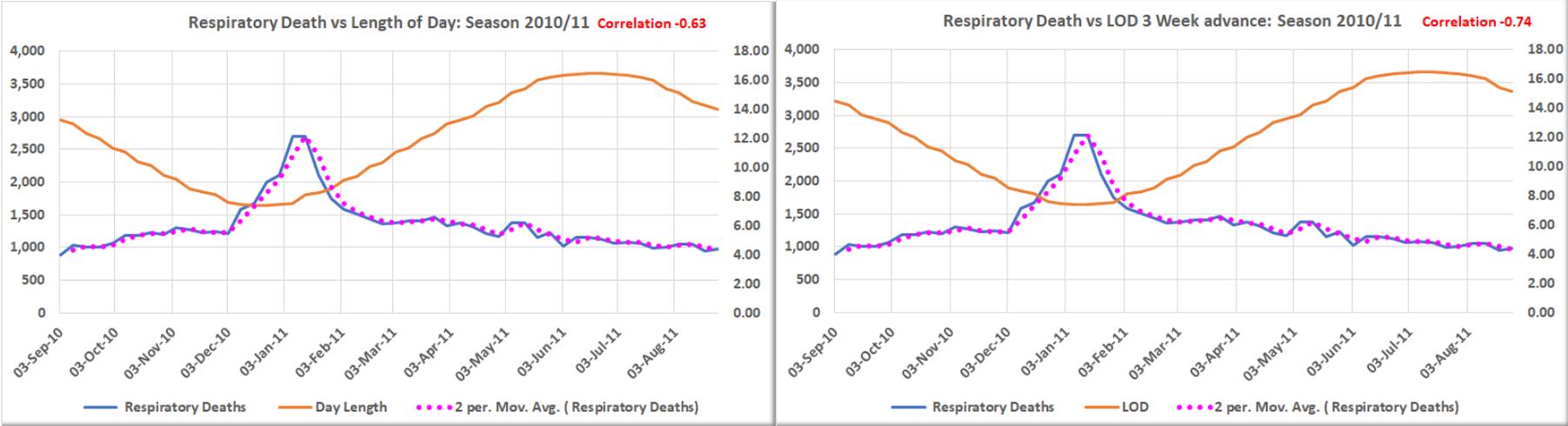
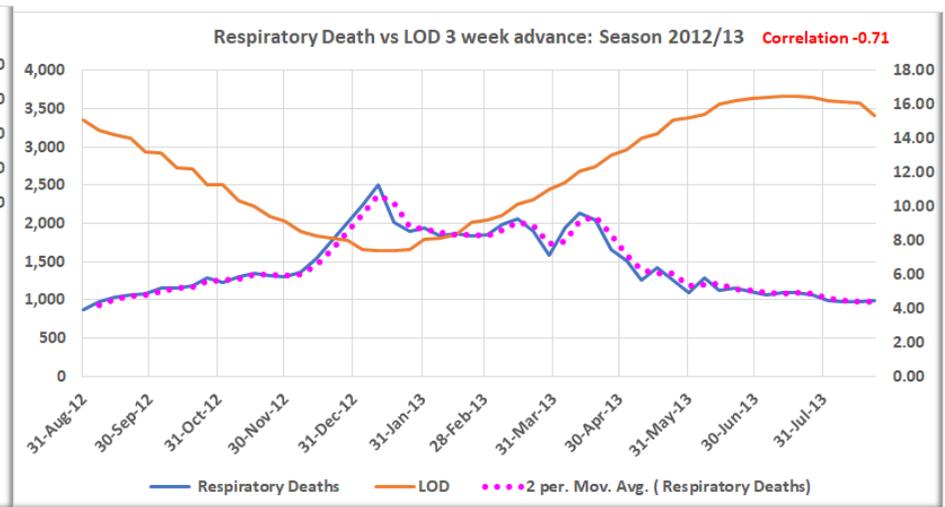
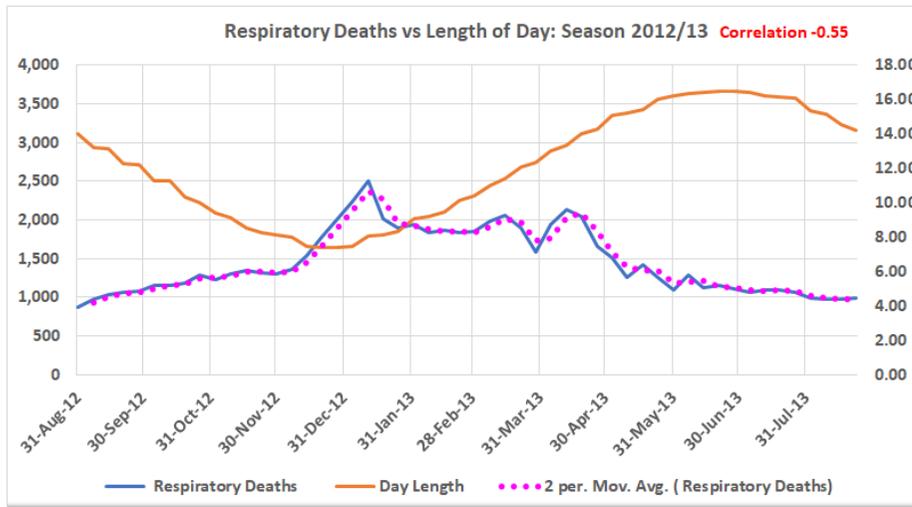
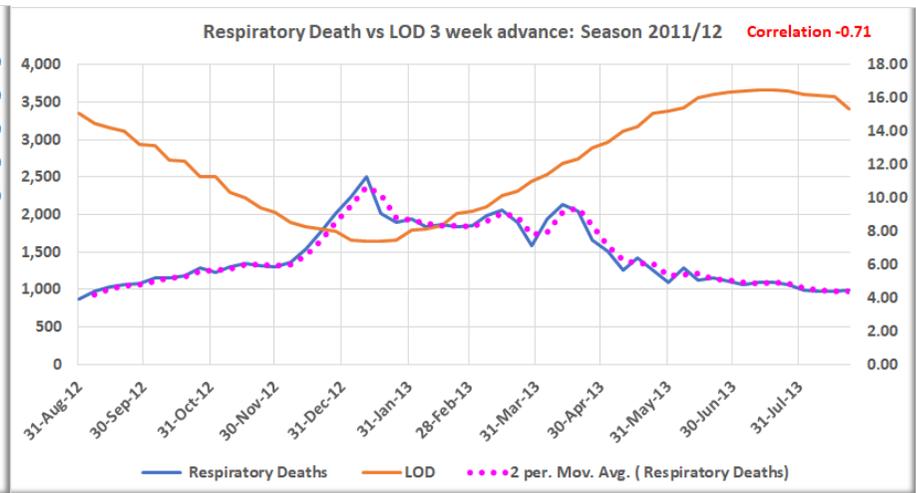
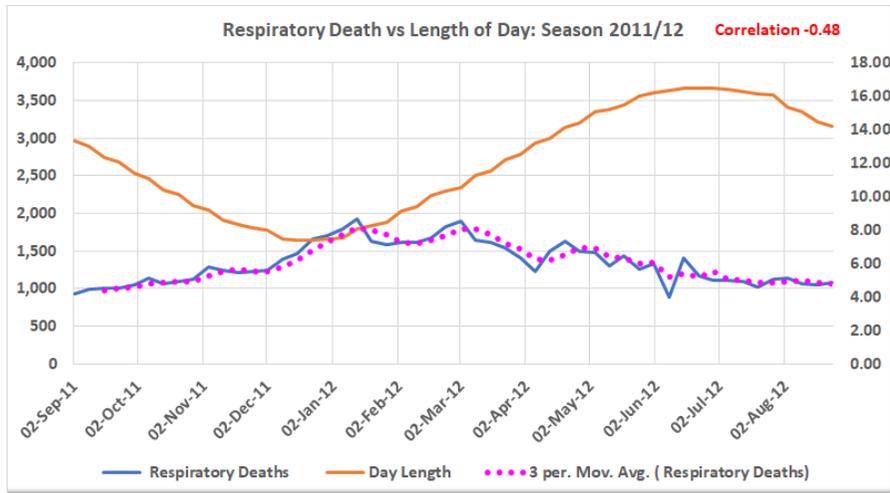
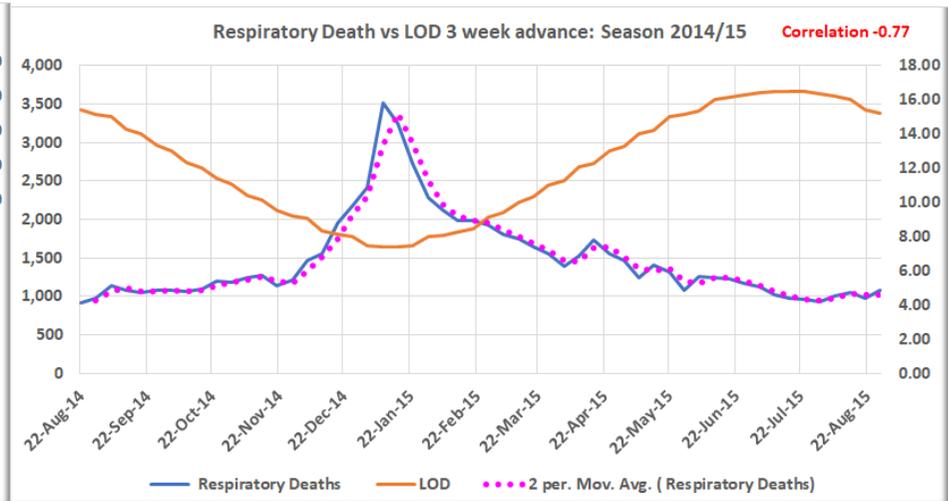
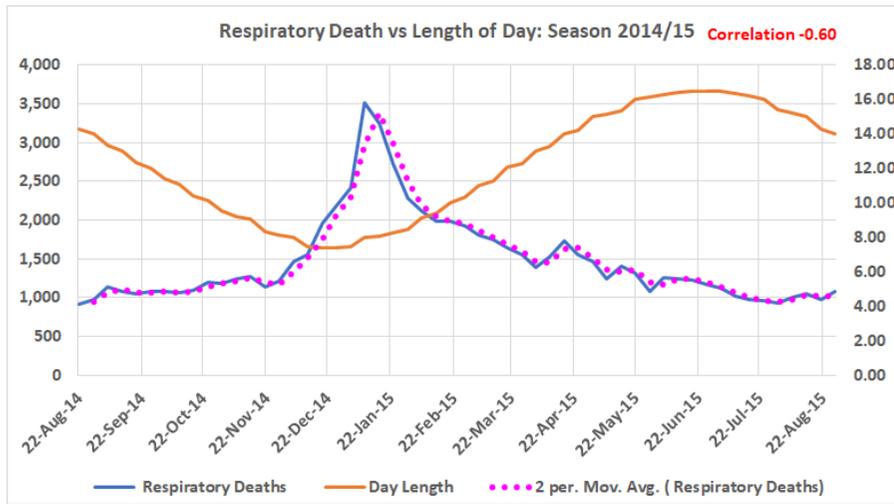
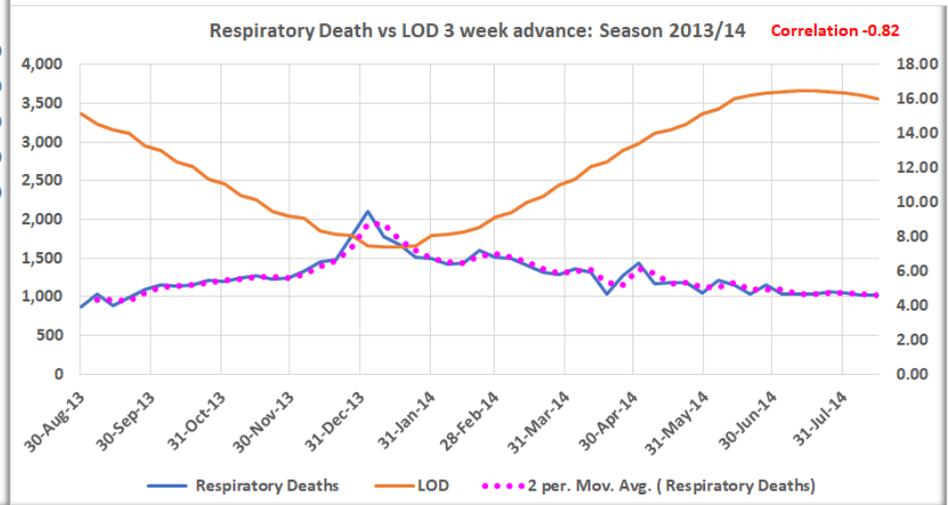
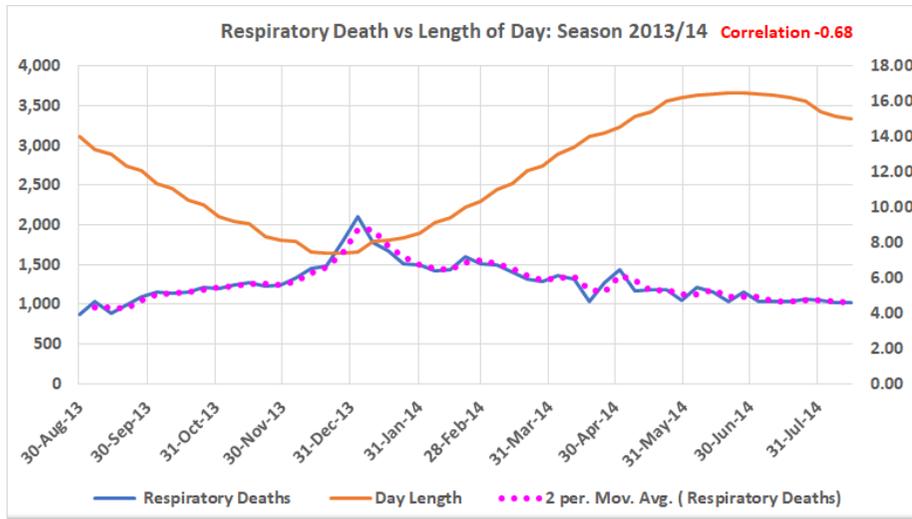


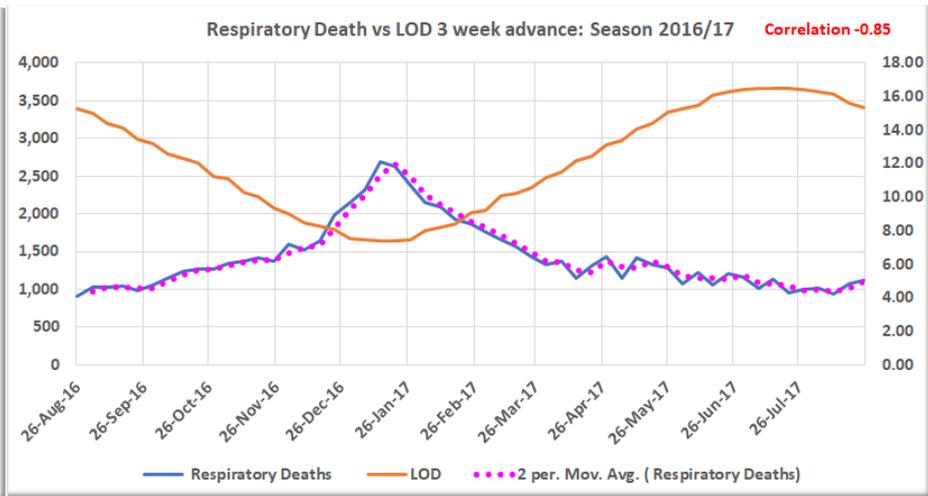
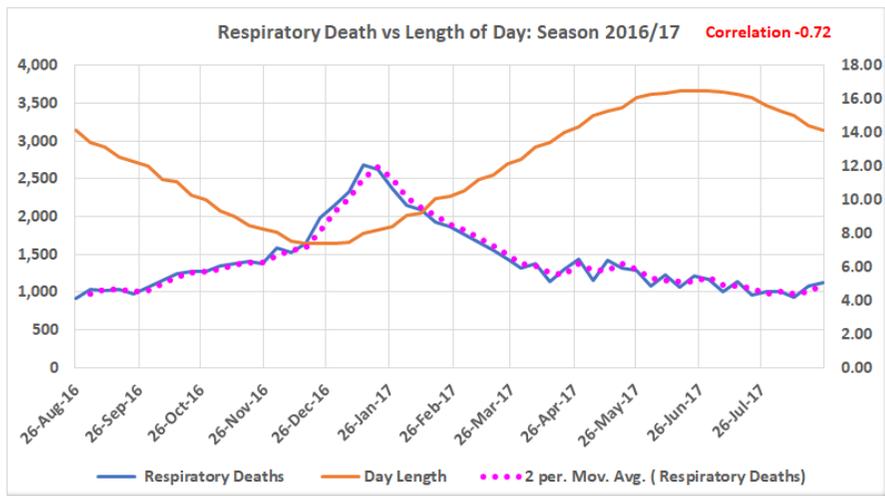
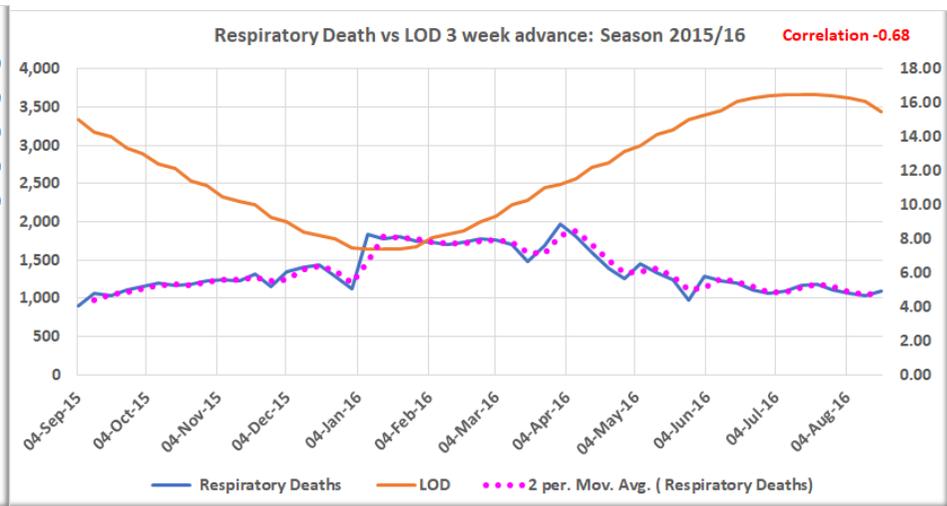
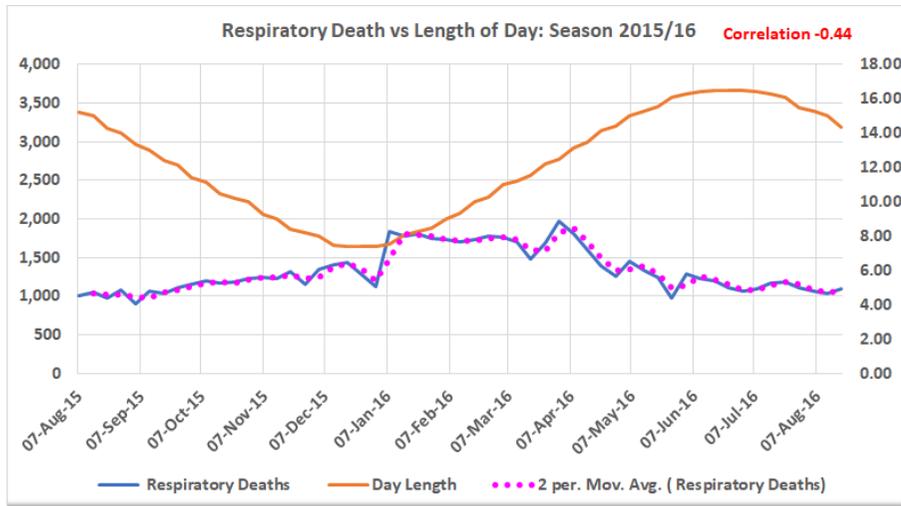
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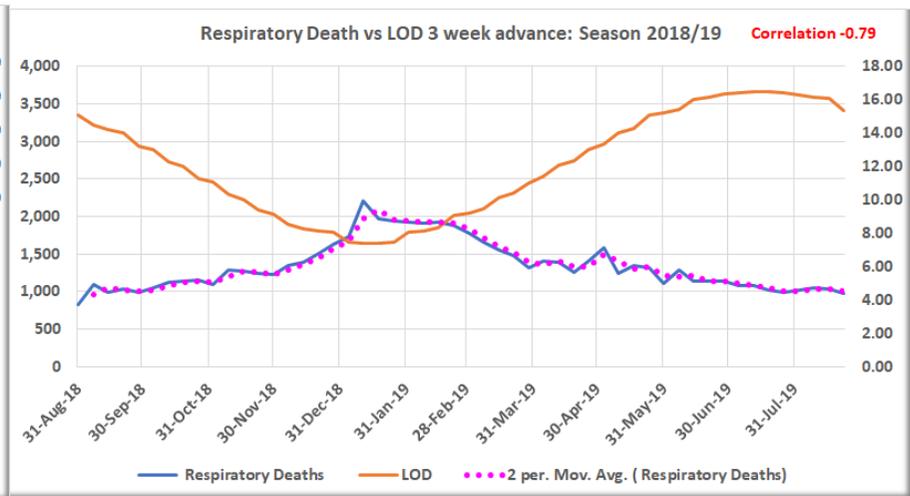
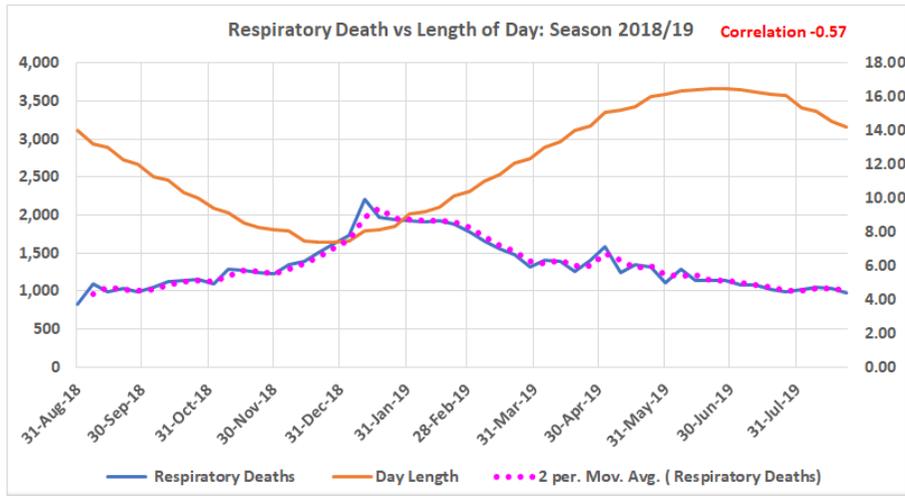
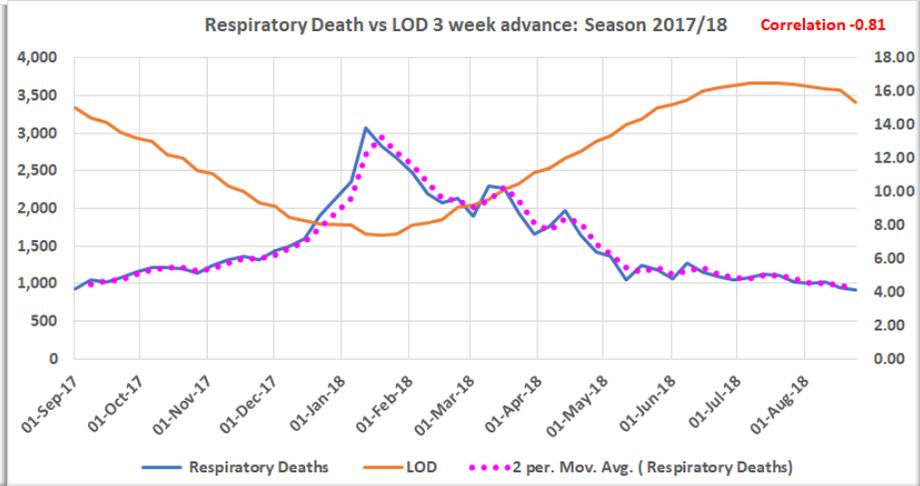
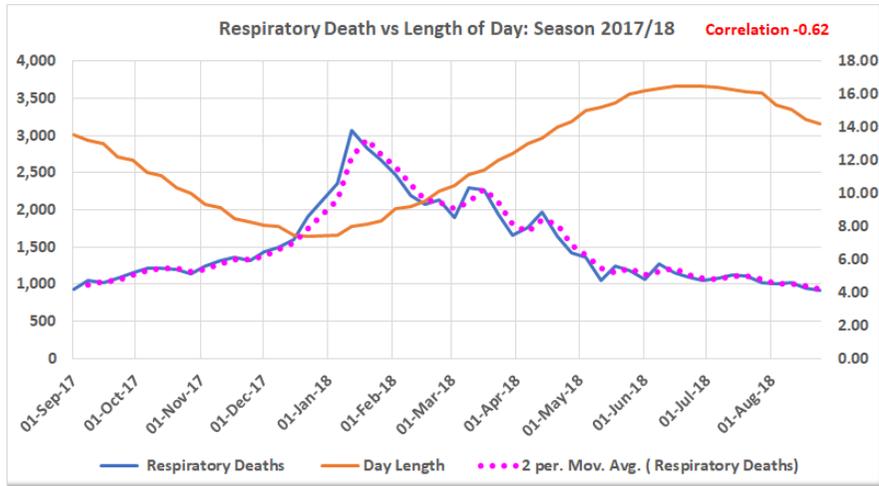
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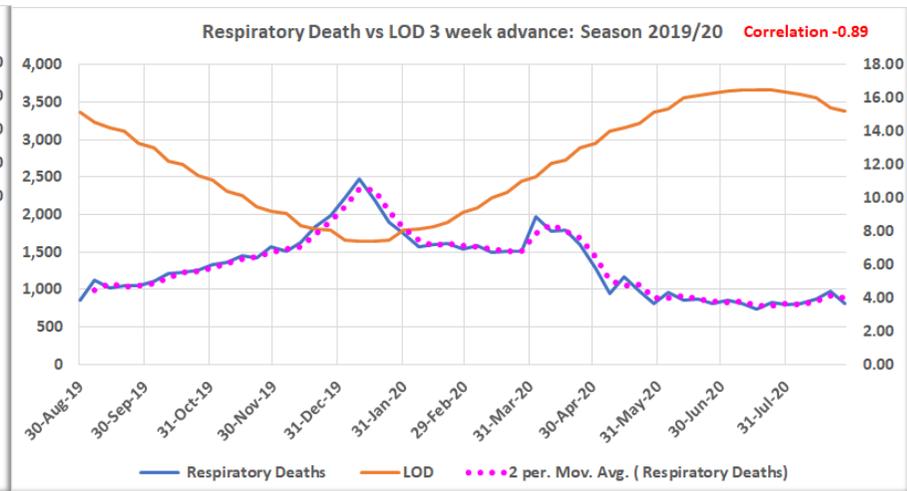
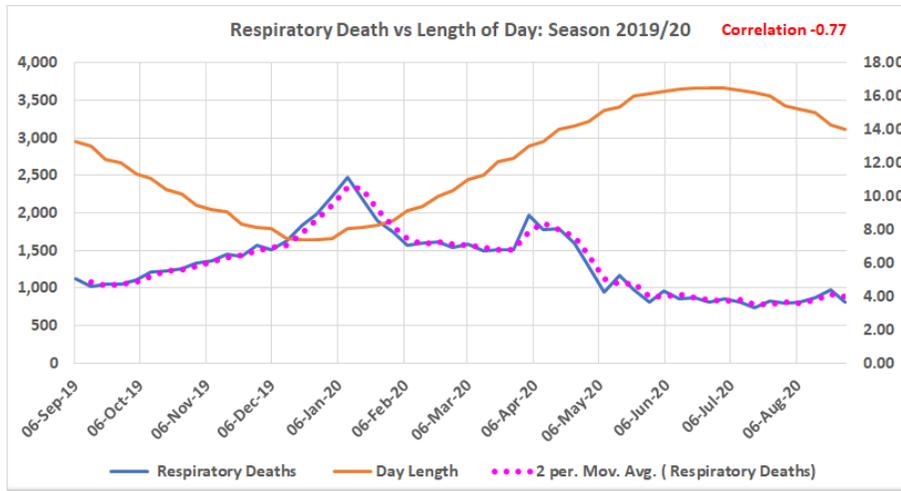












Government data changes:

What's new

We regularly update the dashboard with new data and features. Here is a timeline of changes.

List of changes in the month of May 2021

Date of change: 20 May [Revision to historical case data in England](#)

The introduction of a new system disrupted the removal of cases where a positive rapid lateral flow test (LFD) was followed by all negative laboratory (PCR) tests taken within 3 days, as reported earlier this week. Therefore a further **180 cases have been removed today**. Regions and local authorities do not show the actual number of new cases reported. UK and England numbers of newly reported cases have been adjusted and correctly reflect new cases reported. This issue will be ongoing over the next few days.

Date of change: 19 May [Revision to historical case data in England](#)

The introduction of a new system disrupted the removal of cases where a positive rapid lateral flow test was followed by all negative polymerase chain reaction (PCR) tests taken within 3 days, as reported on 18 May 2021. Therefore a further **561 cases have now been removed**. Newly-reported cases for the UK and England were unaffected. Historical published date totals have not been changed.

Newly-reported cases at regional and local authority level within England are calculated as the daily change in the total number of cases. This means that for 19 May 2021, these show significantly lower numbers or zero, and do not reflect the actual number of new cases reported on that date.

Date of change: 18 May [Local vaccinations added](#)

We are now reporting daily figures for first and second dose vaccinations at region, upper tier local authority and lower tier local authority level within England and Scotland.

Additional details

Date of change: 18 May [Revision to historical case data in England](#)

The introduction of a new system disrupted the removal of cases where a positive rapid lateral flow test was followed by all negative polymerase chain reaction (PCR) tests taken within 3 days. **These 4,776 cases have now been removed**. Newly-reported cases for the UK and England were unaffected. Historical published date totals have not been changed.

Newly-reported cases at regional and local authority level within England are calculated as the daily change in the total number of cases. This means that for 18 May 2021, these show significantly lower numbers or zero, and do not reflect the actual number of new cases reported on that date. Details of the changes and numbers of newly reported cases for 18 May 2021 are available in [csv \(wide format\)](#) and [csv \(long format\)](#).

Date of change: 15 May **No cases or deaths data for Northern Ireland**

Due to technical issues, the Department of Health in Northern Ireland were unable to update the numbers of cases and deaths reported. Vaccinations have been updated as expected. Therefore, the UK total reported numbers of cases and deaths include updates from England and Scotland only (Wales do not report on Saturdays currently).

Date of change: 14 May **[Change to source of pillar 2 PCR tests data in England](#)**

The data source of pillar 2 PCR tests conducted for England has changed. Previously, the number of tests conducted was collated daily from individual laboratories in England based on the day the test was processed. These data are now supplied by NHS Test and Trace digital management information systems, using the date that the test was taken (specimen date). This difference in the way the tests are being reported has resulted in a small revision to the cumulative total PCR virus tests conducted for the UK and England. The historical daily series for England and the UK have not been revised. This new source aligns with that used in the [weekly statistics for NHS Test and Trace](#), and with that used for rapid lateral flow (LFD) tests.

Date of change: 14 May **[Issue affecting case reporting in Scotland](#)**

Public Health Scotland are aware of a potential data issue affecting the flow of tests from UK Government testing sites from 8pm on 13 May 2021 until 9am on 14 May 2021 which has impacted on the numbers reported on 14 May 2021 being lower than expected. The missing data will be reported on 15 May 2021.

Date of change: 14 May **[Interactive map will only display latest data on mobile](#)**

Historical data and the date slider are no longer available on mobile devices. This is to improve performance and reliability for mobile users. Desktop devices are unaffected.

Date of change: 6 May **Addition of vaccination content to landing page**

The daily numbers of newly reported people vaccinated by dose have been added to the landing page. The percentage of the adult population who have received each dose is also displayed and visualised.

Date of change: 6 May **[Revision to reported virus tests for England](#)**

Pillar 4 testing figures are reported for the UK as a whole. They were previously incorrectly included in figures for virus, PCR and antibody tests in England. All pillar 4 tests have now been removed from figures reported for England. Historical figures for England have been updated, UK figures are unaffected.

Date of change: 5 May [Figures reported by Wales for 48-hour period](#)

Figures reported on 5 May for Wales are for the 48-hour period from 9am Sunday 2 May to 9am Tuesday 4 May. The UK figures will also include figures from a 48-hour period from Wales.

Date of change: 4 May [Figures reported by Wales for 48-hour period](#)

Figures reported on 4 May for Wales are for the 48-hour period from 9am Friday 30 April to 9am Sunday 2 May. The UK figures will also include figures from a 48-hour period from Wales.

Date of change: 3 May [Latest deaths data not available below UK level](#)

Due to an issue with processing of deaths data today, the latest data other than the UK figure is not available. This will be updated in the next release.

Date of change: 1 May [Revision to vaccinations data for Northern Ireland](#)

The vaccination figures for Northern Ireland from 30 April 2021 have been revised to match figures as published at 16:58 on the [NI Covid-19 Vaccinations Dashboard](#). These figures were amended after yesterday's release.

List of changes in the month of April 2021

Date of change: 30 April [Amendment to Northern Ireland vaccination numbers](#)

Northern Ireland have switched to a new vaccinations management system (Northern Ireland Vaccinations Management System) which provides a greater level of detail about the vaccination programme. It replaces the previous manual system which relied on a variety of platforms with differing reporting mechanisms.

In developing the system, some data have been amended, however the overall total is consistent. This includes re-classifying a small percentage of first doses as second doses, reflecting the improved data accuracy of the new system.

Date of change: 25 April [No vaccination and local cases/deaths data for Scotland](#)

Due to processing issues, no update is available for vaccinations in Scotland. The UK total includes daily updates from England, Northern Ireland and Wales only. The Scotland daily number is shown as zero and the total is unchanged from 24 April 2021.

In addition, cases and deaths data for Scotland are only available at national headline level. No breakdowns or local authority level data are available. These will be updated in the next release.

Date of change: 21 April [Removal of 2 historical deaths in Scotland](#)

Two previously reported, confirmed COVID-19 deaths have been removed. This was due to further investigation by Public Health Scotland into the length of time between the deaths and the positive COVID-19 test results. Because of this, the cumulative total number of confirmed COVID-19 deaths reported for Scotland is 7,643 instead of 7,645. The UK cumulative total has also been adjusted.

Date of change: 19 April[**Figures reported by Wales for 48-hour period**](#)

Public Health Wales has moved to a 6-day reporting period for [COVID-19 surveillance](#). Figures reported on Mondays for Wales are for a 48-hour period and will probably be around double the usual 24-hour figure. The UK numbers will also include figures for a 48-hour period from Wales on Mondays.

Additional details

Date of change: 17 April[**Data for Wales no longer reported on Saturdays**](#)

As of the week commencing 12 April 2021, Public Health Wales have moved to a six day reporting period for [COVID-19 surveillance](#). This means that there will be no reporting of the daily figures for Wales on Saturdays, and UK numbers have therefore only been updated with data from England, Northern Ireland and Scotland.

Additional details

Date of change: 16 April[**Addition of historical cases in Scotland**](#)

The cumulative case total for Scotland on 16 April includes an additional 160 cases. These cases were identified through the Office of National Statistics (ONS) COVID-19 Infection Survey and are for positive tests from the period 31 October to 1 December 2020. They have also been added to the cumulative total for the UK.

Additional details

Date of change: 14 April[**Backlog of vaccination figures included for Scotland**](#)

As noted on gov.scot: Vaccination figures for Scotland on 14 April include a backlog of GP system data that was not included in yesterday's totals. This includes 886 vaccinations from 11 April and around 5,700 from the days prior to the 11th. This will also be included in vaccination figures for the UK.

Date of change: 13 April[**Headline figures only for Wales**](#)

Due to an issue with data from Public Health Wales, figures are only available for cases and deaths for Wales by report date. The additional figures, including for local authorities in Wales, will be updated in the next release. Hospital and vaccination data for Wales have been updated as normal.

Date of change: 13 April[**Incomplete vaccination figures in Scotland**](#)

Vaccination figures in Scotland exclude data from GP systems on Sunday 11 April.

Date of change: 11 April [Error in case reporting in England](#)

Due to a processing error, 550 historical cases were removed from the England and UK figures. Affected cases were restored in the next release.

Date of change: 9 April [Change to case reporting in England](#)

The way cases are reported has changed. Cases that have been identified through a positive rapid lateral flow test will be removed for people who took Polymerase Chain Reaction (PCR) tests within 3 days that were all negative. Cases of this type that were previously reported were removed from the cumulative total, reducing the total by 8,010. Newly reported numbers of cases for the UK and England were unaffected by the removal of these. Historical published date totals have not been changed.

Newly reported cases at regional and local authority level within England are calculated as the daily change in the total number of cases. This means that for 9 April 2021, these show significantly lower numbers or zero, and should not be considered as the actual number of new cases reported on that date. Details of the changes and numbers of newly reported cases for 9 April 2021 are available in [csv \(wide format\)](#) and [csv \(long format\)](#).

Date of change: 9 April **R number for the UK no longer to be produced**

UK estimates of the R number and growth rate will no longer be produced by SAGE, and therefore will not be available on the dashboard. Further details are available on the [R number in the UK publication](#). The R value and growth rates for the 4 nations and NHS England regions are more robust and useful metrics than those for the whole UK, and will continue to be available on the dashboard. The current ranges for relevant areas are displayed on the postcode search pages, and available to download for all areas from the download data page, along with historical data.

Additional details

Date of change: 6 April **Cases and deaths reported for Wales cover 48 hour period**

The UK numbers for cases and deaths contain a 48 hour reporting period for Wales, up to 9am Monday 5th April 2021

Date of change: 5 April **Cases and deaths reported for Wales and Northern Ireland cover 48 hour periods**

The UK numbers for cases and deaths contain 48 hour reporting periods for Wales and Northern Ireland. Vaccination figures for all nations and the UK are for the usual 24 hour period. Previously missing vaccination figures for Wales for 3 April have also been added.

Additional details

Date of change: 4 AprilNo data reported for Wales, only vaccinations reported for Northern Ireland

As previously announced, no data for cases and deaths have been reported for Wales and Northern Ireland. The UK numbers have therefore only been updated with data from England and Scotland. The UK numbers for vaccinations have been updated with data from England, Northern Ireland and Scotland.

Date of change: 2 AprilNo data reported for Wales

As previously announced, no data have been reported for Wales. The UK numbers have therefore only been updated with data from England, Northern Ireland and Scotland.

Date of change: 2 AprilRevision to historical vaccination data in Scotland

Due to a problem with data flowing from GP systems, vaccination data for Scotland was incomplete for vaccines reported on 27 to 30 March 2021. Numbers for the affected days have been revised.

Date of change: 2 AprilNo R number for the UK presented

As no UK estimates for the R number and growth rate have been agreed by SAGE, no values are shown on the dashboard. Further details are available on the [R number in the UK publication](#). R number and daily infection growth rate ranges are still available for the four nations and NHS regions in England. These are displayed on the postcode search pages, and available to download from the download data page, along with historical data.

Additional details

List of changes in the month of March 2021

Date of change: 30 MarchNo update to testing data

Due to testing data not being available for the whole of the UK, these metrics have not been updated. They will be updated in the next release.

Date of change: 30 MarchRevision to Northern Ireland and UK historical vaccination counts

In order to align data across nations, the vaccination data for Northern Ireland has been revised to be shown by date reported. Numbers of vaccinations given for 22 March 2021 and earlier have been revised for both Northern Ireland and the UK.

Date of change: 27 MarchRemoval of cases incorrectly reported by laboratory

On 27 March 2021, 850 historic cases were removed from the dashboard. Due to a laboratory processing error these tests were reported as positive when they should have been recorded as void. This affected specimen dates between 23 and 25 March in local authorities primarily in

the North East and Yorkshire. The cumulative total number of people tested positive was revised down on 27 March 2021. Historic published date totals have not been changed.

Date of change: 27 March [Cases by test type not presented in England](#)

Due to a processing issue, data for cases by test type in England is not presented. It will be included in the next update.

Additional details

Date of change: 25 March [Addition of historical cases in Wales](#)

Due to a data flow issue which has now been resolved, data for Wales published on 25 March 2021 includes 33 cases from tests carried out on 25 January 2021.

Date of change: 25 March [Exclusion of duplicate cases in Scotland total](#)

177 historical cases were identified as duplicates received from the NHS Lothian laboratory, and have been removed from the cumulative total number of cases on 25 March 2021. Therefore, the cumulative number of cases for Scotland and the UK are not equal to the cumulative cases from 24 March 2021 plus new cases reported on 25 March 2021.

Date of change: 25 March [Revision to Northern Ireland and UK historical vaccination counts](#)

The Northern Ireland Department of Health has migrated to a single data management system for vaccinations, which has required data reconciliation. Numbers of vaccinations given for 22 March 2021 and earlier have been revised for both Northern Ireland and the UK.

Date of change: 24 March [Addition of historical cases](#)

57 cases from 15 February to 4 March 2021 from the NHS Lothian laboratory are now included in the reported number of new cases for Scotland and the UK.

Date of change: 23 March [No update to vaccinations data for Northern Ireland](#)

Due to processing issues, no update is available for vaccinations in Northern Ireland. The UK total includes daily updates from England, Scotland and Wales only. The Northern Ireland daily number is shown as zero and the total is unchanged from 22 March 2021. These will be updated in the next release.

Date of change: 23 March [Total vaccinations \(both doses combined\) added](#)

The number of COVID-19 vaccinations given (both first and second doses combined) is now shown on the dashboard by report date. You can view vaccinations for the UK and the 4 nations.

Additional details

Date of change: 22 March[New blog: how we expanded the dashboard](#)

Our latest blog, [Behind the scenes: Expanding the COVID-19 dashboard](#) is available on [Public health matters](#), Public Health England's official blog.

Date of change: 21 March[Revision to vaccinations reported in Scotland](#)

As a result, the UK totals of 1st and 2nd dose vaccinations have also been revised. The revised figures affect the calculation of the number of vaccines administered.

Additional details

Date of change: 18 March[Vaccination uptake added](#)

The percentage of people aged 18 and over who have received a COVID-19 vaccination is now shown on the dashboard by report date. You can view vaccinations for the UK and the 4 nations, split by 1st and 2nd dose.

Additional details

Date of change: 17 March[No update to testing data](#)

Due to testing data not being available for the whole of the UK, these metrics have not been updated. They will be updated in the next release.

Date of change: 17 March**Data by specimen date and date of death not updated for UK and Northern Ireland**

[The Northern Ireland dashboard](#) is not being updated today. Because of this only headline metrics (reported cases, deaths and vaccinations) are available. The additional metrics will be updated in the next release.

Date of change: 16 March[Change to UK figure for weekly deaths with COVID-19 on the death certificate by date registered](#)

The figure for weekly deaths with COVID-19 on the death certificate by date registered in the UK has increased by 946 deaths. This is due to the inclusion of deaths of non-residents for England and Wales during 2020. Figures for 2021 already include non-residents for England and Wales.

Additional details

Date of change: 15 March[Change to reporting of daily figures for lab testing capacity](#)

Northern Ireland Health and Social Care trusts have discontinued daily reporting of the Pillar 1 capacity figure, moving to weekly reporting. This means that daily figures for UK PCR and Pillar 1 capacity will be reported retrospectively once a week on Friday.

Date of change: 13 March [England deaths within 28 days of positive test affected by delay](#)

Daily counts of deaths in England rely on multiple data sources. On 13 March 2021 there was a delay in receiving this information from one of these sources. This might have a small impact on the total number of deaths reported on that date. This delay will be reflected on the numbers published on 14 March 2021.

Date of change: 11 March [Deprecation of weekly vaccination data](#)

Weekly data on people who have received vaccinations are no longer included on the dashboard. Daily vaccinations data are still shown and are more timely.

Additional details

Date of change: 10 March [Cases by test type in England added](#)

The number of people with at least one positive COVID-19 test result in England is now shown by the type of test used in their first positive test and by specimen date.

Additional details

Date of change: 4 March [Adjustments to deaths within 28 days of a positive test for Wales, Scotland and UK totals](#)

Following clinical validation work in Wales, three individuals previously reported as having died within 28 days of a positive test result have been removed from the figures. Public Health Scotland identified an additional 3 recently registered deaths within 28 days of a positive test result. The total number of deaths in Wales, Scotland and the United Kingdom have been adjusted accordingly.

Date of change: 3 March [172 deaths within 28 days of a positive test added to Scotland and UK totals](#)

Public Health Scotland has improved its method for linking daily confirmed COVID-19 cases with deaths reported through the National Records of Scotland. As a result, an extra 172 deaths were identified as having occurred within 28 days of a first positive test result since the start of the outbreak. These have now been added to the cumulative totals for Scotland and the UK.

Date of change: 2 March [Addition of historical cases](#)

350 cases have been added to the UK and England totals due to a previous failure to report the cases at source. This increases newly reported cases in the South East of England mainly Tandridge, Reigate and Banstead, Crawley, Horsham, Mid Sussex and Mole Valley.

Date of change: 1 March [No update to Scotland cases by specimen date and deaths by date of death](#)

Cases and deaths data were not available for Scotland at time of processing for the dashboard. This will be updated in the next release.

List of changes in the month of February 2021

Date of change: 27 February [Issue with deaths following a positive test at local authority and region levels in England](#)

Owing to a technical difficulty, it has not been possible to assign lower and upper tier local authorities and regions to 254 deaths within 28 days of a positive test and 457 deaths within 60 days of a positive test in England. This will be resolved in the next release.

Date of change: 25 February [Issue with weekly cumulative registered deaths](#)

Thank you to the users who notified us of a problem with the cumulative weekly numbers of deaths for local authorities in Great Britain. The issue is now fixed.

Date of change: 25 February [Re-scheduled release of weekly vaccination figures](#)

Due to a change in schedule for the release of weekly vaccination figures from Scotland the weekly updates of the UK figures will also have to be re-scheduled. We expect an update tomorrow.

Date of change: 25 February [No update to hospital data in England](#)

Due to technical issues, NHS England were not able to produce an update to data for individual hospitals for publication on the dashboard. Data will be released in the next regular Thursday update at the latest. In the meantime, the data are available in spreadsheet format from [NHS England](#).

Date of change: 24 February [No update to England hospital data](#)

Due to technical issues, NHS England were not able to produce an update to hospital data for publication on the dashboard. Data will be updated in the next release.

Date of change: 22 February [Vaccination numbers for Northern Ireland corrected](#)

We were notified of an error in the reported vaccination figure for second doses in Northern Ireland. This was corrected and results in a negative daily change on the following day.

Date of change: 18 February [Vaccinations data added for 15 and 16 January for Scotland](#)

These data were previously unavailable.

Date of change: 15 February [No update to England hospital data](#)

Due to technical issues, NHS England were not able to produce an update to hospital data for publication on the dashboard. Data will be updated in the next release.

Date of change: 8 February [Summary page graphs are now clickable](#)

The graphs on the homepage only give a summary view of the changes over time. Click on them to open the related topics page for more details and insights.

Date of change: 8 February [What's new page launched](#)

This page is a record of all important changes to the dashboard. It will show new features, such as new charts or data and changes to the data. This page highlights news that is important to most people. It is not a detailed log.

Date of change: 8 February [England deaths within 28 days of positive test affected by delay](#)

Daily counts of deaths in England rely on multiple data sources. On 6 February 2021 there was a delay in receiving this information from one of these sources. This might have a small impact on the total number of deaths reported on that date. This delay will be reflected on the numbers published on 9 February 2021.

Date of change: 7 February [Incomplete number of cases for Scotland](#)

An issue was identified with data submissions for cases in Scotland overnight which affected the completeness of the newly reported. Any backlog is reported in the next publication.

Date of change: 3 February [England deaths within 28 days of a positive test for 0–4 year olds corrected](#)

Until 1 February 2021, the numbers of deaths within 28 days of a positive test in the 0–4 age group in England were showing as higher than they actually were because of a data error. This was corrected on 3 February 2021.

Additional details

List of changes in the month of January 2021

Date of change: 11 January [Daily vaccinations added](#)

We are now reporting daily figures for first and second dose vaccinations at UK and nation level as well as weekly figures.

Date of change: 10 January [Vaccinations page launched](#)

The vaccinations topic page is now live. We have moved the available vaccinations data from the healthcare page to a separate vaccinations page.

Date of change: 6 January [Easy-read summary reports](#)

We have made the easy-read summaries more accessible and reviewed the content. They are now in HTML format. PDF downloads are still available.

List of changes in the month of December 2020

Date of change: 24 December [Weekly vaccination figures added](#)

We are now reporting the number of first dose vaccinations given each week at UK and nation level.

Date of change: 22 December [Deaths by age group in England added](#)

We have added a heatmap of rates of new cases by five-year age group, for England and areas within England. Rates for those aged under 60 and 60 and over have also been added.

Date of change: 17 December [Addition of data at NHS Trust level in England](#)

The healthcare page now includes data for English NHS Trusts. Trust data will be updated every Thursday, with data for each of the previous seven days.

Date of change: 16 December [Addition of positivity data and people tested, for PCR tests in England](#)

We have added the number of people who received a PCR test in the previous 7 days, and the percentage of those who had at least one positive COVID-19 PCR test result in the same 7 days for England and areas within England.

Date of change: 14 December [Rate of new cases added for age groups in England](#)

We have added a heatmap of rates of new cases by five-year age group, for England and areas within England. Rates for those aged under 60 and 60 and over have also been added.

Date of change: 11 December [Patients in hospital figures aligned with NHS England](#)

We have updated the patients in hospital figures on this site to align them with NHS England publications and the other measures of healthcare on the dashboard. UK totals and historic data has been revised in line with this change.

Additional details

Date of change: 3 December [Addition of case rates and percentage change in rates](#)

We have added rates of new cases in the previous seven days, along with the percentage change in rate compared to the previous non-overlapping seven-day period.

Diamond Princess: A Petri-dish example:

Tokyo's National Institute of Infectious Diseases (TNIID) study showed how the virus spread, by analysing haplotypes, the genetic determinants on single chromosomes. This was based on knowledge that the disease had been circulating aboard way before the quarantine was put in place.

Conclusion: "Superspreading occurred immediately after introduction of the virus, well before the quarantine started on February 3, 2020," "This may indicate most COVID-19 infections began at mass-gathering events in the recreational areas, where all passengers enjoyed dancing, singing, shopping, and watching performances,"

Another study by Harvard's School of Public Health (HSPH) and the Illinois Institute of Technology (IIT) showed close-range aerosol transmission was the dominant mode after the quarantine began. "Our results demonstrate aerosol inhalation was likely the dominant contributor to SARS CoV-2 transmission among passengers aboard the Diamond Princess cruise ship.

Comment: The Diamond Princess was an excellent "petri dish" for this viral outbreak. From the above reference studies TNIID showed rapid spreading with close contact before quarantine. And the HSPH/IIT study showed close-range aerosol transmission was the dominant mode after quarantine.

"I am not sure what the Harvard study is leading to; do they mean the crew were spreading infection to passengers when delivering food and necessities. Or, as an airborne virus, was it spread through the air-conditioning system? Probably true for both."

Haplotype networks of SARS-CoV-2 virus/COVID-19 infections in the *Diamond Princess* cruise ship outbreak

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1. Edited by Y. Kawaoka, University of Wisconsin–Madison, Madison, WI, and approved July 2, 2020 (received for review April 10, 2020)

With 3,711 passengers and crew, 712 (19.2%) were infected, and 14 (0.38%) died. Using this information in perspective for a UK projection (68m) there would have been, 13,049,200 infected and 258,400 deaths. However, consideration about the density of people on board,

being quarantined in their cabins, and the air conditioning units dispersing CoV-2, an airborne virus, around the ship. Also considering as an airborne virus, the virions (virus particles) would have been trapped inside the vessel and recirculated via the air-conditioning system. For these numbers to be representative they should be reduced by 50%, giving 6,524,600 infections and 129,200. The actual UK figures are 4,439,691 infected (which were confirmed by tests) and 127,860 deaths. This simple analysis of the Diamond Princess was of significant accuracy for deaths.

Professor Michael Levitt of the Structural Biology department at Stanford School of Medicine, and winner of the 2013 Nobel Prize for Chemistry for “the development of multiscale models for complex chemical systems.” Levitt, predicted a death rate for the UK, based on the Diamond Princess analysis, of 50,000, for the season 2019/20, a tenth of the prediction of 500,000 by Professor Ferguson of Imperial College, London, and a member of the SAGE group. Levitt was close for the first outbreak. Ferguson was extraordinarily wrong, with both outbreaks 2019/20 and 2020/21 seasons only amounting to 127,629 deaths. What Ferguson obviously did not understand, is what actually controls the viral load and hence transmission of SARS CoV-2 virus and COVID-19 deaths and perhaps how the natural progression of previous airborne viruses occur.

