International Horizon Scanning and Learning to Inform Wales' COVID-19 Public Health Response and Recovery

Report 26, 18/03/2021

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Iechyd Cyhoeddus Cymru
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World Health Organization
Collaborating Centre on
Investment for Health and Well-being

Overview

The International Horizon Scanning and Learning work stream was initiated following and informing the evolving coronavirus (COVID-19) public health response and recovery plans in Wales. It focuses on COVID-19 international evidence, experience, measures, transition and recovery approaches, to understand and explore solutions for addressing the on-going and emerging health, wellbeing, social and economic impacts (potential harms and benefits).

The learning and intelligence is summarised in weekly reports to inform decision-making. These may vary in focus and scope, depending on the evolving COVID-19 situation and public health / policy needs.

This work is aligned with and feeding into the Welsh Government Office for Science and into Public Health Wales Gold Command. It is part of a wider Public Health Wales' systematic approach to intelligence gathering to inform comprehensive, coherent, inclusive and evidence-informed policy action, which supports the Wellbeing of Future Generations (Wales) Act and the Prosperity for All national strategy towards a healthier, more equal, resilient, prosperous and globally responsible Wales.

Disclaimer: The reports provide high-level summary of emerging evidence from country experience and epidemiology; research papers (peer-reviewed/not); and key organisations' guidance / reports, including sources of information to allow further exploration. The reports don't provide detailed or in-depth data/evidence analysis. Due to the novelty of COVID-19 virus/disease, and dynamic change in situation, studies and evidence can be conflicting, inconclusive or depending on country/other context.

In focus this week

- **Pregnancy and COVID-19**
- **COVID-19 transmission in supermarkets**
- **COVID-19 epidemiological update**

Contents

At a glance: summary of international learning on COVID-19

"…effective response management [of COVID-19]... ensures that policy-making is coordinated, consistent, inclusive and reflects the evolving needs of all population groups."
World Health Organization Regional Office for Europe

Pregnancy and COVID-19

- Pregnant women have the **same likelihood of contracting COVID-19 as the general population**
- The **majority of pregnant women infected are asymptomatic**; and most symptomatic women experience **only mild or moderate cold/flu-like symptoms**
- Compared to non-pregnant women, **pregnant women with COVID-19 have higher rates of intensive care unit admission**; but are **not at increased risk of death**
- Compared to pregnant women without COVID-19, **pregnant women with COVID-19 requiring hospitalisation have overall worse maternal outcomes**
- COVID-19 **transmission from woman to her baby before/during birth is uncommon**
- Aside from preterm birth, there is **no evidence that COVID-19 infection has an adverse effect on the foetus or on neonatal outcomes**
- There is **insufficient evidence to assess the efficacy and safety of COVID-19 vaccines in pregnant patients and their new-borns**, but early data do not reveal safety concerns
- Positions on the vaccination of pregnant women with COVID-19 **vary across countries**
- Overall, recommendations indicate that pregnant women may be **vaccinated after a consultation with their healthcare provider, if they are at a higher risk**

More information is summarised on pp.4-6

COVID-19 transmission in supermarkets

- Growing evidence implicates the **role of aerosols in COVID-19 outbreaks**
- **Good ventilation reduces the risk** of COVID-19 airborne transmission
- **Poor ventilation in confined indoor spaces**, such as supermarkets, is associated with **increased transmission** of respiratory infections
- A **greater number of people in supermarkets, and queuing up**, can increase the likelihood of infection for customers and workers
- Since the start of the pandemic, countries have introduced a **variety of measures to reduce COVID-19 transmissions in supermarkets**, such as restricting the number of customers; changes to the store layout; and enforcing mandatory face covering
- **Heating, ventilation and air-conditioning (HVAC) systems** may have a **complementary role in decreasing COVID-19 transmission** in indoor spaces
- There is currently **no evidence of human infection with COVID-19 caused by infectious aerosols distributed through HVAC systems**
- **Well-maintained HVAC systems securely filter** large droplets containing the virus

More information is summarised on pp.7-9

COVID-19 epidemiological update

- Some countries have recently experienced a peak in both COVID-19 cases and deaths
- Japan has a considerably lower COVID-19 case and death rate

More information is summarised on pp.10-12

Pregnancy and COVID-19

Effect of COVID-19 on pregnancy[1][2]

- Pregnant women **do not appear more likely to contract COVID-19** than the general population
- The **majority of pregnant women (two thirds)** who are infected with the virus are **asymptomatic**
- Most symptomatic women experience **only mild or moderate cold/flu-like symptoms**
- **Compared to non-pregnant women with COVID-19, pregnant women with COVID-19**:
  - ✓ Have higher rates of intensive care unit (ICU) admission, which may reflect a lower threshold for admission to ICU, rather than more severe disease
  - ✓ Are not at increased risk of death from COVID-19
  - ✓ Appear to have a slightly higher risk of death in specific national healthcare settings / populations, such as in the USA and Mexico
- **Compared to pregnant women without COVID-19, pregnant women with symptomatic COVID-19 requiring hospitalisation** have overall worse maternal outcomes, including an increased risk of death, although that risk remains very low *(for example, the UK maternal mortality rate from COVID-19 is 2.2 per 100 000 maternities)*
- Currently, it is **unclear whether pregnancy impacts** on developing prolonged signs and symptoms after an acute COVID-19 infection, so-called **'long COVID'**

Transmission of COVID-19 between mother and baby[1][2][3][4]

- Evidence suggests that **vertical transmission (from woman to her baby before or during birth) of COVID-19 is uncommon**
- If vertical transmission occurs, it appears to **not be affected by mode of birth, delayed cord clamping, skin-to-skin contact, method of feeding or whether the woman and baby stay together (rooming in)**
- **COVID-19 is uncommon in new-borns born to mothers who had COVID-19** during pregnancy
- For new-borns who test positive for COVID-19 shortly after birth, it is **unknown if they got the virus before, during, or after birth**
- Aside from preterm birth, there is **no evidence that COVID-19 infection has an adverse effect on the foetus or on neonatal outcomes**
- **New-borns who test positive for COVID-19 tend to have mild or no symptoms** and recover, however, there are a few reports of new-borns with severe COVID-19 illness

[1] https://www.acog.org/clinical/clinical-guidance/practice-advisory/articles/2020/12/vaccinating-pregnant-and-lactating-patients-against-covid-19
[2] https://www.rcog.org.uk/globalassets/documents/guidelines/2021-02-19-coronavirus-covid-19-infection-in-pregnancy-v13.pdf
[3] https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/pregnancy-breastfeeding.html
[4] https://pubmed.ncbi.nlm.nih.gov/33539825/

Vaccination, pregnancy and breastfeeding[5][6][7][8][9][10][11]

- Due to exclusion of pregnant patients from clinical trials, there is **lacking/insufficient evidence to assess the efficacy and safety of COVID-19 vaccines in pregnant patients and their new-borns**
- Early data on COVID-19 vaccines administered during pregnancy **do not reveal safety concerns** *(Table 1)*
- Limited data is available from **animal developmental and reproductive toxicity studies**
- Vaccine manufacturers are **monitoring women in the clinical trials who became pregnant**
- International agencies, such as the World Health Organization (WHO), and professional associations in Asia, Europe, the Middle East, and North America, take **different positions on the vaccination of pregnant women with COVID-19**, based on both scientific and ethical grounds *(Table 2)*
- Overall, guidance/recommendations indicate that **pregnant women may be vaccinated after a consultation with their healthcare provider if they are at a higher risk** of exposure to COVID-19, or at a higher risk of developing severe disease
- National and international agencies have **safety monitoring systems** in place to capture information about vaccination during pregnancy and are monitoring outcomes closely
- There is **no evidence that vaccines contaminate breast milk**, but COVID-19 antibodies are detected in breast milk of infected mothers and can potentially provide immunity to the new-born

Table 1. Vaccine safety comparison for pregnant women

mRNA COVID-19 Vaccines: Pfizer-BioNtech and Moderna	- There are no safety data specific to mRNA vaccine use in pregnant or lactating women and the potential risks to pregnant women and the foetus are unknown - Experts believe mRNA vaccines are unlikely to pose a specific risk for pregnant women, as they do not enter the cell nucleus, do not alter human DNA, and are also unlikely to cross the placenta, hence they cannot cause genetic changes - Based on the mechanism of action and data from on-going Phase II and Phase III clinical trials, it is expected that the safety and efficacy profile of these vaccines for pregnant women would be similar to that observed in non-pregnant
Adenovirus-vector vaccines: Oxford / AstraZeneca and Janssen	- Not a live virus vaccine, it does not contain preservatives, and it does not replicate in the cell - Based on data from on-going and complete clinical trials of adenovirus-vector vaccines, including COVID-19, HIV, and Ebola, administered to pregnant individuals, overall, they have an acceptable safety and efficacy profile, without significant safety issues identified to date - A review of the available pregnancy data is not suggestive of a pregnancy-related safety concern - The Oxford/Astra Zeneca vaccine can be offered to breastfeeding women if they are part of a group prioritized for vaccination

[5] https://www.acog.org/clinical/clinical-guidance/practice-advisory/articles/2020/12/vaccinating-pregnant-and-lactating-patients-against-covid-19
[6] https://www.rcog.org.uk/globalassets/documents/guidelines/2021-02-19-coronavirus-covid-19-infection-in-pregnancy-v13.pdf
[7] https://www.cdc.gov/coronavirus/2019-ncov/need-extra-precautions/pregnancy-breastfeeding.html
[8] https://pubmed.ncbi.nlm.nih.gov/33539825/
[9] https://www.who.int/news-room/feature-stories/detail/the-oxford-astrazeneca-covid-19-vaccine-what-you-need-to know#:~:text=Vaccination%20can%20be%20offered%20to,of%20breastfeeding%20after%20vaccination
[10] https://blogs.bmj.com/bmj/2021/01/05/why-were-breastfeeding-women-denied-the-covid-19-vaccine/
[11] https://www.cdc.gov/coronavirus/2019-ncov/vaccines/recommendations/pregnancy.html

Table 2. Guidance from governments and professional associations[12]

WHO (Global)	- Pregnant women at high risk of exposure to COVID-1, such as health workers, or those who have comorbidities, adding to their risk of severe disease, may be vaccinated in consultation with their health care provider - WHO does not recommend discontinuation of breastfeeding after vaccination
Ireland	The Royal College of Physicians of Ireland: - Pregnant healthcare workers are numerous in the workforce and their specific needs should be considered equally alongside their non-pregnant colleagues - Assessment of risk by the individual needs acknowledgment - the pregnant woman should be able to choose vaccination if she falls into a priority group - Counselling by healthcare provider should balance available data on vaccine safety, risks to pregnant women from COVID-19 infection, and a woman's individual risk for infection and severe disease - While there is no data on breastfeeding, there is no known biologic mechanism to cause harm
France	The Ministry of Health: - Administration of COVID-19 vaccine during pregnancy is not recommended, unless a high risk of severe disease is identified during pre-vaccination consultations - The safety data is still insufficient to inform about the risks of vaccination during pregnancy
Germany	The Robert Koch Institute: - Due to insufficient experience, immunization in pregnancy and while breastfeeding, COVID-19 vaccination is currently only recommended after individual risk-benefit assessment
Austria	The Ministry of Health: - COVID-19 vaccination is contraindicated in pregnant and breastfeeding women - Priority for immunization should be given to partners of pregnant women because of severe disease history in pregnancy
The Netherlands	- The National Institute for Public Health and the Environment of the Ministry of Health, Welfare, and Sport recommends to postpone the vaccination until after pregnancy
Italy[13][14]	- Italian scientific societies conclude that COVID-19 vaccination is compatible with breastfeeding but currently pregnant and breastfeeding women are not a priority target of the COVID-19 vaccination offer
Spain[15]	The CDC and the independent Advisory Committee on Immunization Practices (ACIP) advise: - Those who are pregnant and are part of a group, recommended for vaccination against COVID-19, can choose to get vaccinated or not - Women trying to become pregnant do not need to avoid pregnancy after receiving an mRNA vaccine
United States	The American College of Obstetricians and Gynaecologists (ACOG): - COVID-19 vaccines should not be withheld from pregnant individuals who meet the criteria for vaccination, based on recommended priority groups - COVID-19 vaccines should be offered to lactating women, similarly to non-lactating, when they meet the criteria for vacation, based on recommended priority groups
Canada	The Canadian Society of Obstetricians and Gynaecologists of Canada (SOGC): - For individuals who are at high risk of infection and/or morbidity from COVID-19, the documented risk of not getting the COVID-19 vaccine outweighs the theorized and undescribed risk of being vaccinated during pregnancy, or while breastfeeding, and vaccination should be offered
Japan	- Pregnant women will not be given vaccination priority due to insufficient knowledge about vaccine safety and effectiveness for them

[12] https://pubmed.ncbi.nlm.nih.gov/33539825/
[13] https://ijponline.biomedcentral.com/articles/10.1186/s13052-021-00998-6
[14] http://www.salute.gov.it/portale/nuovocoronavirus/dettaglioContenutiNuovoCoronavirus.jsp?lingua=italiano&id=5415&area=nuovoCoronavirus&menu=vuoto
[15] https://espanol.cdc.gov/coronavirus/2019-ncov/vaccines/recommendations/pregnancy.html

COVID-19 transmission in supermarkets

Overview[16][17][18]

- Transmission of COVID-19 commonly occurs in **closed indoor spaces**
- Growing evidence implicates the **role of aerosols** (small droplets and droplet nuclei which remain in the air for longer than large droplets) in COVID-19 outbreaks
- **Airborne transmission** occurs when people breathe in aerosols after someone infected with the virus has occupied an enclosed area
- **Good ventilation reduces** the concentration of the virus in the air, therefore reducing **the risk from airborne transmission**
- **Poor ventilation in confined indoor spaces**, such as supermarkets, is associated with increased transmission of respiratory infections
- Since the start of the COVID-19 pandemic, countries have introduced a **variety of measures to reduce COVID-19 transmissions in supermarkets**, such as:
  - ✓ restricting the maximum number of customers
  - ✓ changes to the store layout
  - ✓ enforcing a mandatory face covering policy
- **A greater number of people in supermarkets can increase the likelihood of infection**, as:
  - ✓ the longer one spends in a crowded environment with people who may be infected, the greater the risk of contracting COVID-19
  - ✓ it is more difficult to ensure that social distancing restrictions are maintained
- It is critical to **control and manage queue sizes and customer waiting times to ensure the safety of customers and workers**, allowing employees to maintain social distance from customers
- **Customers waiting outside of stores** can maintain adequate social distance, but are still potentially exposed to infection

Role of ventilation/air-conditioning[18][19]

- **Heating, ventilation and air-conditioning (HVAC) systems may have a complementary role in decreasing transmission** in indoor/enclosed spaces by:
  - ✓ increasing the rate of air change
  - ✓ decreasing recirculation of air
  - ✓ increasing the use of outdoor air
- There is currently **no evidence of human infection with COVID-19 caused by infectious aerosols distributed through HVAC systems** - the risk is rated as very low
- **Well-maintained HVAC systems securely filter** large droplets containing the virus
- It is possible for COVID-19 **aerosols to spread through HVAC systems** within a building or vehicle, and stand-alone air-conditioning units if air is recirculated
- Air flow generated by air-conditioning units may facilitate the spread of droplets excreted by infected people longer distances within indoor spaces

[16] https://arxiv.org/abs/2010.07868
[17] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7470772/pdf/main.pdf
[18] https://www.ecdc.europa.eu/sites/default/files/documents/Ventilation-in-the-context-of-COVID-19.pdf
[19] https://www.hse.gov.uk/coronavirus/equipment-and-machinery/air-conditioning-and-ventilation.htm

Country examples

Germany[20][21][22]

- As of January 2021, Germany has banned people from wearing homemade cloth masks or scarves as face coverings in shops and on public transport
- 'Clinical masks', such as single-use surgical masks or filtering face-piece respirators (known as FFP2 masks), are now required
- The Federal Government announced, it would distribute millions of FFP2 masks to people over 60 years of age and those with chronic conditions as of January 2021
- Information and measures for supermarkets:
  - ✓ Most supermarkets only allow access with a shopping trolley or basket, enabling staff to monitor how many customers are in the store and promoting social distancing
  - ✓ Ensure social distancing rules are followed, keeping minimum of 1.5 meters distance in public spaces, especially supermarkets
  - ✓ Ensure compliance with hygiene rules, e.g. washing hands immediately after shopping at a supermarket
  - ✓ Some supermarkets are using floor markings or have deployed employees, or a security service, to control access and ensure social distancing compliance
  - ✓ Contactless payment is also considered to avoid contact between customers and cashiers

USA[23]

Research from Boston, Massachusetts, September 2020, found that frontline supermarket staff were five times more likely to test positive for COVID-19 when compared with colleagues in other positions after accounting for other important factors, such as the prevalence of the virus where they lived.

England[24]

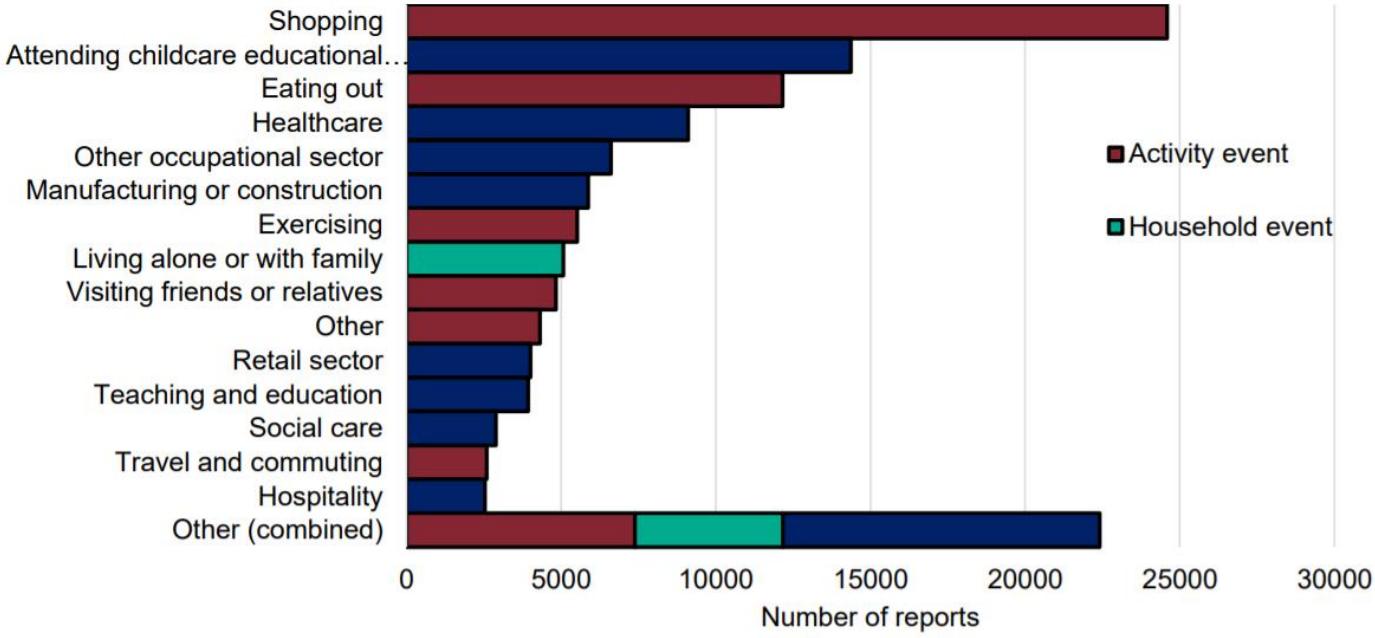
- Data from NHS Test and Trace identified 9789 locations in total, reported by people in England who tested positive in week 46 of the pandemic, 2020
- The **most common locations/settings visited (the most frequent exposure) include supermarkets and schools** (secondary and primary) *(Figure 1)*
- **Shopping is the most common activity**, reported by people testing positive, prior to symptom onset of COVID-19, followed by attending childcare educational setting and eating out *(Figure 2)*

[20] https://www.bfarm.de/SharedDocs/Risikoinformationen/Medizinprodukte/DE/schutzmasken.html
[21] https://www.npr.org/sections/coronavirus-live-updates/2021/01/26/960893423/some-european-countries-move-to-require-medical-grade-masks-in-public
[22] https://www.bundesregierung.de/breg-de/themen/coronavirus/fag-lebensmittel-einkaufen-1740058
[23] https://oem.bmj.com/content/early/2020/10/11/oemed-2020-106774
[24] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/936672/Weekly_COVID-19_and_Influenza_Surveillance_Graphs_w47.pdf

Figure 1. Common locations reported by people testing positive in week 46 of the pandemic, England 2020 (NHS Test and Trace) [24]

Setting	Number of common locations reported	Proportion of all common locations reported
Supermarket (visiting and working)	1796	18.3%
Secondary school (attending)	1240	12.7%
Primary school (attending)	984	10.1%
Hospital (visiting)	356	3.6%
Care home (working)	277	2.8%
College (attending)	236	2.4%
Warehouse (working)	215	2.2%
Nursery preschool (attending)	178	1.8%
Pub or bar (visiting)	161	1.6%
Hospitality (working)	145	1.5%
University (attending)	139	1.4%
Manufacture engineering (working)	134	1.4%
Household fewer than 5 (home/shared)	117	1.2%
General practice (visiting)	112	1.1%
Gym (visiting)	104	1.1%
Restaurant or cafe (visiting)	98	1.0%

Figure 2. Events and activities reported by people testing positive, prior to symptom onset in week 46, England 2020 (NHS Test and Trace)



Note: 'Other' includes a wide range of different activities and settings, each of which has small numbers of individuals, as well as activities which did not fit any specific category and were added as Other by the case. This includes:
(all within 'activities': Arts entertainment or recreation; Civil service or government; Close contact services; Community and charity activities; Critical national infrastructure; Emergency services; Financial services;
Food production; Hospitality; Immigration border services; Information and communication; Military; Personal care;
Prison; Private events and celebrations; Public events and mass gathering; event within a shared household;
Sport events; Supported living; Teaching and education; Transport;
'Other (combined)' includes all exposure group types that have small counts such as "went to church", "went to the zoo" within that event type.

COVID-19 epidemiological update

COVID-19 cumulative cases, deaths and testing capacity

Comparing selected countries since the start of the pandemic *(Figure 3)*, the following is observed:

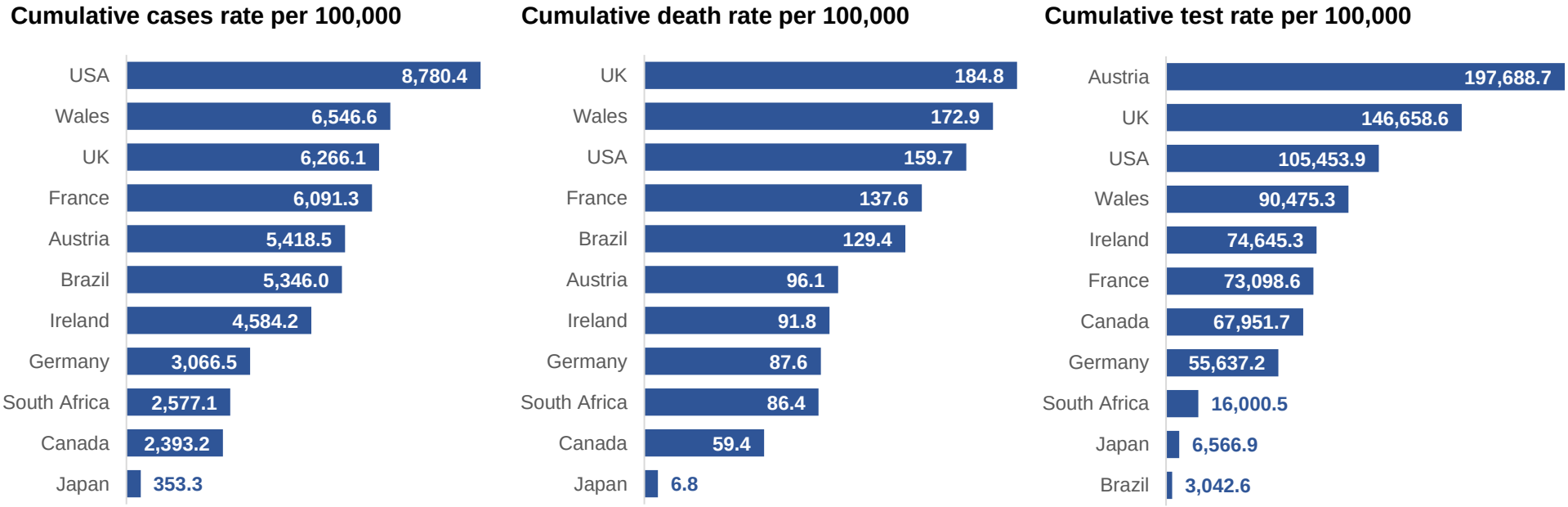
- The USA has the highest cumulative case rate (8,780 per 100,000), compared to Japan which has the lowest (353 per 100,000)
- The United Kingdom has the highest cumulative death rate (184.8 per 100,000), compared to Japan which has the lowest (6.8 per 100,000)
- Austria has the highest cumulative testing rate (197,689 per 100,000), compared to Brazil which has the lowest (3,043 per 100,000)

Trends of weekly COVID-19 case and death rates

Comparing selected countries since the start of the pandemic *(Figure 4)*, the following is observed:

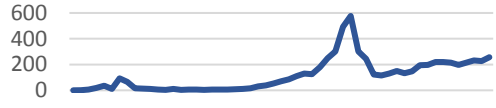
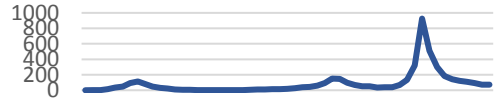
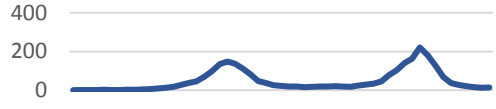
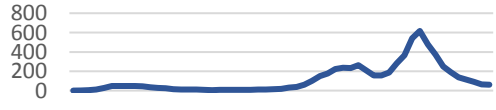
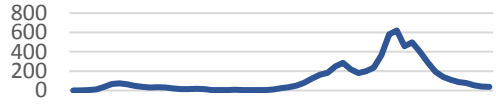
- Five out of eight countries have a decreasing case rate: Ireland, South Africa, United Kingdom, USA and Wales
- COVID-19 weekly case rates are either plateauing or increasing in the following countries: Austria, Brazil, Canada, France, Japan and Germany
- The weekly COVID-19 death rate is on a downward trajectory in ten out of eleven countries
- The weekly COVID-19 death rate in Brazil is on an upward trajectory

Figure 3: Comparing cumulative case, death and testing rates since the start of the pandemic, selected countries



Cases/Deaths:
WHO Coronavirus Disease (COVID-19) Dashboard. (01 January 2020 – 15 March 2021) Available at: https://worldhealthorg.shinyapps.io/covid/
Public Health Wales Rapid COVID-19 Surveillance. (31 January 2020 – 15 March 2021) Available at: https://public.tableau.com/profile/public.health.wales.health.protection#!/vizhome/RapidCOVID-19virology-Public/Headlinesummary
Testing:
Most countries except USA and France were available in the WHO Dashboard above. Data for Wales was sourced from the Public Health Wales Rapid-COVID-19 Surveillance.
France: European Centre for Disease Prevention and Control (01 March 2020 – 07 March 2021). Available at: https://www.ecdc.europa.eu/en/covid-19/country-overviews
USA: Our World In Data – Total COVID-19 Tests (21 January 2020 – 15 March 2021). Available at: https://ourworldindata.org/grapher/full-list-total-tests-for-covid-19?time=2020-02-20..latest
Population Estimates:
Population, Total, The World Bank (Accessed 15 March 2021). Available at: https://datacatalog.worldbank.org/population-total
Population Estimates for Wales was extracted from the Office of National Statistics Population estimates for the UK, England and Wales, Scotland and Northern Ireland (Accessed 15 March 2021). Available at: https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates/bulletins/annualmidyearpopulationestimates/previousReleases

Figure 4: Comparing weekly COVID-19 cases and deaths, selected countries, 24th February 2020 – 15th March 2021

Countries	Weekly Cases per 100,000	Weekly Deaths per 100,000
Austria		
Brazil		
Canada		
France		
Germany		
Ireland		
Japan		
South Africa		
United Kingdom		
United States		
Wales		

Trend Data:
Our World in Data – Daily COVID-19 Cases and Daily COVID-19 Deaths (24 February 2020 – 15 March 2021). Available at: https://ourworldindata.org/explorers/coronavirus-data-explorer?zoomToSelection=true&country=~OWID_WRL&hideControls=true&Metric=Confirmed+cases&Interval=New+per+day&Align+outbreaks=false&Relative+to+Population=false
Public Health Wales Rapid COVID-19 Surveillance. (31 January 2020 – 15 March 2021) Available at: https://public.tableau.com/profile/public.health.wales.health.protection#!/vizhome/RapidCOVID-19virology-Public/Headlinesummary

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