Statistical bulletin

Prevalence of ongoing symptoms following coronavirus (COVID-19) infection in the UK: 1 September 2022

Estimates of the prevalence of self-reported long COVID and associated activity limitation, using UK Coronavirus (COVID-19) Infection Survey data. Experimental Statistics.

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1 . Main points

- An estimated 2.0 million people living in private households in the UK (3.1% of the population) were experiencing self-reported long COVID (symptoms continuing for more than four weeks after the first suspected coronavirus (COVID-19) infection that were not explained by something else) as of 31 July 2022; from this bulletin onwards, the published estimates are not fully comparable with those in previous bulletins.

- Of people with self-reported long COVID, 253,000 (13%) reported they first had (or suspected they had) COVID-19 less than 12 weeks previously, 1.7 million people (83%) at least 12 weeks previously, 892,000 (45%) at least one year previously, and 429,000 (22%) at least two years previously.

- Of people with self-reported long COVID, 582,000 (29%) reported they first had (or suspected they had) COVID-19 before Alpha became the main variant; this figure was 256,000 (13%) during the Alpha period, 386,000 (19%) during the Delta period, and 681,000 (34%) during the Omicron period.

- Long COVID symptoms adversely affected the day-to-day activities of 1.5 million people (73% of those with self-reported long COVID), with 384,000 (19%) reporting that their ability to undertake their day-to-day activities had been "limited a lot".

- Fatigue continued to be the most common symptom reported by individuals experiencing long COVID (62% of those with self-reported long COVID), followed by shortness of breath (37%), difficulty concentrating (33%), and muscle ache (31%).

- As a proportion of the UK population, the prevalence of self-reported long COVID was greatest in people aged 35 to 69 years, females, people living in more deprived areas, those working in social care, those aged 16 years or over who were not working and not looking for work, and those with another activity-limiting health condition or disability.

- The estimates presented in this analysis relate to self-reported long COVID, as experienced by study participants who responded to a representative survey, rather than clinically diagnosed ongoing symptomatic COVID-19 or post-COVID-19 syndrome in the full population.

Warning: We have now moved to a more flexible, remote data collection method. Participants can complete the survey online or by telephone. Swab and blood sample kits are sent through the post and returned by post (or by courier for some participants). The results in this bulletin are based on both study worker and remote data collection. Therefore, from this bulletin onwards, the published estimates are not fully comparable with those in previous bulletins.

If you are worried about new or ongoing symptoms for four or more weeks after having COVID-19, there are resources available to help. See the NHS's Long-term effects of coronavirus page and the Your COVID Recovery page, which can help you to understand what has happened and what you might expect as part of your recovery. The time it takes to recover from COVID-19 is different for everyone, and the length of your recovery is not necessarily related to the severity of your initial illness or whether you were in hospital.

Warning: Long COVID is an emerging phenomenon that is not yet fully understood. These are therefore **Experimental Statistics**, which are statistics that are in the testing phase and not yet fully developed.

2 . Impact of moving to remote data collection

The Coronavirus (COVID-19) Infection Survey (CIS) has moved from a study worker home visit data collection method to a more flexible approach for participants. We have introduced a questionnaire that can be completed online or by telephone, and swab and blood samples are returned to the laboratories for analysis through the post (or by courier for a small number of participants). Further information on what these changes mean and how the survey will continue to be valuable can be found in our recent blog post, The COVID-19 Infection Survey is changing. Further details can also be found in our recent CIS quality report.

Any changes in the way that data are collected can result in changes to the estimates produced from those data. For example, participants may tend to respond to certain questions differently depending on whether those questions are asked in a face-to-face interview or an online questionnaire. Some groups of participants may be more likely to respond to the survey if using one data collection method when compared with another. Therefore, it is possible that the remote survey may represent some groups of the population differently compared with the previous face-to-face data collection.

Not all measures will be subject to these effects, and the size and direction of any effect will vary. The analysis below explores the possible impact of the change in the data collection mode on our estimates of the prevalence of self-reported long COVID. This is an initial analysis of the first remotely collected data, and our understanding of it and its quality will improve over time. Similar analysis is being conducted for a range of other CIS outputs and will be published when available.

The data used in this bulletin were collected by a variety of modes: face-to-face interviews with study workers, telephone interviews and online questionnaires. Of the 222,000 survey responses received in the four weeks to 31 July 2022, 94,000 (42%) were collected remotely, of which 91,000 (97%) were collected online and the remaining 3,000 (3%) by telephone. Therefore, from this bulletin onwards, the published estimates are not fully comparable with those in previous bulletins, where the data were collected through face-to-face interviews alone.

The unadjusted odds of self-reporting long COVID were 32% higher for those responding remotely (online or by telephone) than for those who responded through face-to-face interviews with study workers. After statistically adjusting for socio-demographic factors that may be related to both the likelihood of responding to the survey given different modes of data collection, and the likelihood of experiencing long COVID symptoms, the odds of self-reporting long COVID were 30% higher for those who responded remotely than for those who responded through face-to-face interviews (Table 1).

Table 1: Unadjusted and adjusted odds ratios (and 95% confidence intervals) of self-reporting long COVID remotely (online or by telephone) compared with through face-to-face interviews, for all people and stratified by age groups, UK, 4 July to 31 July 2022

Group	Unadjusted	Adjusted
All people	1.32 (1.26-1.38)	1.30 (1.24-1.37)
Age 2 to 29 years	1.44 (1.22-1.71)	1.47 (1.24-1.75)
Age 30 to 49 years	1.46 (1.34-1.60)	1.45 (1.32-1.59)
Age 50 to 69 years	1.27 (1.18-1.35)	1.27 (1.18-1.36)
Aged 70 and over	1.15 (1.02-1.28)	1.12 (1.00-1.26)

Source: Source: Office for National Statistics – Coronavirus Infection Survey

Notes

1. The adjusted odds ratios were estimated using a binary logistic regression of self-reported long COVID status on age, sex, region of residence, area deprivation quintile group, ethnicity, work sector and pre-existing health or disability status. Age was modelled as a restricted cubic spline with knots at the tenth, fiftieth and ninetieth percentiles of the age range.

Differences between responses collected remotely and those collected via face-to-face interviews were largest for children and younger adults, and smallest for older adults. The adjusted odds ratios were of a similar magnitude when separately comparing online and telephone responses to face-to-face responses, resulting in 30% and 34% higher odds of self-reporting long COVID, respectively.

The adjusted odds ratios give an indication of systematic differences in the likelihood of self-reporting long COVID when responding to the survey by different modes, that cannot be explained by differences in sample composition according to measured socio-demographic characteristics (although the sample composition across different modes may still vary by factors not included in the statistical models). There are various factors that might explain these systematic differences. For example, participants might have more time to read the survey questions and consider their response and all the response options when responding remotely. Participants might also be less likely to describe themselves as having long COVID in face-to-face interviews because of perceived stigma associated with the condition.

If only the 128,000 responses collected through face-to-face interviews (58%) had been used to compile this month's prevalence estimate, then 1.7 million people living in private households in the UK (2.6% of the population) would have been estimated to be experiencing self-reported long COVID as of 31 July 2022. This is lower than the estimate of 2.0 million (3.1%) when both remote and face-to-face responses are used, and lower than last month's estimate of 1.8 million (2.8%) as of 2 July 2022. For this month, we have published a supplementary dataset using only responses collected by study workers.

The proportion of responses made online and via telephone rather than through face-to-face interviews will be greater for next month's bulletin as the transition to full remote response continues, and the bulletins following that are expected to be based solely on remote responses.

3 . Prevalence of ongoing symptoms following coronavirus infection in the UK data

Prevalence of ongoing symptoms following coronavirus (COVID-19) infection in the UK
Dataset | Published 1 September 2022
Estimates of the prevalence and characteristics of people with self-reported long COVID and associated activity limitation, using UK Coronavirus (COVID-19) Infection Survey data.

4 . Glossary

Logistic regression

Logistic regression is a statistical modelling technique for quantifying the strength of association between the occurrence of an event, such as self-reporting long COVID, and a set of characteristics. The model can be used to infer the independent relationship between the event and a particular characteristic of interest while "adjusting" or "controlling" for other characteristics, which may be related to both the event and the characteristic of interest.

Odds ratio

An odds ratio (OR) for a particular group (for example, people responding to the Coronavirus Infection Survey (CIS) remotely) describes the relative difference in the likelihood of self-reporting long COVID in that group compared with a reference group (for example, people responding to the CIS through face-to-face interviews study workers). An OR higher than 1 indicates a greater likelihood, while an OR less than 1 indicates a lower likelihood.

5 . Measuring the data

This analysis was based on 222,276 responses to our [Coronavirus (COVID-19) Infection Survey](#) (CIS) collected over the four-week period ending 31 July 2022, weighted to represent people aged two years and over living in private households in the UK.

Self-reported long COVID was defined as symptoms persisting for more than four weeks after the first suspected COVID-19 infection that were not explained by something else. Parents and carers answered the survey questions on behalf of children aged under 12 years.

Date of first (suspected) COVID-19 infection was taken to be the earliest of:

- the date of first positive test for COVID-19 during study follow-up

- the date of first self-reported positive test for COVID-19 outside of study follow-up

- the date of first suspected COVID-19 infection, as reported by the participant

Those with an unknown date of first (suspected) COVID-19 infection are in the estimates for "any duration" but not in duration-specific estimates. All estimates by duration are calculated from the date of the first (suspected) COVID-19 infection, and reinfections are not taken into consideration.

The survey questions relating to self-reported long COVID can be found in Section F of the enrolment and Section D of the follow-up [CIS questionnaires](#).

6 . Strengths and limitations

Strengths

This analysis is based on data from the Coronavirus (COVID-19) Infection Survey (CIS), a large study that provides a key indicator of national COVID-19 positivity. CIS responses are weighted to represent the UK population in private households according to age group, sex, and region. The sampling weights are adjusted to account for non-response to the survey over the reference period. All participants had the opportunity to answer the survey questions relating to long COVID, regardless of whether they had previously tested positive for COVID-19.

Limitations

Like all household surveys, not all sampled households invited to participate in the study actually enrol, and individuals may drop out over time (see Tables 2a to 2f of the [technical dataset](#) accompanying the latest Coronavirus (COVID-19) Infection Survey statistical bulletin for survey response rates). Our estimates are weighted to account for non-response. However, bias may be introduced if non-response is related to long COVID, for example participants being more willing, or less able, to continue in the study because of their symptoms.

Long COVID status was self-reported by study participants and so misclassification is possible. For example, some participants may be experiencing symptoms because of a health condition unrelated to COVID-19 infection. Others who do have symptoms caused by COVID-19 may not describe themselves as experiencing long COVID (for example, because of lack of awareness of the term or not knowing they were initially infected with COVID-19).

7 . Related links

Coronavirus (COVID-19) Infection Survey quality report: August 2022
Report | Released 18 August 2022
This quality report presents information on the Coronavirus (COVID-19) Infection Survey data collection method change from study worker home visit to remote data collection.

Self-reported long COVID after infection with the Omicron variant in the UK: 18 July 2022
Bulletin | Released 18 July 2022
The likelihood of self-reported long COVID after a first coronavirus (COVID-19) infection compatible with the Omicron BA.1 or BA.2 variants, compared with the Delta variant, using data from the COVID-19 Infection Survey.

COVID-19 Infection Survey: methods and further information
Methodology article | Last updated 5 August 2022
This methodology guide is intended to provide information on the methods used to collect the data, process it, and calculate the statistics produced from the Coronavirus (COVID-19) Infection Survey.

Coronavirus (COVID-19) latest insights
Interactive tool | Updated as and when data become available
Explore the latest data and trends about the coronavirus (COVID-19) pandemic from the Office for National Statistics (ONS) and other official sources.

Coronavirus (COVID-19) Infection Survey: characteristics of people testing positive for COVID-19 in England
Bulletin | Released fortnightly
Characteristics of people testing positive for COVID-19 from the Coronavirus (COVID-19) Infection Survey.

8 . Cite this statistical bulletin

Office For National Statistics (ONS), released 1 September 2022, ONS website, statistical bulletin, Prevalence of ongoing symptoms following coronavirus (COVID-19) infection in the UK, 1 September 2022