

Notes relating to the compilation of CO-Gas Safety statistics and graphic representations

The statistics represented in this press pack have been prepared using the CO-Gas Safety database of information relating to unintentional carbon monoxide poisoning cases.

The database records both fatal and non-fatal incidents, but the statistics published here include only those that resulted in a life lost. Other exposures that caused injury or potential risk to health are not included. Many of the incidents that resulted in the included fatalities will have also injured or affected other individuals.

The database itself covers all information that CO-Gas Safety has been able to compile for incidents that took place from 01/09/1995 to the present day. The statistics shown in this press pack were gathered from the database on 31/08/2020 and therefore do not include any data that was added to, or updated in, the database after that date. For this reason, there may be incidents that took place before 31/08/2020 (but recorded by CO-Gas Safety after that date) that are not included in this set of statistics. This often includes cases where the necessary inquest has not yet been concluded and sometimes this can take several years. This year we *are* including 2 fatalities that are yet to have an inquest conclusion, as the Marine Accident Investigation Branch has already made public that the official causes of death were accidental carbon monoxide poisoning.

As we are continually working on the information that we hold on the database (to ensure that press reports are officially verified by bodies such as Coroners, the Health & Safety Executive, Police & Fire Services etc) there will be differences between the figures published by CO-Gas Safety here and in previous CO-Gas Safety releases. This would be particularly noticeable in those statistics that quote fatality figures by specific annual intervals.

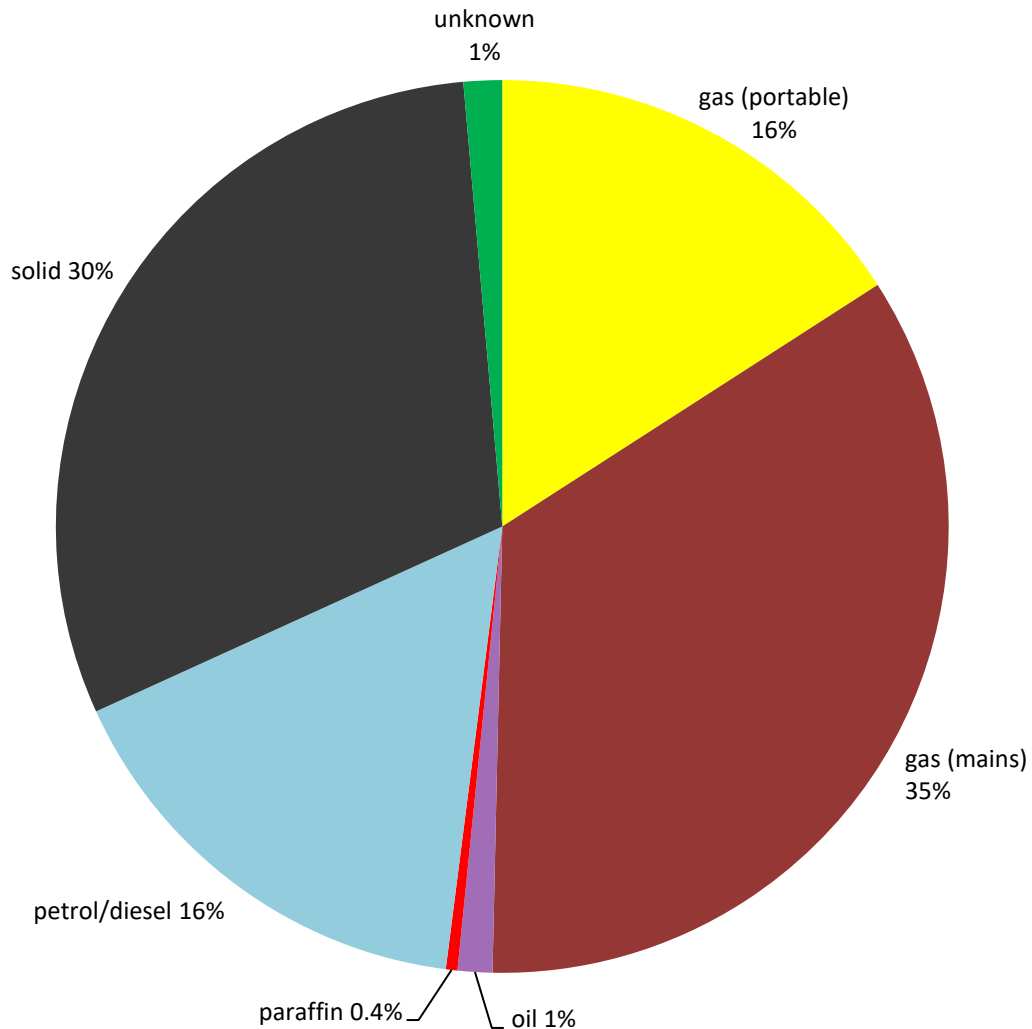
As percentage figures are quoted as whole numbers (and to one decimal place for any results less than 1%), the sum of all categories quoted may not give a total of exactly 100%.

For many of the systems and appliances involved in unintentional carbon monoxide poisoning incidents, the cause of the leak of carbon monoxide that results in a potentially fatal situation may be a fault or blockage in the flue system, rather than the appliance itself. However, it is the appliance requiring the flue that is used to produce our statistics. In some cases it may be that there was no fault with the actual appliance but that it was used inappropriately, such as without adequate ventilation (if vents were covered over or if an outdoor generator, BBQ or patio heater was used indoors).

Most of the charts included in this press pack show a category of 'unknown'. For these cases the field of data relevant to that particular chart may be inconclusively definable for a number of reasons – the information may not have been deemed relevant to the circumstances of the death and therefore not included in the inquest proceedings, or the wording used in a press report may have had multiple possible interpretations. For some incidents, Coroner's offices no longer held full paper records, due to fire or flood, and held only sparse details on computer archives. If CO-Gas Safety could not determine the information with certainty, then a response of 'unknown' was recorded for statistical purposes, and notes of our assumptions and/or suspicions will have been made anecdotally within the database notes.

Where necessary, notes have been given below a chart to help clarify the categories used in their production. These are sometimes difficult to define and incidents can often fall into more than one dataset. In such circumstances a judgement must be made by the compiler of the statistics. Examples are as follows: in the *appliance type* chart, cases resulting from misuse of portable outdoor patio heaters have been included in the 'portable heater (outdoor)' category, but could just as easily have been assigned to the 'camping equipment' category instead; in the *place* chart, a case of a tradesman being poisoned while working on an unfinished new-build home was categorised under 'workplace' rather than 'house'; and a victim discovered in a shed behind a restaurant was categorised under 'commercial premises' rather than 'shed or similar', as it was felt that it was more important to reflect the ownership of the locations than their construction.

FUEL TYPE relating to UK deaths from unintentional carbon monoxide poisoning from 01.09.1995 to 31.08.2020

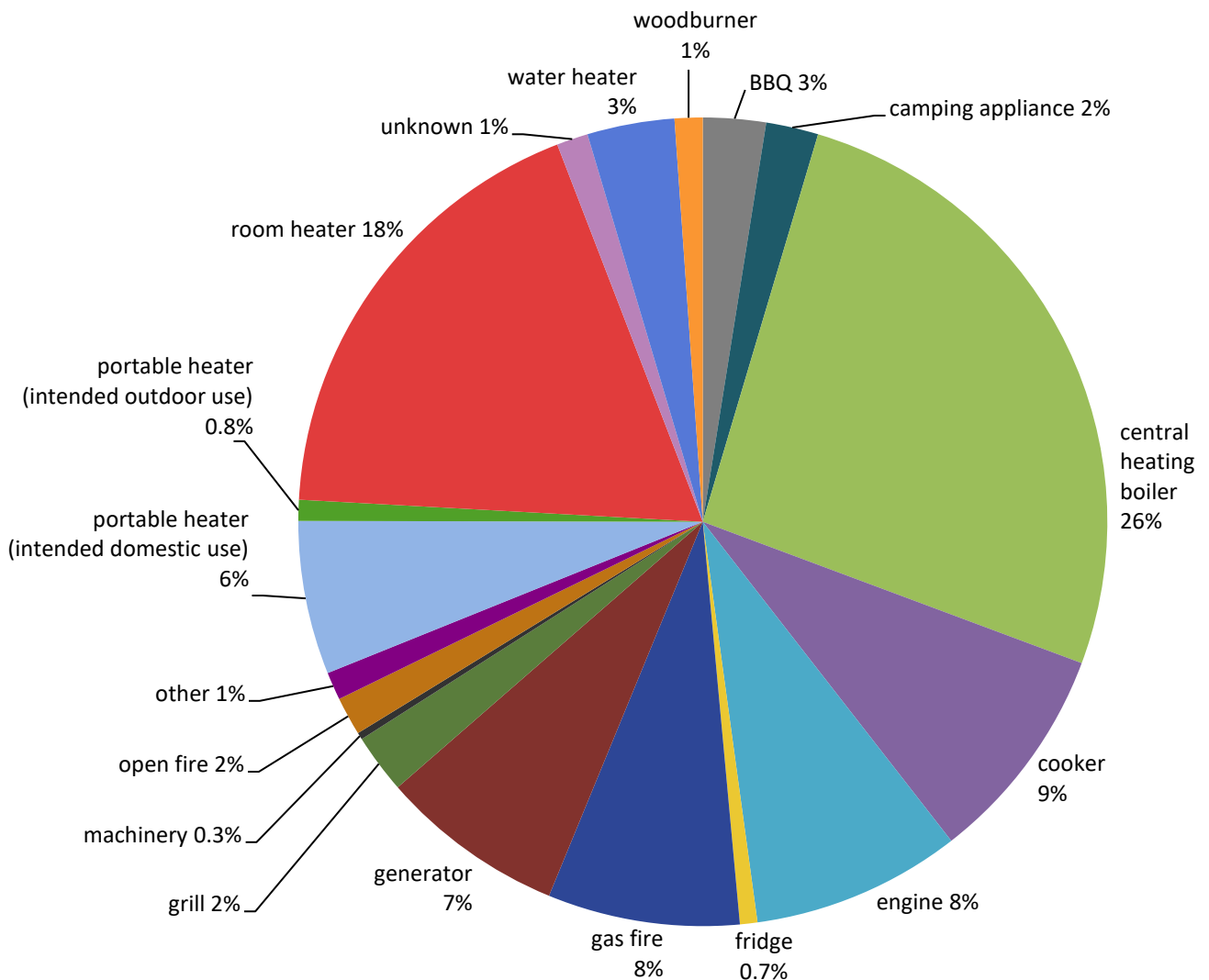


CO-Gas Safety comment

This chart shows that gas is responsible for the greatest percentage of the deaths included in our data, but our data so far also suggests that, per user, gas causes *less* deaths from carbon monoxide than solid fuel (since the number of users of solid fuel across the UK is far less than that of gas users).

In other words, considering the relatively small number of solid fuel users, there is a high incidence of deaths from solid fuel compared to that of gas.

APPLIANCE TYPE relating to UK deaths from unintentional carbon monoxide poisoning from 01.09.1995 to 31.08.2020



'camping appliance' includes items other than BBQ's, such as gas lamps and gas or paraffin stoves.

'central heating boiler' includes mains gas, oil and solid fuel systems. Back boiler systems are included in this category.

'cooker' includes hobs, range cookers and permanent stoves (not portable camping stoves).

'engine' is of any type, including from a car, lorry (or other motor vehicle), aeroplane or boat.

'fridge' is of a portable type, powered by Liquid Petroleum Gas cylinder.

'generator' is a portable machine.

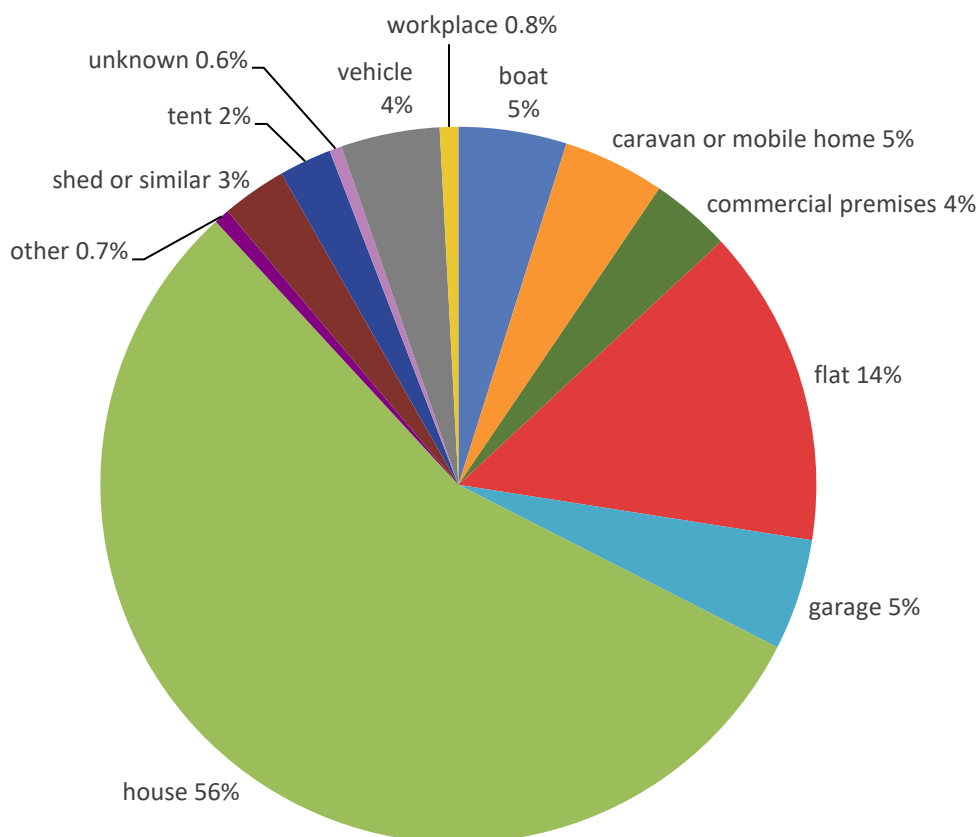
'machinery' indicates industrial or commercial machinery, such as a disc cutter.

'woodburner' indicates a permanently installed domestic appliance intended for indoor use. Multi-fuel burners are included in this category.

CO-Gas Safety comment

It is interesting that the largest proportion of deaths by one appliance is by a central heating boiler.

PLACE OF INCIDENT relating to UK deaths from unintentional carbon monoxide poisoning from 01.09.1995 to 31.08.2020



'commercial premises' includes shops, public houses, hotels, restaurants & guest houses.

'flat' includes bedsits, and both purpose-built flats and those converted from larger dwellings.

'house' includes bungalows, detached, semi-detached and terraced houses.

'other' includes care homes, public halls and workshops.

'shed or similar' includes metal containers, wood cabins, outhouses and portacabins.

'vehicle' includes all types (other than boat) such as car, lorry, camper van and aeroplane.

'workplace' includes building sites, offices and other work sites.

CO-Gas Safety comment

It is easy to see that people at home are most at risk from carbon monoxide poisoning.

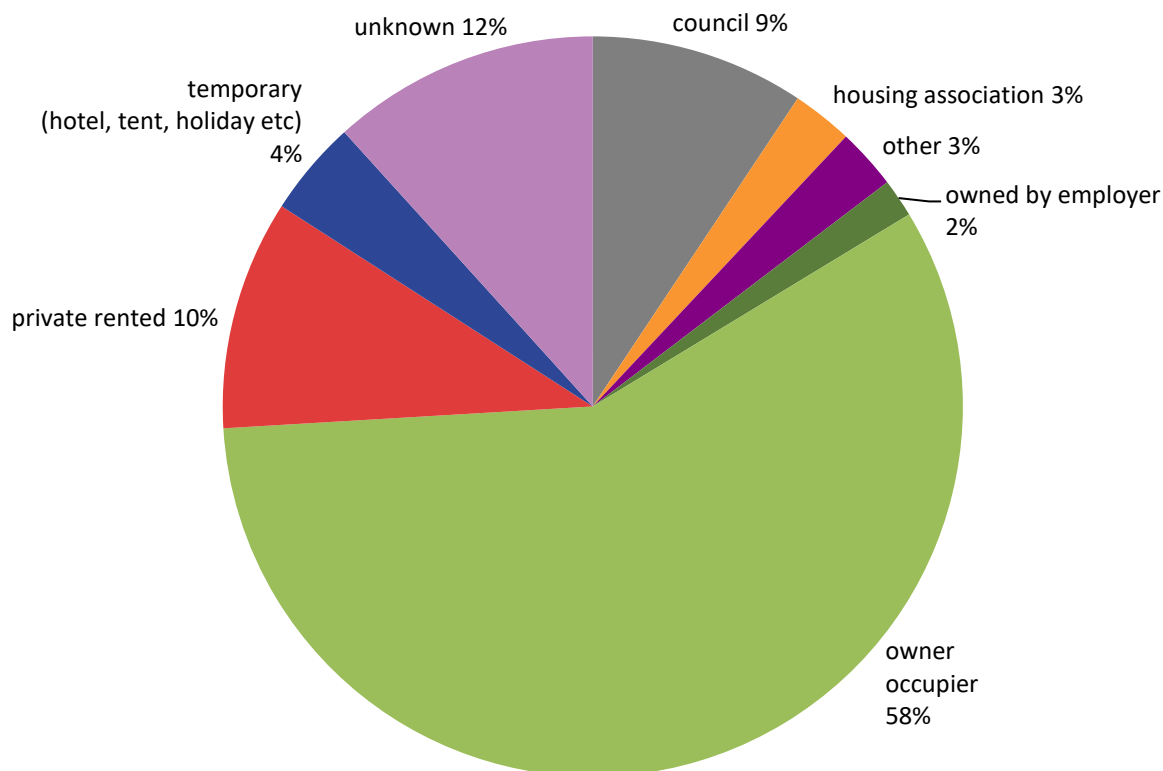
Despite this, more than a third (36%) of UK households do not have a CO alarm and over half (52%) of those who do not have a CO alarm say they are aware of what one is but don't feel a need for one at home. <https://www.hpmmaq.com/news/half-uk-households-say-not-need-carbon-monoxide-detector>

For an example of long-term CO exposure in the home please see <http://www.mirror.co.uk/news/real-life-stories/thought-early-dementia-three-years-5930721> Daily Mirror, 22 June 2015 by Angela Cooke.

Dr Ben Croxford's research at UCL (University College London) in 2006 found:

- 23% of homes had one or more defective gas appliance;
- 8% of homes were judged to be at risk of dangerous levels of CO;
- 45% of homes had received no information on the dangers of CO; and
- A higher prevalence of problem appliances was found in the homes of vulnerable people, such as the young, the old, and those in receipt of benefits. (Taken from HSE press release 2006).

TENURE TYPE relating to UK deaths from unintentional carbon monoxide poisoning from 01.09.1995 to 31.08.2020

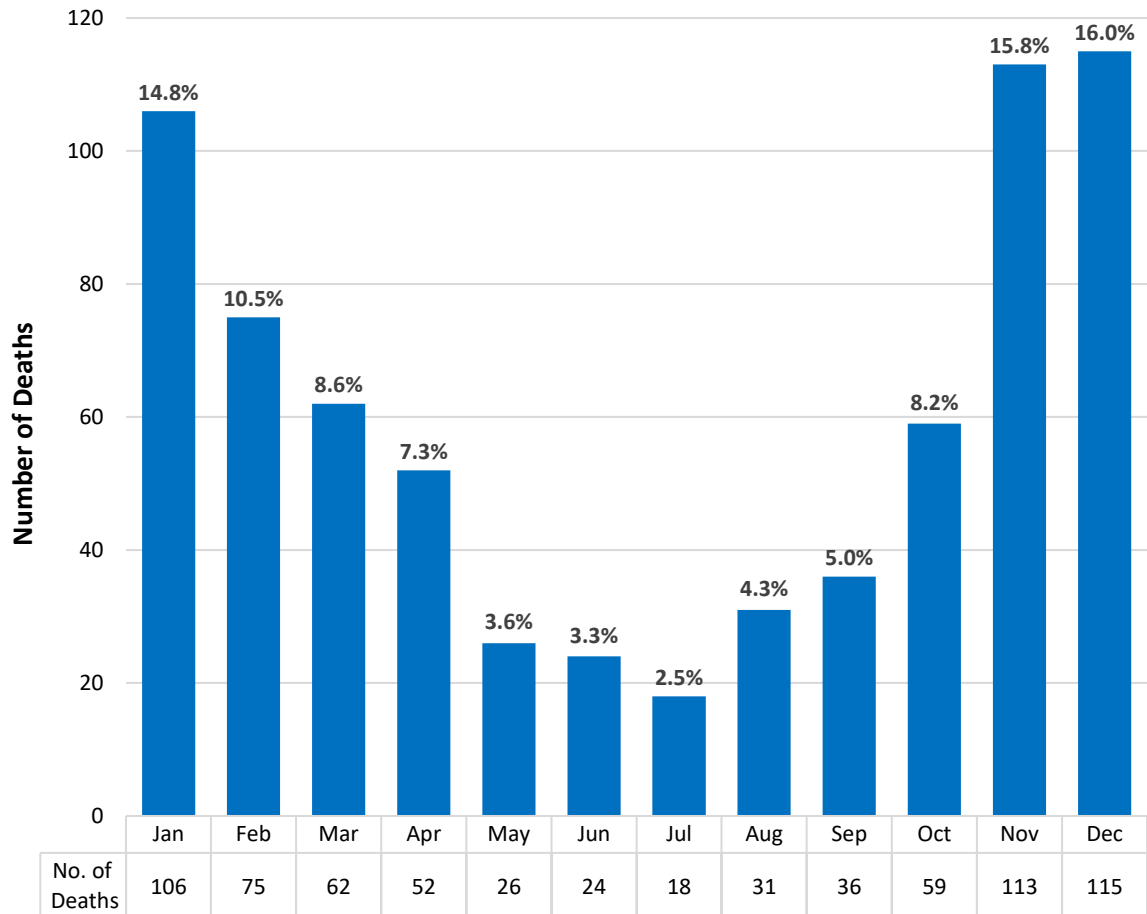


Changes in the way that housing statistics are collected by the UK devolved nations mean that official statistics on tenure are no longer published for the UK as a whole but Table 104 at this link does give them for England: <https://www.gov.uk/government/statistical-data-sets/live-tables-on-dwelling-stock-including-vacants> For 2019 this quotes 24.4 million dwellings in England; an increase of 242,000 dwellings (almost 1%) on 2018. Of these, 15.6 million dwellings (63%) were owner-occupied dwellings, 4.7 million private rented dwellings (19.3%) and 4.1 million social and affordable rented dwellings (2.5 million housing association dwellings, that's a little over 10% of all dwellings, and 1.6 million, or 6.5%, were rented from Local Authorities).

CO-Gas Safety comment

Although the figures above relate only to England and our data covers all of the UK, it is interesting that within the rental market unintentional CO deaths in both housing association dwellings and privately-rented properties look low (3% & 10%) compared to the numbers of these properties in the English housing stock (10% & 19%, respectively). Conversely, deaths in dwellings rented from Local Authorities make up 9% of our cases, despite LA housing representing only 6.5% of housing in England. This may infer that private rental legislation is becoming more effective than LA management of their properties. However, it should also be said that we are unaware of any deaths in council-owned properties in England for at least the last five years, but there have been up to 5 in privately-rented properties (4 currently await inquest conclusions). The number of cases in our data with unknown tenure (12%) could account for some of these anomalies, and our tenure data also includes locations not included in the official statistics, such as boats, tents and cars, which will affect percentage figures. In order to establish accurate conclusions it would be really helpful to have even more co-operation from Coroners to record the tenure of dwellings which, of course, the government could require.

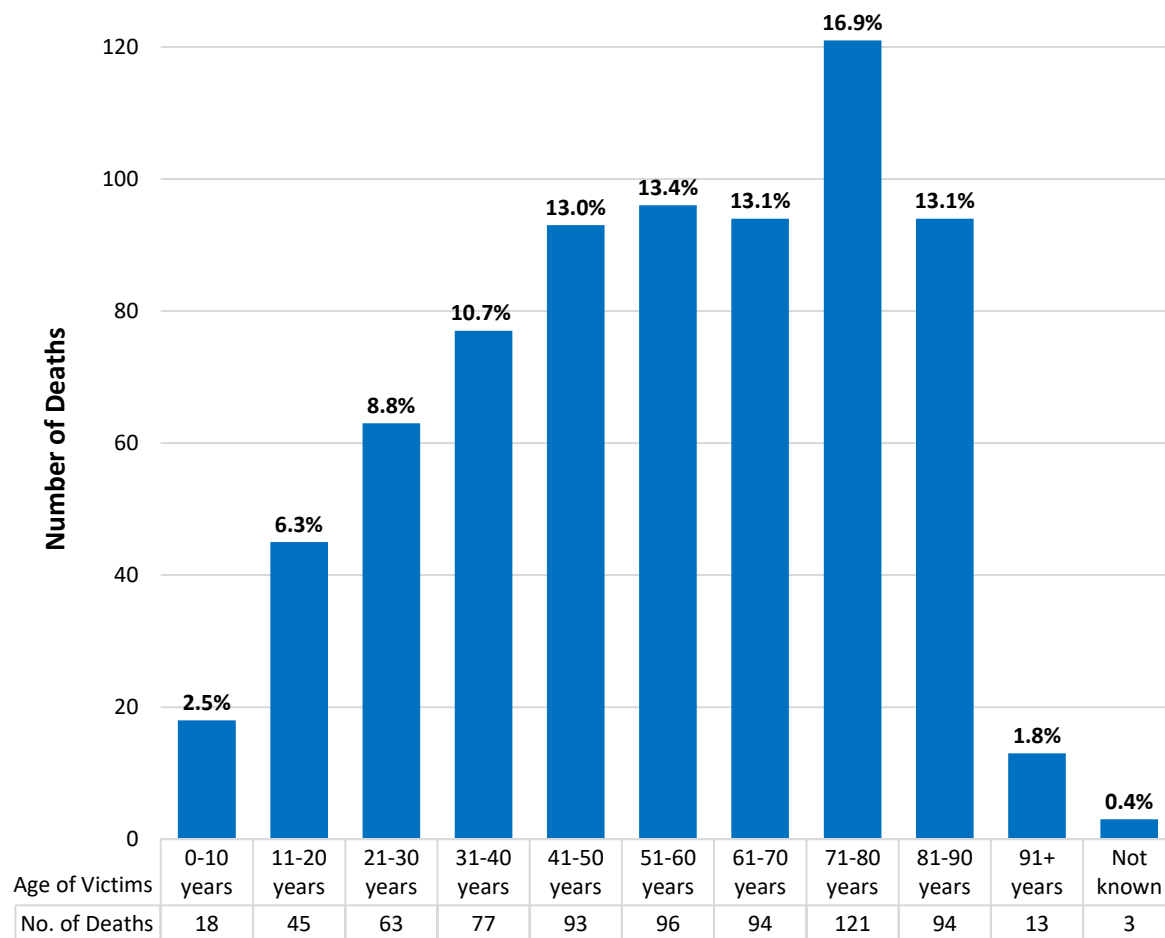
MONTH OF DEATH relating to UK deaths from unintentional carbon monoxide poisoning from 01.09.1995 to 31.08.2020



CO-Gas Safety comment

It is unsurprising that the colder months of November, December and January contain the highest number of deaths.

AGE OF VICTIMS relating to UK deaths from unintentional carbon monoxide poisoning from 01.09.1995 to 31.08.2020



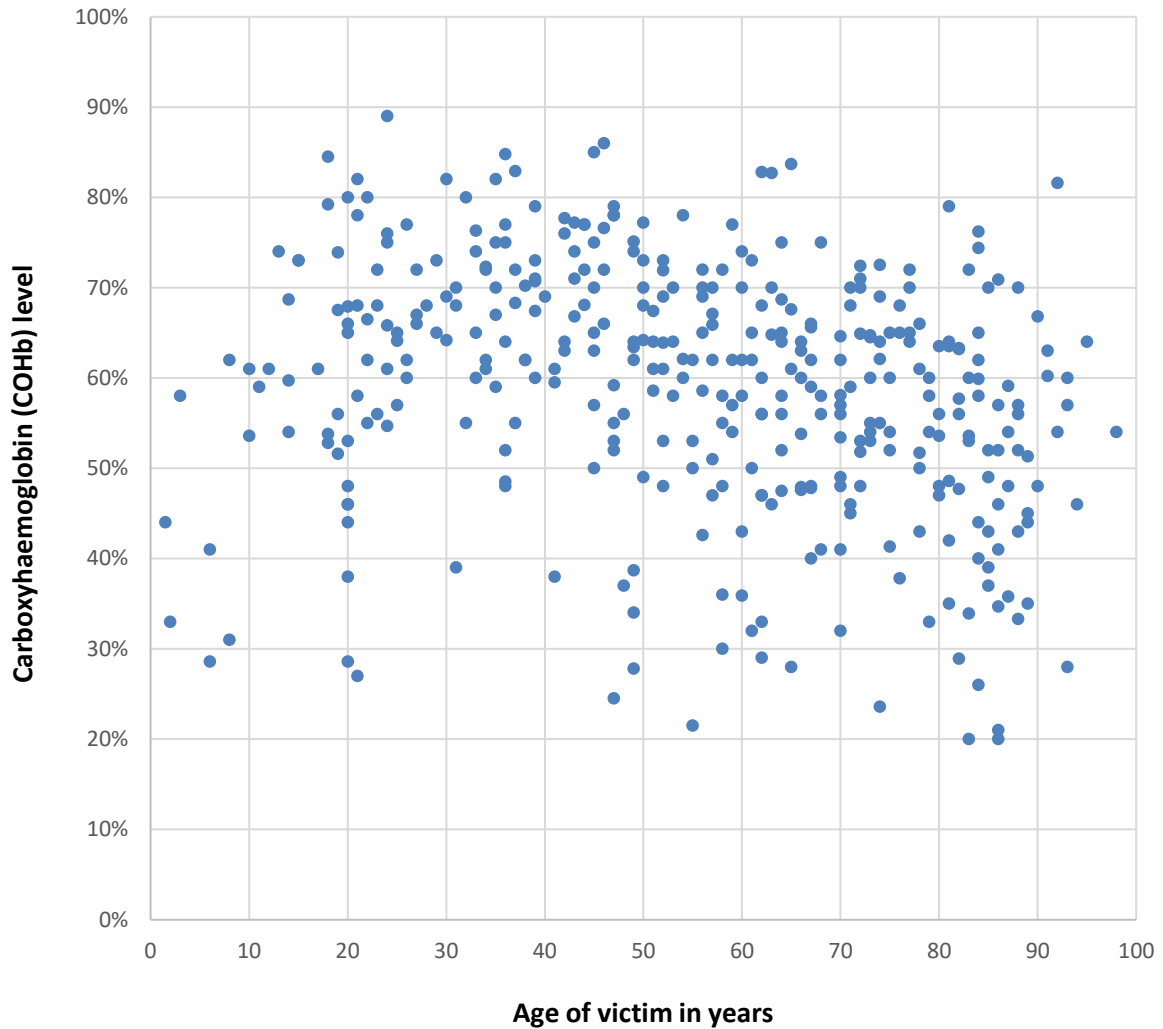
CO-Gas Safety comment

It is interesting to note that those aged 71-80 years make up just over 7% of the population* yet represent around 17% of the total deaths. In our opinion, many more deaths in this age group that may actually be due to CO are probably put down to 'heart attack' or other 'natural causes' (and therefore do not come to our attention and become included in our statistics). This is because there is no automatic test for CO on death, meaning the number of deaths in this age group in particular could be even higher.

**Taken from ONS Table P01 2011 Census: Usual resident population by single year of age and sex, England and Wales.*

The Gas Safety Trust has funded a pilot which originally sought to develop a protocol to test all dead bodies for CO. This started in early 2016 and has not yet been published. The update is that the report is currently being reviewed and will be published in the coming months. There have been issues which have caused significant delays primarily due to the need to reflect and capitalise on recent legislative changes. Gas Safety Trust - GST@electralink.co.uk

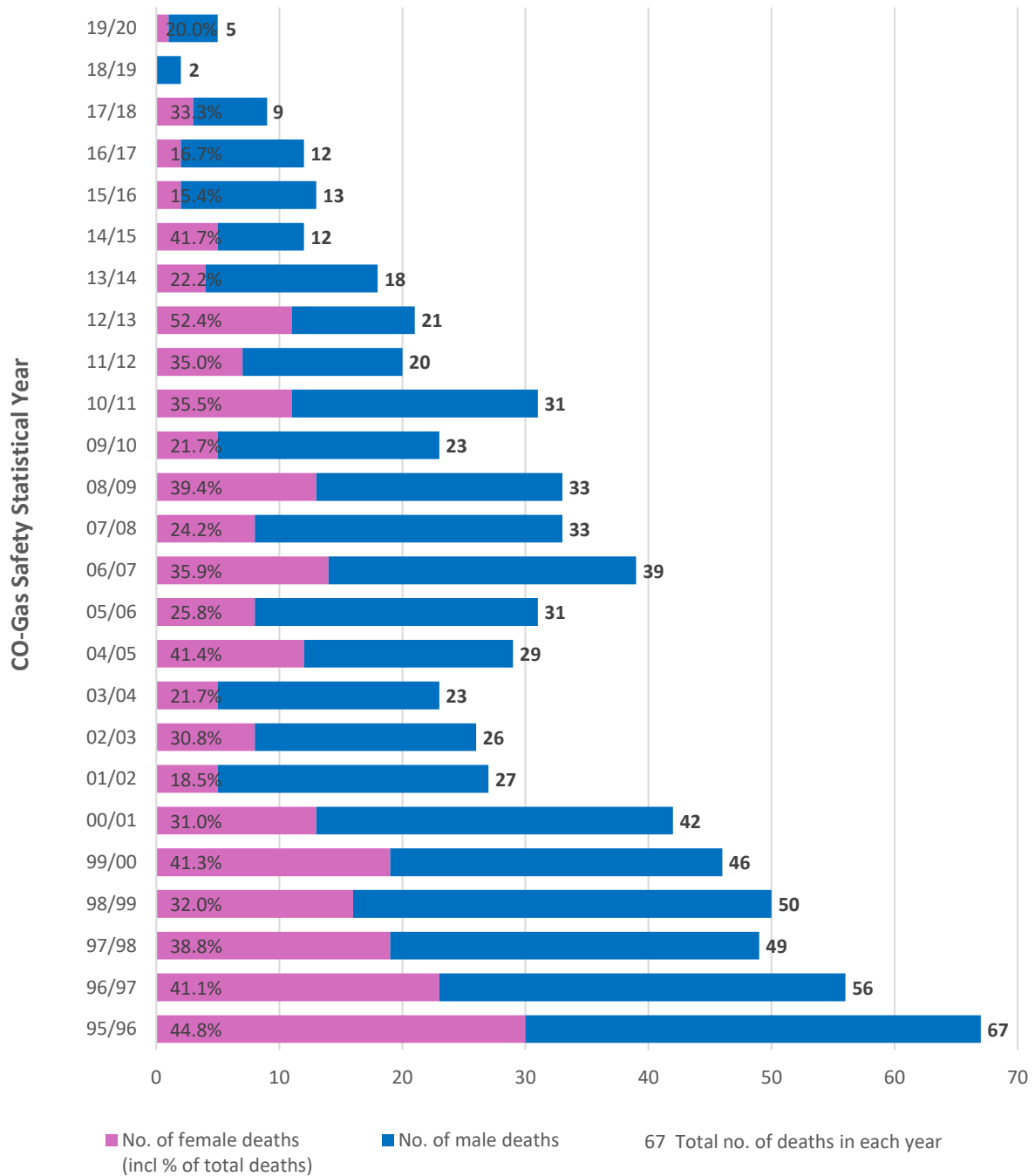
COHb LEVEL OF VICTIMS relating to UK deaths from unintentional carbon monoxide poisoning from 01.09.1995 to 31.08.2020



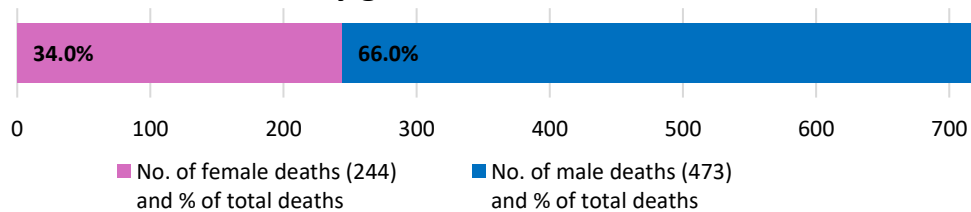
CO-Gas Safety comment

For this analysis we now have data available for 382 victims. This represents another increase on the recording of COHb levels in our database over the last year and may be of interest to the scientific community.

GENDER OF VICTIMS relating to UK deaths from unintentional carbon monoxide poisoning from 01.09.1995 to 31.08.2020



Total deaths by gender 01.09.1995 - 31.08.2020



LOCATION OF INCIDENT relating to UK deaths from unintentional carbon monoxide poisoning from 01.09.1995 to 31.08.2020

ENGLAND	No. of deaths	WALES	No. of deaths
Bedfordshire	1	Clwyd	6
Berkshire	7	Dyfed	23
Buckinghamshire	8	Gwent	20
Cambridgeshire	6	Gwynedd	8
Cheshire	5	Mid Glamorgan	16
Cornwall	20	South Glamorgan	6
Cumbria	20	West Glamorgan	13
Derbyshire	27	TOTAL	92
Devon	11		
Dorset	7		
Durham	9	SCOTLAND	No. of deaths
East Sussex	10	Borders	2
East Riding of Yorkshire	3	Central Scotland	2
Essex	21	Fife	7
Gloucestershire	6	Glasgow	3
Greater London	63	Grampian	1
Greater Manchester	18	Highlands and Western Isles	1
Hampshire	7	Lanarkshire	4
Herefordshire	2	Lothian	3
Hertfordshire	12	Renfrewshire	2
Kent	25	Tayside	3
Lancashire	18	Unknown Scottish Location	2
Leicestershire	8	TOTAL	30
Lincolnshire	17		
Merseyside	7	NORTHERN IRELAND	No. of deaths
Norfolk	19	County Antrim	7
North Yorkshire	17	County Armagh	1
Northamptonshire	2	County Down	6
Northumberland	5	County Fermanagh	5
Nottinghamshire	11	County Londonderry	2
Oxfordshire	13	County Tyrone	4
Shropshire	10	TOTAL	25
Somerset	13		
South Yorkshire	32	England	570
Staffordshire	25	Wales	92
Suffolk	5	Scotland*	30
Surrey	4	Northern Ireland	25
Tyne & Wear	11	TOTAL UK DEATHS	717
Warwickshire	7		
West Midlands	14		
West Sussex	8		
West Yorkshire	23		
Wiltshire	9		
Worcestershire	4		
TOTAL	570		

*Note that Scotland does not have a Coronial system as the other UK countries do, but holds Fatal Accident Inquiries for a much smaller proportion of deaths (total of 40-70 FAIs per year but often not even one inquiry about a CO death). It is possible that this contributes to the lower rate of CO deaths recorded in Scotland.