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

Report 24, 18/02/2021

GIG CYMRU
NHS WALES

Iechyd Cyhoeddus Cymru
Public Health Wales

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

- **The long-term health impact of remote working**
- **Predicting futures and scenario planning**
- **Sustainable recovery from COVID-19**
- **COVID-19 epidemiology update**

Contents

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

"We need to turn the recovery into a real opportunity to do things right for the future"
António Guterres, Secretary-General of the United Nations

The long-term health impact of remote working

- The COVID-19 pandemic has led to a **shift towards working remotely (from home)**
- People may **continue to work from home, in some capacity**, **for the foreseeable future**
- Working from home has been associated with various (unintended) **public health risks**, as well as **positive effects**, which have been (or could be) influenced by COVID-19
- The **health/work relationship is complex** and requires consideration of the broader system factors and wider COVID-19 impacts
- **Potential negative impacts** can include mental and physical health issues, related to work-family balance, social isolation, or inadequate working space/equipment
- **Potential positive impacts,** due to reduced/lack of commuting, are related to both the individual and the environment
- **Men and women experience remote working differently**, with women generally experiencing and reporting more negative outcomes than men
- **Organisations need to implement formalised policies** for working remotely that consider technical and management support, workload, training, performance and others

More information is summarised on pp.5-6

Predicting futures and scenario planning

- Future scenario planning / forecasting / foresight **can help both short and long-term decision-making and preparedness**
- COVID-19 **transmissibility predictions** consider mobility, new variant spread, vaccination pace and mask use
- The pandemic has the potential to create **long-lasting changes** in the global and UK economy where **government interventions will play a key role** in determining the **population health and wellbeing outcomes**
- **Economy predictions are dependent on:**
    - the spread or containment of COVID-19
    - the pace of vaccine dissemination over the next two years
    - the level of global financial stress
- **The education sector could be transformed completely** by redesigning the learning space; and personalization of content, enabled by cutting-edge technology
- There is an **opportunity to develop agile responsive educational systems**, with multiple variations across **'evolutionary', as well as 'revolutionary'** scenarios
- **A shifting landscape across higher education** outlines **five interconnected trends**:
    1) Communications help students feel connected
    2) Existing trust gaps between university leadership, students, and staff have widened
    3) Wellbeing concerns
    4) More flexible learning options, related to distant/online learning
    5) Uncertainty about the future of education and employment

- Rethinking and rewiring the educational system poses **important questions**, related to the learning environment, existing capacities, innovation, vulnerability, etc.
- **A strong public health and healthcare system** enables countries to accommodate higher levels of COVID-19 infection, without overwhelming the health system, and having to trigger severe public health measures

More information is summarised <mark>on pp.7-13</mark>

Sustainable recovery from COVID-19

- The COVID-19 pandemic has emphasized the need for a **transformative recovery** that rebuilds health, social and economic systems to be **sustainable, inclusive and greener**
- Many countries are **steering away from business as usual**, aiming at innovations and transformation with a particular focus **on sustainability and building resilience**
- **Green recovery is a win-win strategy**: clean air and water, effective waste management, and biodiversity protection not only reduce the vulnerability of communities to pandemics and disasters, and improve resilience; they also have the potential to boost economic activity, generate income, create jobs, and reduce inequalities
- **Key elements of a healthy sustainable recovery** include:
  - Protect and preserve Nature and biodiversity
  - Invest in essential services; and quick green energy transition
  - Promote healthy, sustainable food systems
  - Build healthy, liveable cities and communities
  - Build inclusive economy and society where no one is left behind
- Transformation design and implementation need to be informed by **timely dynamic data, intelligence and research** and supported by **targeted protected investment**
- The **integral connection between the environment, health and the economy** requires health leaders to be directly involved in the design and implementation of recovery plans

More information is summarised <mark>on pp.14-16</mark>

COVID-19 epidemiology update

- **Most countries across Europe are experiencing a slight decrease in the number of new COVID-19 cases and deaths**, following a peak over the past two months
- **Testing rates continue to increase** in the majority of countries

More information is summarised <mark>on pp.17-19</mark>

Long-term health impact of remote working

Overview[1]

− The COVID-19 pandemic and related containment measures have resulted in **changes to the working arrangements of millions of employees worldwide**
− There has been a **shift towards working remotely - working from home, teleworking, telecommuting; or a blended approach** of office and remote working
− It is expected that **people may continue to work from home**, in some capacity (or in blended pattern), **for the foreseeable future**
− Working from home has been associated with **various (unintended) public health risks**, as well as **positive effects**, which have been influenced by COVID-19 *(Tables 1 and 2)*
− The **health/work relationship is complex** and requires consideration of broader system factors
− It is difficult to measure specifically the health impacts of remote working related to COVID-19, due to **interaction with other consequences**, such as financial stress, concern about employment stability, or less interaction with family and friends
− **Potential negative impacts** can include mental health/wellbeing issues, related to work-family integration and balance, and social (professional) isolation; as well as physical problems, related to inappropriate working station/equipment
− **Potential positive impacts** can be related to reduced/lack of commuting - both to the individual (e.g. less stress travelling) and to the environment (e.g. less pollution)
− The evidence indicates that **men and women experience remote working differently**, with women generally reporting lower levels of satisfaction with the situation than men
− Decisions on how to **promote employees' health and wellbeing while working from home** need to be **based on the best available evidence** to optimise worker's outcomes
− **Organisations would need to implement formalised policies** that consider work-home boundary management support, role clarity, workload, performance indicators, technical support, facilitation of co-worker networking, and training for managers

A recent UK survey[2] found that people working from home as a result of COVID-19 have experienced a number of health and well-being impacts:
− Most commonly:
  ✓ Feeling less connected to colleagues (67%)
  ✓ Less exercise (46%),
  ✓ Musculoskeletal problems (39%);
  ✓ Disturbed sleep (37%)
− Over one in four (26%) were working from home from either a sofa or a bedroom -
  ✓ nearly half of those (48%) said they had developed musculoskeletal problems
  ✓ nearly two thirds of those (59%) said they felt more isolated from their colleagues
− Women were more likely than men to feel isolated (58% versus 39%) and develop musculoskeletal problems (44% versus 29%)
− People who live with multiple housemates were more likely to think that working from home was worse for their health and well-being (41%), compared to people who live on their own (29%) or with just their partner (24%)

[1] *https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-020-09875-z*
[2] *https://www.rsph.org.uk/about-us/news/survey-reveals-the-mental-and-physical-health-impacts-of-home-working-during-covid-19.html*

Table 1: Impacts of remote (home) working

Positive impacts
− Improved quality of life
− Perceived increase in safety and reduced stress associated with commuting[3]
− Lower job induced stress[4]
− Decreased fatigue and stress compared to those not working from home[5]

Negative impacts
− Inability to disengage from work and positively related to job stress, which was greater for women than men[6]
− Increased family-to-work and work-to-family conflict, particularly for female workers
− Higher levels of exhaustion in comparison to those who performed limited remote working[7]

Mixed findings
− In men, remote working was associated with increased stress, but also increased happiness[8] and lower levels of stress, pain and tiredness, related to not commuting (compared to commuters)
− Women reported higher levels of happiness compared to commuters, but reported similar levels of stress, pain and tiredness as non-remote workers[9]
− Remote working was associated with fewer mental and physical health problems in comparison to non-remote working; however fewer hours of remote working was also associated with lower levels of depression[10]

Table 2: Health impact of telework, COVID-19-related effect and key prevention measures[11]

Risk	Impact of telework (overall)	COVID-19-related effect	Key prevention measures
Risks associated with transportation	Decreased	None	
Risks associated with home working environment	Increased risk associated with housing, e.g. with fire, slip, trip and fall hazards, temperature	Amplified due to lack of anticipation	Diffusion of simple, pragmatic security message
	Increased risks associated with workstation, e.g. musculoskeletal problems	Ambiguous / Potentially amplified due to the lack of anticipation, poorly suited home working environment and reduced physical activity (depending on duration)	- Diffusion of simple, pragmatic messages on ergonomics; - Financial contribution to adapted equipment (e.g. adjustable chair, computer station); - Promotion of physical activity
Psychosocial risks	Increased risks of social/professional isolation	Potentially reduced due to universalisation of telework/telecommunication	Adopt virtual collective working periods
	Increased risk of blurring the boundaries between work and home/family time and balancing those	Amplified by the multiplication of non-work-related tasks, such as caring for children and facilitating home schooling	Adapt working time and schedule for workers ensuring home childcare
Behavioural risks (e.g. diet, sleep, addiction)	Ambiguous	Amplified, e.g. linked to anxiety	Allow and promote teleconsultations with occupational practitioners

[3] https://search.proquest.com/docview/2388310910?pq-origsite=gscholar&fromopenview=true
[4] https://www.nzjournal.org/NZJER35%282%29.pdf#page=76
[5] https://onlinelibrary.wiley.com/doi/10.1111/jomf.12633
[6] https://journals.sagepub.com/doi/10.1177/1059601115619548
[7] https://link.springer.com/article/10.1007/s10869-011-9247-0
[8] https://www.sciencedirect.com/science/article/abs/pii/S0305596119301120?via%3Dihub
[9] https://www.emerald.com/insight/content/doi/10.1108/IJM-04-2018-0134/full/html
[10] https://pubmed.ncbi.nlm.nih.gov/26389981/
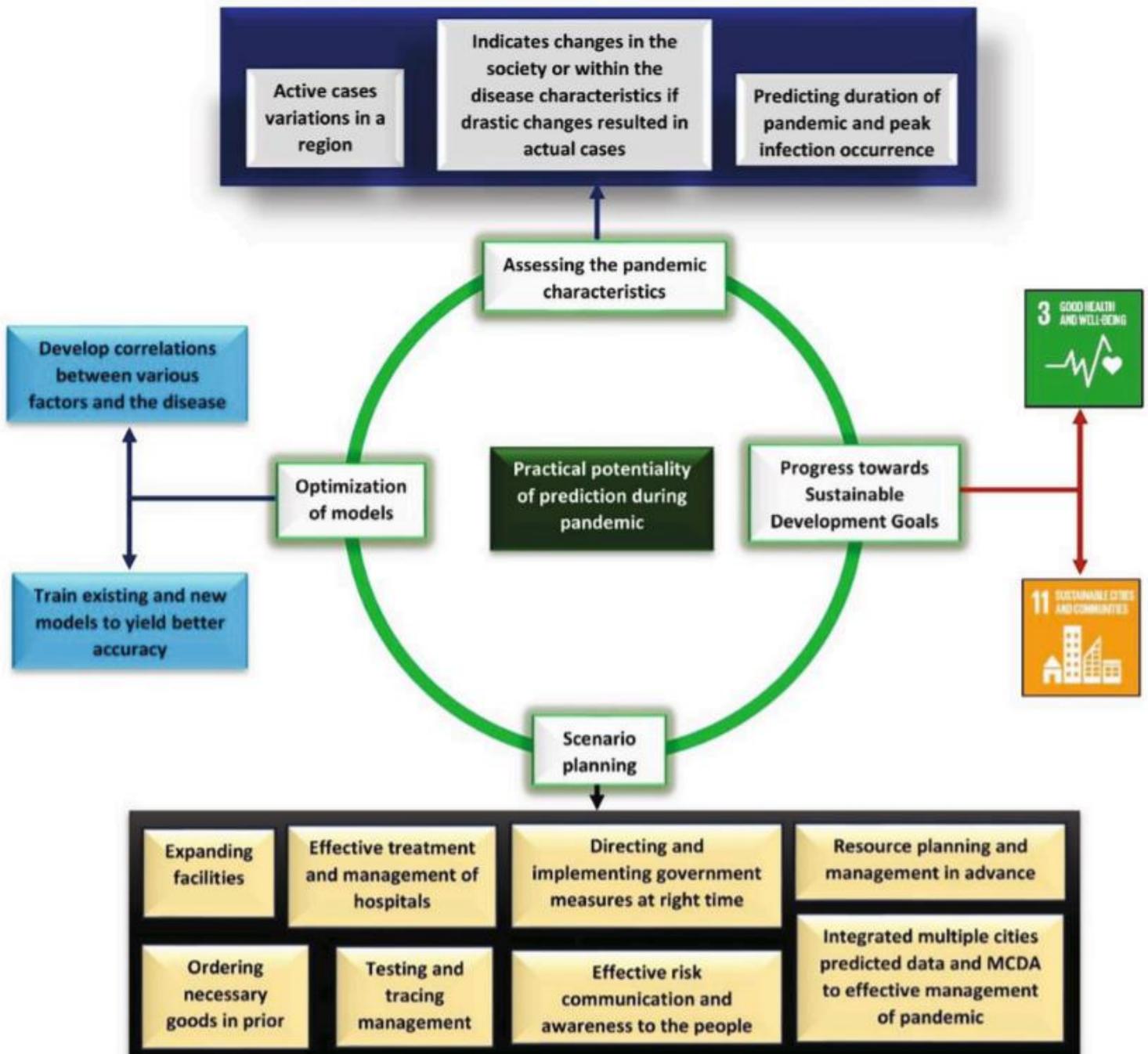[11] https://oem.bmj.com/content/77/7/509

Predicting futures and scenario planning

Overview[12][13]

− Future 'scenario planning' / forecasting / predicting future trends helps countries to prepare and support decision-making process for implementing COVID-19 containment measures

− Modelling various future scenarios, related to disease and mortality rates/trends, can help both short and long-term preparedness and planning *(Figure 1)*

Figure 1. Practical significance of predicting COVID-19 infected cases[12]

[12] https://www.ncbi.nlm.nih.gov/pmc/articles/PMC7806459/pdf/main.pdf
[13] https://www.imd.org/research-knowledge/reports/scenario-planning-for-a-post-covid-19-world/

COVID-19 transmissibility predictions[1415]

– COVID-19 transmissibility predictions consider mobility, new variant (UK/South African) spread, vaccination pace and mask use *(Table 3)*

Table 3. Possible scenarios for COVID-19 transmissibility

Scenarios	Mobility	New variant spread	Vaccination	Mask use
Current projection (most likely to happen)	- Mobility in the unvaccinated follows the pattern seen last year associated with seasonality - In 25% of those vaccinated, mobility returns toward pre-COVID-19 levels	- UK variant continues to spread in locations with more than 100 cases detected	- Expected pace	- Stays at current levels
Rapid variant spread	- Mobility in the unvaccinated follows the pattern seen last year associated with seasonality - In 25% of those vaccinated, mobility returns toward pre-COVID-19 levels	- UK variant continues to spread in locations with > 100 cases detected - South African variant spreads everywhere in the world starting 1 Feb 2021	- Expected pace - Vaccine effectiveness lower against South African variant	- Stays at current levels
Worst case	- Mobility in the unvaccinated follows the pattern seen last year associated with seasonality - In 100% of those vaccinated, mobility returns toward pre-COVID-19 levels	- UK variant continues to spread in locations with > 100 cases detected - South African variant spreads everywhere in the world starting 1 Feb 2021	- Expected pace - Vaccine effectiveness lower against South African variant	- Stays at current levels

– The US developed **five 'COVID-19 pandemic planning scenarios'** to help inform public health decision-making and healthcare system resource planning *(Tables 4 and 5)*

Healthcare system preparedness[161718]

– Hospitals across the world have been rapidly increasing their capacity to manage the burden of COVID-19 patients
– Healthcare systems (hospitals in particular) have implemented different measures to manage limited resources, including:
  - ✓ Cancelling elective procedures
  - ✓ Setting up additional beds
  - ✓ Constructing temporary facilities
  - ✓ Using mobile military resources
– Scaling up production of ventilators and personal protective equipment (PPE) is necessary to ensure these resources are available to health care facilities as demand grows
– A strong public health and healthcare system enables countries to accommodate higher levels of COVID-19 infection without overwhelming the health system and having to trigger severe public health measures
– Countries should continue strengthening the capacity of their healthcare systems, including healthcare facilities, to ensure enough space and equipment to care for people who are severely sick; and intermediate facilities for those who have milder symptoms

---

[14] http://www.healthdata.org/covid/faqs#Scenarios
[15] https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html
[16] http://www.healthdata.org/covid/faqs#hospital%20capacity%202
[17] https://covid19.healthdata.org/global?view=resource-use&tab=trend&resource=all_resources
[18] https://www.thelancet.com/action/showPdf?pii=S2666-6065%2820%2930043-2

Table 4. Description of the five COVID-19 Pandemic Planning Scenarios in the US[19]

Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5
– Lower values for virus transmissibility and disease severity – Lower percentage of transmission prior to onset of symptoms – Lower percentage of infections that never have symptoms – Lower contribution of those cases to transmission	– Lower values for virus transmissibility and disease severity – Higher percentage of transmission prior to onset of symptoms – Higher percentage of infections that never have symptoms – Higher contribution of those cases to transmission	– Upper values for virus transmissibility and disease severity – Lower percentage of transmission prior to onset of symptoms – Lower percentage of infections that never have symptoms – Lower contribution of those cases to transmission	– Upper values for virus transmissibility and disease severity – Higher percentage of transmission prior to onset of symptoms – Higher percentage of infections that never have symptoms – Higher contribution of those cases to transmission	Current best estimate of the parameter values for viral transmissibility, disease severity, and pre-symptomatic and asymptomatic disease transmission, based on the latest surveillance data and scientific knowledge

Table 5. Parameter values across the five COVID-19 Pandemic Planning Scenarios[19]
These scenarios are intended to advance public health preparedness and planning.
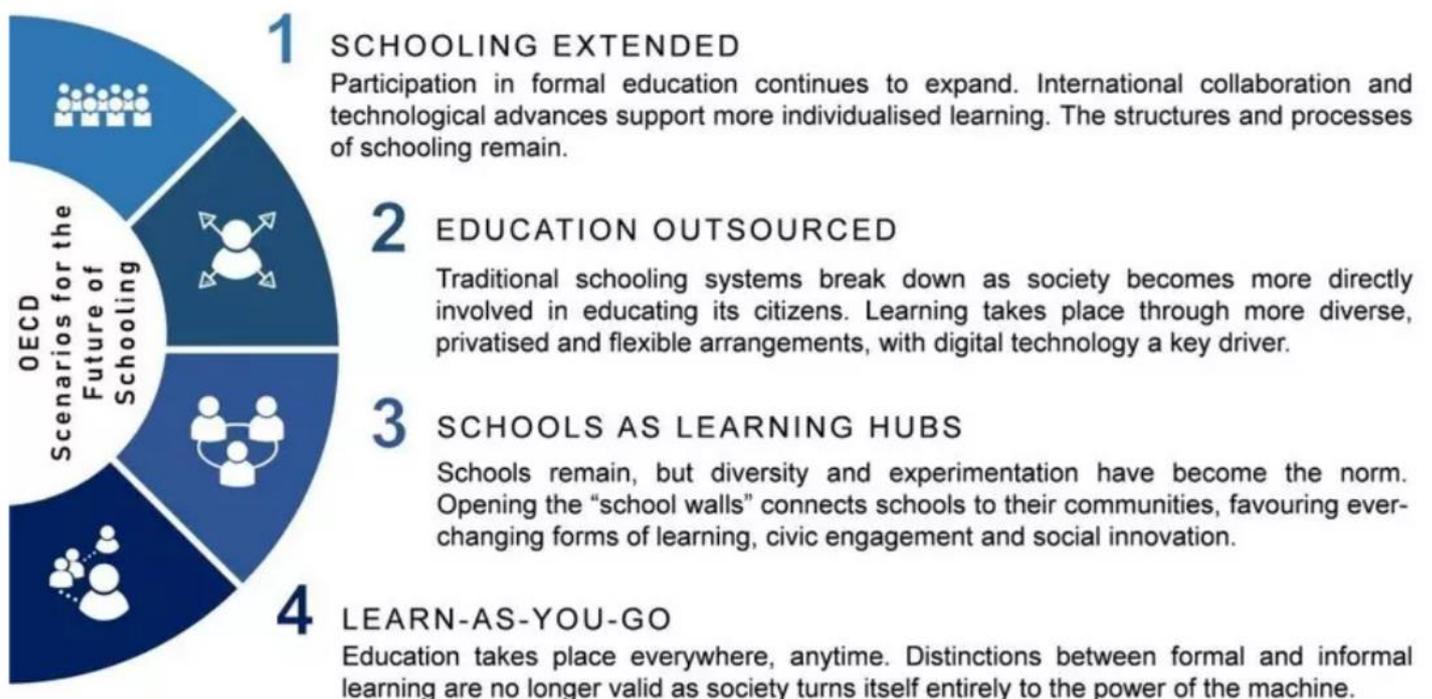**They are not predictions or estimates of the expected impact of COVID-19**

Parameter	Scenario 1	Scenario 2	Scenario 3	Scenario 4	Scenario 5: Current Best Estimate
R_0*	2.0		4.0		2.5
Infection Fatality Ratio[+]	0-19 years: 0.00002 20-49 years: 0.00007 50-69 years: 0.0025 70+ years: 0.028		0-19 years: 0.0001 20-49 years: 0.0003 50-69 years: 0.010 70+ years: 0.093		0-19 years: 0.00003 20-49 years: 0.0002 50-69 years: 0.005 70+ years: 0.054
Percent of infections that are asymptomatic[§]	10%	70%	10%	70%	40%
Infectiousness of asymptomatic individuals relative to symptomatic[¶]	25%	100%	25%	100%	75%
Percentage of transmission occurring prior to symptom onset**	30%	70%	30%	70%	50%

---

[19] https://www.cdc.gov/coronavirus/2019-ncov/hcp/planning-scenarios.html

The future of education[20]

−	COVID-19 has shown us we **must prepare for uncertainty** in our future plans for education

−	The education sector could be **transformed completely by re-envisioning the learning space**; and using multiple physical / virtual spaces both in and outside of existing schools

−	There could be **personalization of content and pedagogy** for each student, enabled by **cutting-edge technology**, using body information, facial expressions or neural signals

−	There is an opportunity to **develop agile responsive educational systems**, with multiple variations and **'evolutionary', as well as 'revolutionary' scenarios**, such as:

	✓	**Modernizing and extending current schooling**, with largely standardised content and spaces across the system; mostly school-based, with digital technology increasingly present, rather than to revolutionise teaching and learning

	✓	**Schools (formal teaching) disappear altogether** due to rapid advancements in artificial intelligence, virtual and augmented reality, and the Internet of Things where it is possible to assess and certify knowledge, skills and attitudes instantaneously

	✓	Four potential scenarios for the future of schooling are presented on *Figure 2*[21]

−	Rethinking and rewiring the educational system poses **important questions**:

	✓	How to reconfigure the spaces, the people, the time and the technologies to create powerful learning environments?

	✓	What is the right balance between modernizing and disruption?

	✓	How to reconcile new goals with old structures?

	✓	How to leverage new potential with existing capacity?

	✓	How to support globally minded and locally rooted students and teachers?

	✓	How to foster innovation while recognising the conservative nature of education?

	✓	Who is responsible for the most vulnerable members of our society?

	✓	What regulatory system is required for data ownership and citizen empowerment?

Figure 2. Scenarios for the future of schooling as of 28 January 2021 (OECD[21])

1 **SCHOOLING EXTENDED**
Participation in formal education continues to expand. International collaboration and technological advances support more individualised learning. The structures and processes of schooling remain.

2 **EDUCATION OUTSOURCED**
Traditional schooling systems break down as society becomes more directly involved in educating its citizens. Learning takes place through more diverse, privatised and flexible arrangements, with digital technology a key driver.

3 **SCHOOLS AS LEARNING HUBS**
Schools remain, but diversity and experimentation have become the norm. Opening the "school walls" connects schools to their communities, favouring ever-changing forms of learning, civic engagement and social innovation.

4 **LEARN-AS-YOU-GO**
Education takes place everywhere, anytime. Distinctions between formal and informal learning are no longer valid as society turns itself entirely to the power of the machine.

---

[20] https://www.weforum.org/agenda/2021/01/future-of-education-4-scenarios/
[21] https://www.oecd-ilibrary.org/education/back-to-the-future-s-of-education_178ef527-en

– **Higher education** has gone through **tremendous change** during the COVID-19 pandemic
– Institutions with prior investment in digital technologies are emerging more agile and resilient
– A shifting landscape across **higher education** outlines **five key interconnected trends**[22]:
  6) **Communications help students feel connected**: 75% of students wanted to receive weekly (or even more frequent) pandemic-related updates, reinforcing a sense of belonging through online communities and other digital channels
  7) The pandemic has **worsened existing trust gaps** between university leadership, students, and staff, mostly due to a lack of resources provided during the restrictions
  8) **Juggling wellbeing concerns** due to social distancing/lockdowns, compounded by various well-being challenges, from financial anxieties to familial responsibilities
  9) Students are drawn to **online learning** and many institutions are investing in new modalities/revenue streams, including **more flexible learning options**
  10) **Uncertainties remain around future plans**: 51% of students are reconsidering their education plans; 60% are concerned about finding employment after graduation; and an increase in adult learners' enrolment is expected due to the need to reskill/upskill

Future predictions for the economy[23][24]

– The **economic downturn,** resulting from COVID-19 and related measures, is having **substantial impact on people's lives and livelihoods** due to growing unemployment, income reduction, and increasing uncertainty about future jobs and income
– The pandemic has the potential to create **long-lasting structural changes** in the global and UK economy where **government interventions will play a key role** in determining the eventual **population health and wellbeing outcomes**
– **Four scenarios for the world after COVID-19**[25] were developed in May 2020, challenging how we respond and prepare for uncertainty *(Figure 3)*
– **Global growth outcomes** could follow any of the following scenarios:
  ✓ **Baseline scenario**: economic activity would recover to 4% in 2021 and 3.8% in 2022
  ✓ **Downside scenario**: global economy could face another year of below-potential growth before a rebound in 2022
  ✓ **Severe downside scenario**: financial crises erupt and global economy could contract for a second consecutive year (which has not occurred since the Second World War)
  ✓ **Upside scenario**: growth could average nearly 5% over the next two years (if dramatic decline in COVID-19 spread due to effective control and prompt extensive vaccination)
– Economy predictions are **dependent on:**
  - the **spread or containment of COVID-19**
  - the **pace of vaccine dissemination** over the next two years
  - the **level of global financial stress**
– **The level of vaccine coverage** could define the future pandemic course:
  ✓ Vaccination in advanced economies and major emerging market and developing economies (EMDEs) achieve widespread coverage in the second half of 2021
  ✓ Failures in vaccine deployment could delay this process by more than a year
  ✓ Vaccination would occur two to four quarters later in other EMDEs and low-income countries (LICs) partly due to logistical impediments

[22] https://www.weforum.org/agenda/2020/11/evolution-higher-education-covid19-coronavirus
[23] https://onlinelibrary.wiley.com/doi/epdf/10.1111/1475-5890.12230
[24] https://www.weforum.org/agenda/2021/01/scenarios-global-economic-growth-covid19-charts/
[25] https://www.imd.org/contentassets/b9e9a6572dbc4d11af99038674577ec7/imd-covid-19-scenario-planning-report.pdf

Figure 3. Four scenarios to challenge strategies and response to COVID-19[26]

	Global Marketplace	**Digital Reset**	**Back to Basics**	**Walled Gardens**
Global environment	Quick return to global geopolitical stability, openness and international cooperation. Harmonization of trade and engagement rules on many topics: data flows, cyber security, Internet governance.	Strong push for multilateral cooperation. Harmonization of trade and engagement rules on many topics, including guidelines on responsible and ethical use of digital technologies and information flows.	Unstable geopolitical environment, protectionism takes over: stagnant growth. Lack of international harmonization in privacy standards and digital governance.	Societies trend towards nationalism, isolationism, and protectionism. Strong government intervention to support local economies. Local digital giants reduce the power of global players.
Business landscape	Vibrant and highly competitive business landscape with small and large companies competing from within and outside reference industries. Digital business models unfold their full value. High rates of corporate mortality.	Digital disruptors are challenged by consumers' lack of trust in online services. Small and large companies team together in consortia to offer digitally secured services through platforms. Intense competition across consortiums.	Large regional companies dominate the landscape. Markets consolidate within industries. Digital business models lose their strengths in terms of experience and platform value. The tech bubble bursts.	Multinational companies become regional. Global trade shrinks because of protectionism. Some local and regional markets thrive, while others suffer. Successful companies enter market adjacencies to keep up growth.
Market regulation	Business-friendly regulation favoring industry convergence: finance & telecom & e-commerce; energy & automotive; post & e-commerce.	Business-friendly regulation favoring industry convergence: finance & telecom & e-commerce; energy & automotive; post & e-commerce.	Regulation hindering industry convergence. Global giants are impacted and protected. Governments enact laws to protect people from poor ethical digital practices.	Business-friendly local and regional regulation favoring industry convergence: finance & telecom & e-commerce; energy & automotive; post & e-commerce.
Innovation trends	Asia emerges as the main global driver of innovation. New innovations scale quickly across the globe. Digital innovation expands from base in US to global.	Asia emerges as the main global driver of product and business innovation. Digital innovation slow-down due to consumer/company disengagement.	Digital innovation continues to be driven by a small set of large monopolistic tech companies. Security takes off.	Innovation continues but at local and regional levels. Differences among regions become more pronounced.
Consumer engagement	Consumers/companies have a digital always-on approach. Personalized products expand at the expense of privacy & security.	Consumers are disillusioned by digital: costs of being online are higher than benefits. Consumers/companies value privacy and security first: • They want control & ownership of their data. • Trust in a vendor is the key value in the purchasing process.	Consumers are aware of the privacy and security costs of being digital, and reluctantly bear these risks. Consumers/companies have limited leverage over the data that is being collected about them whenever they are online. Trust in technology providers that guarantee privacy and security is highly valued by consumers/companies.	Consumers/companies have a digital always-on approach. Personalized products expand at the expense of privacy & security. Shift away from global brands like Google, Nestlé, Nike, Amazon, to more local and regional brands.

26 https://www.imd.org/research-knowledge/reports/scenario-planning-for-a-post-covid-19-world/

– **Delays in vaccine rollout could result in persistently higher COVID-19 caseloads**, while an **accelerated deployment could reduce the pandemic's spread** *(Figure 4)*

Figure 4. Impact of vaccine coverage assumptions on number of COVID-19 cases in major economies compared to baseline scenario (Source: World Bank)[27]
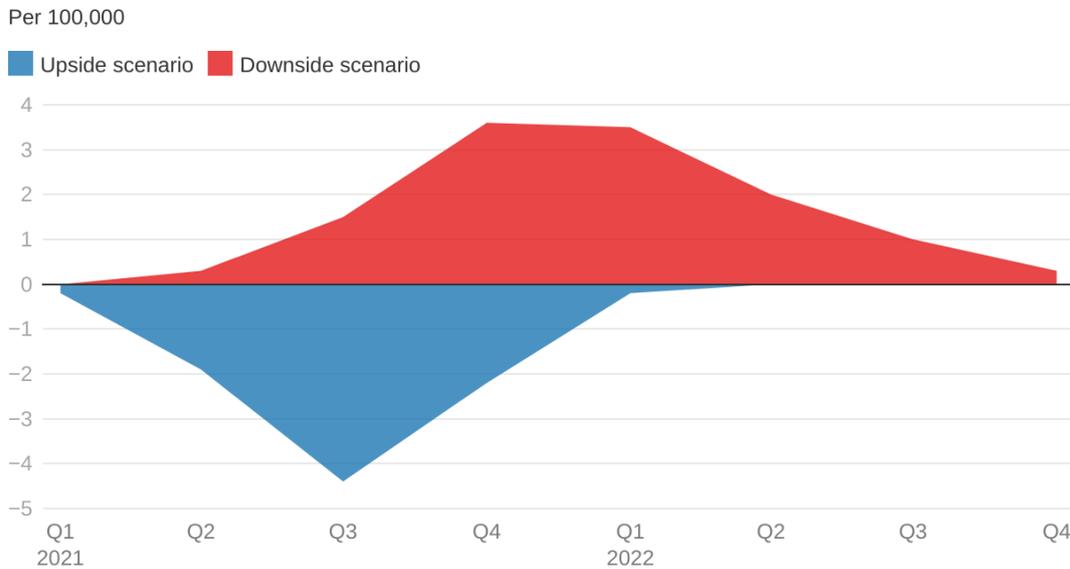
Blue (red) areas show the difference of new daily confirmed COVID-19 cases per 100000 individuals between the upside (downside) scenario and the baseline pandemic scenario. Scenarios are modelled using a stochastic susceptible-infected-recovered (SIR) model as in Zhou and Ji (2020).

– Building on a range of factors and perspectives, it is possible to outline **four directions for post COVID-19 economic development[28]** *(Figure 5)*

Figure 5. Four directions for post COVID-19 economy
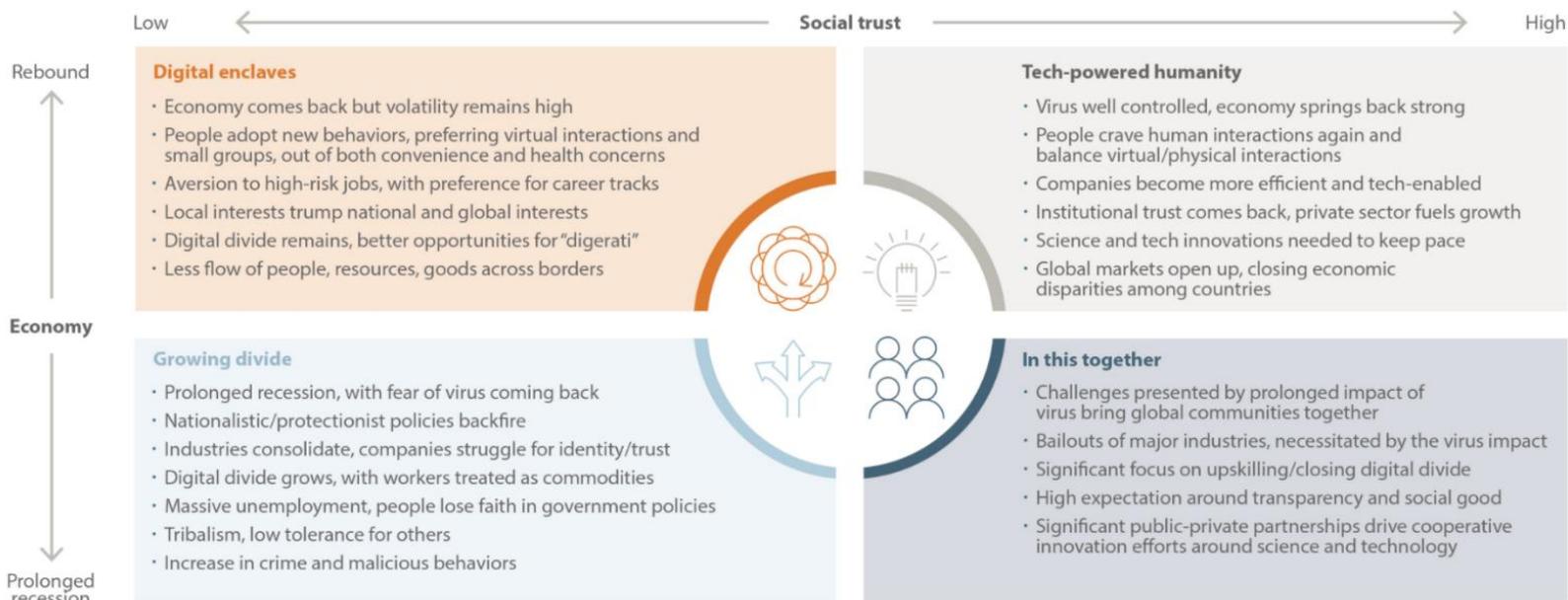
[27] https://www.weforum.org/agenda/2021/01/scenarios-global-economic-growth-covid19-charts/
[28] https://www.heidrick.com/Knowledge-Center/Publication/COVID19_and_the_future_of_work_Four_scenarios

Sustainable recovery from COVID-19
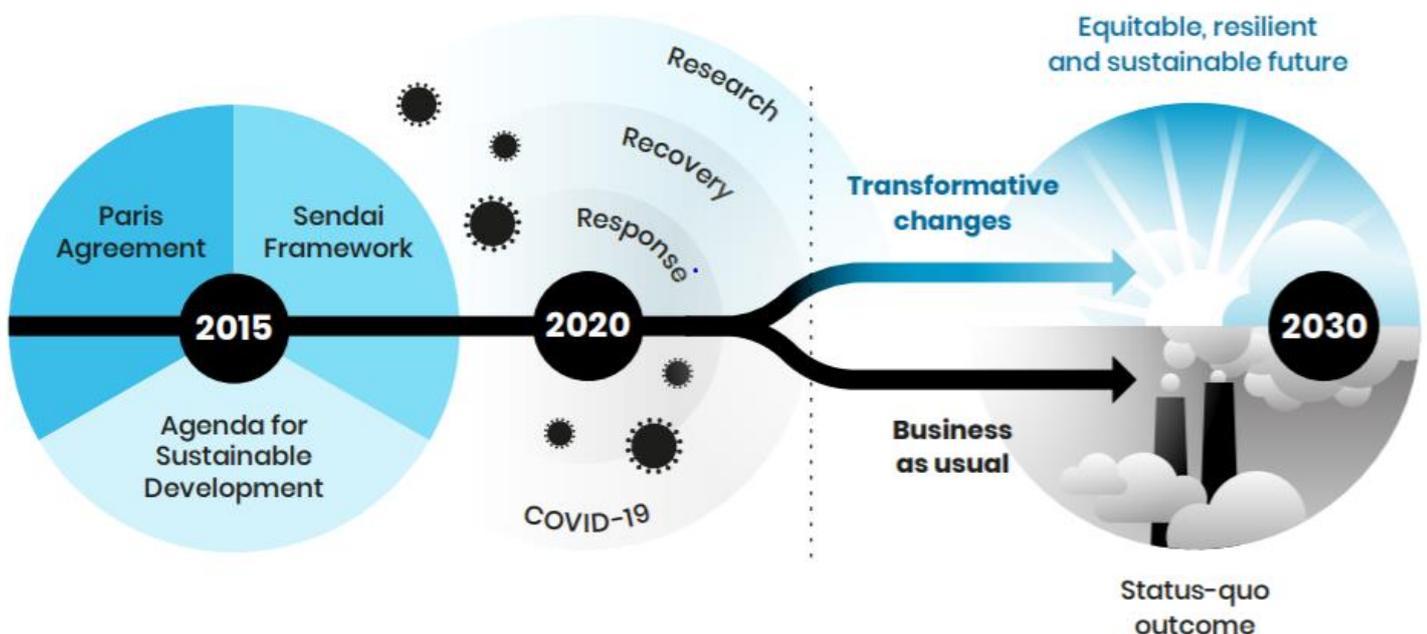
Overview[29]

- Countries **cannot allow to neglect anymore environmental protection, social safety nets, health systems and emergency preparedness,** in order to save money
- The COVID-19 crisis has shown that **people can support even difficult policies if decision-making is transparent, evidence-based, and inclusive**, and has the clear aim of protecting their health, their families and their livelihoods
- There has been **widespread public support for policies** that seek not only to maximize economic growth, but to **protect and enhance people's wellbeing**, as well as to **combat environmental and biodiversity destruction**
- The **integral connection between the environment, health and the economy** requires health leaders to be directly involved in the design and implementation of recovery plans

Key approaches to driving sustainable recovery from COVID-19

The 2030 Agenda for Sustainable Development[30][31] *(Figure 6)*
- **Progress towards Agenda 2030 have been disrupted and stalled** by the pandemic
- **Bold policies and interventions** are required to steer the world back on track towards **achieving the Sustainable Development Goals (SDGs)**
- Implementing the SDGs provides an central route for a recovery that leads to **greener, more inclusive economies; and stronger, more resilient societies**
- Transformation design and implementation need to be informed by **up-to-date dynamic intelligence and research**

Figure 6. Choice between business as usual and transformative change[30]

Equitable, resilient and sustainable future

Research / Recovery / Response

Transformative changes

Business as usual

Status-quo outcome

COVID-19

2015 — Paris Agreement, Sendai Framework, Agenda for Sustainable Development

2020

2030

---

[29] https://www.who.int/news-room/feature-stories/detail/who-manifesto-for-a-healthy-recovery-from-covid-19
[30] https://www.un.org/sustainabledevelopment/sdgs-framework-for-covid-19-recovery/
[31] https://www.un.org/en/pdfs/UNCOVID19ResearchRoadmap.pdf

A Manifesto for a Healthy Recovery from COVID-19[32]

The **World Health Organization (WHO) multi-sectoral approach** to recovery includes:

1) Protect and preserve the source of human health: Nature
2) Invest in essential services, from water and sanitation to clean energy in healthcare facilities
3) Ensure a quick healthy energy transition
4) Promote healthy, sustainable food systems
5) Build healthy, liveable cities
6) Stop using taxpayers money to fund pollution (e.g. subsidizing fossil fuels)

Once-in-a-lifetime opportunity to ensure a sustainable recovery[33]

The **Organization for Economic Co-operation and Development (OECD)** suggests **four approaches** to sustainable recovery:

1) Step up actions for a **green and inclusive recovery**
2) Speed the **transition to a low-emissions economy**
3) Track progress through **pertinent, comparable and timely data**
4) **Leverage finance to invest** in the green recovery

Dimensions for assessing whether recovery packages can "build back better" include: alignment with long-term emission reduction goals, factoring in resilience to climate impacts, slowing biodiversity loss and increasing circularity of supply chains *(Figure 7)*

Figure 7. Key dimensions for building back better
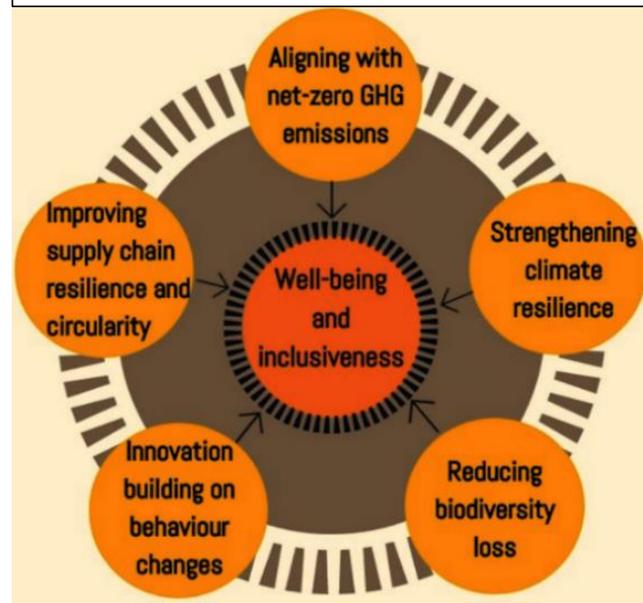
European Union (EU) Recovery Plan[34][35][36][37]
– The plan provides a **framework, considering all three dimensions (social, economic and environmental) of sustainable development**
– The EU initiated the **"Next Generation EU"**, a financial mechanism to counteract the impact of the COVID-19, with a proposed € 750 billion funding for recovery to reinforce the European 2021 - 2027 multiannual financial framework (MFF)

Country comparison
Recovery plans and measures have been introduced to lead countries out of the COVID-19 pandemic and counteract the social, environmental and economic challenges across the world[38] *(Table 6)*

---

[32] https://www.who.int/news-room/feature-stories/detail/who-manifesto-for-a-healthy-recovery-from-covid-19
[33] https://www.oecd.org/coronavirus/en/themes/green-recovery
[34] https://ec.europa.eu/jrc/en/publication/eur-scientific-and-technical-research-reports/sustainable-recovery-eu
[35] https://publications.jrc.ec.europa.eu/repository/bitstream/JRC122301/recovery_plan_and_sdgs_final_online_1.pdf
[36] https://ec.europa.eu/jrc/en/news/jrc-study-eu-post-covid-recovery-strongly-connected-all-sustainable-development-goals
[37] https://www.europarl.europa.eu/news/de/headlines/economy/20200513STO79012/covid-19-eu-plan-fur-wirtschaftliche-erholung
[38] https://www.imf.org/en/News/Articles/2020/12/21/na122220five-charts-on-the-euro-areas-postcovid19-recovery-and-growth

Table 6: Country examples of COVID-19 recovery plans

Country	Recovery plan

Germany[39]	**A Development and Resilience Plan** sets out policy priorities for a sustainable and inclusive social and economic recovery; and translates them into relevant measures. It includes **six key areas** that focus on overcoming the **two great challenges of our time - climate change and digital transformation:**
	   1) Climate policy and energy transition
	   2) Digitization of the economy and infrastructureDigitization of education
	   4) Strengthening social participation
	   5) Strengthening a pandemic-resilient health system
	   6) Modern financial management and dismantling of investment barriers

Denmark[40][41]	– Proposed **green innovations**, including insulation, window replacements and replacing of oil-fired heating between 2020-2026 – Extra funding to companies who work towards green transition and a circular economy
Sweden[41][42]	– Investment to increase housing energy performance and to support improvements of rental properties – Budget bill 2021 has proposed **green investments, extra resources to welfare, and tax reductions** on recovery labour and enterprise

Canada[43][44]	– **First priority** of the COVID-19 Economic Response Plan is to **protect the health and safety of the population**, including:
	  ✓ Direct support to people and businesses
	  ✓ Tax and customs duty payment deferrals to meet liquidity needs of businesses
	  ✓ Liquidity support through Bank of Canada, the Office of the Superintendent of Financial Institutions (OSFI), the Canada Mortgage and Housing Corporation (CMHC) and commercial lenders
	– **Growth plan focused on investing in 'cleaner' travel options** including zero-emission buses, clean power, green infrastructure with focus on energy efficiency building retrofits

Australia[45]	– The Economic Recovery Plan includes a '**job maker' hiring credit**: $200 per week for those between 16-29 years of age; and $100 per week for those between 30-35 years of age – The credit is estimated to support around 450,000 jobs for young people and is payable for up to 12 months for each new job created – Eligible employees are required to work a minimum of 20 hours per week – Eligible employers need to demonstrate an increase in overall employee headcount and payroll for each additional new position created – Other measures include skills training courses, tax relief schemes, and an improvement of infrastructure

New Zealand[41][46]	– Based on the principle of the **"best economic response is a strong health response"** a comprehensive economic rebuild and recovery plan has been initiated, including:
	  ✓ **Investing in people** – to improve the skills of people by free training
	  ✓ **Creating jobs and improving productivity** – invest in construction sector and environmental jobs
	  ✓ **Preparing for the future** – promoting e-commerce and decarbonisation
	  ✓ **Supporting small businesses and entrepreneurs** - loan schemes and tax changes
	  ✓ **Positioning New Zealand globally** – trade agreements and support to reach overseas markets
	– "Warmer Kiwi Homes" programme for low-income households, providing subsidised insulation and heating

South Korea[47]	– South Korea's Green New Deal is a national strategy to create 659,000 jobs and help the country **overcome the economic crisis while addressing climate and environmental challenges** – $61 billion in five years (2020-25) has been allocated to **increase renewable energy, to expand green mobility** (electric and hydrogen powered vehicles), and to **establish zero energy premises**, and **smart green cities**

[39] https://www.bundesregierung.de/breg-de/aktuelles/aufbau-und-resilienzplan-1829280
[40] erhvervsfremmebestyrelsen.dk
[41] https://www.carbonbrief.org/coronavirus-tracking-how-the-worlds-green-recovery-plans-aim-to-cut-emissions
[42] https://www.government.se/press-releases/2020/09/budget-bill-for-2021-working-sweden-out-of-the-crisis--together/
[43] https://cib-bic.ca/en/partner-with-us/growth-plan/
[44] https://www.canada.ca/en/department-finance/services/publications/economic-fiscal-snapshot/overview-economic-response-plan.html
[45] https://ministers.treasury.gov.au/ministers/josh-frydenberg-2018/media-releases/economic-recovery-plan-australia#:~:text=Our%20Economic%20Recovery%20Plan%20for,economy%20and%20secure%20Australia's%20future.&text=The%202020%2D21%20Budget%20commits,new%20measures%20to%20create%20jobs.
[46] https://www.beehive.govt.nz/release/economic-plan-will-support-jobs-and-covid-19-recovery
[47] https://www.oecd.org/coronavirus/policy-responses/making-the-green-recovery-work-for-jobs-income-and-growth-a505f3e7/

COVID-19 epidemiology update

Countries of the European Union/European Economic Area (EU/EEA) and The United Kingdom

A comparison between case rates, death rates, testing rates and positivity rates (% of positive tests) across Europe is presented in *Table 7*

- For the EU/EEA Countries, the data is from the period 25th January – 7th February 2021[48]
- The UK data is from 27th January to 9th February 2021[49]. Any approximate rates for the UK data are calculated using the Office for National Statistics mid-2019 population estimates[50]

Cases over the latest 14-day period

- Currently, Portugal has the highest 14-day case notification rate (1190.1 per 100,000), compared to Iceland which has the lowest (8.4 per 100,000)
- The UK has had a case rate of approx. 422.8 per 100,000

Deaths over the latest 14-day period

- Portugal has the highest 14-day death rate (334.4 per 100,000), compared to Iceland and Liechtenstein which currently have the lowest (both 0 per 100,000)
- The UK has reported 11,265 deaths within 28 days of a positive test, which is approx. 16.9 per 100,000

Testing for COVID-19

- Cyprus has the highest testing rate for COVID-19 (25,899 per 100,000), compared to Poland who has the lowest recorded testing rate (715 per 100,000)
- The UK has had a testing rate of approx. 13,387.4 per 100,000

---

[48] https://covid19-country-overviews.ecdc.europa.eu/
[49] https://coronavirus.data.gov.uk/
[50] https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationestimates

Table 7: 14-day case notification rate (per 100,000), 14-day death rate (per 1,000,000), positivity (%) and testing rate (per 100,000) for countries of the European Union/European Economic Area Source: European Centre for Disease Prevention and Control (extracted 15/02/2021)

| Country	Case rate Value	Case rate Trends	Death rate Value	Death rate Trends	Positivity (%) Value	Positivity (%) Trends	Testing rate Value	Testing rate Trends
Austria	224.8		65.2		1.1		10,840	
Belgium	277		52		4.4		3,027	
Bulgaria	127.4		73		7.8		909	
Croatia	157.5		83.2		7.1		1,019	
Cyprus	198.9		29.7		0.4		25,899	
Czechia	914.6		176.5		13.1		3,596	
Denmark	108.9		35.5		0.3		13,814	
Estonia	570		67.9		12.2		2,521	
Finland	97.7		8.3					
France	423		88.3		6.4		3,265	
Germany	176.9		115.5		6		1,344	
Greece	111.6		30.4		2.8		2,357	
Hungary	176.4		115.7		8.6		1,069	
Iceland	8.4		0		0.2		1,975	
Ireland	326.5		146		5.7		2,500	
Italy	281.5		96.3		4.9		2,810	
Latvia	577.1		122.9		8.5		3,600	
Liechtenstein	187.6		0					
Lithuania	353.3		104.1		8.2		1,814	
Luxembourg	349.2		47.2		1.9		10,016	
Malta	397.7		70.9		3.7		4,257	
Netherlands	317.9		49.1		10.1		1,498	
Norway	69.3		6.4		1.4		2,452	
Poland	196.4		98.3		14.5		715	
Portugal	1190.1		334.4		12.8		2,961	
Romania	175.5		57.7		9.5		902	
Slovakia	496.4		220.7		20.2		1,286	
Slovenia	762.2		149		6.7		5,424	
Spain	843.1		129.7		10.7		3,300	
Sweden	394.1		27.3		9.9		1,931	

Other countries

Australia[51][52]

Since the start of the pandemic, there have been 28,892 cases and 909 deaths in total, due to COVID-19. The trend in weekly number of cases/ deaths is presented on *Figure 8:*

– Cases and deaths have been considerably lower in recent months compared to earlier months in the pandemic (June – September 2020)

– A total of 13,702,483 tests have been conducted from the start of the pandemic

Figure 8: Weekly COVID-19 cases and deaths, Australia, 3rd January 2020 – 14th February 2021

28,892
confirmed cases

909
deaths

Source: World Health Organization
Data may be incomplete for the current day or week.
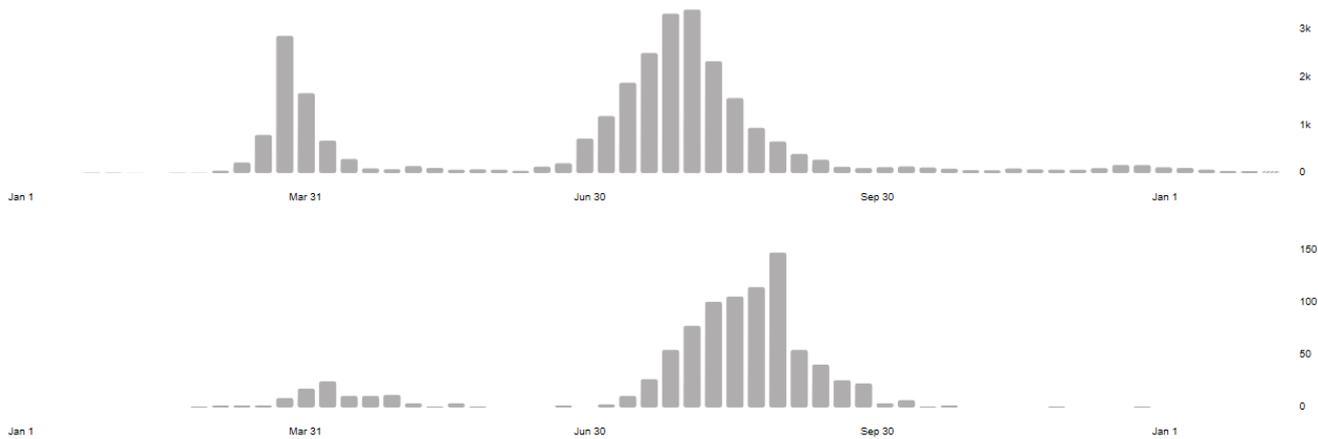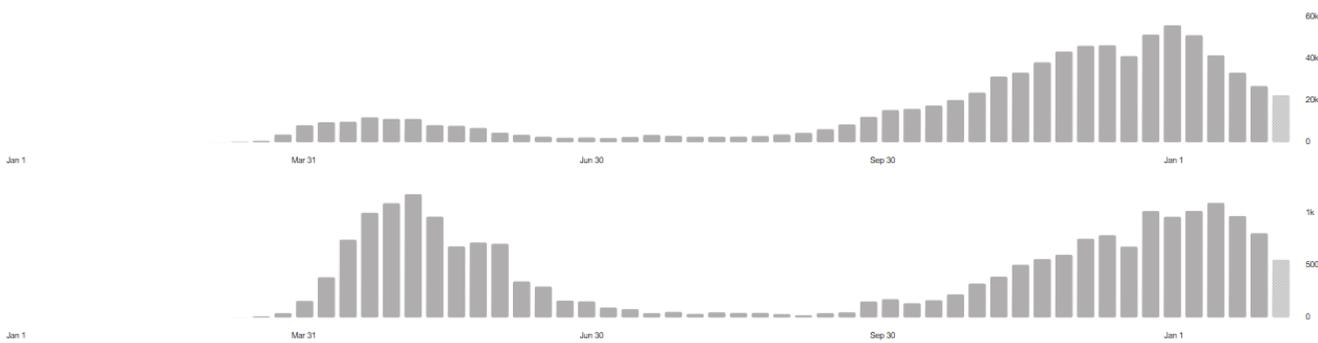
Canada[53][54]

Since the start of the pandemic, there have been 820,306 cases and 21,162 deaths in total, due to COVID-19. The trend in weekly number of cases /deaths is presented on *Figure 9:*

– Cases and deaths have been decreasing in the recent weeks, however, in relative terms, both cases and deaths are at a high level

– A total of 23,022,414 tests have been conducted from the start of the pandemic

Figure 9: Weekly COVID-19 cases and deaths, Canada, 3rd January 2020 – 14th February 2021

820,306
confirmed cases

21,162
deaths

Source: World Health Organization
Data may be incomplete for the current day or week.

[51] https://covid19.who.int/region/wpro/country/au
[52] https://www.health.gov.au/news/health-alerts/novel-coronavirus-2019-ncov-health-alert/coronavirus-covid-19-current-situation-and-case-numbers#tests-conducted-and-results
[53] https://covid19.who.int/region/amro/country/ca
[54] https://www.canada.ca/en/public-health/services/diseases/coronavirus-disease-covid-19.html

Canolfan Gydweithredol
Sefydliad Iechyd y Byd
ar Fuddsoddi ar gyfer
Iechyd a Llesiant

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

phwwhocc.co.uk

@phwwhocc   Phwwhocc