

Deaths from Covid-19 (coronavirus): how are they counted and what do they show?

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Coronavirus disease 2019 (Covid-19) is the name given to the disease associated with the virus Severe Acute Respiratory Syndrome Coronavirus-2 (SARS-CoV-2), which led to a global pandemic that began in 2020. This article examines how the number of people who have died from Covid-19 is counted and what the numbers to July 2022 show.

Summary

Note: This report examines Office for National Statistics (ONS) (provisional) data on Covid-19 and overall deaths since 2020, when the pandemic started, to 29 July 2022. The data relates to England, England and Wales, or the UK depending on data availability and relevance to the context.

- Overall, the number of people who have died from Covid-19 to end-July 2022 is 180,000, about 1 in 8 of all deaths in England and Wales during the pandemic.
- There have been several waves of Covid-19 deaths in England and Wales between 2020 and 2022, causing a surge in total and excess deaths compared with years preceding the pandemic. The first and second waves between mid-March 2020 and March 2021 caused the most deaths. Since then, the number of people dying from Covid-19 has been more moderate.
- The pandemic has resulted in about 139,000 excess deaths¹ in England and Wales by 29 July 2022. This caused the mortality rate from all causes in 2020 and 2021 to increase to levels of about a decade ago. However, from January to June 2022, the all-cause mortality fell and was lower than in any year since 2001, very likely because of people who died prematurely in 2020 and 2021 as a result of the pandemic.
- Covid-19 changed the health profile of England's population radically by becoming the leading cause of death in 2020 and 2021. The number of people dying from Covid-19 exceeded the number of people dying from the most common killers in preceding years (eg, dementia and Alzheimer's disease, heart disease, stroke and lung cancer).
- During the pandemic, significantly larger (by one-third) numbers of people died at home compared with preceding years; only 3 per cent of these deaths at home were due to Covid-19. Fewer non-Covid-19 deaths occurred in hospital, suggesting many people who died at home would in non-pandemic years have died in hospital. The first wave saw a surge in people dying in care homes, where there were almost 27,000 excess deaths compared with the 2015–19 average, almost half (45 per cent) of all excess deaths in England and Wales.
- People in some population groups have a higher risk of dying from Covid-19 than others:
 - mortality rates rise sharply with age and are higher among men than women
 - mortality rates are significantly higher among people with pre-existing conditions such as dementia and Alzheimer's disease, heart disease, high blood pressure and diabetes
 - mortality is 2.6 times higher in the most deprived than the least deprived tenth of areas
 - people from some ethnic minority groups have a significantly higher risk of being infected by Covid-19 and dying from it; Covid-19 mortality during the pandemic has been highest in the Bangladeshi, Pakistani and Black Caribbean groups
 - obesity is associated with an increased risk of adverse outcomes, including death, from Covid-19
 - mortality rates are higher among people with a self-reported disability or a learning disability.
- The Covid-19 mortality rate is higher among unvaccinated people than those who have been vaccinated. Vaccination rates are lower among some groups with the highest Covid-19 mortality (adults living in deprived areas, and Black Caribbean, Black African, Pakistani and Bangladeshi adults).
- Covid-19 has caused the biggest fall in life expectancy in England since World War II. Compared with 2019, life expectancy in 2020 fell by 1.3 years for males (from 80 years to 78.7) and 1 year for females (from 83.6 to 82.6) and remained virtually unchanged in 2021.
- Covid-19 has exacerbated health inequalities: life expectancy in 2020 fell by 1.8 and 1.5 years in males and females in the most deprived tenth of areas compared with 0.8 and 0.9 years respectively in the least deprived.
- Among comparator high-income countries (other than the US), only Spain and Italy had higher rates of excess mortality in the pandemic to mid-2021 than the UK². Overall, England has experienced a larger fall in life expectancy than most comparator countries between pre-pandemic 2019 and 2021.

¹ (#footnote1_6tmmdf6). ONS estimates excess deaths as follows: for deaths in 2020 and 2021 it uses average deaths in 2015–19 as the comparator because it provides a comparison with the number of deaths expected in a usual (non-Covid-19 pandemic) year. For 2022, ONS uses the average for 2016, 2017, 2018, 2019 and 2021 because the further we move away from the baseline five-year comparator, the less robust the measure is because of changes in population numbers, age and structure.

² (#footnote2_gi4ijk7). International rankings vary between different data sources and methodologies used, and because the timing of surges and declines in the pandemic's death toll differ between countries.

Why does the UK count deaths?

Mortality data is used for many purposes, for example, to assess population health and health care needs, plan health and other public services, evaluate the effectiveness of such services, identify inequalities, and inform medical research.

[Information from death certificates compiled by the ONS provides the main source of data on deaths](https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/methodologies/userguidetomortalitystatisticsjuly2017#in-collected-at-death-registration)

(<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/methodologies/userguidetomortalitystatisticsjuly2017#in-collected-at-death-registration>). Details of the deceased person, such as name, date of birth, gender, cause and place of death, are recorded on the death certificate. The aggregated 'vital statistics' produced from this information are used in many different ways, for example, to calculate mortality rates for different causes of death, population groups, areas and time periods.

How are deaths usually counted?

Deaths in England and Wales are required by law to be registered within five days, unless there is a coroner's post-mortem or an inquest. A medical certificate of cause of death (MCCD) completed by a doctor is required for the death to be registered.

Every person who dies has an 'underlying' cause of death recorded, and any other causes that may have contributed to the death ('contributory' causes) – taken together, these are called 'mentions'.

For many conditions, eg, lung cancer and stroke, the ONS uses the underlying cause to count deaths. However, like influenza, Covid-19 can cause death directly or precipitate death from other causes, hence ONS uses 'mentions' to get a more complete count of Covid-19 deaths.

How are Covid-19 deaths counted?

The main source of data on numbers of people dying from Covid-19 nationally is the ONS.

[The ONS provides weekly figures on deaths registered in England and Wales](https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/weeklyprovisionalfiguresondeathsregisteredine)

(<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/weeklyprovisionalfiguresondeathsregisteredine>) with Covid-19 as an underlying or contributory cause. The ONS data includes deaths caused or contributed to by Covid-19, whether the person who died had tested positive for Covid-19 or was not tested but the certifying doctor suspected Covid-19 based on symptoms. Because ONS data is based on death certificates that record details about the person who died, the data can be analysed in different ways to examine Covid-19 mortality patterns, for example, by age, gender, cause of death, area, place of death. This is important because, for example, such analyses show that Covid-19 mortality rates are higher in men, older people and those living in urban areas.

Timely monitoring of the number of people dying from Covid-19 is vital for tracking the pandemic and informing the government's response to it. ONS data has a reporting delay of 11 days from the date of death due to processes around death certification and registration. This is a significant limitation for monitoring and response planning when numbers of people dying are high and changing rapidly. To provide more timely data during the earlier worst phase of the pandemic, the Department of Health and Social Care released daily updates (on GOV.UK) on the number of people dying in the UK (and its constituent countries) within 28 (or 60) days of testing positive for Covid-19. This data has limitations because it doesn't include deaths in people where Covid-19 was not confirmed by testing, and some of these deaths in people with Covid-19 could have resulted from a different cause. The GOV.UK data on Covid-19 deaths is now published weekly and also includes the ONS numbers.

[NHS England publishes numbers of people dying in hospitals in England](https://www.england.nhs.uk/statistics/statistical-work-areas/covid-19-deaths/) (<https://www.england.nhs.uk/statistics/statistical-work-areas/covid-19-deaths/>) among patients who tested positive for Covid-19 or where it was mentioned on the death certificate. It has also now moved from daily to weekly publication.

This explainer is based on the ONS data as it provides the most complete, reliable and detailed source of data on Covid-19 deaths. The data is provisional and subject to revision.

How many Covid-19 deaths have occurred and what impact have they had on overall mortality?

2020 got off to a good start. [About 4,800 fewer people died in total in England and Wales](https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/monthlymortalityanalysisenglandandwales/dec)

(<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/monthlymortalityanalysisenglandandwales/dec>) from January to mid-March 2020 than the 2015–19 average for the same period, in part due to a [mild influenza season in the 2019–20 winter](https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/changesinallcauseandcovid19mortalityovertime)

(<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/changesinallcauseandcovid19mortalityovertime>

). Then the Covid-19 pandemic struck. The first two waves running roughly from mid-March to August 2020 and from October

2020 to April 2021 respectively saw [the highest number of people dying from Covid-19](https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsregisteredweeklyinenglandandwalespro)

(<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsregisteredweeklyinenglandandwalespro>

), about 51,000 and 85,000 respectively (see Figure 1). [3 \(#footnote3_wuoaeih\)](https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsregisteredweeklyinenglandandwalespro). Fewer people have died from Covid-19

subsequently, due in part to the vaccination programme, less virulent strains of the virus, and growing population immunity.

[Excess deaths were highest in April 2020 and January 2021](https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/articles/coronaviruscovid19latestinsights/deat)

(<https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/articles/coronaviruscovid19latestinsights/deat> [4 \(#footnote4_8gygxu1\)](https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/articles/coronaviruscovid19latestinsights/deat)).

These waves of excess deaths have been followed by periods when the total numbers of people dying and people dying from non-Covid-19 causes were lower than expected based on number of people dying in preceding years (see Figure 1), suggesting [some people may have died prematurely](https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/articles/coronaviruscovid19latestinsights/deat).

(<https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/articles/coronaviruscovid19latestinsights/deat>) during the pandemic.

The overall [number of people dying from Covid-19 from mid-March 2020 to 29 July 2022](https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsregisteredweeklyinenglandandwalespro) was 180,000, 1 in 8 of all deaths in England and Wales during this period, leading to 131,000 excess deaths. This caused the mortality rate from all causes in [2020](https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/monthlymortalityanalysisenglandandwales/dec) and [2021](https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/monthlymortalityanalysisenglandandwales/dec) to increase to levels of about a decade ago. However, [from January to June 2022, the mortality rate from all causes fell to its lowest level since 2001](https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/monthlymortalityanalysisenglandandwales/late), again possibly because of people dying prematurely in 2020 and 2021.

 Figure 1: Number of deaths registered by week from week ending 3 January 2020 to week ending 29 July 2022

In addition to its direct impact on overall mortality, the Covid-19 pandemic may have caused an increase in the number of people dying from other serious conditions, such as heart disease. The number of people seeking and receiving health care from [GPs](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/948465/GPInHoursEngBulletin2020Wk52.pdf), [accident and emergency](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/948470/EDSSSBulletin2020wk52.pdf) and other health care services for other conditions fell significantly during the early waves of the pandemic. [Routine and elective care](https://www.health.org.uk/publications/long-reads/elective-care-in-england-assessing-the-impact-of-covid-19-and-where-next) (<https://www.health.org.uk/publications/long-reads/elective-care-in-england-assessing-the-impact-of-covid-19-and-where-next>), [referrals and care for cancer](https://scienceblog.cancerresearchuk.org/2021/02/02/cancer-services-during-covid-19-40000-fewer-people-starting-treatment/) (<https://scienceblog.cancerresearchuk.org/2021/02/02/cancer-services-during-covid-19-40000-fewer-people-starting-treatment/>) and [other outpatient referrals](https://www.england.nhs.uk/statistics/statistical-work-areas/outpatient-referrals/mrr-data/) (<https://www.england.nhs.uk/statistics/statistical-work-areas/outpatient-referrals/mrr-data/>) were also postponed or cancelled because of pressure on NHS services, leading to backlogs in diagnosis and treatment. It is too early to say what the full impact of the pandemic on the number of people dying from other conditions will be.

[3. \(#ofDeaths\)](#) The number of deaths registered in a given week may be affected by bank holidays.

[4. \(#ofONSestimates\)](#) ONS estimates excess deaths as follows: for deaths in 2020 and 2021 it uses average deaths in 2015-19 as the comparator because it provides a comparison with the number of deaths expected in a usual (non-coronavirus pandemic) year. For 2022, ONS uses the average for 2016, 2017, 2018, 2019 and 2021 because the further we move away from the baseline five-year comparator, the less robust the measure is because of changes in population numbers, age and structure.

How do numbers of Covid-19 deaths compare with deaths from other causes?

Covid-19 changed the health profile of the population radically. In [2020](https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/monthlymortalityanalysisenglandandwales/dec) and [2021](https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/monthlymortalityanalysisenglandandwales/dec), it became the leading cause of death in England and Wales, accounting for 12 per cent of all deaths, and exceeding the number of deaths from the most common causes of death in preceding years, such as dementia and Alzheimer's disease, heart disease, stroke and lung cancer (see Figure 2). However, [Covid-19 deaths fell after 2021](https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/monthlymortalityanalysisenglandandwales/june) (<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/monthlymortalityanalysisenglandandwales/june>), and Covid-19 became the fifth leading cause of death in January to June 2022 after dementia and Alzheimer's disease, heart disease, stroke and chronic lower respiratory disease, causing 5 per cent of all deaths.

 Figure 2 Leading causes of death

Where are deaths taking place?

During 2015–19, 47 per cent of all [deaths in England and Wales](https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsregisteredweeklyinenglandandwalespro) occurred in hospital, 24 per cent at home, 22 per cent in care homes and 7 per cent elsewhere. This pattern changed during the pandemic: [between March 2020 and July 2022 the proportion of people dying in hospital fell](https://www.ons.gov.uk/releases/deathsregisteredweeklyinenglandandwalesprovisionalweekending29july2022) (<https://www.ons.gov.uk/releases/deathsregisteredweeklyinenglandandwalesprovisionalweekending29july2022>) (to 43 per cent) and the [proportion dying at home](https://www.ons.gov.uk/releases/deathsregisteredweeklyinenglandandwalesprovisionalweekending29july2022) (<https://www.ons.gov.uk/releases/deathsregisteredweeklyinenglandandwalesprovisionalweekending29july2022>) increased (to 29 per cent); the [proportion dying in care homes](https://www.ons.gov.uk/releases/deathsregisteredweeklyinenglandandwalesprovisionalweekending29july2022) (<https://www.ons.gov.uk/releases/deathsregisteredweeklyinenglandandwalesprovisionalweekending29july2022>) was 21 per cent. These overall proportions fluctuated significantly depending on the phase of the pandemic (see Figure 3).

[The number of people dying in hospital rose sharply in the two major waves of Covid-19 deaths in 2020 and 2021](https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/weeklyprovisionalfiguresondeathsregisteredind) (<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/weeklyprovisionalfiguresondeathsregisteredind>) (see Figure 3a). Notably, by 29 July 2022, about 104,000 fewer people died of non-Covid-19 causes in hospital compared with

the average number in preceding years. [5. \(#footnote5_e59wy7a\)](#). The large excess in number of people dying at home (see below) suggests that many people who would normally have died in hospital died at home.

[The number of people dying at home has exceeded expected levels throughout the pandemic](#)

(<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/weeklyprovisionalfiguresondeathsregisteredine>

(see Figure 3b), especially during the peaks of the two Covid-19 waves in 2020 and 2021, although only 3 per cent of those deaths involved Covid-19. Overall, by July 2022, about 100,000 more people had died at home than expected, 33 per cent above the five-year average for comparator years. Many of these excess deaths at home occurred from non-Covid-19 causes such as dementia and Alzheimer's disease, diabetes, cancer and heart disease; under normal circumstances, they would probably have occurred in hospital but were 'displaced' – because admission to hospital was either not possible or was unacceptable to some people (or their families or carers) because of the pandemic. Although the number of people dying at home has fallen somewhat in 2022, it still exceeds the expected number despite the fall in people dying from Covid-19.

[The number of people who died in care homes increased sharply in the first Covid-19 wave in 2020](#)

(<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/weeklyprovisionalfiguresondeathsregisteredine>

peaking at more than three times the 2015–19 average (see Figure 3c), with about 27,000 excess deaths from mid-March to June 2020, comprising almost half (45 per cent) of all excess deaths nationally. The relatively large numbers of excess non-Covid-19 deaths in care homes in the first wave likely reflects the later roll out of testing in care homes compared with hospitals, and under-recording of Covid-19 as a cause of death among older people with pre-existing conditions. The impact of subsequent waves on the number of people dying in care home was more moderate with the introduction of stricter infection control measures.

 Figure 3a Deaths in hospital, England and Wales between 7 March 2020 and 29 July 2022

 Figure 3b Deaths at home, England and Wales

 Figure 3c Deaths in care homes, England and Wales

[5. \(#footnote5_e59wy7a\)](#) ONS estimates excess deaths as follows: for deaths in 2020 and 2021 it uses average deaths in 2015–19 as the comparator because it provides a comparison with the number of deaths expected in a usual (non-coronavirus pandemic) year. For 2022, ONS uses the average for 2016, 2017, 2018, 2019 and 2021 because the further we move away from the baseline five-year comparator, the less robust the measure is because of changes in population numbers, age and structure.

What is the impact of Covid-19 on different population groups?

People in some groups in England and Wales have a higher risk of dying from Covid-19. For most groups, these differentials have narrowed over time as deaths from Covid-19 have fallen, and with vaccinations and medical advances in treating Covid-19 reducing adverse outcomes.

Age

While some young and middle-aged adults can develop serious complications or die from Covid-19, the risks rise sharply with age because immune systems tend to deteriorate with age and because older people are more likely to have long-term conditions (see pre-existing conditions below). For example, [in 2020 the mortality rate from Covid-19 in England and Wales at age 80–84 was 6.5 times higher](#)

(<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/articles/deathsregisterredduetocovid19/2020#deaths-due-to-covid-19-by-age-and-sex>), than at ages 65–69 and 57 times higher than at ages under 65.

Gender

Males have a higher risk of dying from Covid-19 than females. Since the start of the pandemic, [the Covid-19 mortality rate in England and Wales has been 61 per cent higher in males than females](#)

(<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/monthlymortalityanalysisenglandandwales/june>). Various reasons have been suggested for this gender difference, but none have been scientifically established yet.

Region

The pandemic has had an unequal impact regionally. From 2020 to mid-June 2022, [Covid-19 deaths as a proportion of total deaths were highest in London](https://www.ons.gov.uk/datasets/weekly-deaths-region/editions/covid-19/versions/92) (17 per cent) and lowest in the South West (8 per cent), while in other regions the proportion was 12–13 per cent. Regional differences were more marked during earlier phases of the pandemic and have narrowed in 2022.

Pre-existing conditions

[Most \(about 86 per cent\) people dying from Covid-19 have one or more pre-existing conditions](https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/datasets/preexistingconditionsofpeoplewhodiedduetocovid-19) such as dementia and Alzheimer's disease, diabetes, heart disease, high blood pressure, respiratory disease and obesity. Pre-existing conditions may weaken immune systems and reduce the ability to fight infection.

Deprivation

[The Covid-19 pandemic has exacerbated existing inequalities](https://publications.whatshappeninglifeexpectancyengland) in health and mortality. [Mortality from Covid-19 has been higher in more deprived areas](https://analytics.phe.gov.uk/apps/segment-tool/), accounting for 15 per cent of the gap in life expectancy between the most and least deprived fifths of the population in England in 2020 and 2021. [Between March 2020 and April 2022, the Covid-19 death rate was 2.6 times higher in the most deprived tenth of areas of England](https://analytics.phe.gov.uk/apps/chime/) than in the least deprived tenth (see Figure 4), compared with about double for non-Covid-19 causes of death. Deprived areas such as Newham, Tower Hamlets, and Barking and Dagenham in London, and Blackburn with Darwen, Sandwell, Leicester, Manchester and Liverpool, had some of the highest Covid-19 mortality rates in this period.

Figure 4 Mortality rates from Covid-19 and other causes

Ethnicity

[People in ethnic minority groups have experienced higher mortality from Covid-19](https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/articles/updatingethniccontrastsindeathsinvolvedthecoronavirus) than people in the White British group, but the patterns have changed during the course of the pandemic. Ethnic differences were more pronounced during the first wave from March to September 2020, when mortality was two to three times higher in several ethnic minority groups. Ethnic differences narrowed in subsequent waves, with some exceptions: people in Bangladeshi and Pakistani groups experienced greater excess Covid-19 mortality relative to people in the White British group in more recent waves and, along with people in the Black Caribbean group, have experienced the highest mortality throughout the pandemic.

[People from ethnic minority communities are at increased risk of Covid-19 infection](https://www.gov.uk/government/publications/covid-19-review-of-disparities-in-risks-and-outcomes) because they are more likely to live in urban areas and overcrowded households, experience socio-economic deprivation and work in occupations (such as health and social care, transport) that expose them to higher risk. [Structural racism can reinforce these socio-economic inequalities](https://www.gov.uk/government/publications/covid-19-understanding-the-impact-on-bame-communities) among ethnic minority groups. [A higher prevalence of pre-existing conditions also contributes to their excess Covid-19 mortality](https://www.gov.uk/government/publications/covid-19-pre-existing-health-conditions-and-ethnicity).

Occupation

Mortality rates from Covid-19 in the first year of the pandemic were [higher among people working in public-facing occupations](https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/causesofdeath/bulletins/coronaviruscovid19relateddeathsbyoccupationalgroup) and close proximity to others, such as nurses, social care workers (including home carers), security guards, transport workers, sales and retail assistants. The factors associated with these occupational risks included exposure to infection, where people live (mortality is higher among people living in deprived, urban areas), and the proportion of workers from ethnic minority groups.

Obesity

[Excess weight is associated with an increased risk of a positive test for Covid-19](https://www.gov.uk/government/publications/excess-weight-and-covid-19-insights-from-new-evidence), hospitalisation, severe disease and death. The risks increase progressively with increasing body mass index (BMI) above the healthy weight range.

Disability⁶ (#footnote6_ps7k8re)

From January 2020 to March 2022, [the risk of Covid-19 deaths in England was 3–4 times higher in more-disabled men and women compared with non-disabled people](https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/articles/coronaviruscovid19relateddeathsbydisabilitystat) (<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/articles/coronaviruscovid19relateddeathsbydisabilitystat>); after adjustment for demographic, socio-economic and health related factors, the risk was about 1.5 times higher. [For people with a medically diagnosed learning disability, the risk of dying from Covid-19 in 2020 was 3.7 times greater](https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/articles/coronaviruscovid19relateddeathsbydisabilitystat) (<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/articles/coronaviruscovid19relateddeathsbydisabilitystat>) compared with people without a learning disability; after adjustment for a range of factors, among which communal living was the most significant contributor, the risk remained 1.7 times higher.

⁶ (#footnote6_ps7k8re) Analysis of disability was based on responses to a question in the 2011 Census, reflecting individuals' own assessment of disability. People responding that their day-to-day activities were 'limited a lot' are referred to as 'more-disabled', whereas people reporting no limitation to their activities are referred to as 'non-disabled'. Learning disability is based on clinical diagnosis by a medical practitioner.

Covid-19 vaccination and deaths

The Covid-19 vaccination programme was introduced in the UK in December 2020. People in higher risk groups, such as older people and those who were clinically vulnerable, and health and care workers were prioritised for vaccination before roll out to other groups. Although many factors, such as health status, determine the risk of dying from Covid-19, [the Covid-19 mortality rate in England between January 2021 and May 2022 was more than ten times greater in unvaccinated people](https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsinvolvingcovid19byvaccinationstatuseng) (<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/deathsinvolvingcovid19byvaccinationstatuseng>) (863 per 100,000 person-years) compared with vaccinated people (64). Unvaccinated people with Covid-19 are also [more likely to be admitted to critical care](https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/articles/coronaviruscovid19latestinsights/vaccineeffectiveness) (<https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/conditionsanddiseases/articles/coronaviruscovid19latestinsights/vaccineeffectiveness>).

Vaccination rates in England are lowest among some groups with the highest Covid-19 mortality. [By June 2022, 85 per cent of adults living in the least deprived one-fifth of areas had received three vaccinations](https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthinequalities/datasets/coronavirusandvaccinationratesinpeoplea) (<https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthinequalities/datasets/coronavirusandvaccinationratesinpeoplea>) compared with 60 per cent in the most deprived areas. Vaccination rates are lower also in several ethnic minority groups: [by June 2022 the proportion of adults who had received three vaccinations was highest in White British, Chinese and Indian groups](https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthinequalities/datasets/coronavirusandvaccinationratesinpeoplea) (<https://www.ons.gov.uk/peoplepopulationandcommunity/healthandsocialcare/healthinequalities/datasets/coronavirusandvaccinationratesinpeoplea>) (more than 70 per cent) and lowest in Black Caribbean, Black African, Pakistani and Bangladeshi groups (less than 50 per cent), the ethnic groups with the highest Covid-19 mortality.

What impact has Covid-19 had on life expectancy?

[Compared with 2019, life expectancy at birth in England in 2020 fell by 1.3 years for males](https://analytics.phe.gov.uk/apps/covid-19-indirect-effects/) (<https://analytics.phe.gov.uk/apps/covid-19-indirect-effects/>) (from 80 years to 78.7) and 1 year for females (from 83.6 to 82.6), primarily as a result of the Covid-19 pandemic. [Such a fall in life expectancy is unprecedented in modern times](https://publications.whats-happening-life-expectancy-england/) (<https://publications.whats-happening-life-expectancy-england/>), and is the biggest since the World War II. The fall is all the more worrying as [improvements in life expectancy had slowed significantly in the decade before the pandemic](https://doi.org/10.1787/223159ab-en) (<https://doi.org/10.1787/223159ab-en>). [Life expectancy remained virtually unchanged in 2021 compared with 2020](https://analytics.phe.gov.uk/apps/covid-19-indirect-effects/) (<https://analytics.phe.gov.uk/apps/covid-19-indirect-effects/>).

The fall in life expectancy in 2020 caused by Covid-19 exacerbated pre-existing health inequalities. Life expectancy fell by almost 2 years in the most deprived tenth of areas compared with 1 year in the least deprived, increasing the gap between people living in the least and most deprived areas to 10.3 years for males and 8.5 years for females. The gap widened further in 2021 (to 10.4 and 8.7 years respectively).

Trends in life expectancy in the near future are unpredictable. [The overall mortality rate in England and Wales from January to June 2022 is the lowest since 2001](https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/monthlymortalityanalysisenglandandwales/late) (<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/bulletins/monthlymortalityanalysisenglandandwales/late>) (except in 2019 when it was slightly lower than in 2022), reflecting the significant numbers of premature deaths caused by Covid-19 in 2020 and 2021. However, the pandemic is still ongoing, and its future course and the impact of delayed care for other conditions is unpredictable.

>> [Further details about patterns of and trends in life expectancy are available](https://publications.whats-happening-life-expectancy-england/) (<https://publications.whats-happening-life-expectancy-england/>).

How do the numbers of Covid-19 deaths in UK compare with other countries?

International comparisons of the number of people dying from Covid-19 are unreliable because of differences between countries in the way Covid-19 deaths are recorded. All-cause mortality avoids these problems and also takes into account the indirect impact of the pandemic, such as deaths from other causes that could be related to delayed access to health care. A reliable measure of the overall impact of the pandemic is the excess in all-cause mortality during the pandemic over a pre-pandemic baseline.

International rankings on these measures vary between different data sources and because the timing of surges and declines in the pandemic's death toll differ significantly between countries. For example, Western European countries (including the UK) experienced high death tolls at the start of the pandemic in spring 2020, whereas central and Eastern European countries experienced surges later.

If viewing this chart on mobile, rotate your phone to landscape mode to see these charts in full.

Figure 5 Relative cumulative all-cause mortality (rcASMRs) in selected European countries, January 2020 to 18 June 2021: percentage change from 2015-19

Notes for Figure 5

1. [The ONS analysis from which the data for this graph was obtained](#) was constrained by the data available for European countries for the period to 3 September 2021. For example, Germany and Ireland were not included and the data for Figure 5 covers the period to 18 June 2021 because ONS says it was 'the optimal week for data availability and completeness for the year'.
2. The countries shown in Figure 5 are a selection of the 33 European countries included in the ONS analysis. Smaller countries such as Malta and Cyprus, and the 4 constituent countries of the UK, are excluded from these graphs.

The ONS analysed cumulative [excess all-cause mortality in European countries](#) (<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/deaths/articles/comparisonsofallcausemortalitybetweeneuropeandtheuk>), including the UK, in 2020 and to 18 June 2021 (see Figure 5). The percentages in the graph measure excess mortality compared with the 2015–19 average: a plus value shows higher mortality and a minus value shows lower mortality.

For cumulative excess mortality during this period, the UK ranked 10th out of 29 European countries. [7](#) ([#footnote7_w6hf8d6](#)). Some East European countries had the highest rates, but among comparator West European countries only Spain and Italy had higher rates than the UK (see Figure 5). In contrast, a few countries, including Denmark, Norway and Finland, experienced mortality improvement despite the pandemic.

These findings are broadly consistent with [Organisation for Economic Co-operation and Development \(OECD\) data on excess deaths per million population to June 2021](#) (<https://www.oecd-ilibrary.org/sites/ae3016b9-en/1/3/2/index.html?itemId=/content/publication/ae3016b9-en&csp=ca413da5d44587bc56446341952c275e&itemIGO=oecd&itemContentType=book#annex-d1e20431>), which showed that mortality in some other high-income countries (Australia, New Zealand, Canada) was also lower than in the UK (and highest in the US).

[England has experienced a larger fall in life expectancy than most comparator countries](#) (<https://ec.europa.eu/eurostat/databrowser/view/TPS00205/bookmark/table?lang=en&bookmarkId=91a7a16b-37ab-42fc-874e-d98e70d719ad>), between pre-pandemic 2019 and 2021.

[7](#) ([#footnote7_w6hf8d6](#)). Data for some European countries (eg, Republic of Ireland, Germany) was not available, hence they are not included in the ONS analysis.

Conclusion

Covid-19 led to an unprecedented increase in the overall number of deaths in England and Wales, affecting all groups in the population and causing life expectancy in 2020 and 2021 to fall to the levels of a decade ago. Moreover, the pandemic has exacerbated health inequalities, which were already widening before the pandemic.

Covid-19 deaths in the UK have fallen in 2022, in part due to less virulent strains of the virus circulating, growing population immunity and medical advances, including vaccination. The overall mortality rate in January to June 2022 is the lowest since 2001, very likely reflecting the many premature deaths in 2020 and 2021. A continuation of these trends could see life expectancy make a recovery towards pre-pandemic levels. However, [future trends in mortality are unpredictable](#) (<https://www.ons.gov.uk/peoplepopulationandcommunity/birthsdeathsandmarriages/lifeexpectancies/articles/mortalityinenglandandwales/pastandprospects-for-life-expectancy>), as they depend on many factors, including what the direct and indirect impacts of Covid-19 may be, for example, the impact of delays in care for other health conditions. The UK has had higher excess mortality during the pandemic and a larger fall in life expectancy than many comparator high-income countries.

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