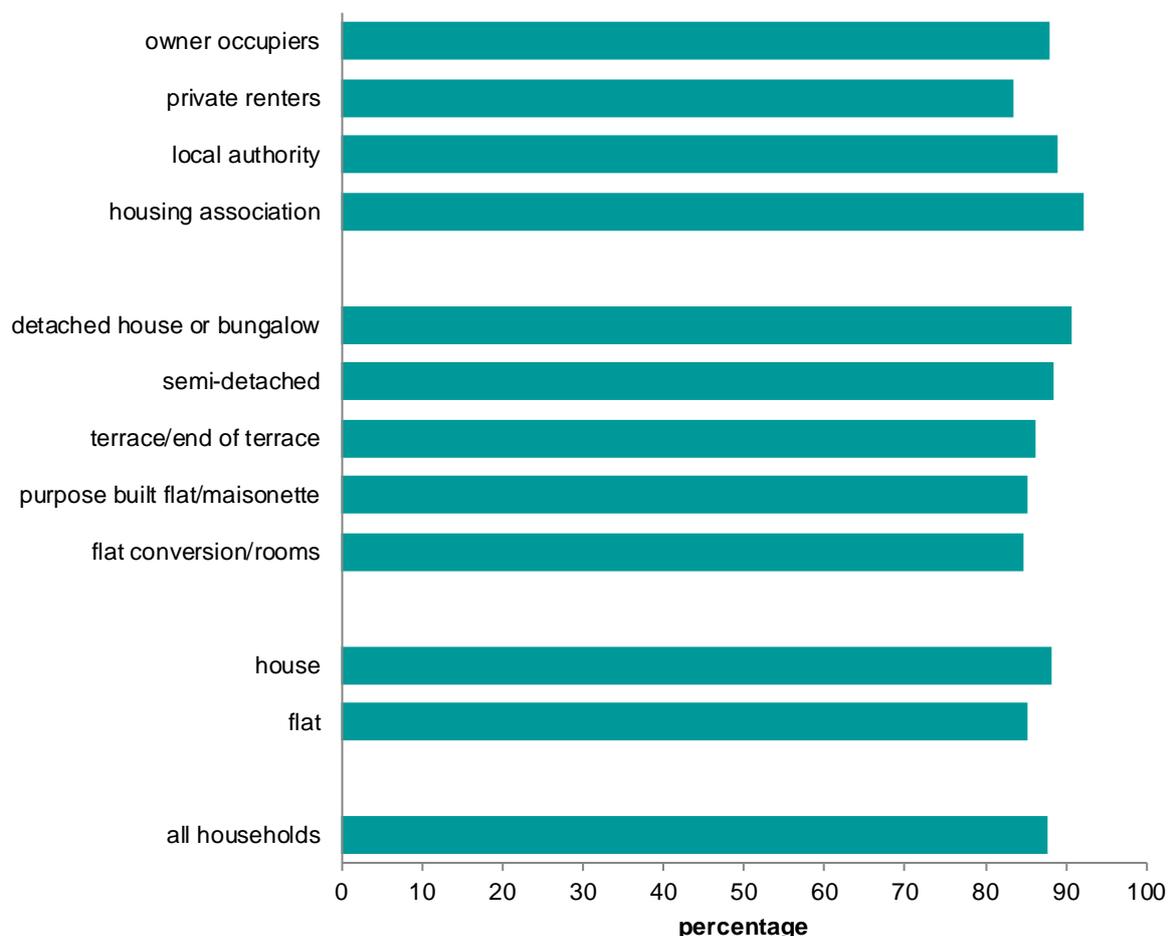
**Source: English Housing Survey, full household sample**

## Working smoke alarm ownership

### Tenure and dwelling type

- 1.2 There is no legal requirement for owner occupiers to install a smoke alarm in their home or for landlords to provide smoke alarms in single occupation tenanted properties. However, DCLG's Fire Kills campaign advises that landlords ensure that at least one smoke alarm is installed on every level of the properties that they let.
- 1.3 Housing association households (92%) were most likely to have at least one working smoke alarm in their home. A similar proportion of owner occupiers (88%) and local authority tenants (89%) had at least one working smoke alarm. Private renters (83%) were the least likely to have this feature, highlighting the potential for improvement within this sector, Figure 1.2.
- 1.4 Houses (88%) were more likely to have a working smoke alarm than flats (85%). There was no difference in the proportion of households that had a working smoke alarm according to the type of flat (i.e. conversion or purpose built).
- 1.5 Households living in detached houses and bungalows were more likely to have a working smoke alarm (91%) than those households living in terrace and semi-detached houses (86-88%).

**Figure 1.2: Households with at least one working smoke alarm, by tenure and dwelling type, 2012-13**



**Base: all households**

**Note: underlying data are presented in Annex Table 1.1**

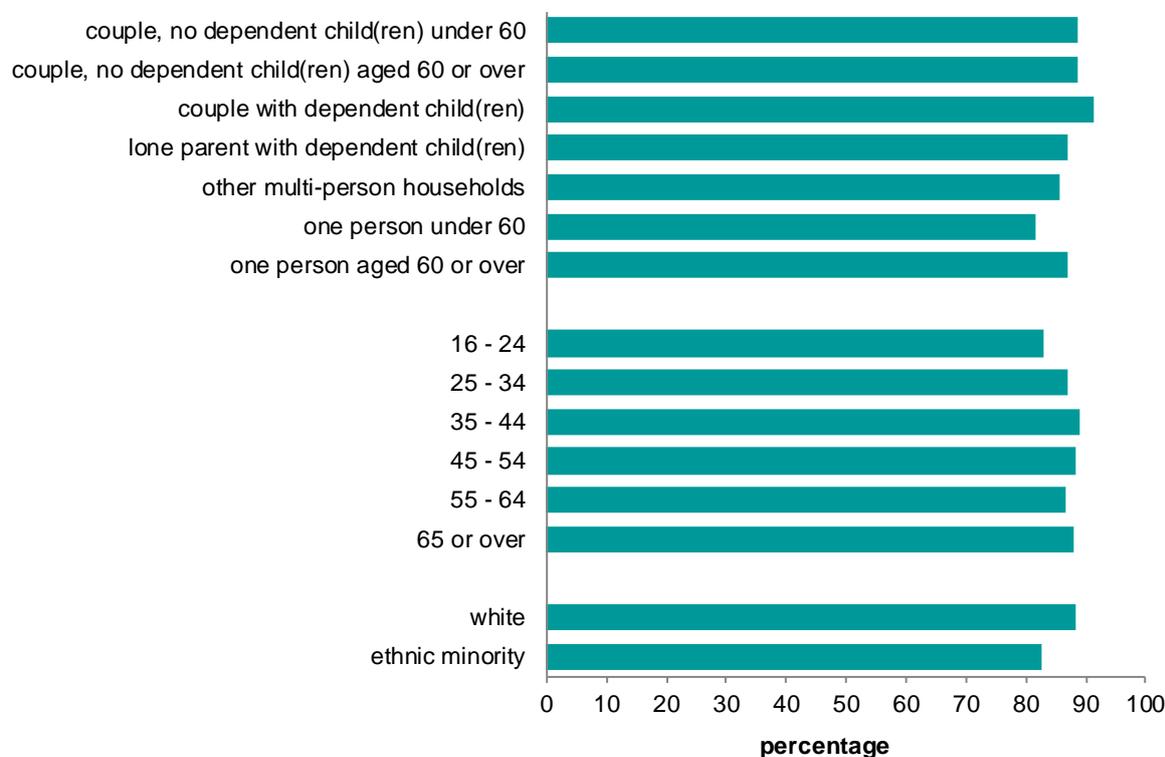
**Source: English Housing Survey, full household sample**

## Household characteristics

- 1.6 The differences in working smoke alarm ownership between types of households were more noticeable than those that existed between different tenures and dwelling types.
- 1.7 Couples with dependent children were most likely to have a working smoke alarm (91%), whilst single households under 60 (81%) were least likely to have this feature. As over one quarter of households with a household reference person (HRP) aged 16-24 were single households, this group were less likely to have a working smoke alarm (83%) than other age groups, Figure 1.3.

1.8 Households with a HRP from an ethnic minority background were less likely than households with a white HRP to have a working smoke alarm (83% compared with 88%).

**Figure 1.3: Households with at least one working smoke alarm, by household type, age and ethnicity, 2012-13**



**Base: all households**

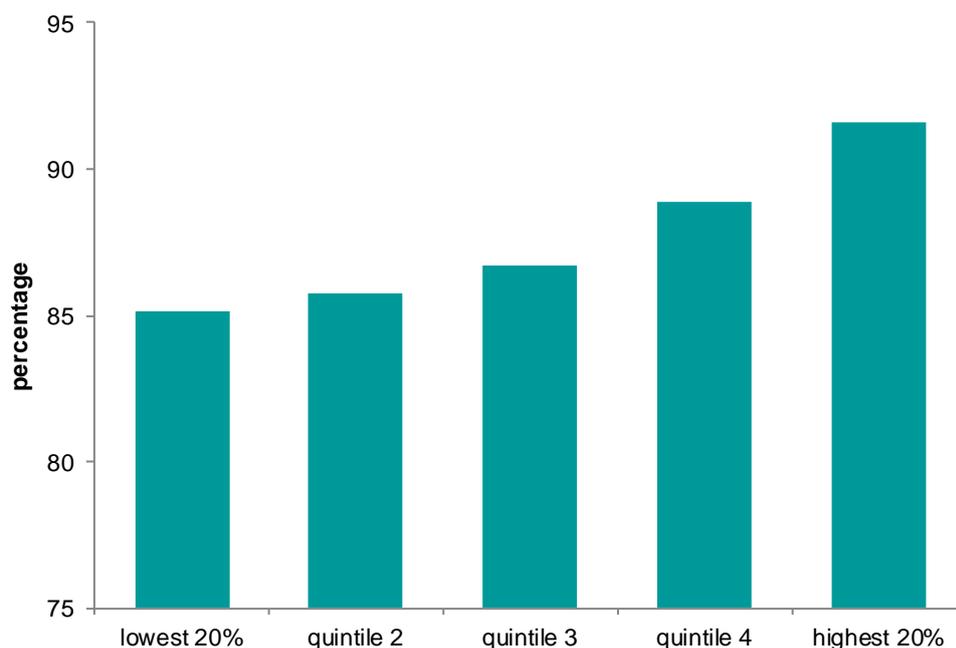
**Note: underlying data are presented in Annex Table 1.2**

**Source: English Housing Survey, full household sample**

1.9 Households where the HRP was either working full time (89%) or retired (88%) were more likely to have at least one working smoke alarm than student (81%) or unemployed households (82%), Annex Table 1.3.

1.10 The likelihood of having a working smoke alarm was also related to household income. Households in the highest 40% of household incomes were more likely to have this feature compared with lower income bands, Figure 1.4

**Figure 1.4: Households with at least one working smoke alarm, by household income band, 2012-13**



**Base: all households**

**Note: underlying data are presented in Annex Table 1.3**

**Source: English Housing Survey, full household sample**

1.11 Households were equally likely to have a working smoke alarm if they were registered disabled or were in receipt of means tested benefits or disability benefits compared with all other households, Annex Table 1.3.

## Multivariate analysis

1.12 Multivariate analysis was conducted to identify those factors that were most likely to result in the ownership of a working smoke alarm/s. Logistic regression was used to assess which key factors (independent variables), outlined below, are statistically related to the ownership of at least one working smoking alarm (the dependent variable). Each individual factor is assessed assuming all other characteristics in the model are held equal. Although logistic regression can be used to explore associations between variables, it does not necessarily imply causation and results should be treated as indicative rather than conclusive. See Appendix A for further information on the methodology and table for this analysis.

### *Household type*

1.13 The logistic regression shows that, for households with the same characteristics apart from household type, households containing couples with dependent children had the highest likelihood of having a working smoke alarm. All other types of households were significantly less likely to have a working smoke alarm with households consisting of one person under 60 being the least likely.

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### *Income*

- 1.14 Households in the highest income band quintile were found to have the highest likelihood of having a working smoke alarm. All households not in the highest quintile had lower likelihood of owning a working smoke alarm, with those households in the lowest income quintile being the least likely.

### *Tenure*

- 1.15 Housing association tenants were found to have the highest likelihood of having a working smoke alarm, most likely due to the higher proportion of newer homes in this sector. All other households had significantly lower likelihood of having a working smoke alarm, with private renters being the least likely.

### *Type of accommodation*

- 1.16 Relative to households living in a detached house or bungalow, all households in other accommodation types had lower likelihood of having a working smoking alarm particularly converted flats.

### *Ethnicity*

- 1.17 Compared to households where the HRP was white, households with a HRP from an ethnic minority background had lower likelihood of having a working smoke alarm in their home. Households with a Pakistani or Bangladeshi HRP had the lowest likelihood of having a working smoke alarm.

### *Employment status*

- 1.18 Relative to households where the HRP worked full time, households with an unemployed HRP had the lowest odds of having a working smoke alarm.

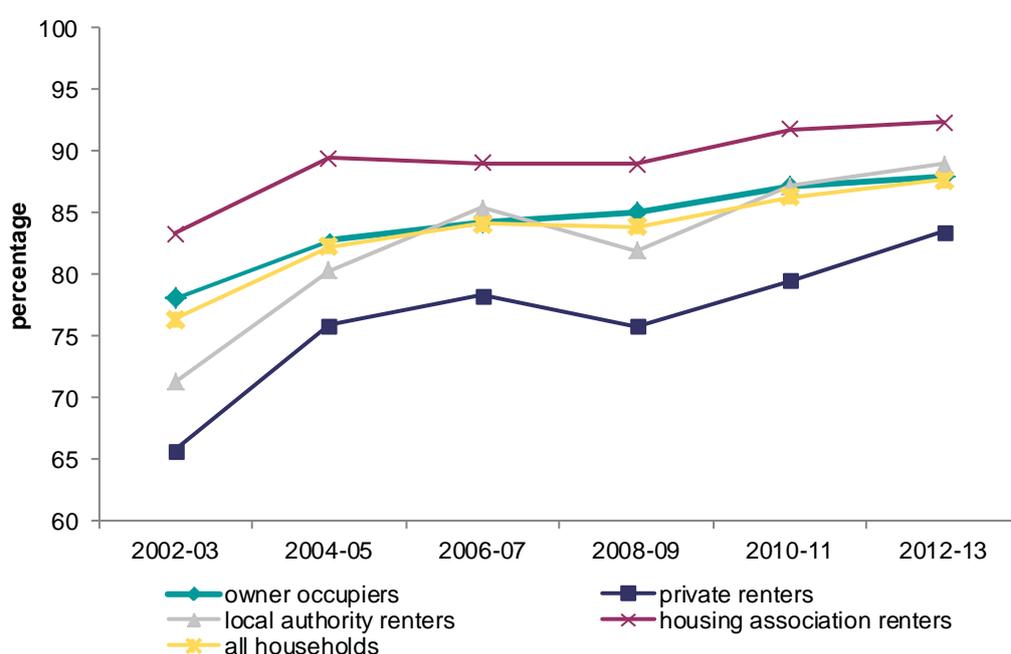
### *Age*

- 1.19 The age of the HRP had no impact on the likelihood of a household owning a working smoke alarm.

## Trends in working smoke alarm ownership<sup>2</sup>

- 1.20 Between 2002-03 and 2012-03, there was a significant increase in the proportion of households with at least one working smoke alarm, from 76% to 88%. This increase occurred across all tenures and was likely to be partly due to factors such as the Fire Kills campaign and the Fire and Rescue Services community fire safety activities which include the installation of smoke alarms.
- 1.21 The most marked improvement over this period was for private renters (from 66% to 83%) and local authority tenants (from 71% to 89%).

**Figure 1.5: Households with at least one working smoke alarm, by tenure, 2002-03 to 2012-13**



Base: all households

Note: underlying data are presented in Annex Table 1.4

Sources:

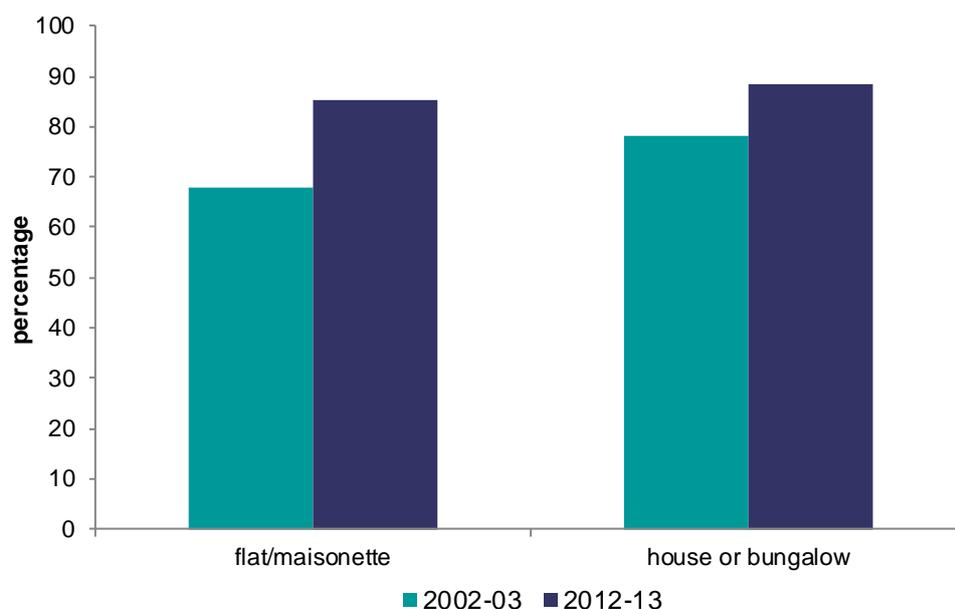
2002-03 to 2006-07: English House Condition Survey, household sub-sample;

2008-09 onwards: English Housing Survey, full household sample

- 1.22 Since 2002-03, the substantial increase in the proportion of households with more than one working smoke alarm was evident among all types of homes, but particularly among flats (up from 68% in 2002-03 to 85% in 2012-13), Figure 1.6.

**Figure 1.6: Households with at least one working smoke alarm, by dwelling type, 2002-03 and 2012-13**

<sup>2</sup> Questions on the presence and working order of smoke alarms were changed in 2008-09, so it is not possible to produce a fully consistent time series. For further details refer to *English housing survey: changes to survey form and questionnaire between 2008 and 2010*, <https://www.gov.uk/government/publications/english-housing-survey-changes-to-survey-form-and-questionnaire-between-2008-and-2010>



**Base: all households**

**Note: underlying data are presented in Annex Table 1.1**

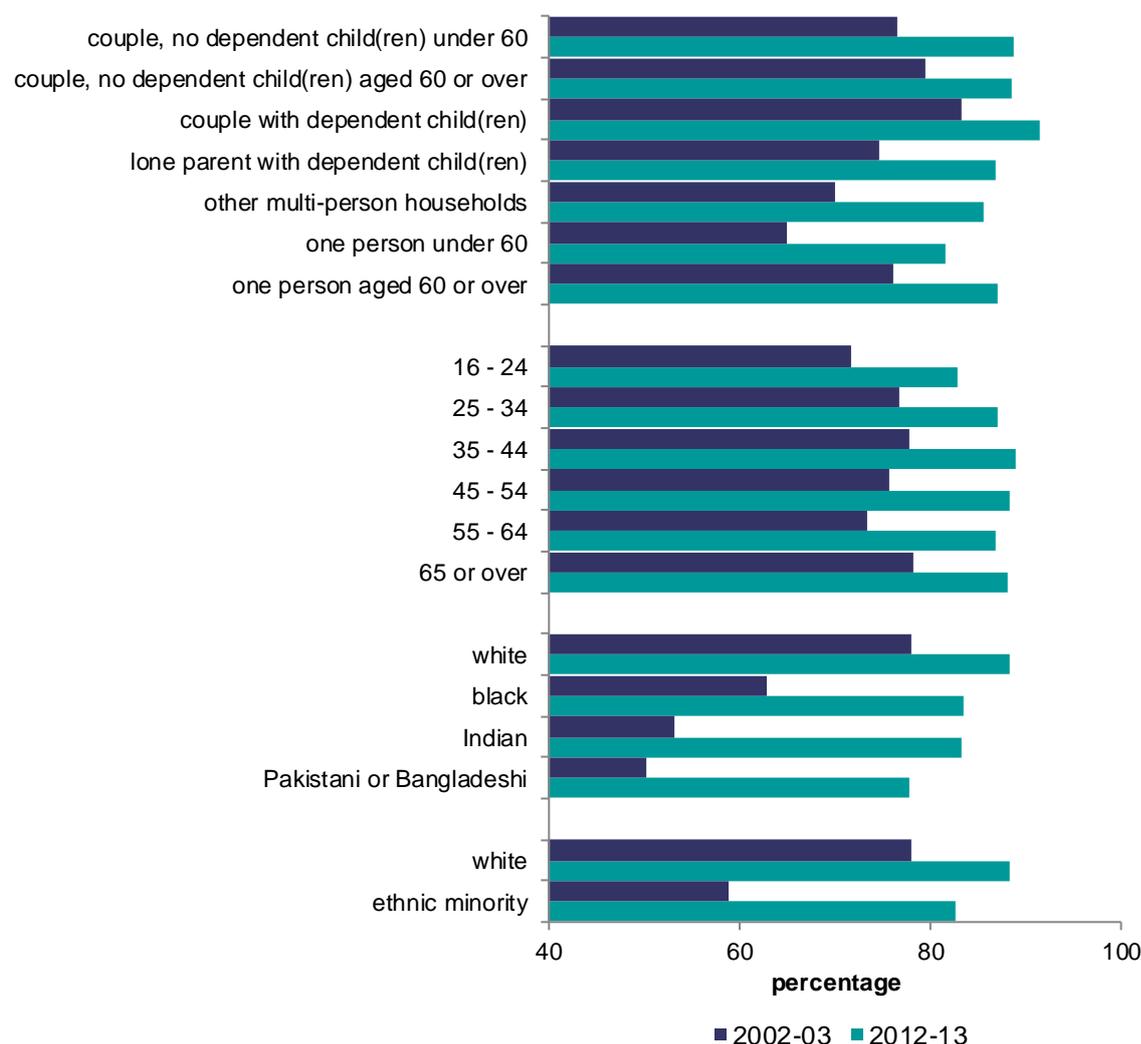
**Sources:**

**2002-03: English House Condition Survey, household sub-sample;**

**2012-13: English Housing Survey, full household sample**

- 1.23 The significant increase in the proportion of households with at least one working smoke alarm between 2002-03 and 2012-13 occurred across all household types. The most notable improvement was among single person under 60 households (from 65% to 81%) and multi-person households (from 70% to 85%), Figure 1.7.
- 1.24 Over this period, there was also an increase in the proportion of ethnic minority households with a working smoke alarm. Ownership among black HRP households rose from 63% to 83%, ownership among Pakistani or Bangladeshi HRP households rose from 50% to 78% and ownership among Indian HRP households increased from 53% to 83%. Meanwhile, the proportion of white HRP households with at least one working smoke alarm in their home increased from 78% to 88%, Figure 1.7.

**Figure 1.7: Household ownership of at least one working smoke alarm, by household type, age and ethnicity, 2002-03 and 2012-13**



Base: all households

Note: underlying data are presented in Annex Table 1.2

Sources:

2002-03: English House Condition Survey, household sub-sample;

2012-13: English Housing Survey, full household sample

- 1.25 Although the proportion of households with at least one working smoke alarm has improved for all income and working status categories over this period, the most noticeable increase has been for those households in the 20% lowest income category (from 71% to 85%). Households who were economically inactive, unemployed or in full time education were less likely to have at least one working smoke alarm in their homes throughout this period, compared with households that were in part-time or full time work, or retired, Annex Table 1.3.
- 1.26 Between 2002-03 and 2012-13, there was an increase in the number of smoke alarms a household had installed. In 2002-03, 49% of households with a working smoke alarm had only one smoke alarm installed. By 2012-13, this proportion had fallen to 30% of households. However, the proportion of

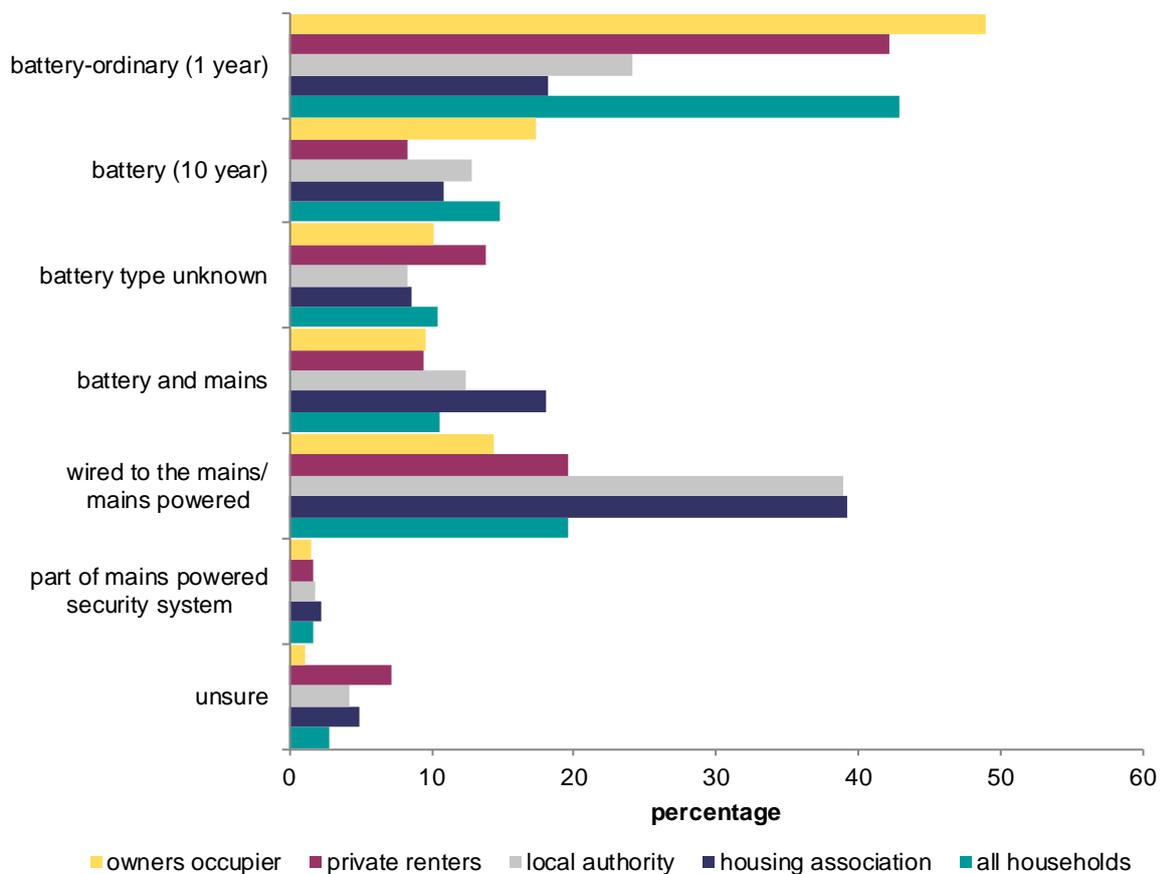
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households with two smoke alarms increased from 40% to 49%, and the proportion of households with three or more smoke alarms installed increased from 12% to 20% over this period, Annex Table 1.5.

## How smoke alarms are powered

- 1.27 Households with working smoking alarms were also asked how these alarms were powered. Multiple responses were allowed for cases where more than one smoke alarm was owned since each alarm may have been powered differently.
- 1.28 In 2012-13, around two thirds (68%) of working smoke alarms were powered by battery only (43% with a 1 year battery, 15% with a 10 year battery and 10% with an unknown battery type). A fifth (20%) of working smoke alarms were mains only powered while 11% were powered by a combination of both battery and mains. A very small proportion (2%) of smoke alarms were part of the mains security system, Figures 1.8 and 1.9.
- 1.29 Social renters had a much higher proportion of their smoke alarms powered by mains power, including that to any mains powered security system, or by a combination of mains and battery power (53-59%) compared with both private renters (31%) and owner occupied households (26%), Annex Table 1.6.
- 1.30 Owner occupiers were much more likely to have smoke alarms powered by batteries only (76%) than by other means. The same was true for private renters, 64% of whom had a smoke alarm powered by batteries only. However, private renters were more likely than owner occupiers to have a smoke alarm powered by mains power only (20% compared with 14%), Figure 1.8.

**Figure 1.8: How working smoke alarms are powered, by tenure, 2012-13**



**Base: all households with at least one working smoke alarm**

**Notes:**

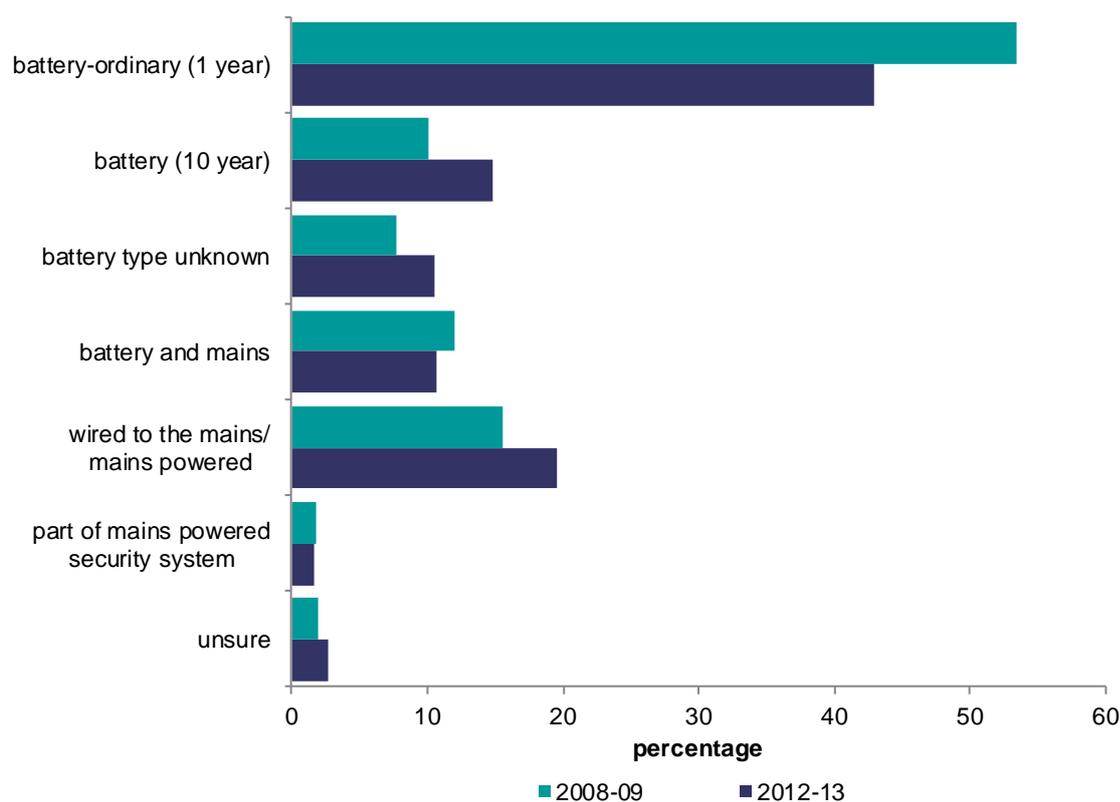
1) multiple responses allowed for households with more than one smoke alarm

2) underlying data are presented in Annex Table 1.6

Source: English Housing Survey, full household sample

1.31 Between 2008-09 and 2012-13, there was a decrease in the number of smoke alarms that are powered by a 1 year ordinary battery (from 53% to 43%) but an increase in smoke alarms that are powered by a 10 year battery (10% to 15%) or that are mains powered only (from 16% to 20%), Figure 1.9.

**Figure 1.9: How working smoke alarms are powered, 2008-09 and 2012-13**



**Base:** all households with at least one working smoke alarm

**Notes:**

1) multiple responses allowed for households with more than one smoke alarm

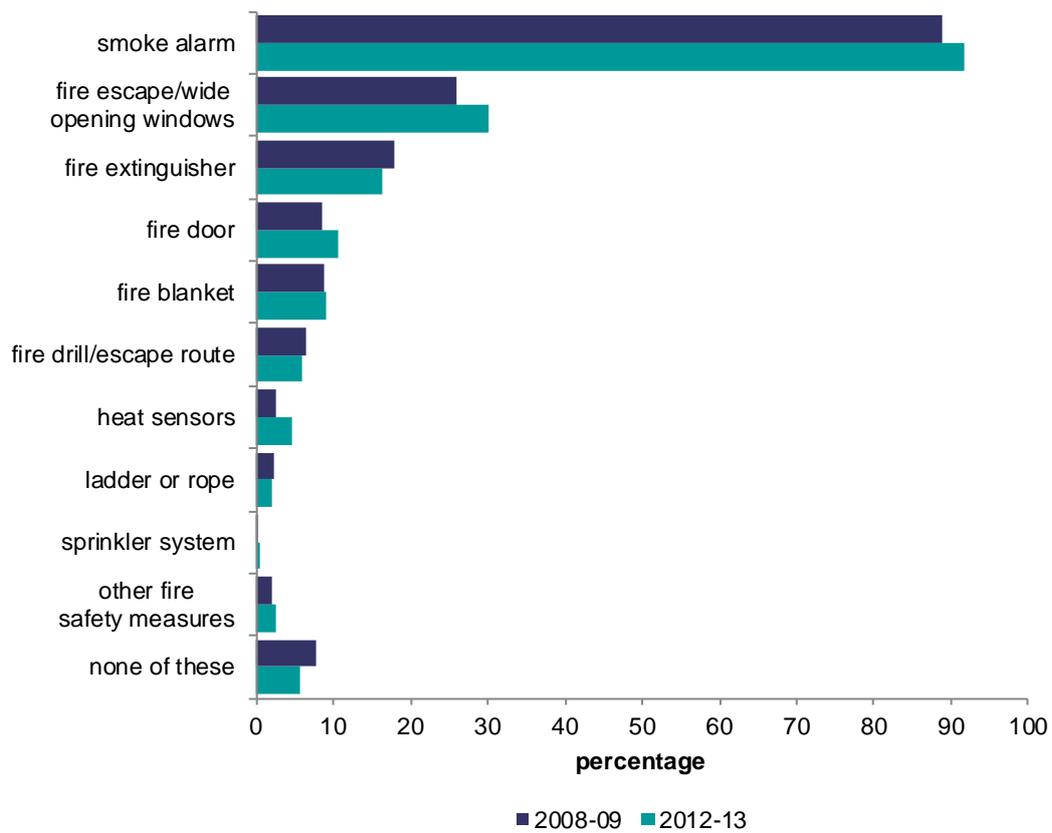
2) underlying data are presented in Annex Table 1.6

**Sources:** English Housing Survey, full household sample

## Other fire safety measures in the home

- 1.32 All households were asked which fire safety measures were present in their home. The fire safety measures were only included if they were located in a habitable part of their home, for example, items kept in a garage or shed were excluded.
- 1.33 The most common reported fire safety measures were: one or more smoke alarms (92%), a fire escape/wide opening window/s (30%) and a fire extinguisher (16%). Smaller proportions of households had a fire door (11%) or a fire blanket (9%). Some 6% of households reported having no fire safety measures present in their home, Figure 1.10.
- 1.34 Between 2008-09 and 2012-13, there was a reduction in the percentage of households with no fire safety measures in their home (from 8% to 6%). Over the same period, there was an increase in the proportion of households with smoke alarms fitted (from 89% to 92%), fire escapes (from 26% to 30%), and a fire door (8% to 11%), but a reduction in the percentage of households with fire extinguishers (from 18% to 16%).

**Figure 1.10: Fire safety measures, 2008-09 and 2012-13**



**Base: all households**

**Note: underlying data are presented in Annex Table 1.7**

**Source: English Housing Survey, full household sample**