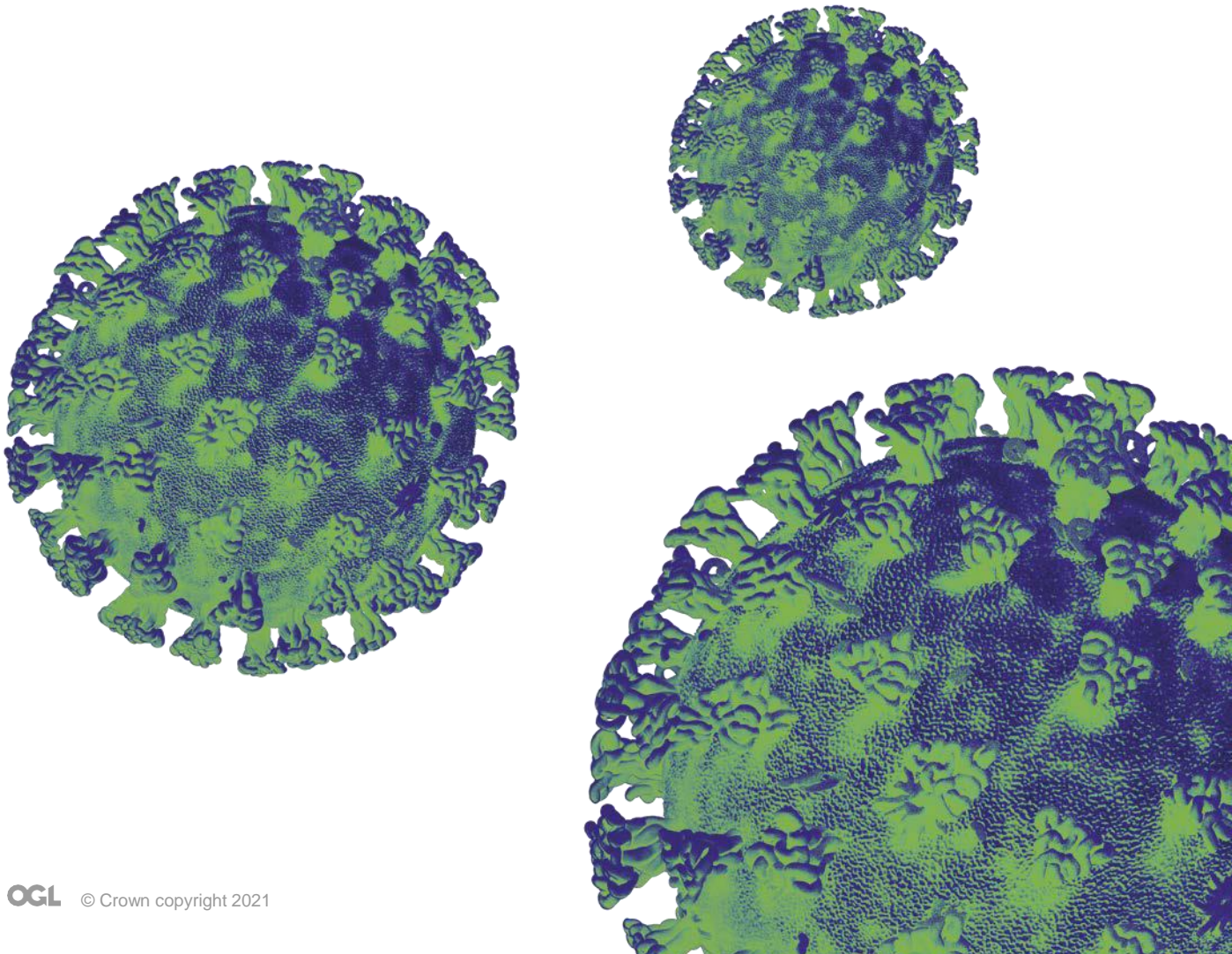


# Advice from the Technical Advisory Group and Chief Scientific Advisor for Health: 21 Day Review

13<sup>th</sup> January 2022



*This advice has been drafted based on the available evidence at time of writing and has been assembled in order to support policy colleagues and Welsh ministers. The purpose of scientific advice is to provide an overview of what we know from scientific and technical investigations, what we can infer indirectly from the evidence base or by a consensus of expert opinion. This is advice, not Welsh government policy.*

## **Summary**

- Following the festive period and changes in testing policy and population behaviours, there is considerable uncertainty around current trends in case numbers. There are indications of a change in trajectory from relatively unbiased estimates such as the ONS coronavirus infection survey, however additional data is required to have confidence in the future trajectory of the pandemic.
- While Wales may be past the peak (low confidence), the reestablishment of networks following the return of schools and workplace mixing could see a return to epidemic growth (medium confidence). Evidence suggests more cautious behaviours since the emergence of the Omicron variant have been sustained into early 2022.
- Advice from TAG and SAGE suggest that protections should not be rolled back significantly until we can be more confident a peak has been reached. However, there may be opportunities to refine protective measures such that they are consistent with emerging scientific evidence and the balance of harms (socio-economic, mental health).
- Updated modelling from Swansea University suggests the Omicron wave is likely to produce a lower peak in hospital occupancy than previous waves (750 – 1100 compared to previous peak of 1600), and a much lower peak in critical care (6-9 admissions per day compared to previous maximum daily peak of 15) and deaths (25-35 per day compared to previous peak of 48) (medium confidence). This takes into account the lower severity of Omicron compared to Delta, against a background of high population immunity due to vaccination and previous infection.
- As stated in previous advice and as has been observed, even with a reduced hospitalisation rate there remains a risk that a large number of cases can still lead to high numbers of COVID-19 hospital admissions and create significant pressure for the NHS. Admissions to hospital with COVID-19 can still result in severe outcomes. While a greater proportion admissions are 'with' rather than 'due to' COVID compared to previous waves, this still places a significant burden on the health care system due to the volume of patients and infection prevention control requirements for COVID positive patients.
- The importance of vaccination should continue to be emphasised to the public. UKHSA estimates of vaccine effectiveness against hospitalisation suggest protection of 88% 2+ weeks after a booster dose. Further data is also needed to investigate the duration of protection; however, previous experience suggests protection against severe disease will likely last considerably longer than protection against symptomatic disease.
- Despite early evidence that the Omicron variant is more infectious but less severe and vaccination is having a significant impact on reducing severe outcomes, there remain a number of uncertainties around the long term impact

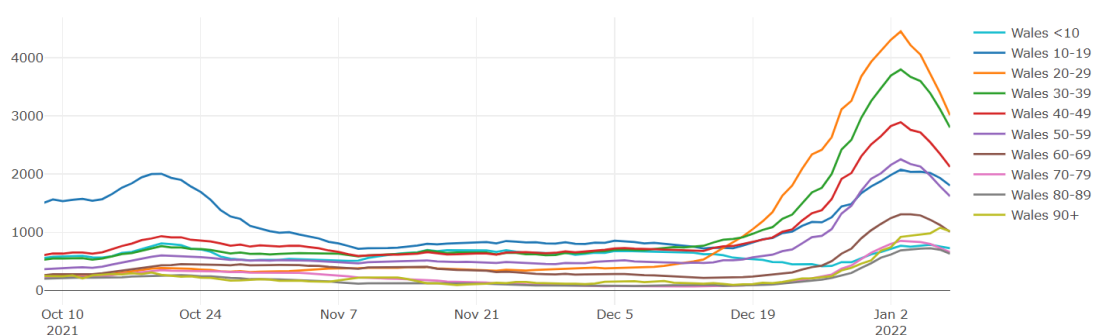
of the Omicron variant (e.g. Long COVID) and the future trajectory of the epidemic in Wales.

- Following the UK policy change that those who receive a positive lateral flow test result are no longer required to take a follow-up PCR test, it is more important than ever that members of the public report their rapid COVID-19 test result (both positive and negative) and that this process is made as simple and accessible as possible.

## 1. Wales situation

- The latest fortnightly COVID-19 Situational Report dated 13 January 2022, containing the most recent data on epidemiological surveillance, NHS status, wastewater monitoring, education and children, international travel, mobility, vaccination and population immunity and forward projections for Wales is available [here](#).
- Cases of COVID-19 and test positivity increased rapidly in Wales following the emergence of the Omicron variant but appear to be falling as of 4 January. As at 7 January the 7-day case rate per 100,000 population in Wales was 1,595, a decrease of 550 compared to the previous 7 days. As at 8 January the highest incidence by age group was 3,011 cases per 100,000 in the 20-29 age group, although all age groups appear to be decreasing (see below). Currently, the extent to which this is a reflection of a real fall in symptomatic cases, or the impact of changes in behaviour, or changes in testing, is uncertain.

Cases per 100k by age and local authority



- For the week 31 December 2021 to 06 January 2022, the ONS Coronavirus infection Survey, which provides a relatively unbiased estimate of levels of infection unaffected by changes to testing, suggests the percentage of people testing positive for COVID-19 continued to increase; it is estimated during this time 5.56% of the community population in Wales had COVID-19 (95% credible interval: 4.89% to 6.27%). This equates to approximately 1 person in every 20 or 169,100 people during this time. This compares to around 1 in 15 people in England and around 1 in 20 people in Scotland and Northern Ireland. Only private residential households and their residents aged 2 years and over are included in the survey. In hospitals, care homes and/or other institutional settings, rates of COVID-19 infection are likely to be different.

- Wastewater monitoring also provides a relatively unbiased indicator for COVID-19 compared to traditional testing methods or approaches as it is less affected by behaviour or policy changes.
- Data from Wastewater samples collected up to 7 January show a marked reduction or plateau compared with the increasing signal being observed before and immediately after the Christmas period. The wastewater signal has particular utility in giving indications of change; the reduction in signal at sites could indicate that the infection rates in communities have slowed, plateaued or are reducing.
- Despite a reduction in the signal, the level of virus still remains high, and comparable to the levels being observed in mid-December. A continued reduction in the signal from wastewater over the next two weeks will indicate a sustained reduction in the level of infections observed in the catchments.
- Triangulating from these different data sources (confirmed cases, positivity, ONS and waste water) suggests that cases might be falling, but since ONS prevalence is not yet falling, and has not reached the peaks observed in other parts of the UK, we may still see a further plateauing or increase in cases.
- As at 11 January the number of COVID related patients in Welsh hospital beds was 1,175, which is 245 (26%) higher than the same day the previous week. There were 930 confirmed COVID patients in hospital, 210 higher than the previous week. The number of occupied surge and normal beds in a critical care environment was 170, 18 higher than the pre-COVID baseline of 152 for critical care beds. This is 18 higher than the same day the previous week. There were 31 COVID related patients in critical care, 5 lower than the same day the previous week.
- NHS Staff absences due to COVID-19 sickness or self-isolation have also increased to 2.3% and 1.4% respectively as at 10 January 22<sup>1</sup>. Levels are highest in the nursing and midwifery staff groups at 2.6% and 1.9% respectively and there is also considerable heterogeneity between services and regions.
- The total number of weekly COVID-19 deaths has continued to increase during the most recent 7-day period ending 7 January from 35 to 60 according to PHW data. PHW death data is limited to reports of deaths of hospitalised patients in Welsh hospitals or care homes where COVID-19 has been confirmed with a positive laboratory test and the clinician suspects COVID-19 was a causative factor. It does not include patients who may have died from COVID-19 but who were not confirmed by laboratory testing, those who died in other settings, or Welsh residents who died outside of Wales. As a result the true number of deaths will be higher.
- The UKHSA consensus estimate of the reproduction number for Wales is between 1.3 and 1.6 and a doubling time of 7 to 10 days (as at 7 January 2022), while PHW's estimate is 0.936 with a doubling time of 15.3 days (as at 10 January 2021). Note the UKHSA estimate is typically lagged by 2-3 weeks

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<sup>1</sup> [NHS staff absence and self-isolation rate, by staff group and date \(gov.wales\)](https://gov.wales/nhs-staff-absence-and-self-isolation-rate-by-staff-group-and-date)

while PHW, which uses a different methodology, is lagged by around 1 week. These estimates should be interpreted with caution and the confidence intervals taken into account. Estimates will be effected by changes in testing patterns over the festive period.

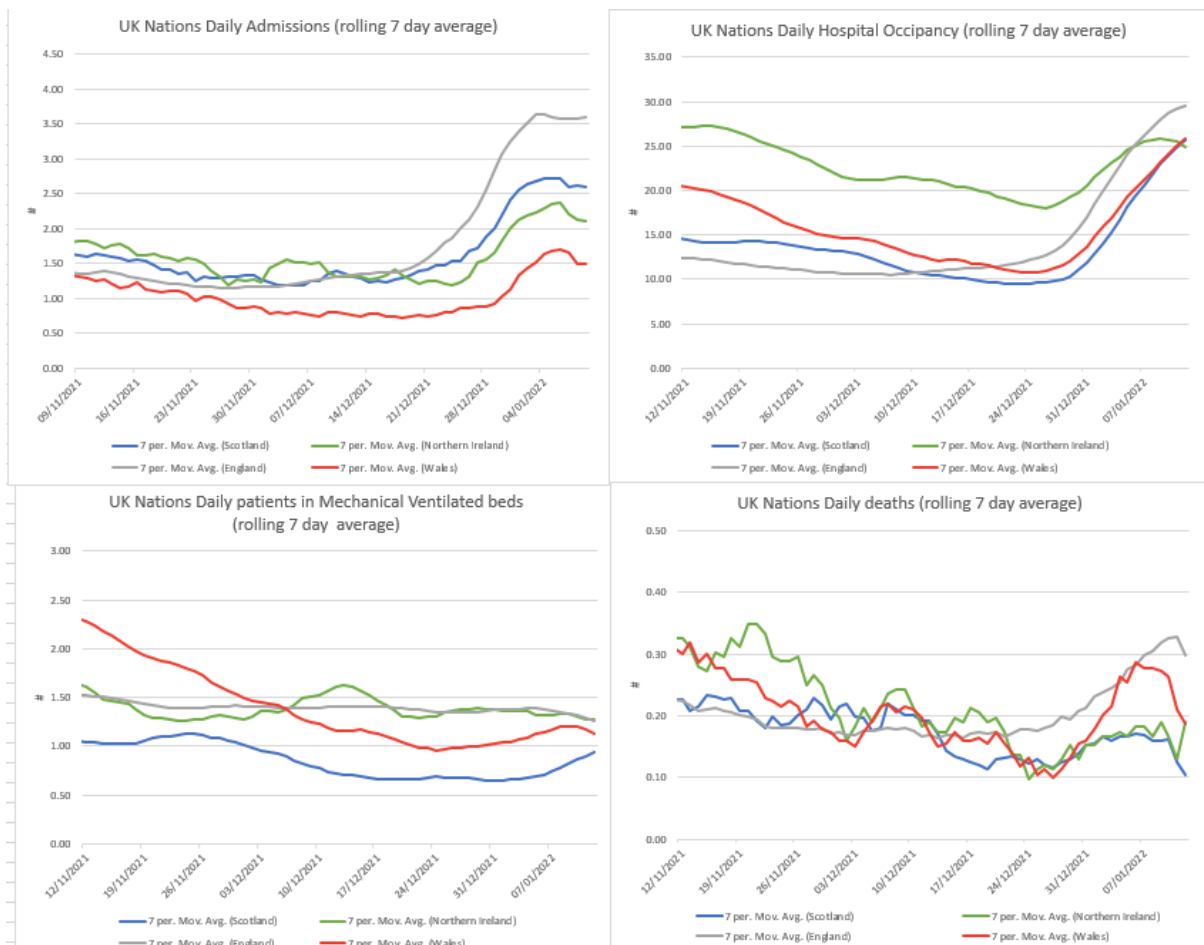
- As at 11 January 2022, Wales has had 25,024 (+11,158 compared to previous week) confirmed cases of the Omicron variant, 90,796 (+1,066) confirmed cases of Delta and 14,791 (+545) confirmed cases of confirmed cases of AY4.2 VUI-21OCT-01. No other variants of concern were confirmed by genomic sequencing in Wales. As at 7 January in Wales the doubling time for Omicron was 3.9 days, while Delta was halving every 4.3 days, according to PHW.
- As at 12 January 2022, a total of 6,618,417 doses of COVID-19 vaccine had been given in Wales and recorded in the COVID-19 Welsh Immunisation System. 2,497,658 were first doses, 2,328,295 were second doses, 1,740,099 were booster doses and 52,365 were third dose primary course recommended for severely immunosuppressed individuals. Source: [PHW](#).

## **2. Situation in the UK and comparator regions**

### UK Overview

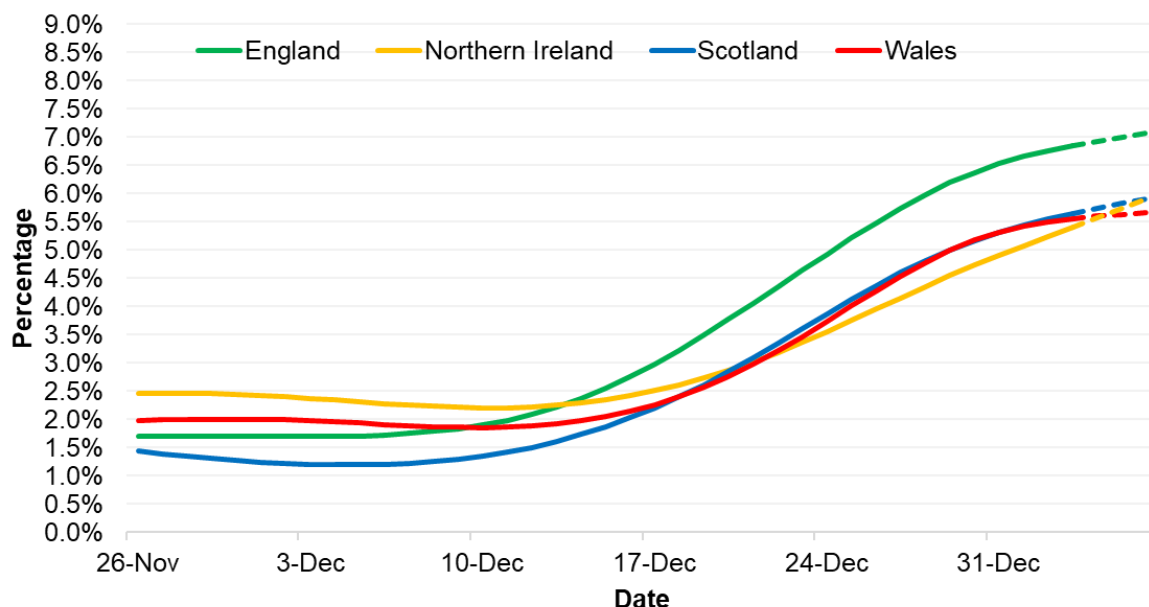
- As at 7 January weekly case rates appear to be declining in all UK nations. This data should be treated with caution as recent changes in testing behaviours over the festive period, and in light of policy changes, may affect testing uptake.
- As at 8 January the number of COVID-19 patients admitted to hospital was plateauing in England, Wales and Scotland, and decreasing in Northern Ireland. As at 11 January hospital occupancy was increasing in all four nations apart from Northern Ireland where it was plateauing. ICU occupancy was increasing in Scotland and stable or decreasing in England, Wales and Northern Ireland. Data suggests that admissions to ICU were much lower than previous waves as a proportion of hospital cases.
- As at 11 January death rates are decreasing in England, Wales and Scotland and increasing in Northern Ireland.





### Coronavirus (COVID-19) infection survey (headline estimates): Week ending 6 January:

- The Office for National Statistics estimates of the percentage of the population in the UK nations testing positive for the coronavirus (COVID-19) up to the 7 January are provided below. In Wales, the percentage of people testing positive for COVID-19 in the community continued to increase; it is estimated that 169,100 people in Wales had COVID-19 (95% credible interval: 148,700 to 190,600). This equates to 5.56% of the population who had COVID-19 (95% credible interval: 4.89% to 6.27%) or around 1 in 20 people (95% credible interval: 1 in 20 to 1 in 15). This compares to 1 in 15 people in England and 1 in 20 people in Northern Ireland and Scotland.



- England-only analysis from the ONS Coronavirus Infection Survey of positivity by age suggests the percentage of people testing positive has increased in those aged 50 to 69 and those aged 70 and over in the week ending 6 January. In all other age groups, the percentage of people testing positive has increased over the previous two weeks, but the trend is uncertain in week ending 6 January.

### International overview

- Omicron has been seeded in most countries of the world and all countries in Europe. The experiences of seeded countries vary depending on when they were seeded and on their positions with other variants, especially Delta, but the overall picture is that Omicron is spreading very rapidly across the world.
- In South Africa, where Omicron was detected first, Omicron has become by far the most dominant variant. However, despite its increased transmissibility, the daily case rate has fallen rapidly from its peak in December and is about half that record number of cases. There is room for a level of optimism in that Omicron will cause cases to rise fast and then fall quite quickly in those countries where there is widespread antibody resistance to the virus through previous infections or through good vaccine rollout. Those people unvaccinated or not previously infected will remain very vulnerable.

### European position

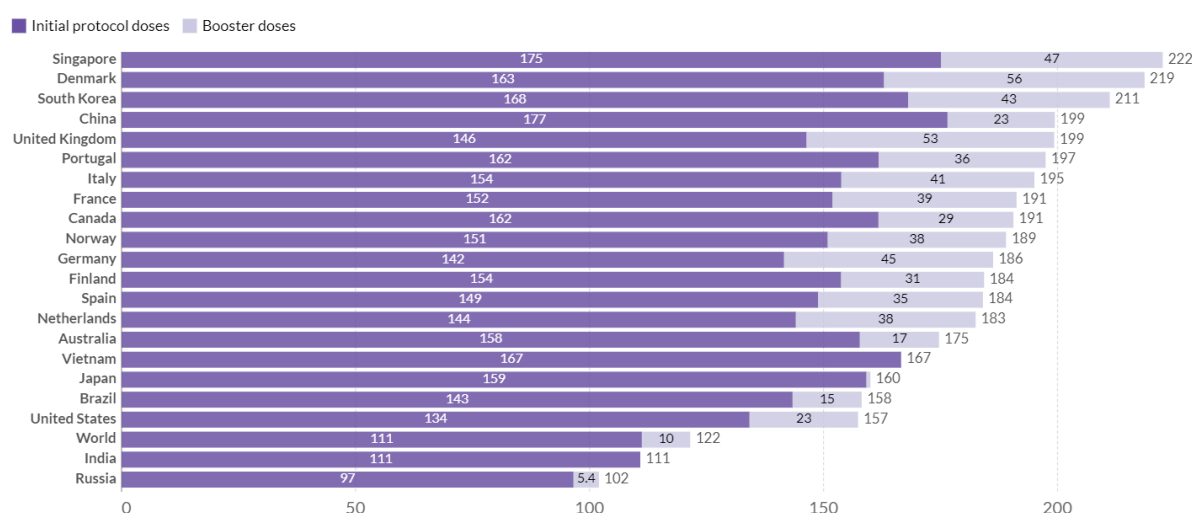
- In Europe, the experiences are split broadly into two categories, those which had suffered with high Delta waves that had been suppressed (mostly of northern and eastern Europe) and those which had not been affected particularly badly by Delta (Spain, Portugal, France, Italy). In the former group, two clear waves have developed, the first by Delta (Balkans, Black Sea and Baltic States, Germany) and the second by Omicron. In the latter group, the early developing Delta wave has been swamped by the fast-spreading Omicron wave so that there is only one wave apparent dominated by Omicron.

- In many countries which are experiencing two discrete waves, the Delta wave was brought under control by a combination of vaccine roll-out, boosters and the imposition of NPI controls. In several of these countries the NPI controls were not relaxed and in some cases, they were tightened as the Omicron wave became obvious. Although most countries have maintained the stringency of their NPI controls, their maintenance has done little to prevent the spread of Omicron cases. France has one of the highest NPI stringency indexes in Europe (see below), but this has not prevented an Omicron wave of cases five times higher than the previous record high wave in April 2021. A similar pattern exists for Spain, Italy and Portugal. Elsewhere in the world Canada, USA and Australia are experiencing record levels of Omicron cases.

### Figure: vaccination status for international comparators

COVID-19 vaccine initial doses and boosters per 100 people, Jan 12, 2022

Total number of doses administered, broken down by whether they are part of the initial protocol or booster doses, divided by the total population of the country.



Source: Official data collated by Our World in Data

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## 3. Omicron Variant of Concern - Update

- UKHSA's most recent risk assessment for Omicron states a reduced risk of severe infection, following early data showing a 50-70% reduced risk of hospital admission with Omicron compared to Delta. Available data on severity of illness for those hospitalised suggests a reduction in risk of severe disease, but it is uncertain how much of this is an intrinsic reduction in severity for Omicron, and how much is protection provided by prior infection/ vaccination. Data from the Scottish EAVE II study<sup>2</sup> suggests a two thirds reduction in the hospitalisation of double vaccinated young people compared to Delta for Omicron, and that the booster is highly effective at reducing serious illness from Omicron.

<sup>2</sup> [Severity of Omicron variant of concern and vaccine effectiveness against symptomatic disease: national cohort with nested test negative design study in Scotland — University of Edinburgh Research Explorer](#)



- Data from CO-CIN indicates the severity of disease being observed in hospital over the last three weeks is lower than observed in early phases of previous waves, with less need for oxygen, less admission to intensive care, better outcomes, and shorter stays. Unlike in previous waves, intensive care units are not likely to be the part of the health system under most pressure in this wave (medium confidence). The probability of needing admission to ICU is very much higher in the unvaccinated population and outcomes remain poor for those who require mechanical ventilation<sup>3</sup>.
- There is emerging data<sup>4</sup> that Omicron replicates less readily in lung tissue compared to Delta and more quickly in nasal tract cells. Animal models also suggest reduced severity and less systemic effects for Omicron infection compared to Delta. These findings could also have implications for young children who have relatively small nasal passages; young babies breathe only through their noses. Unlike in other age groups, there does not appear to be a reduction in hospitalisation risk for Omicron compared to Delta in younger children (under 10 years old) though there is no indication of an increase in serious disease<sup>1</sup>.
- The severity of disease for children remains low (high confidence). For the small number of children who do attend hospital, the length of stay is typically short and where they stay overnight it is often to allow for screening for other infections. Fever and upper airways symptoms appear to be the most common symptoms. COVID-19 continues to account for a small minority of paediatric activity and paediatric intensive care occupancy has not changed significantly. Vaccination rates in pregnant women remain low compared to the wider population. Increasing vaccination rates in pregnant women may increase immunity in the youngest children as antibodies can be transferred from mother to baby. Vaccination is also very important for the health of the mother (high confidence).
- UKHSA estimates of vaccine effectiveness against hospitalisation suggest protection of 88% 2+ weeks after a booster dose. Further data is also needed to investigate the duration of protection; however, previous experience suggests this will likely last considerably longer than protection against symptomatic infection.
- UKHSA analysis of vaccine effectiveness against symptomatic COVID-19 infection with the Omicron variant compared to the Delta variant shows mRNA boosters following a primary dose of AstraZeneca or Pfizer beginning to wane from one month (week 5-9) for Omicron, and as low as 30-50% effective from 10 weeks post-booster (this is not seen for Delta).
- An increase in reinfections is also noted, with 9.5% of Omicron infections linked to previous confirmed infection more than 90 days previously, although the true number may be 2-3 times greater due to underreporting of community cases in the first wave and uncertainty around the number of asymptomatic infections that were never tested.

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<sup>3</sup> SAGE minutes 102

<sup>4</sup> [Omicron's feeble attack on the lungs could make it less dangerous \(nature.com\)](https://www.nature.com/articles/d41586-021-01000-0)

## Long Covid

- The Office for National Statistics continues to provide monthly estimates of the prevalence of ongoing symptoms following COVID-19 infection through the COVID-19 Infection Survey<sup>5</sup>.
- An estimated 58,000 people living in private households in Wales (approx. 1.8% of the population) were experiencing self-reported long COVID (symptoms persisting for more than four weeks after the first suspected COVID-19 infection that were not explained by something else) as of 6 December 2021.
- Of people with self-reported long COVID in Wales, 39,000 people (67%) first had (or suspected they had) COVID-19 at least 12 weeks previously, and 21,000 (36%) first had (or suspected they had) COVID-19 at least one year previously.
- Based on UK-data, the proportion of people with self-reported long COVID who reported that it reduced their ability to carry out daily activities remained stable compared with previous months; symptoms adversely affected the day-to-day activities of 64% of those with self-reported long COVID, with 20% reporting that their ability to undertake their day-to-day activities had been “limited a lot”.
- Fatigue continued to be the most common symptom reported as part of individuals' experience of long COVID (51% of those with self-reported long COVID), followed by loss of smell (37%), shortness of breath (36%), and difficulty concentrating (28%).
- As a proportion of the UK population, prevalence of self-reported long COVID was greatest in people aged 35 to 69 years, females, people living in more deprived areas, those working in health care, social care, or teaching and education (which saw the biggest month-on-month increase out of all employment sectors), and those with another activity-limiting health condition or disability.
- It is important to note that this is analysis of new, recently collected data, and understanding of it and its quality will improve over time. Long COVID remains an emerging phenomenon that is not yet fully understood. The estimates presented are experimental statistics. Percentages are approximate.

## 4. Impact of Change to testing on COVID-19 Surveillance

- The Chief Statistician for Wales has provided advice on interpreting data in light of the policy change across the UK that those who receive a positive lateral flow test result are no longer required to take a follow-up PCR test.<sup>6</sup>
- The recently announced policy changes mean that in some circumstances, people will now no longer have a PCR test. Public Health Wales estimates this is likely to

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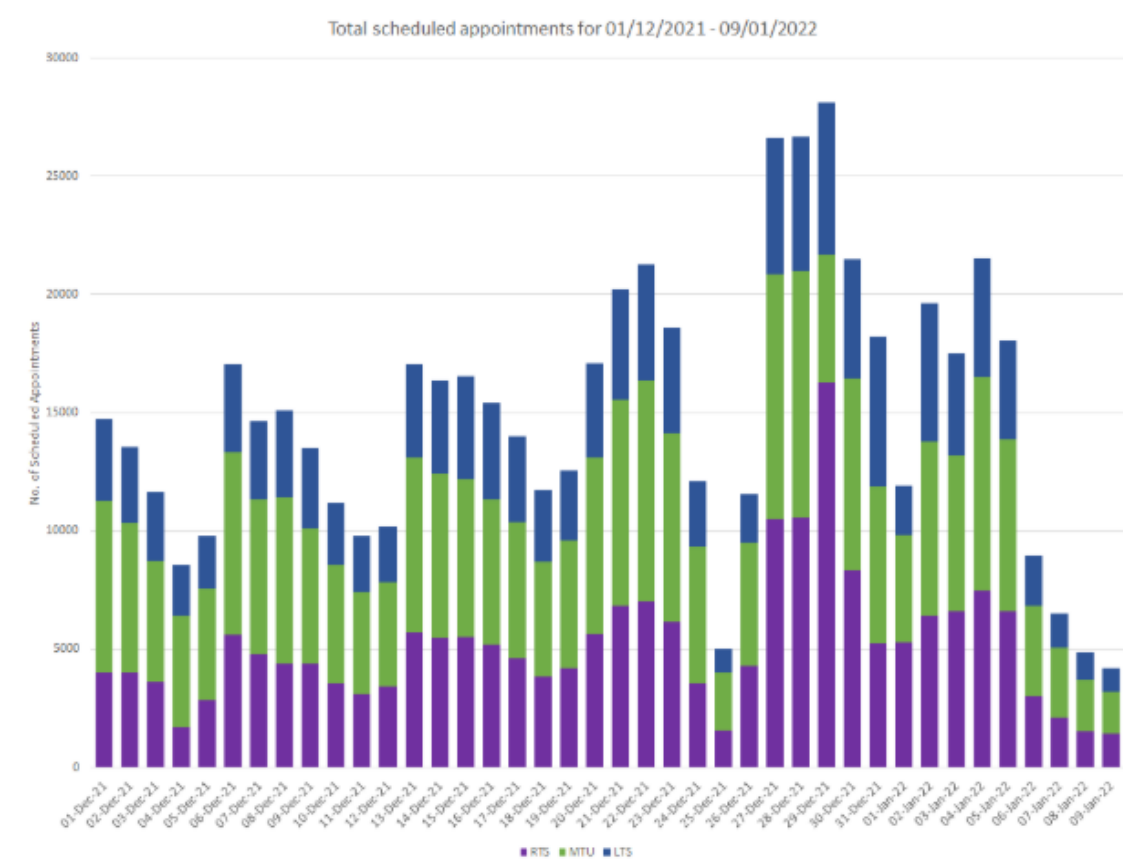
<sup>5</sup> [Prevalence of ongoing symptoms following coronavirus \(COVID-19\) infection in the UK - Office for National Statistics \(ons.gov.uk\)](https://ons.gov.uk/covid19/articles/prevalence-of-ongoing-symptoms-following-coronavirus-covid-19-infection-in-the-uk)

<sup>6</sup> [Chief statistician's update: understanding COVID-19 infection rates in Wales | Digital and Data Blog \(gov.wales\)](https://gov.wales/digital-and-data-blog/understanding-covid-19-infection-rates-in-wales)

reduce the overall number of reported cases by about 10%. This is based on an analysis of recent trends linking lateral flow tests to positive PCR tests and could be larger or smaller if population behaviour changes in other ways.

- The policy change was introduced on 6 January so this will start to affect data gathered from around that point. It's unlikely that there will be a clean break in the data, so there will be a period of time where extra caution needs to be taken when looking at trends.
- For example, in the short term, cases could appear to fall but this might not reflect a genuine fall in symptomatic cases in the population. Over time, Public Health Wales expects the stability of the case figures to improve. The charts below shows that test booking demand in physical channels has decreased significantly since 6 January.

**Figure: Total scheduled testing appointments at regional testing sites (RTS), mobile testing units (MTU) and local testing sites (LTS), 1 December 2021 to 9th January 2022**



**Source:** Management data, Test Trace Protect

- It will also be critical to communicate to the public the importance of reporting their rapid COVID-19 test result (both positive and negative) and that this process is made as simple and accessible as possible, in order to provide accurate data feeds.

## 5. Swansea University COVID-19 Modelling

- Omicron became the dominant variant (accounting for more than 50% of cases) in Wales by the end of December with rising numbers of cases of Omicron in Wales throughout December 2021. This led to debate on whether measures needed to be taken to bring the spread of COVID-19 under control. There was significant uncertainty at this time and models produced for SPI-M and Swansea University modelling produced specifically for Wales suggested that the Omicron wave could potentially overwhelm the NHS in terms of increased demand, and reduced availability of staff through sickness absence. This evidence influenced the decision for Wales to move to Alert Level 2 on 26<sup>th</sup> December. Scotland also increased protections and many other countries around the world increased their stringency of restrictions.
- Since then, a number of different studies have been published which suggest a reduction in the risk of requiring hospital treatment for Omicron compared to Delta cases<sup>7</sup>. These reductions in severity are positive news but must be balanced against the much larger risk of infection with Omicron, due to the reduction in protection provided by both vaccination (including boosters) and natural infection. Some of the most pessimistic scenarios around Omicron can be ruled out but it could still cause a significant wave of hospital admissions and other harms, and a lot of people being absent due to sickness at the same time.
- The following policy modelling scenarios from Swansea University were produced to assist with planning. They are not intended to predict what will happen but provide scenarios of what could happen. They are intended to be short-term scenarios with the aim of updating them regularly as the picture changes in light of new data, information, assumptions or variants. These scenarios are still uncertain and an increase in hospital admissions has now levelled off somewhat. A proportion of hospital cases are nosocomial and some are likely to be incidental COVID-19 positives in individuals admitted for other reasons.
- The model scenarios are being recalibrated to the data every few days and currently each new iteration is looking more positive in terms of having fewer hospital admissions than the previous iteration, which is likely reflecting that vaccines and boosters are holding up well in terms of preventing severe disease for a high proportion of people.
- This most recent policy modelling from Swansea University considers the impact of a move on 26 December 2021 to Alert level 2 for two or four weeks. In the event, Wales moved to introduce Alert Level 2 – type restrictions on 26 December. An unmitigated scenario where no population protections are introduced is also included. The model scenarios shown here are for **Omicron wave only**; the cases start from zero and go back to around zero. In reality this is unlikely and it is likely we will see some level of continued prevalence of COVID-19 – either Omicron, Delta, or another variant.

- The models assumes a reduction in the number of average contacts an individual has in the week before Christmas, as well as a 25% increase in asymptomatic infections compared with Delta and a lower case-hospitalisation ratio (CHR) of around 1%. Hospital cases may be inflated due to people being admitted for other reasons who test positive, or nosocomial infections. Each scenario was run for varying levels of vaccine effectiveness, from 60% to 80% vaccine effectiveness against infections for Delta which has been recalibrated to estimates of effectiveness against Omicron. Booster vaccinations up to 8 December 2021 were included in the modelling with an assumption of 45,000 vaccines being administered per day in Wales after this date. In light of Omicron, the booster vaccination programme was ramped up in mid-December. All eligible adults in Wales were offered and encouraged to receive a booster vaccination by the end of the year.
- All scenarios estimate that the peak number of COVID-19 cases will far exceed previous peaks regardless of which, if any, population protections were implemented in the 4 weeks following Christmas. There are a maximum 12,000 to 19,000 estimated daily symptomatic cases. This will continue to put pressure on the system in terms of high prevalence and sickness absence.
- However the peak may be less sharp, and more drawn out, dependent on the mixing behaviour over the Christmas period and the next few weeks. COMIX data suggests slightly increased contacts in Wales up to the end of December, albeit with a lot of uncertainty. This is also reflected in England-only modelling discussed at SPI-M and SAGE 102<sup>8</sup>.
- The scenarios suggest how hospital admissions can be controlled/reduced to an extent by bringing in coronavirus control plan measures. The impact of the measures on admissions will also depend on the case hospitalisation ratio (CHR). With the low severity of Omicron, it may be possible to keep hospitalisations and bed occupancy at lower or similar levels to previous peaks observed in Wales. However, this may be counteracted by an increase in incidental cases and nosocomial cases. Model scenarios suggest that if alert level measures were applied for two weeks only from 26 December 2021, there may be some benefit, but if introducing the protections for four weeks, alert level 2 could have a significant impact.
- The below figures show the model scenario provided on 5 January 2022 for COVID-19 cases, hospital admissions, and hospital bed occupancy, at various vaccine effectiveness estimates, using the assumptions for low severity and fitted to the initial rise in the Rt of Omicron.
- Under this scenario, cases are closely tracking the 80% vaccine effectiveness (VE) assumption ('high vaccine effectiveness'), with current daily cases estimated at just over 10,000 and a peak of around 12,000 in mid-January.
- Daily admissions are estimated to peak between 120 and 180 in mid-January, and start to decline sharply from early February. Under the mid and high vaccine

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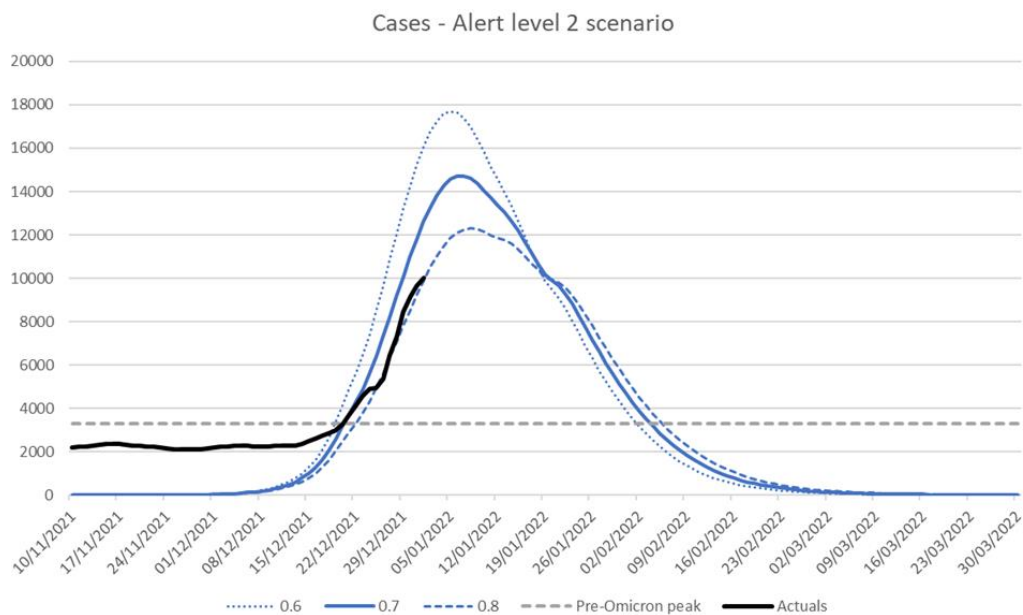
<sup>8</sup> [Scientific evidence supporting the government response to coronavirus \(COVID-19\) - GOV.UK \(www.gov.uk\)](https://www.gov.uk/government/evidence/scientific-evidence-supporting-the-government-response-to-coronavirus-covid-19)



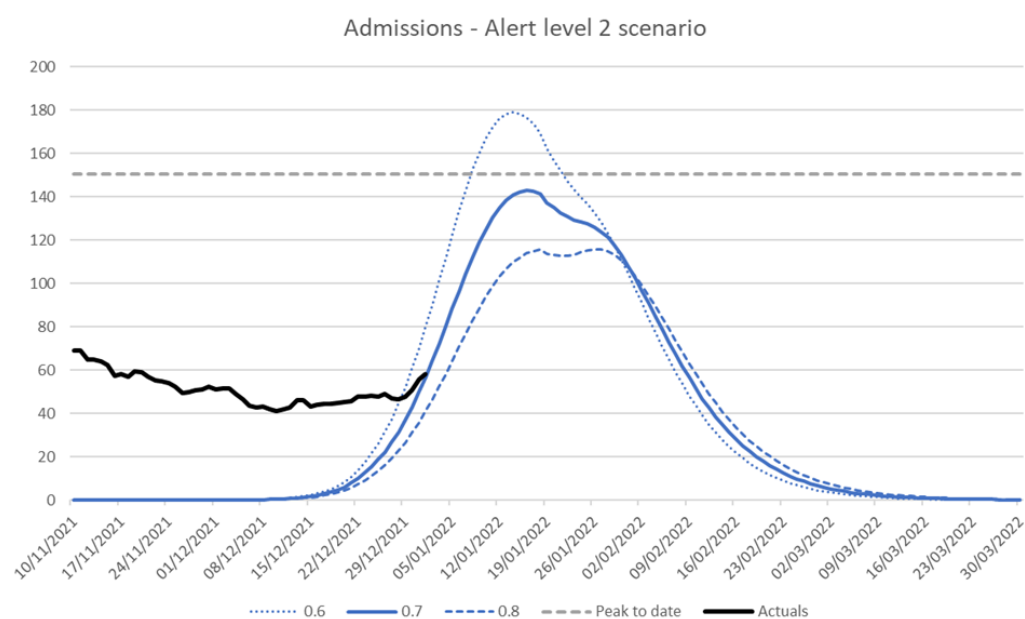
effectiveness assumptions, peak daily admissions stays below the peak seen before Omicron, but is exceeded under the low vaccine effectiveness assumption.

- Actual occupancy data is currently approximately around a week ahead of this scenario, but under all VE assumptions, the peak is estimated to remain below what was seen previously.
- In reality, we may not see such a rapid increase and fall in cases if people continue to change their behaviour and reduce their contacts; we may see a longer tail of cases than these scenarios predict and we are likely to see a longer period of continued COVID-19 cases, either Omicron or another variant.

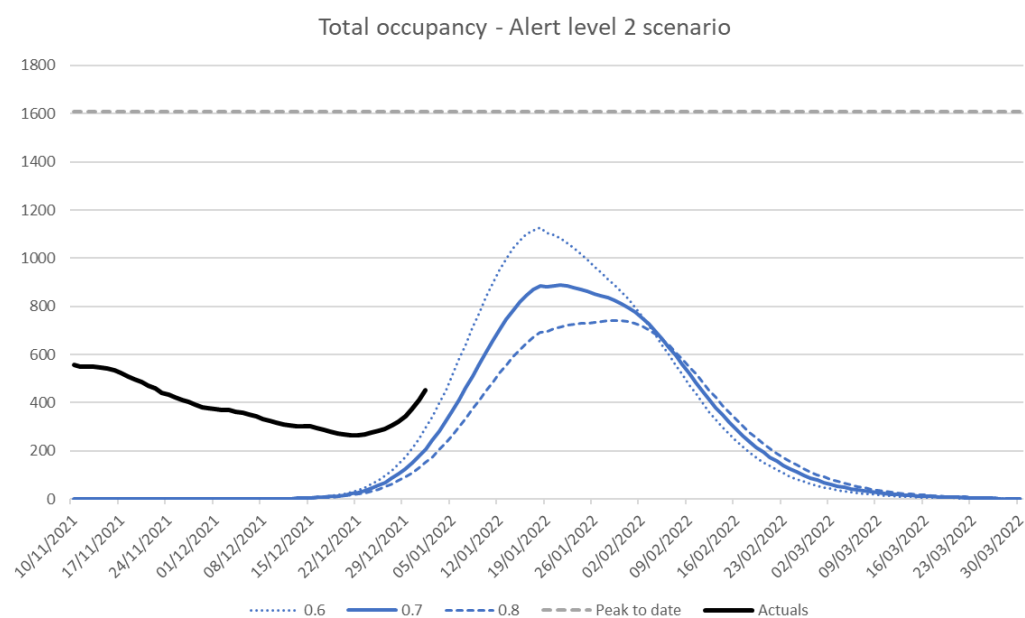
*Estimated daily COVID-19 cases in Wales due to the Omicron variant under Alert Level 2 – low severity. Actuals include both Delta and Omicron cases.*



*Estimated daily COVID-19 admissions in Wales due to the Omicron variant under Alert Level 2 – low severity. Actuals include both Delta and Omicron cases.*



*Estimated daily total COVID-19 hospital bed occupancy in Wales due to the Omicron variant under Alert Level 2 – low severity. Actuals include both Delta and Omicron cases.*



## **6. Outdoor events**

- As discussed in previous advice<sup>9</sup>, there is evidence that the risk of being infected with COVID-19 is reduced when outdoors, as viral particles breathed out by infected individuals dissipate in the air and naturally decay over time at a typically faster rate than indoors. Events held outdoors may therefore be comparatively lower risk for attendees, but a greater risk lies in the associated indoor or wrap-around activities. These risks can be reduced by following the current guidance including for example: wearing a face-covering when in settings of potentially higher transmission; use of the Covid Pass; ensuring social distancing and table service inside venues<sup>10</sup> and proactive use of regular precautionary LFTs<sup>11</sup>. Owners, operators and staff of spaces and facilities doing all they can to elicit, enable and encourage personal protective behaviours by individuals using their premises, as well as assessing risks and mitigating against them, be that through improved ventilation, environmental restructuring or improvements to systems and process.
- While the general consensus is the half-life of SARS-CoV-2 in aerosol is between 1-2 hours, a recent preprint (not peer-reviewed) paper by researchers at Bristol University states that, in their model, “A decrease in infectivity to ~10 % of the starting value was observable for SARS-CoV-2 over 20 minutes, with a large proportion of the loss occurring within the first 5 minutes after aerosolisation.”<sup>12</sup> Loss of infectivity occurred was also found to occur much faster at a lower relative humidity. Further research is required to determine for how long the remaining infectivity persists and how this may depend on the viral load in the aerosol. although the study pre-dated Delta and Omicron, three contemporary variants were compared and found to have a similar degree of airborne stability, suggesting the findings are representative of later circulating variants.
- Despite these findings, which have not been peer-reviewed, the importance of ensuring good ventilation and protective measures such as face coverings, as discussed in previous advice, has not diminished. The study supports the view that the virus is primarily spread over short distances, and suggests the use of CO<sub>2</sub> monitors to assess the relative risk of different indoor environments may be beneficial, although the precise relationship between room CO<sub>2</sub> level and virus improvement is unknown.
- Another preprint from University of Boston considers the impact of group size on transmission, concluding that “large gatherings of 50+ individuals have relatively small epidemiological impact while small and medium-sized groups of 10 to 50 individuals contribute most to COVID-19 epidemics.”<sup>13</sup> In other words, a high number of small gatherings has a larger impact than a small number of large gatherings. These findings apply both indoors and outside and are considered

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<sup>9</sup> [advice-from-the-technical-advisory-cell-and-chief-scientific-advisor-for-health-21-day-review-2-december.pdf \(gov.wales\)](#)

<sup>10</sup> <https://gov.wales/updated-advice-technical-advisory-group-and-chief-scientific-advisor-health-evidence-use-covid>

<sup>11</sup> [advice-from-the-technical-advisory-cell-and-chief-scientific-advisor-for-health-21-day-review-2-december.pdf \(gov.wales\)](#)

<sup>12</sup> [The Dynamics of SARS-CoV-2 Infectivity with Changes in Aerosol Microenvironment | medRxiv](#)

<sup>13</sup> [\[Infectious disease dynamics and restrictions on social gathering size | medRxiv\]](#)

applicable to several variants. The findings also align with a similar paper presented at SAGE in April 2021<sup>14</sup>.

- Emerging evidence, taken together or alongside peer-reviewed published evidence further strengthens the understanding that transmission is less likely in the outdoor environment compared to crowded indoor spaces with poor ventilation.

## 7. Behavioural considerations

- Previous [TAG advice](#) has highlighted the uncertainty around the notion of behavioural fatigue to explain observed reductions in adherence to protective measures in place. While there is evidence of a gradual decline in such adherence following the move to Alert Level 0 in Wales, seen elsewhere in the UK, this pattern shifted with the emergence of the Omicron variant in November 2021. For example, reported adherence to a range of protective measures in Wales, including the use of face coverings, maintaining distance and working from home, increased in mid-December when compared with the preceding months, while the use of lateral flow tests prior to meeting friends/family and attending events increased over the festive period and is also now common. These behaviours have continued into early 2022 and at this point in time, there is no sign of such behaviours falling away again<sup>15</sup>. There are a range of potential explanatory factors driving these changes, including: voluntary action associated with initial uncertainty and concern associated with the Omicron variant; the impact of the protective Alert Level 2 measures in place; the introduction of Plan B measures in England reinforcing the existing Alert Level 2 measures, including use of face coverings and working from home where feasible; and the consequences of transmission, notably significant numbers self-isolating. These changes are not unique to Wales, with similar evidence elsewhere in the UK.
- For example, analysis (preprint) of a rapid data collection exercise<sup>16</sup> (ALSPAC and Twins UK/Biobank) suggests voluntary measures reduced the projected impact of the Omicron variant in England but that such measures alone would not be sufficient to completely control transmission. The most recent available [ONS data](#) from the Opinions and Lifestyle Survey, covering the period 15 December 2021 to 3 January 2022, also show adherence to a series of protective measures being maintained or slightly increasing between mid-December and early-January in Great Britain.
- Publicly available mobility data from [Google](#) and [Apple](#) suggests fewer social contacts, taking an observed drop in mobility in recent weeks as a proxy for such interaction. It is important to note that disentangling reasons for observed changes is difficult. As with behaviours noted above, mobility is likely to be influenced by

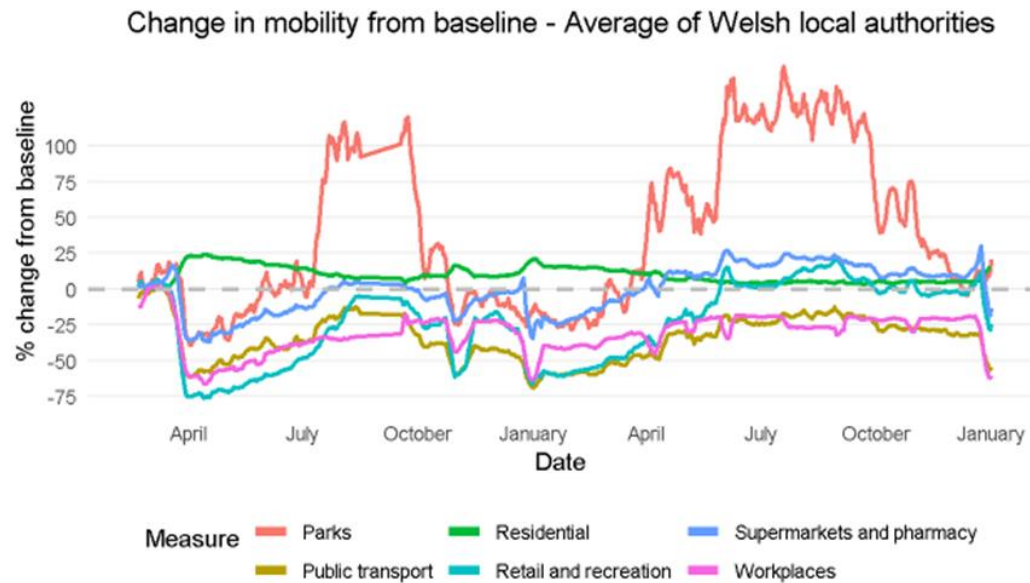
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<sup>14</sup> [JUNIPER and LSHTM: The population attributable fraction \(PAF\) of cases due to gatherings with relevance to COVID-19 mitigation strategies, 22 April 2021 - GOV.UK \(www.gov.uk\)](#)

<sup>15</sup> [Survey of public views on the coronavirus \(COVID-19\) | GOV.WALES](#)

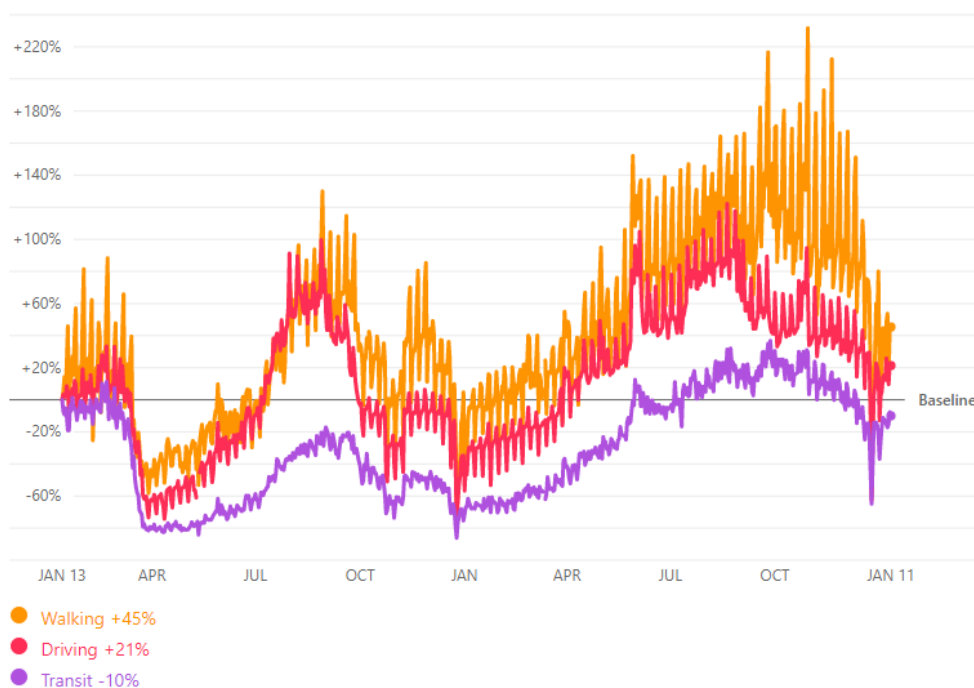
<sup>16</sup> Brooks-Pollock E. et al. Impact of voluntary risk-mitigation behaviour on the magnitude of a COVID-19 Omicron variant wave in England. Draft paper, 11<sup>th</sup> January 2022.

protective measures in place, voluntary change, increases in self-isolation and patterns ordinarily anticipated during the festive period. Furthermore, mobility around specific locations will be affected by other factors, such as weather conditions and visits to parks. Despite the limitations, the data would appear to support those patterns identified in the survey sources above.



Source: Google LLC "Google COVID-19 Community Mobility Reports."

Google mobility data as of January 6th 2022. Note data are presented as change compared with baseline, the median value, for the corresponding day of the week, during the five week period 3 Jan – 6 Feb 2020.



Apple mobility data as of January 11<sup>th</sup> 2022. Note data are presented as change compared with January 13<sup>th</sup> 2020 baseline.



- A recent qualitative [study](#) (preprint) in the UK suggests the possibility of habituation to the risk posed by COVID-19, despite the increased risk posed by the new variant Omicron, referred to as 'variant fatigue' and due to a general decline in engagement with news related to COVID-19. The challenge of the increasing media focus on 'living with' COVID-19 and Omicron being 'mild', despite still causing severe illness for some, could undermine efforts to encourage voluntary adherence, although evidence would suggest this has not been seen to date. Importantly, the findings also suggest most people do intend to adhere to measures in place, even if reluctantly, including more stringent measures if thought necessary in future. Trust in government and leadership remains a critical factor in encouraging and maintaining adherence to these measures<sup>17</sup>.
- The advice presented here should be read in conjunction with previous [TAG advice](#) which remains extant (including the [COVID Code](#) and socio-economic harms), as well as the most [recent advice from SPI-B/EMG](#) reaffirming the importance of a range of mitigations in the context of the Omicron variant.

## 6. Summary

- Omicron has now become the dominant COVID-19 variant in Wales and has had a significant impact on case levels and, more recently, hospitalisations. There may be signs that cases are peaking in many age groups, however the extent to which this is a true reflection is uncertain and there may be considerable geographic heterogeneity with regards to when peaks are reached. SAGE and TAG have suggested that significant changes in behaviour, for example if there were an easing of current protective measures before the peak is passed, could increase the overall impact of this wave on hospitalisations or alter the current trajectory of cases.
- As mentioned above, Wales-specific modelling scenarios suggest that if alert level measures were to be maintained until 23 January, alert level 2 could have a marked impact on mitigating against the continued impact of Omicron on direct health harms.
- Taken together, advice from TAG and SAGE support that protections should not be rolled back significantly until we can be more confident a peak has been reached. Some indicators suggest that we may be close to or past the peak (low confidence), although revising measures where there is evidence of lower risk of transmission is considered proportionate. Whilst this evidence mainly considers the scientific, public health and behavioural impacts of the Omicron epidemic in Wales, the balance of harms is broader and requires additional consideration of other impacts (e.g. inequalities, economic) to ensure a proportionate and balanced response to the epidemic.

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<sup>17</sup> [Covid-19: What we have learnt from behavioural science during the pandemic so far that can help prepare us for the future | The BMJ](#)