

Statistical bulletin

# Coronavirus and vaccination rates in people aged 18 to 64 years by occupation, England: 31 December 2021

Coronavirus (COVID-19) vaccination rates among people aged 18 to 64 years who live in England by Standard Occupational Classification (SOC) 2020.

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# 1 . Main points

- As of 31 December 2021, 64.9% of adults aged 18 to 64 years who were employed had received three coronavirus (COVID-19) vaccinations and 8.8% were unvaccinated.
- The occupation groups that had the highest proportion of people who had received three vaccinations were health professionals (80.4%) and teaching and other educational professionals (76.0%); these groups also had the lowest proportion of people who had not received a vaccine at 4.2% and 4.8% respectively.
- The occupation groups with the lowest proportion of people who had received three vaccinations were elementary trades and related occupations (48.0%) and elementary administration and service occupations (52.3%); these groups also had the highest and third highest proportion of people who had not received a vaccination at 18.1% and 13.6% respectively.
- The differences in vaccination status between occupation groups are not driven by differences in age, as the ranking largely remained unchanged after adjusting for age.
- Within occupation groups, there was large variation in vaccination coverage between occupations; for instance, within the health professionals' group, 90.5% of specialist medical practitioners had received three vaccinations, compared with 66.4% of therapy professionals not elsewhere classified.
- Occupations that [require working in close physical proximity to others](#) had large variation in vaccination coverage, with the proportion of people who had received three vaccinations being highest among specialist medical practitioners (90.5%), specialist nurses (87.2%), generalist medical practitioners (87.2%) and head teachers and principals (86.8%) and lowest in bar staff (38.1%), beauticians and related occupations (38.8%), waiters and waitresses (38.8%) and roofers, roof tilers and slaters (42.6%).

Vaccination rates are produced using the Office for National Statistics Public Health Data Asset, which covers only a subset of the population (see [Measuring the data](#)). Data may differ from weekly administrative vaccination data published by NHS England.

## 2 . Coronavirus (COVID-19) vaccination rates by occupation group

Combining data from the Office for National Statistics (ONS) Public Health Data Asset (PHDA) and information on occupation collected as part of the 2021 Census, we examine differences in vaccination coverage between occupations (see [Measuring the data](#)).

Vaccination rates are estimated by Standard Occupational Classification (SOC) 2020 sub-major occupation groups and unit group occupations, referred to as occupation groups and occupations respectively in the remainder of this article.

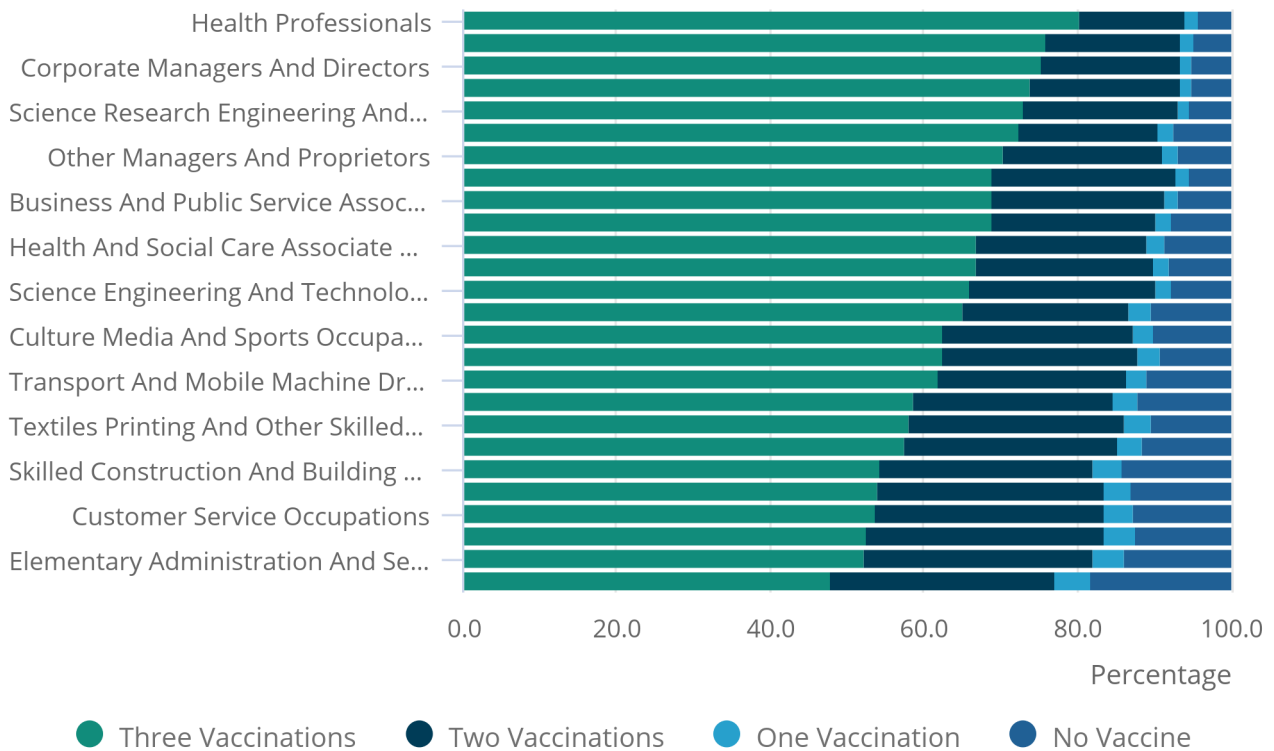
Vaccination coverage varies substantially by occupation group (Figure 1). The proportion of people who had received three vaccinations was highest in health professionals (80.4%) and teaching and other educational professionals (76.0%); these groups also had the lowest proportion of people who had not received a vaccine at 4.2% and 4.8% respectively. The lowest proportion of people who had received three vaccinations was in elementary trades and related occupations (48.0%) and elementary administration and service occupations (52.3%); these groups also had the first and third highest proportion of people who had not received a vaccination at 18.1% and 13.6% respectively.

**Figure 1: The highest proportion of people who had received three vaccinations were in the health professionals and teaching and other education professionals groups**

Crude Vaccination Rate by sub-major occupation group and dose number in people aged 18 to 64 years, England, 31 December 2021

Figure 1: The highest proportion of people who had received three vaccinations were in the health professionals and teaching and other education professionals groups

Crude Vaccination Rate by sub-major occupation group and dose number in people aged 18 to 64 years, England, 31 December 2021



Source: Office for National Statistics – Public Health Data Asset

Notes:

1. This analysis covers adults aged 18 to 64 years and includes vaccinations recorded between 8 December 2020 and 31 December 2021. The population includes those enumerated in the 2011 and 2021 Censuses, registered with a GP, resident in England and alive on 31 December 2021.
2. These data only include third vaccinations that were received from 16 September 2021 onward.
3. Third vaccination refers to a booster or third dose vaccination.
4. SOC 2020 groups were derived from the 2021 Census. [The Standard Occupational Classification \(SOC\)](#) is a common classification of occupational information for the UK.

Vaccinations were offered according to priority groups set out by the Joint Committee on Vaccination and Immunisation (JCVI). To account for some of these differences, we calculated age-standardised vaccinated proportions. Age-standardised proportions are used to allow comparisons between occupations that may contain different proportions of people of different ages. However, the vaccination roll-out was also prioritised by health status of individuals, with the extremely clinically vulnerable and those with underlying health conditions being vaccinated earlier than other people in their age group. In addition, frontline health and social care workers, who could have a higher occupational risk, were also prioritised for vaccination.

The differences in vaccination status between occupation groups are not driven by differences in age, as the ranking largely remained unchanged after age standardisation. However, the sales occupations and customer service occupations groups had the third and fourth lowest crude proportions of people that had received three vaccinations at 52.7% and 53.9% respectively. However, it had the ninth and eleventh lowest age-standardised proportions of people that had received three vaccinations at 54.1% and 57.7% respectively.

### **3 . Coronavirus (COVID-19) vaccination rates by unit occupation groups**

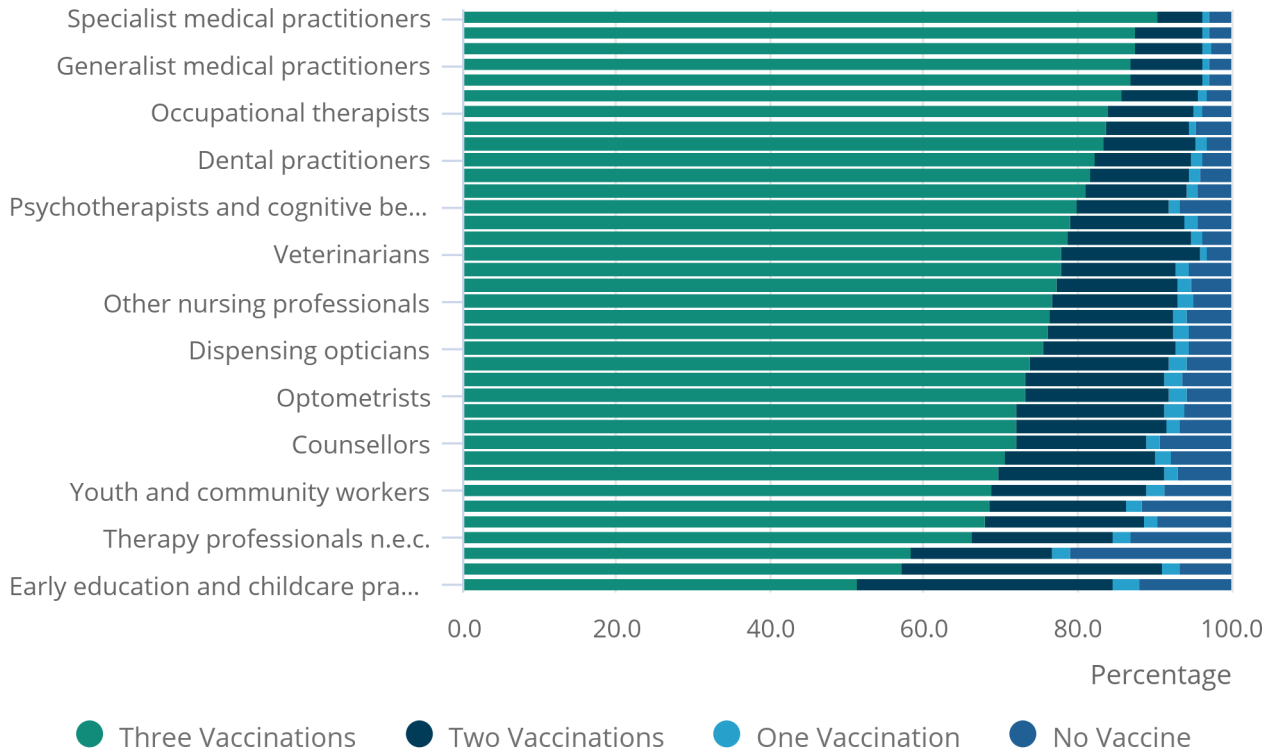
Vaccination coverage varies markedly within occupation groups. For instance, there are substantial differences in vaccination coverage within the health professionals and health and social care associate professionals groups. Among these groups, the occupations that had the highest proportion of people who had received three vaccinations were specialist medical practitioners (90.5%) and speech and language therapists (87.8%). The occupations that had the lowest proportion of people who had received three vaccinations were early education and childcare practitioners (51.5%) and veterinary nurses (57.2%).

**Figure 2: Among health professionals and health and social care associate professionals, third vaccination coverage was highest in specialist medical practitioners and speech and language therapists**

Crude vaccination rate for health professionals and health and social care associate professionals, by unit occupation group and dose number in people aged 18 to 64 years, England, 31 December 2021

Figure 2: Among health professionals and health and social care associate professionals, third vaccination coverage was highest in specialist medical practitioners and speech and language therapists

Crude vaccination rate for health professionals and health and social care associate professionals, by unit occupation group and dose number in people aged 18 to 64 years, England, 31 December 2021



Source: Office for National Statistics – Public Health Data Asset

Notes:

1. This analysis covers adults aged 18 to 64 years and includes vaccinations recorded between 8 December 2020 and 31 December 2021. The population includes those enumerated in the 2011 and 2021 Censuses, registered with a GP, resident in England and alive on 31 December 2021.
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4. SOC 2020 groups were derived from the 2021 Census. [The Standard Occupational Classification \(SOC\)](#) is a common classification of occupational information for the UK.

Using data from the [Occupational Information Network](#) (O\*NET), we analysed how vaccination rates differ in occupations which involved working in close physical proximity to others, defined as being within an arm's length or touching (see [Measuring the data](#)). There was large variation in the proportion of people who received three vaccinations within occupations that require working in close physical proximity to others (Figures 3 and 4). The proportion of people who had received three vaccinations was highest in specialist medical practitioners (90.5%), specialist nurses (87.2%), generalist medical practitioners (87.2%) and head teachers and principals (86.8%). It was lowest in bar staff (38.1%), beauticians and related occupations (38.8%), waiters and waitresses (38.8%) and roofers, roof tilers and slaters (42.6%).

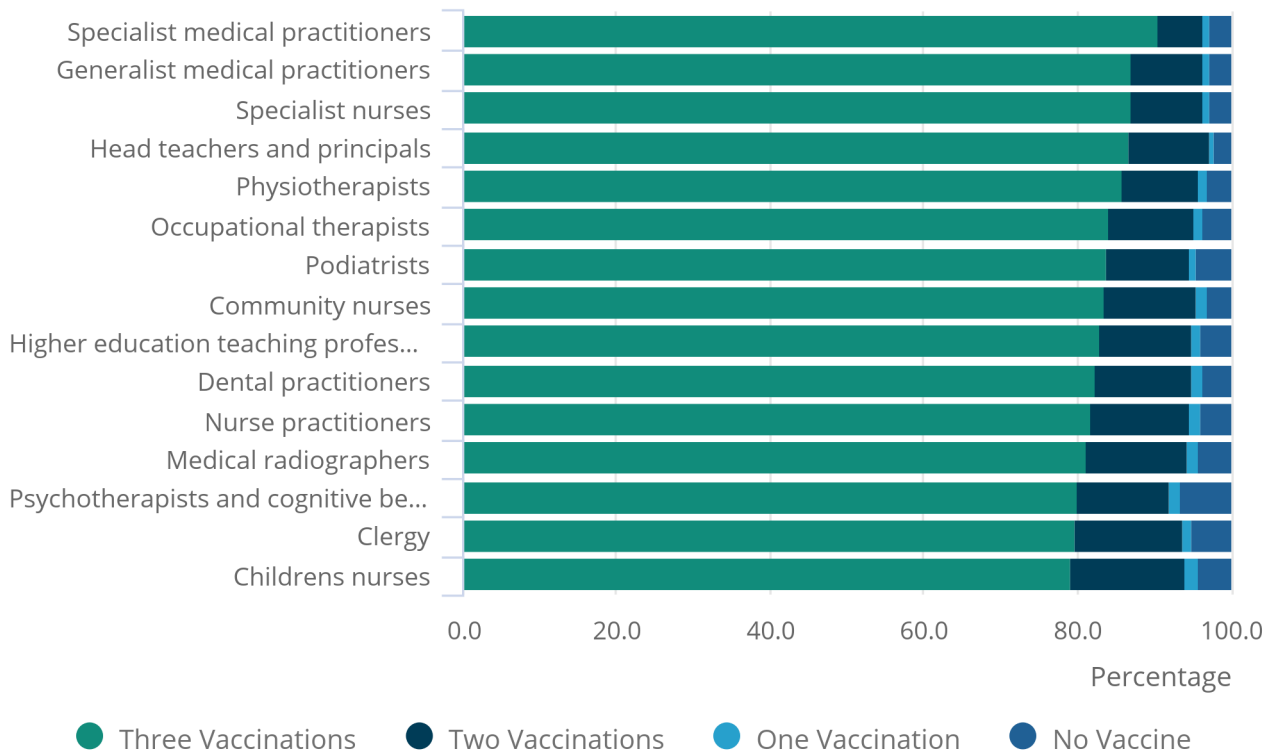


**Figure 3: Among occupations that involve working in close proximity to others, third vaccination coverage was highest in specialist medical practitioners (90.5%) and specialist nurses (87.2%)**

Vaccination status on 31 December 2021 for people aged 18 to 64 years working in the 15 unit occupation groups with the highest proportions with three vaccinations amongst occupations with close physical proximity to others, England

Figure 3: Among occupations that involve working in close proximity to others, third vaccination coverage was highest in specialist medical practitioners (90.5%) and specialist nurses (87.2%)

Vaccination status on 31 December 2021 for people aged 18 to 64 years working in the 15 unit occupation groups with the highest proportions with three vaccinations amongst occupations with close physical proximity to others, England



Source: Office for National Statistics – Public Health Data Asset

Notes:

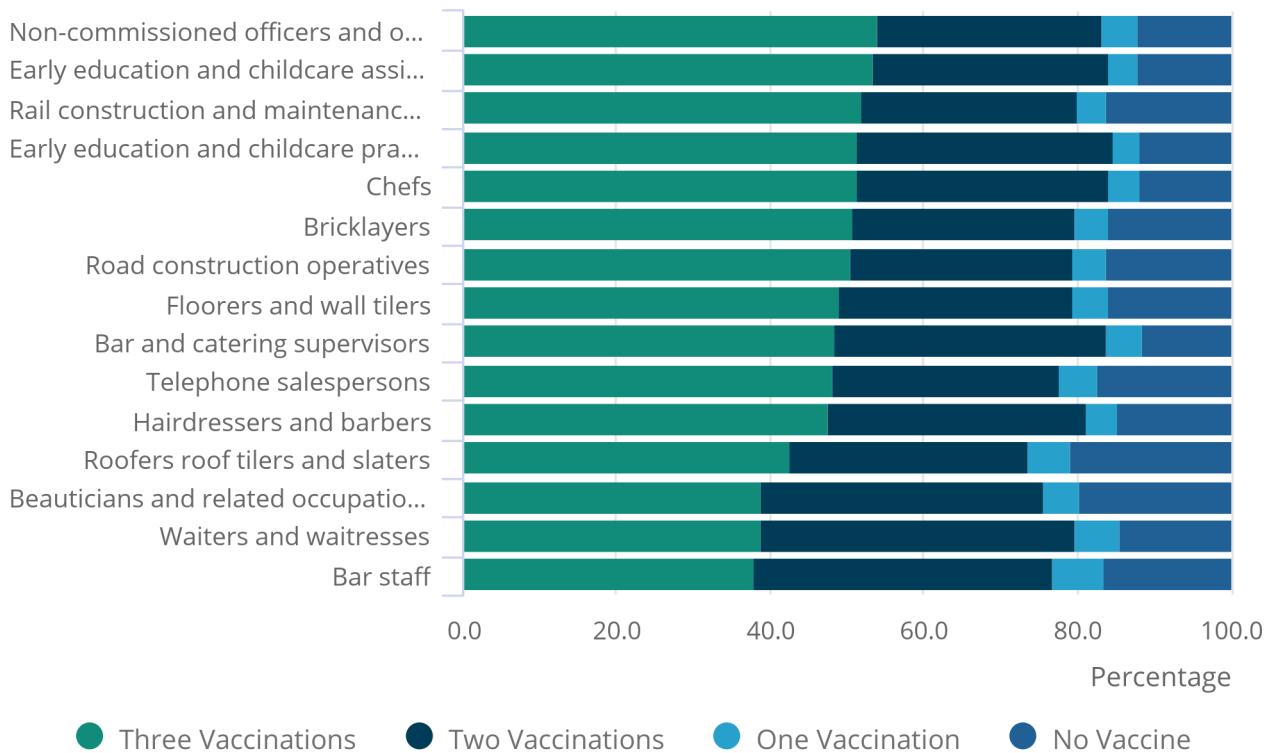
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4. SOC 2020 groups were derived from the 2021 Census. [The Standard Occupational Classification \(SOC\)](#) is a common classification of occupational information for the UK.

**Figure 4: Among occupations that involve working in close proximity to others, third vaccination coverage was lowest in bar staff (38.1%) and beauticians and related occupations (38.8%)**

Vaccination status on 31 December 2021 for people aged 18 to 64 years working in the 15 unit occupation groups with the lowest proportion of three vaccinations amongst occupations with close physical proximity to others, England

Figure 4: Among occupations that involve working in close proximity to others, third vaccination coverage was lowest in bar staff (38.1%) and beauticians and related occupations (38.8%)

Vaccination status on 31 December 2021 for people aged 18 to 64 years working in the 15 unit occupation groups with the lowest proportion of three vaccinations amongst occupations with close physical proximity to others, England



Source: Office for National Statistics – Public Health Data Asset

Notes:

1. This analysis covers adults aged 18 to 64 years and includes vaccinations recorded between 8 December 2020 and 31 December 2021. The population includes those enumerated in the 2011 and 2021 Censuses, registered with a GP, resident in England and alive on 31 December 2021.
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4. SOC 2020 groups were derived from the 2021 Census. [The Standard Occupational Classification \(SOC\)](#) is a common classification of occupational information for the UK.

## 4 . Coronavirus and vaccination rates by occupation data

[Coronavirus and vaccination rates in people aged 18 to 64 years by occupation, England](#)

Dataset | Released 28 January 2022

Coronavirus (COVID-19) vaccination rates among people aged 18 to 64 years who live in England by Standard Occupational Classification (SOC) 2020.

## 5 . Glossary

### Standard Occupational Classification

The Standard Occupational Classification (SOC) is a common classification of occupational information, in which jobs are classified by their skill level and content. [SOC 2020 is the current classification.](#)

## 6 . Measuring the data

Under strict security protocol, we linked vaccination data from the National Immunisation Management System (NIMS) to the Office for National Statistics (ONS) Public Health Data Asset (PHDA) and a de-identified extract of the 2021 Census.

The ONS PHDA is a unique linked dataset combining the 2011 Census, the General Practice Extraction Service (GPES) data for pandemic planning and research, and the Hospital Episode Statistics (HES). We retrieved NHS numbers for 94.6% of 2011 Census participants, using the 2011 to 2013 NHS Patient Registers. All subsequent linkages were based on NHS numbers. In addition, we updated the information on occupation in the PHDA by using an extract from Census 2021, with all personal information removed to protect security and confidentiality. We retrieved NHS numbers for 82.1% of 2021 Census participants, using the Personal Demographics Service (PDS).

The study population consisted of people aged 18 to 64 years old, alive on 31 December 2021 who were resident in England, registered with a general practitioner (GP) in 2019, enumerated at the 2011 and 2021 Censuses, and were working and reported an occupation. Our dataset contains 19,307,780 people, which amounts to 67.1% of the population of people employed, based on estimates from the [Annual Population Survey](#). The dataset used in this study is not fully representative of the population living in England. People who did not take part in the 2011 and 2021 Censuses, such as recent migrants, are not included in these calculations. In addition, not all people enumerated at the 2011 and 2021 Censuses are included, because no NHS number could be obtained for them.

These data only include third vaccinations that were received from 16 September 2021 onwards. Third vaccination may refer to a booster vaccination or a third dose vaccination received as part of the primary course.

Occupation was derived from an extract of the 2021 Census and was classified according to the Standard Occupational Classification (SOC) 2020. We've used SOC 2020 sub-major occupation groups and unit group occupations, referred to as occupation groups and occupations, respectively, throughout this release. Occupation was recorded on the 21 March 2021, and some individuals may have changed occupation since then.

The NIMS data covered the period 8 December 2020 to 31 December 2021. However, there may be an additional lag in data reporting such that it is possible we have not captured all vaccinations that were received by 31 December 2021.

Using information from the [Occupational Information Network](#) (O\*NET), we defined occupations that [require working in close physical proximity to others](#) as occupations with a score of 75 for the standardised physical proximity measure, which corresponds to being moderately close (at arm's length) or very close (near touching). More information on this measure can be found in our release exploring [which occupations have the highest potential exposure to the coronavirus](#) (COVID-19). The physical proximity scale was initially derived for SOC 2010; We mapped SOC 2020 unit occupation groups to the corresponding SOC 2010 unit occupation groups, taking the mean score for SOC 2020 unit occupation groups which overlapped two or more SOC 2010 unit occupation groups.

The age-standardised proportions presented are annualised directly age-standardised rates per 100 people, represented as a percentage. This is the number of people who have received a vaccination divided by the population for the relevant time period, standardised to the European Standard Population, multiplied by 100.

## 7 . Related links

### [Use of preliminary information collected in Census 2021 in England to inform the ongoing response to coronavirus](#)

Web page | 28 January 2022

Statement outlining how we are updating estimates of coronavirus (COVID-19) vaccination rates in England.

### [Coronavirus and vaccination rates in people aged 18 years and over by socio-demographic characteristic and occupation, England](#)

Bulletin | 20 January 2022

Coronavirus (COVID-19) vaccination rates among people aged 18 years and older who live in England, including estimates by socio-demographic characteristic and Standard Occupational Classification (SOC) 2010.

### [Coronavirus and vaccination rates in people aged 40 to 64 years by occupation, England](#)

Bulletin | 24 December 2021

First, second, third dose and booster COVID-19 vaccination rates, among people aged 40 to 64 years old who live in England, by Standard Occupational Classification 2010 (SOC 2010).

### [Coronavirus and vaccination rates in people aged 50 years and over by socio-demographic characteristic, England](#)

Bulletin | 24 December 2021

First, second, third dose and booster COVID-19 vaccination rates among people aged 50 years and older who live in England, including estimates by socio-demographic characteristic.

### [Coronavirus and the social impacts on Great Britain](#)

Bulletin | 21 January 2022

Indicators from the Opinions and Lifestyle Survey covering the period 6 to 16 January 2022, to understand the impact of the coronavirus (COVID-19) pandemic on people, households and communities in Great Britain.

### [COVID-19 Health Inequalities Monitoring for England \(CHIME\) tool](#)

Webpage | Updated monthly

The CHIME tool brings together data relating to the direct impacts of COVID-19, for factors such as mortality rates, hospital admissions, confirmed cases and vaccinations. The tool presents these factors by inequality breakdowns, including by age, sex, ethnic group, level of deprivation and region.

### [NHS England Coronavirus \(COVID-19\) Vaccinations](#)

Webpage | Updated daily

Administrative data on vaccinations published by NHS England weekly, covering all vaccinations given to individuals who have an NHS number and are currently alive in the resident population.