COVID-19 Global Trends and Analyses

Global Epidemiology Global Snapshots

December 2020 | Update 2

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CONTENTS

SUMMARY

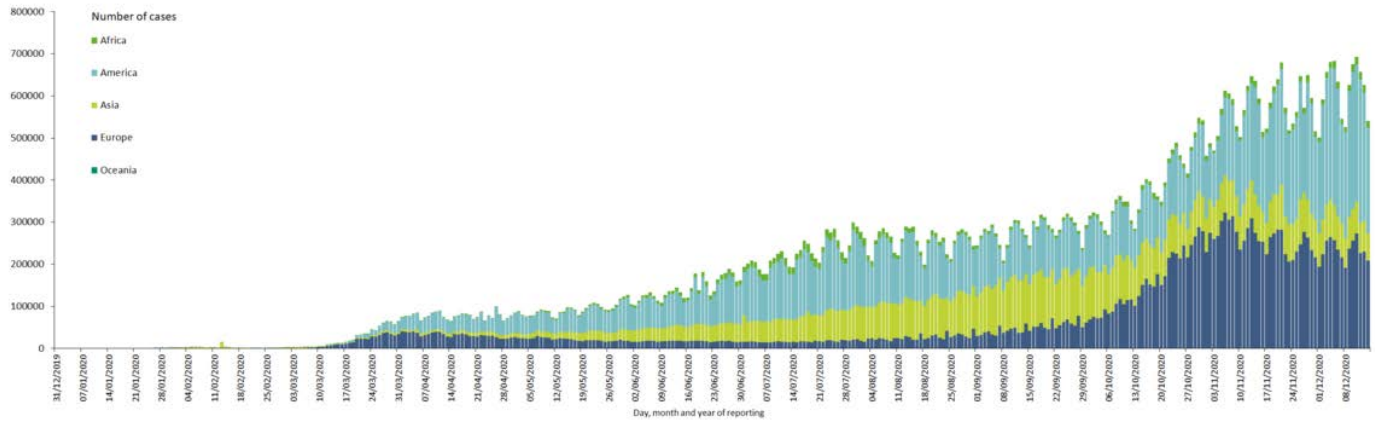
COVID-19 GLOBAL TRENDS AND ANALYSES | 8 – 16 December 2020

- The **global** number of reported cases has surpassed 74 million -- an increase of 17 million in the past four weeks -- and more than 1.6 million deaths as of 16 December.
- In **Europe,** the number of new daily cases has been in decline in most countries for at least two weeks. Exceptions include Germany, the UK, Netherlands, Russia, Turkey, Poland, Ukraine, Romania, Croatia and Sweden.
- In the **United States,** the number of cases has surpassed 17 million (five days after reaching 16 million) and the death toll is more than 313,000. More than 3,260 deaths were reported on 9 December, an all-time high. Likewise, the more than 106,000 people currently hospitalised is the highest ever.
- **Indonesia** has reported more than 623,000 cases and 19,000 deaths. The country continues to report 5,000 to 6,000 new cases daily but reached a record peak of 8,369 on 3 December.
- **India, the Philippines and Nepal** are reporting steady declines in new daily cases.
- **Sri Lanka, Pakistan and Bangladesh** are experiencing second waves.
- **Japan, South Korea and Hong Kong** are each experiencing third waves of cases.
- **Myanmar** continues to report around 1,500 new cases daily.
- **Papua New Guinea** has reported 69 new cases and one death in the past 14 days, with a total of 729 cases and eight deaths.
- **Victoria** has reported zero locally acquired cases for 45 days in a row. However, since Melbourne resumed accepting international arrivals, seven new cases have been diagnosed in quarantine hotels. However, **New South Wales** reported 18 new locally acquired cases on 16-17 December. One was a driver of a van transporting international flight crew from Sydney airport and the others all live in the Northern Beaches municipality of Sydney.

GLOBAL EPIDEMIOLOGY AND TRENDS

The **global** total number of reported cases has surpassed 74 million and 1.6 million deaths as of 16 December[1].
The number of new daily cases globally has been trending between 600,000 and 700,000.

Distribution of COVID-19 cases worldwide, as of 14 December 2020 (source European CDC)[2]



Per capita attack rates and death rates

Attack rates in 12 countries in the Asia-Pacific Region (12 December 2020)

	Cases per 1,000	Tests per 1,000	Population
Singapore	9.9	823	5,871,000
Nepal	8.4	62	29,367,000
India	7.1	109	1,386,012,000
Malaysia	2.5	89	32,549,000
Indonesia	2.2	22	274,803,000
Myanmar	1.9	26	54,572,000
Sri Lanka	1.5	45	21,453,000
Australia	1.1	403	25,631,000
Papua New Guinea	0.8	3.6	9,021,000
Thailand	0.6	14	69,878,000
New Zealand	0.4	266	5,002,000
Vietnam	0.14	14	97,727,000

[1] https://www.worldometers.info/coronavirus/#countries

[2] https://www.ecdc.europa.eu/en/geographical-distribution-2019-ncov-cases

Death rates and case fatality ratios in 12 countries in the Asia-Pacific region (12 December 2020)

	Cases	Deaths	Case fatality ratio (%)	Deaths per million
India	9,826,031	142,616	1.5	103
Indonesia	605,243	18,511	3.1	67
Nepal	246,694	1,674	0.7	57
Myanmar	105,863	2,220	2.1	41
Australia	28,011	908	3.2	35
Malaysia	80,309	402	0.5	12
Sri Lanka	31,375	146	0.5	7
Singapore	58,305	29	0.05	5
New Zealand	2,092	25	1.2	5
Papua New Guinea	720	8	1.1	0.9
Thailand	4,180	60	1.4	0.9
Vietnam	1,391	35	2.5	0.4

European Region

- While most European countries have reported a steady decline in new daily cases, **Germany, the UK and the Netherlands** are experiencing recent surges. **Turkey** is reporting a severe second wave with more than 30,000 new cases every day in the past two weeks. Other countries that have not yet reached a peak in their second waves include **Russia, Sweden, Croatia, Denmark, Finland, Bulgaria, Ukraine, and Serbia.**
- **Poland** became the eighth European country to record more than one million cases.
- An antibody survey of 51,400 people across **Spain** found that 10 per cent tested positive for coronavirus, up from just over 5 per cent in June. Prevalence was highest in Madrid, with 18.6 per cent testing positive.
- In **Southeast England,** the fastest increase in test positivity is among high school children aged 11 to 18 while rates in adults remain flat. **London** has imposed a Tier 3 lockdown closing all bars and restaurants.
- According to the Rosstat statistics agency, 205,500 people died in **Russia** in October, a rise of 47,800 on October 2019. It did not give any explanation for the excess mortality, but said 22,761 people died in October who were either among confirmed or suspected COVID-19 cases. These included 11,630 cases where the primary cause of death was COVID-19.

Sweden | European Region

Sweden has retreated from its no-lockdown stance as the government struggles to stem an alarming rise in the number of coronavirus infections and deaths. The **Stockholm** regional health service reported on 10 December that 99 per cent of intensive care beds were full[3]. Sweden was unique in pursuing a no-lockdown strategy at the beginning of the pandemic, instead relying on a more relaxed approach which relied on voluntary social distancing measures. Although the country's second wave began later than most other European countries, it is much more severe than the first wave with new daily cases peaking at 7,500 -- in a country with a population of just ten million. It has now reported more than 312,000 cases and 7,300 deaths. Sweden's attack rate is 31 per 1,000, compared to 17 per 1,000 in Denmark, 7.3 per 1,000 in Norway, and 5 per 1,000 in Finland. In the past four weeks, the country has reported more than 1,000 deaths -- more than Australia's total deaths since the pandemic began. Its COVID-19 death rate is 726 per million, compared to 158 in Denmark, 80 in Finland and 70 in Norway. Sweden's test rate is the lowest of the four Scandinavian countries and is just one-quarter the testing rate in neighbouring Denmark.

[3] https://www.businessinsider.com.au/sweden-coronavirus-surge-alarm-stockholm-hospitals-herd-immunity-strategy-2020-12?r=US&IR=T

Slovakia | European Region

According to an article in the *British Medical Journal*, COVID-19 infections fell in Slovakia after the rollout of rapid population-wide testing, but experts are not sure how much of the drop was a result of testing, as other restrictions were introduced at the same time[4]. A preliminary analysis of three rapid antigen testing rounds reported that incidence of detected COVID-19 infections decreased by 58 per cent (95% confidence interval 57% to 58%) within one week in the 45 counties of Slovakia that were subject to two rounds of mass testing. This drop increased to 61 per cent when adjusted for geographical clustering, attendance rates, and the epidemiological situation at the time of the first round.

The authors, from the London School of Hygiene & Tropical Medicine, UK, said that this decrease could not be explained solely by the other restrictions and that it highlighted the impact of isolating people who tested positive and quarantining the members of their household. More than five million tests were completed, but rather than the rapid antigen tests being self-administered—as in the mass testing pilot in Liverpool, England—this scheme involved swabbing by more than 20,000 trained medical staff. It used the **SD Biosensor Standard Q** antigen test, the first rapid point-of-care COVID-19 test approved for emergency use by the World Health Organization.

The United States and Canada

- In the past week the **US** has broken all-time records for daily new cases, daily deaths and current hospitalisations. The country has now reported more than 17 million cases and more than 313,000 deaths.
- **ICU beds are more than 95% full** in parts of 22 states, with New Mexico, Arizona, Minnesota, California, Alaska, Louisiana, Alabama, Texas, and North and South Dakota most heavily affected.
- According to a genetic fingerprinting study published in *Science* on 10 December, a biotech conference in **Boston** last February that's already been flagged as a COVID-19 superspreading event **led to at least 245,000 other cases across the US and Europe**[5]. One single case seems to have been responsible for many of the other eventual cases, the team at the Broad Institute in Massachusetts reported.
- The US has begun administering the **Pfizer BioNTech vaccine** to health care workers. The vaccine was authorised by the Food and Drug Administration (FDA) late last week. The first vaccination was to healthcare workers in Queens, New York. Hospitals have decided to stagger vaccination schedules to adequately deal with workers who display side effects such as fevers and aches.
- The FDA also authorised the **Ellume Antigen Test** as the first over-the-counter home diagnostic test for COVID-19[6]. The lateral flow test was developed by the Australian company Ellume, based in Brisbane.
- **Canada** has reported more than 460,000 cases and 13,500 deaths. Ontario, Alberta and Quebec are the most severely affected provinces, each reporting close to 2,000 new cases every day.

[4] https://www.bmj.com/content/371/bmj.m4761

[5] https://science.sciencemag.org/content/early/2020/12/09/science.abe3261

[6] https://www.fda.gov/news-events/press-announcements/coronavirus-covid-19-update-fda-authorizes-antigen-test-first-over-counter-fully-home-diagnostic

Latin America

- The Latin countries of North, Central and South America have been among the hardest hit by COVID-19 in the world. In **South America** alone, more than 12 million cases have been reported (one-sixth of the global total) and more than 340,000 deaths. And that does not include **Mexico** (1.2 million cases) and the countries of Central America and the Caribbean (870,000). Both Mexico and Brazil are led by presidents that have denied the severity of COVID-19 and shunned wearing masks and physical distancing.
- **Brazil, Mexico, Chile and Paraguay** are all experiencing second waves. Brazil, which has lost more lives than any country apart from the US, is already feeling the impact with its seven-day moving average of deaths this week hitting 617, its highest level since early October. **Mexico's CFR** of 9.5 per cent is the highest in the world.

Uruguay -- South America's only COVID-19 success story | Latin America

Uruguay is a small democratic republic bordered by two major Latin American countries: Brazil and Argentina. Both have been seriously hit by the pandemic, and Brazil alone has recorded more cases than the entire population of Uruguay, which has achieved one of the lowest rates of infection in the world. Uruguay's cumulative attack rate of 2.8 per 1,000 compares with 32 per 1,000 in Brazil and 33 per 1,000 in Argentina. Since the start of the global pandemic this country, with a population of 3.5 million, has recorded just over 3,700 cases and 63 deaths, the overwhelming majority of which have been elderly people with chronic illnesses.

Several factors have worked to Uruguay's advantage in controlling the virus. It has high sanitary and hygiene standards in comparison to the rest of the region; the country is not an international transport hub; and the government made an early decision to close its borders when the first cases were detected in March. Dr Giovanni Escalante, the WHO's representative in Uruguay, has credited the simultaneous combination of public health policies, long-term investment, epidemiological surveillance, and voluntary but highly compliant isolation and quarantine for the country's achievements in keeping COVID-19 at bay[7].

Sub-Saharan Africa

- **South Africa** is experiencing a clear second wave reporting more than 8,000 new daily cases across the five most populous provinces. Adolescents aged between 16 and 24 have the highest positive test rates.
- Other countries experiencing a second wave include **Kenya, Sudan, Ethiopia, Nigeria and Uganda.**

Tanzania -- Africa's most extreme example of denial | Sub-Saharan Africa

In May this year, as the COVID-19 pandemic spread across the world, the government of Tanzania stopped reporting cases to the World Health Organization, the only African country to do so[8]. A month later, President John Magufuli declared the country "coronavirus-free." Restrictions placed on the media that prohibit the publication of content on COVID-19 without the approval of authorities have meant that Tanzanians have no access to information. Tanzania has been widely criticised for its COVID-19 response, which has mainly involved widespread denialism. In May, when the government stopped reporting cases, the country had a total of 509 confirmed cases and 21 deaths. Despite claims by the government that there is no coronavirus in the country, it has accepted large amounts of funding for the COVID-19 response, including 27 million euros from the EU, $14 million from the IMF, and a $50.7 million loan by the African Development Bank as 'COVID-19 crisis response budget support.'

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[7] https://www.sbs.com.au/news/dateline/voluntary-quarantine-and-rapid-tests-how-uruguay-became-south-america-s-coronavirus-success-story

[8] https://www.devex.com/news/in-tanzania-election-covid-19-denialism-an-excuse-to-clamp-down-on-dissent-98418

North Africa and the Middle East

- **Iran** became the first country in the region to report more than one million cases.
- **Israel** is reporting a third wave with new daily cases exceeding 2,000. Plans to impose a curfew during Hanukkah were abandoned by the government.
- The Palestinian health ministry has recorded more than 78,000 cases of COVID-19, including 740 deaths in the **West Bank,** territory occupied by Israel since 1967. Strict limitations have been imposed on Christmas events.
- **Egypt's** new cases are increasing, having doubled to more than 400 since mid-November. A midnight curfew has been imposed.
- With a population of just ten million, **Jordan** has reported more than 260,000 cases and 3,365 deaths. However, new daily cases are now in decline, reporting fewer than 2,000 cases on 12 December compared with the peak of 7,500 on 14 November.

Asia-Pacific Region

- New cases continue to decline in India, Nepal and the Philippines; however, **Sri Lanka, Pakistan, and Bangladesh** are each experiencing second waves.
- **Japan, South Korea and Hong Kong** are all experiencing third waves, each more severe than previous waves.
- **Indonesia,** which has reported more than 630,000 cases and 18,800 deaths, continues to report more than 6,000 new cases every day.
- **Myanmar** continues to report around 1,500 new daily cases, a situation that goes back to late October.
- In **Singapore,** the MOH has announced that 152,000 foreign workers – 47 per cent - have been infected[9]. Around 54,500 workers have tested positive for the PCR test while another 98,000 were found via a serology test.

India | Asia-Pacific Region

India has reported more than ten million cases and 143,000 deaths. However, the number of new daily cases has been steadily declining, reporting an average of around 30,000 during the past week compared to the peak of more than 95,000 in mid-September. Among the major states, there were only three — Delhi, Kerala and Haryana — whose growth rate (seven-day compounded daily growth rate) was above one per cent a day in late November. West Bengal and Rajasthan also had growth rates of around one per cent a day. Trends are not uniform across India. The state of **Maharashtra** and its capital Mumbai have long been India's epicentre of the pandemic, accounting for around a fifth of the nation's tally and more than a third of deaths. It was one of the large states whose coronavirus turnaround helped to flatten then reverse the national epidemic curve.

However, some critics have suggested that the decline in reported cases was at least in part due to a decline in tests conducted. **New Delhi**, one of the hotspots in the country, which is experiencing a third wave, reported a steep decline in daily cases from around 8,500 to 3,500 the week of 20 November[10]. However, this coincided with a 50 per cent reduction in tests conducted. The test positivity rate that week was 15.3 per cent, well above the WHO threshold of 5 per cent. Private hospitals were the first to raise the alarm over paucity of COVID-19 ICU beds early in November. Government hospitals too are now running short. In all, New Delhi had just 164 ICU beds vacant in late November.

Testing numbers have been low not just in New Delhi, but across the country. For the four days leading up to 20 November, fewer than one million tests had been performed. Since the end of August, the testing numbers have never been below one million for four days in a row. Except for lower testing numbers, **no other explanation for India's reduction in new COVID-19 numbers has been offered in the published literature.**

[9] https://www.moh.gov.sg/news-highlights/details/measures-to-contain-the-covid-19-outbreak-in-migrant-worker-dormitories

[10] https://indianexpress.com/article/cities/delhi/delhi-coronavirus-cases-lockdown-7053194/

South Korea | Asia-Pacific Region

For most of the year South Korea has kept its coronavirus numbers so low without the use of widespread lockdowns that it was the envy of the world. South Korea's daily number of new cases was once as low as two per day. That number soared to 1,030 new cases on 13 December, the highest daily count since the beginning of the pandemic. The previous two waves included mass clusters that health officials were rapidly able to target and trace. The current wave has spread through numerous small clusters that erupted in nursing homes, hospitals, saunas, bars, restaurants, music halls, churches and factories, most of them in the Seoul metropolitan area, but also in towns farther away. Contact tracing is now very challenging. President Moon Jae-in has warned that South Korea will consider restrictions at the highest level to slow down the current wave.

Experts believe the current wave is being fuelled by younger asymptomatic patients and others who are weary of a prolonged life of social distancing. This week, the government announced that it had secured enough doses of coronavirus vaccines from AstraZeneca and Pfizer to inoculate roughly 86 per cent of the population, but the first batch won't arrive until March[11].

Australia

- **Victoria** has reported zero locally acquired cases for 47 days in a row. However, since Melbourne resumed accepting international arrivals, seven new cases have been diagnosed in quarantine hotels. This reflected the situation across the country with no locally acquired cases in almost two weeks until **New South Wales** reported 18 new locally acquired cases on 16-17 December. One was a driver of a van transporting international flight crew from Sydney airport and the others all live in the Northern Beaches municipality of Sydney.

Healthcare workers (HCW) in Victoria | Australia

In the first wave of COVID-19 cases in Victoria, only one was a HCW. This nurse had cared for an abattoir worker who had come in with a workplace injury and later tested positive for coronavirus, before the Cedar Meats outbreak was understood. No one else who was involved in the man's care was infected. Fast forward to the second wave, and 3,573 Victorian healthcare workers caught COVID-19, more than 7 in 10 of them at work. These HCWs represent around 20 per cent of all Victorian cases in the second wave.

Most of the HCWs who got COVID-19 were nurses or, aged care or disability workers. Of the nurses, around 40 per cent acquired it in an aged care setting[12]. Geriatric wards in several hospitals were receiving patients from residential aged care facilities, where, similarly to the case of the abattoir worker from the first wave, COVID-19 outbreaks were brewing but not yet known about. One of the big criticisms of the system during the outbreak was that healthcare staff didn't have access to adequate personal protective equipment (PPE).

Aged care experts say early on, the issue was more that geriatric wards weren't considered high risk environments warranting the use of N95/P2 masks, and staff wore surgical masks. Compounding that was the fact that staff who worked with older patients weren't trained in how to safely remove their PPE. Experts say that the experience has taught them that it's not enough to only do infection control training for staff in emergency departments, intensive care units and COVID wards. Hospital airflow design also needs to be reassessed.

[11] https://www.nytimes.com/2020/12/10/world/asia/south-korea-covid-vaccine-surge.html

[12] https://www.abc.net.au/news/health/2020-12-10/how-health-care-workers-in-victoria-caught-covid/12961340

GLOBAL SNAPSHOTS | VACCINE UPDATE

AstraZeneca/Oxford ChAdOx1 nCoV-19 vaccine | Vaccine Update

The safety and efficacy data from the **AstraZeneca/Oxford ChAdOx1 nCoV-19 vaccine** trials in the UK and Brazil have been published in *The Lancet*[13]. Participants aged 18 years and older were randomly assigned (1:1) to ChAdOx1 nCoV-19 vaccine or control (meningococcal group A, C, W, and Y conjugate vaccine or saline). Participants in the ChAdOx1 nCoV-19 group received two doses containing 5 × 1010 viral particles (standard dose; SD/SD cohort); a subset in the UK trial received a half dose as their first dose (low dose) and a standard dose as their second dose (LD/SD cohort).

Between 23 April and 4 November 2020, 23,848 participants were enrolled and 11,636 participants (7,548 in the UK, 4,088 in Brazil) were included in the interim primary efficacy analysis. In participants who received two standard doses, vaccine efficacy was 62.1 per cent; in the LD/SD cohort, efficacy was 90.0 per cent. Overall vaccine efficacy across both groups was 70.4 per cent. From 21 days after the first dose, ten cases were hospitalised with COVID-19, all in the control arm; two were classified as severe COVID-19, including one death. There were 74,341 person-months of safety follow-up and the vaccine was found to have an acceptable safety profile. AstraZeneca's vaccine is seen as the most globally important vaccine because it is the cheapest and easiest to manufacture and distribute at fridge temperature.

Pfizer/BioNTech BNT162b2 | Vaccine Update

Safety and efficacy data from the **Pfizer/BioNTech BNT162b2 vaccine** trials have been published in the *New England Journal of Medicine*[14]. A two-dose regimen of BNT162b2 conferred 95 per cent protection against COVID-19 in persons 16 years of age or older. Safety over a median of 2 months was similar to that of other viral vaccines. Meanwhile, on 8 December, the UK began to vaccinate healthcare workers and people over the age of 80 with the vaccine. Canada, the UK, Saudi Arabia, Mexico, Singapore and Israel have approved the vaccine. In the US, the Food and Drug Administration (FDA) granted emergency approval on 11 December. The first doses of the vaccine were administered on the 14 December to healthcare workers in Queens, New York.

Sinopharm | Vaccine Update

The **United Arab Emirates** became the first country to approve the Chinese **Sinopharm vaccine**[15]. The UAE conducted a trial beginning in September of the vaccine involving 31,000 volunteers from 125 nations. Volunteers between 18 and 60 years old received two doses of the vaccine over 28 days. The trial produced 86 per cent efficacy and no safety issues. **Bahrain** has also approved the vaccine.

[13] https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(20)32661-1/fulltext

[14] https://www.nejm.org/doi/full/10.1056/NEJMoa2034577

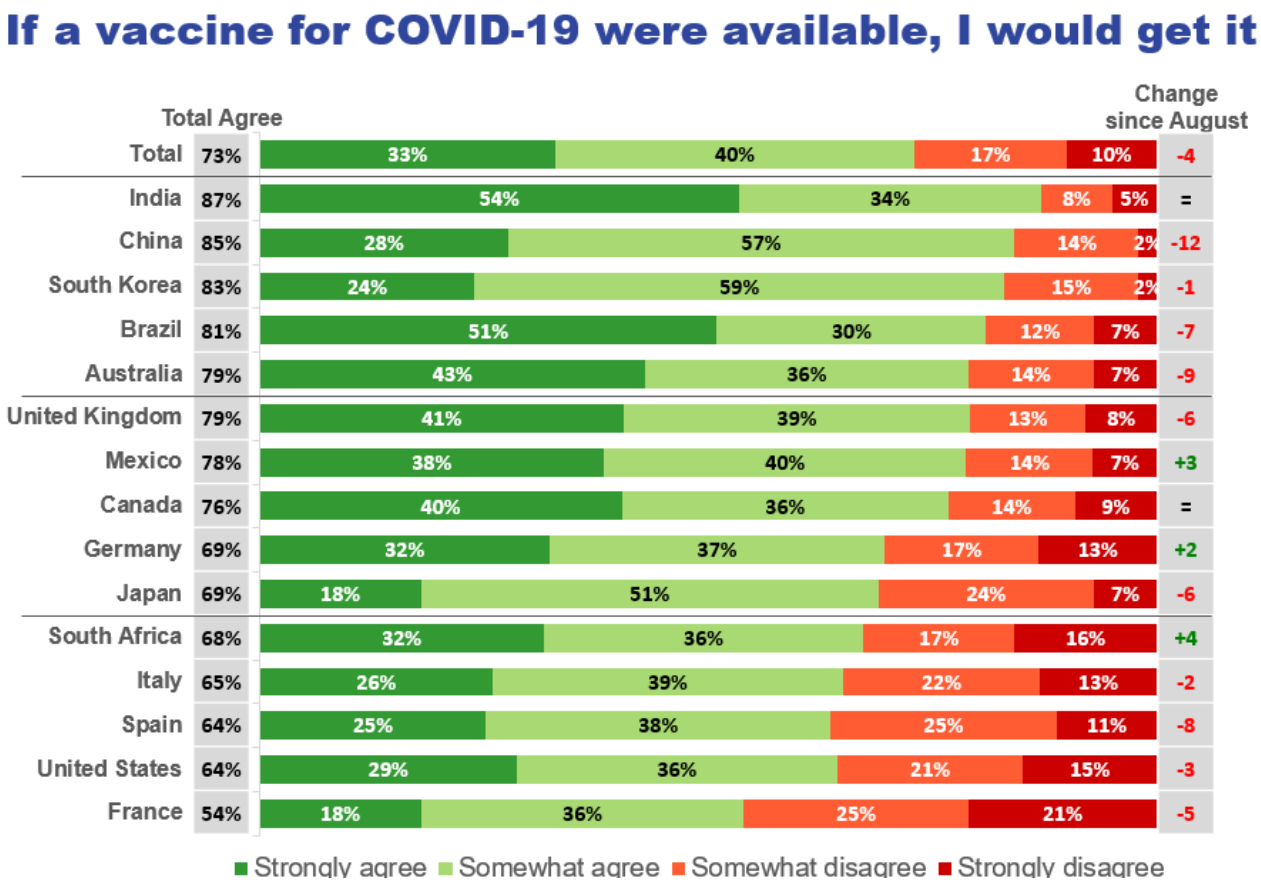
[15] https://www.theguardian.com/world/2020/dec/09/chinese-covid-19-vaccine-has-86-efficacy-uae-says

University of Queensland/CSL | Vaccine Update

The **University of Queensland** and CSL announced on 11 December that they will not progress the **v451 COVID-19** vaccine candidate to Phase 2/3 clinical trials[16]. The Phase 1 trial of the UQ-CSL vaccine, which uses molecular clamp technology, has shown that it elicits a robust response towards the virus and has a strong safety profile. There were no serious adverse events or safety concerns reported in the 216 trial participants. However, the Phase 1 data also showed the generation of antibodies directed towards fragments of a **protein (gp41) derived from HIV**, which is a component used to stabilise the vaccine. Trial participants were fully informed of the possibility of a partial immune response to this component, but it was unexpected that the levels induced would interfere with certain HIV tests.

Global Vaccine Hesitancy

In a World Economic Forum/Ipsos survey of 18,526 adults in 15 countries, **only 73 per cent say they would get a COVID-19 vaccine** if available - down four points since August[17]. The recent survey was conducted prior to several companies announcing encouraging vaccine efficacy in field trials. Since August, vaccination intent has declined in ten of the 15 countries, most of all China (down 12 points to 85 per cent), **Australia** (down nine points to 79 per cent) and Spain (down eight points to 64 per cent). More than four in five people in India, China, South Korea, and Brazil say they would get a vaccine if available – compared to just over half in France and about two-thirds in the US, Spain, Italy, South Africa, Japan, and Germany.



[16] https://www.uq.edu.au/news/article/2020/12/update-uq-covid-19-vaccine

[17] https://www.weforum.org/press/2020/11/survey-shows-rising-vaccine-hesitancy-threatening-covid-19-recovery/

Reasons for not taking a vaccine

In nearly equal proportions, those who do not intend to take a vaccine for COVID-19 say that they are worried about the side effects (**34 per cent**) and that they are worried that vaccines are moving through clinical trials too fast (**33 per cent**). Fewer say they don't think the vaccine will be effective (**10 per cent**), they are against vaccines in general (**10 per cent**), and that the risk they'll get COVID-19 is too low (**8 per cent**).

Concern about side effects is highest in **Japan** (**62 per cent**) and **China** (**46 per cent**). Worry that the clinical trials are rushed is highest in **Brazil** and **Spain** (**48 per cent** in both). General opposition to vaccines in general among those who won't get one is highest in **South Africa** (**21 per cent**) and **India** (**19 per cent**).

In a separate June survey of 13,426 people in 19 countries, comprising 55 per cent of the world's population, 71.5 per cent of participants reported that they would be very or somewhat likely to take a COVID-19 vaccine[18]. Differences in acceptance rates ranged from almost 90 per cent (in China) to less than 55 per cent (in Russia). Respondents reporting higher levels of trust in information from government sources were more likely to accept a vaccine and take their employer's advice to do so.

In the **United States**, five pollsters that have recently tracked how Americans feel about a coronavirus vaccine have found a mixed willingness to receive one, with **a range of 45 to 61 per cent of the public saying they will or are likely** to get the injections[19]. In a Quinnipiac University poll, 6 in 10 registered voters said they're willing to get a vaccine "if it is approved by government health officials." Another poll, from AP-NORC, found that just under half — 47 per cent — currently plan to get the vaccine when it becomes available. An additional 26 per cent said they don't plan on vaccinating, while 27 per cent are unsure. That last category is crucial.

The Quinnipiac survey found 33 per cent of people were not willing. An Axios-Ipsos poll also released this week found 47 per cent of people were not likely to get the vaccine, and a Pew Research Centre survey released last week found that 39 per cent said they would not get it.

A November **survey of 3,000 adult Australians** by the ANU Centre for Social Research and Methods found that only 58.5 per cent say they will definitely get a COVID-19 vaccine once it is available[20]. A further 29 per cent were not certain if they would get the vaccine. But six per cent of the population say they definitely won't, with another seven per cent of Australians saying they will probably not get the vaccine. They found that women, those living in disadvantaged areas, those who reported that risks of COVID-19 were overstated, and those who had more populist views and higher levels of religiosity were more likely to be hesitant or resistant to a vaccine.

[18] https://www.nature.com/articles/s41591-020-1124-9

[19] https://www.washingtonpost.com/nation/2020/12/09/coronavirus-covid-live-updates-us/

[20] https://www.anu.edu.au/news/all-news/study-finds-high-level-of-covid-vaccine-resistance

GLOBAL SNAPSHOTS | GLOBAL HEALTH

The Impact of COVID-19 on Pregnant Women and Newborns

The COVID-19 pandemic has been an unparalleled test of healthcare services in all countries. The direct and indirect impacts of the pandemic on women and newborns are widespread. Pregnant women do not stop needing care in a pandemic, nor can, nor should, care be delayed. Babies keep being born and the usual pregnancy-related complications continue, regardless of the pandemic.

Pregnant women themselves do not appear to be at significantly increased risk of adverse outcomes for themselves or their baby, although when they do become unwell, they may be more likely to need intensive care treatment[21]. Reports from the United States show that among women of reproductive age with COVID-19, **pregnancy was associated with an increased risk of intensive care** unit admission and receipt of mechanical ventilation, although not with maternal death[22]. There is also some evidence of **increases in preterm birth** in women with COVID-19, though this may be due to changes or concerns in clinical practice rather than an increase in the biological risk of prematurity[1]. In some countries, particularly low- and middle-income countries, the healthcare costs for pregnant women admitted with severe COVID-19 may be expensive and this again makes accessing proper care difficult.

One of the biggest challenges for pregnant women has been that many essential health services have been disrupted during the pandemic[23]. In a recent WHO Pulse Survey, **antenatal care was one of the most frequently disrupted services**[24]. Lock-down policies may mean women are unable to attend facilities to give birth. The absence of clear guidelines during COVID-19 and sufficient personal protective equipment (PPE) have further impacted care. Diverting experienced health workers, including midwives, to COVID-19 wards has also exposed them to a greater risk of contracting COVID-19, becoming ill themselves, and further decreasing maternity unit staffing[25].

Disruptions to essential health services mean that pregnant women and their unborn children are at higher risk of complications and even death. Modelling work has estimated that in the least severe scenario, there are likely to be

[21] Khalil A, Kalafat E, Benlioglu C, O'Brien P, Morris E, Draycott T, et al. SARS-CoV-2 infection in pregnancy: A systematic review and meta-analysis of clinical features and pregnancy outcomes. EClinicalMedicine. 2020;25

[22] Ellington S, Strid P, Tong VT, et al. Characteristics of Women of Reproductive Age with Laboratory-Confirmed SARS-CoV-2 Infection by Pregnancy Status — United States, January 22–June 7, 2020. MMWR Morb Mortal Wkly Rep. 2020;69:769–75

[23] Homer C, Leisher S, Aggarwal N, Akuze J, Babona D, Blencowe H, et al. Counting stillbirths and COVID 19: There has never been a more urgent time. The Lancet Global Health. 2020;DOI:https://doi.org/10.1016/S2214-109X(20)30456-3.

[24] WHO. Pulse survey on continuity of essential health services during the COVID-19 pandemic: Interim report (27 August 2020). Geneva: World Health Organization; 2020

[25] Semaan AT, Audet C, Huysmans E, Afolabi BB, Assarag B, Banke-Thomas A, et al. Voices from the frontline: findings from a thematic analysis of a rapid online global survey of maternal and newborn health professionals facing the COVID-19 pandemic. medRxiv. 2020:2020.05.08.20093393.

253,500 additional child deaths and 12,200 additional maternal deaths[26]. The most severe scenario will result in 1,157,000 additional child deaths and 56,700 additional maternal deaths. There are also reports of increased rates of stillbirth in a number of countries[7].

In response to the COVID-19 pandemic, many countries altered the way they provide care. In particular, face-to-face contact was reduced and mobile phone or video calls were used to provide care. In response, the United Nations Population Fund (UNFPA) developed a series of technical briefs to assist and support countries to maintain maternal and newborn health services. In particular, this included guidance on how to provide antenatal care and postnatal care using remote means, that is, with a phone, telehealth or using platforms such as WhatsApp.

Maternity services should continue to be prioritised as an essential core health service, and other sexual and reproductive health care such as family planning, emergency contraception, antenatal care, treatment of sexually transmitted infections, and where legal safe abortion services, to the full extent of the law, also need to remain available as essential health services.

COVID-19 will be with the global community for some time. Even if effective vaccines or curative treatments are developed and distributed, it will be some time until high global access and coverage is achieved. New ways of providing maternity and newborn health care must be developed – reducing or omitting services is not an option. Disrupted maternal health services are likely to unravel gains in reaching the Sustainable Development Goals in all countries and those with the greatest health inequities will be left behind. Global, national and local efforts must prioritise the quality, availability and accessibility of maternal and newborn health services for all.

COVID-19 has harmed the poorest countries the most across Asia-Pacific

The COVID-19 pandemic has highlighted existing gaps in healthcare within the Asia-Pacific region and reinforced differences between rich and poor, a report from the Organisation for Economic Co-operation and Development (OECD) has concluded[27]. The biennial study monitors 27 countries and territories in the region—ranging from Australia and New Zealand to China, India, Myanmar, and Vietnam[28]. All have felt the impact of COVID-19 in terms of population health and the economy.

In terms of the overall health impact, **India, the Philippines and Hubei province** in China were the most affected in the first nine months of 2020, based on reported deaths. Indonesia has also been badly hit by the virus. In contrast, most countries situated in the Indochinese peninsula, as well as Pacific Islands countries have been less adversely affected to date.

Adjusting for population size, **Singapore** has reported the highest attack rate, totalling over 10,000 cases per million people up to 5 October 2020. India and Wuhan city reported 5,000 cases or more per million. By early December, Myanmar had reported 1,840 cases per million. In contrast, Lao PDR, Cambodia and Vietnam reported fewer than 20 cases per million.

Prevention and treatment services for cancer, cardiovascular disease and diabetes as well as for HIV, tuberculosis and malaria have been severely disrupted, in particular in low- and middle-income countries. The indirect effects of COVID-19

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[26] Roberton T, Carter E, Chou V, Stegmuller A, Jackson B, Tam Y, et al. Early estimates of the indirect effects of the COVID-19 pandemic on maternal and child mortality in low-income and middle-income countries: a modelling study. The Lancet Global Health. 2020;8(7):e901-e8.

[27] https://www.bmj.com/content/371/bmj.m4660

[28] OECD. Health at a glance: Asia Pacific 2020: measuring progress towards universal health coverage. November 2020. www.oecd.org/health/health-at-a-glance-asia-pacific-23054964.htm

on pregnant women, newborns, young children and adolescents are also huge both directly on their health and indirectly on their livelihoods.

In response to the pandemic, governments have promptly put in place strict containment and mitigation policies to minimise the risk of transmission, to slow the spread of the virus and, in some places, to suppress transmission completely. Also, because of their experience with previous SARS and MERS outbreaks, many Asia-Pacific governments responded early to the COVID-19 outbreak compared with other region of the world.

Transmission Heterogeneities of SARS-CoV-2

In a study recently published in *Science*, researchers analysed detailed epidemiological records for 1,178 SARS-CoV-2 infected individuals and their 15,648 close contacts, representing 19,227 separate exposure events, compiled by the Hunan Provincial CDC[29]. The dataset includes 210 epidemiological clusters representing 831 cases, with additional 347 sporadic cases (29 per cent) unlinked to any cluster. Cases were identified between 16 January and 3 April 2020; primary cases were captured by passive surveillance, contact tracing or travel screening and were laboratory confirmed by RT-PCR. Prior to 7 February, contacts were tested if they developed symptoms during the quarantine period. After 7 February, RT-PCR testing was required for all contacts, and specimens were collected at least once from each contact during quarantine, regardless of symptoms.

The study found that **80 per cent of secondary infections traced back to 15 per cent of SARS-CoV-2 primary infections**, indicating substantial transmission heterogeneities. Transmission risk scales positively with the duration of exposure and the closeness of social interactions and is modulated by demographic and clinical factors. The lockdown period increases transmission risk in the family and households, while isolation and quarantine reduce risks across all types of contacts. The reconstructed infectiousness profile of a typical SARS-CoV-2 patient peaks just before symptom presentation.

Hospital-Acquired SARS-CoV-2 Infection: Lessons Learned | Healthcare Workers

A review of two early case series in China estimated that 44 per cent of 179 SARS-CoV-2 infections were hospital-acquired[30]. An example of the potential for health care transmission came from St Augustine's Hospital in Durban, South Africa, a facility with 469 beds, including 18 wards, six intensive care units, and 735 clinical staff[31]. Through a detailed epidemiologic study supplemented by phylogenetic analyses, investigators documented how a single unsuspected case of SARS-CoV-2 led to six major clusters involving five hospital wards and an outside nursing home and dialysis unit, with infection ultimately confirmed among 80 staff members and 39 patients, 15 of whom died.

An analysis of more than 2 million community members and nearly 100,000 frontline health care workers (HCW) in the US and the UK found an increased risk of having a positive SARS-CoV-2 test result among HCWs compared with community

[29] https://science.sciencemag.org/content/early/2020/11/23/science.abe2424

[30] Zhou Q, Gao Y, Wang X, et al. Nosocomial infections among patients with COVID-19, SARS and MERS: a rapid review and meta-analysis. Ann Transl Med. 2020;8(10):629. doi:10.21037/atm-20-3324

[31] Lessells R, Moosa Y, de Oliveira T. Report into a nosocomial outbreak of coronavirus disease 2019 (COVID-19) at Netcare St. Augustine's Hospital. Published May 15, 2020. https://www.krisp.org.za/manuscripts/StAugustinesHospitalOutbreakInvestigation_FinalReport_15may2020_comp.pdf

members, with rates of 2,747 and 242 cases per 100,000 people, respectively, and a hazard ratio for a positive test result of 3.40 after adjusting for a wide variety of measurable factors[32].

Mounting evidence supports the effectiveness of a relatively simple intervention in reducing hospital transmission of SARS-CoV-2: universal use of surgical masks by HCWs and patients. A study of HCWs at 12 hospitals with more than 75,000 employees found that the SARS-CoV-2 test positivity rate among HCWs decreased linearly from 14.65 per cent to 11.46 per cent during a 3-week period after implementation of universal masking[33].

In the few outbreaks that have been reported in hospital settings during universal masking, several recurrent features have emerged. In outbreaks among HCWs in three hospitals in the U.S., hospital epidemiologists identified a number of important contributing factors, including that "many patients were not masked during clinical care" and "[that there was a] lack of physical distancing among staff while unmasked and eating[34]."

Hospital systems should focus on a number of provisions in addition to distributing a sufficient supply of masks to all staff and patients. Adequate, well-ventilated, and ideally dedicated space must be provided for breaks from daily work activities and mealtimes for health care workers, with processes in place to ensure that these are staggered to minimise contact and conversation during these higher-risk periods. Shared patient rooms should be avoided when possible, especially when local prevalence of infection is high. The marginal benefit of universal eye protection should be evaluated, particularly during clinical encounters. Regular, flexible, and convenient testing with short turnaround times and adequate and statutory sick leave should be made available to all health care workers, with systems in place to ensure progression of training for medical trainees.

Characteristics of Hospitalised COVID-19 Patients With No Underlying Conditions

Existing evidence indicates that the majority of people infected with SARS-CoV-2, the virus that causes COVID-19, experience mild symptoms, but some people may experience severe illness requiring hospitalisation and intensive care. The majority of COVID-19-associated hospitalisations occur in adults aged ≥65 and/or those with underlying conditions[35].

Using COVID-NET data from 1 March – 1 August 2020, the authors of a pre-release paper describe the epidemiology, characteristics, and outcomes of non-pregnant adults aged 18–49 years without underlying conditions hospitalised with COVID-19 in the U.S[36]. COVID-NET surveillance is conducted in 99 counties in 14 states in the U.S. and covers approximately 10 per cent of the U.S. population. Eligible patients were COVID-NET catchment area residents with a positive SARS-CoV-2 test by real time RT-PCR within 14 days prior to or during hospitalisation.

Between 1 March and 1 August, of 3,619 patients aged 18-49 years, 14.2 per cent (n=513) had no underlying conditions and were included in the analysis. The most common symptoms present at admission were cough (67.1 per cent), fever/chills (64.7 per cent), and shortness of breath (63.4 per cent). In total, 34.9 per cent of patients (n=179) were prescribed treatment for COVID-19 and **22.0 per cent (113) were admitted to the ICU.**

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[32] Nguyen LH, Drew DA, Graham MS, et al; Coronavirus Pandemic Epidemiology Consortium. Risk of COVID-19 among front-line health-care workers and the general community. Lancet Public Health. 2020;5(9):e475-e483. doi:10.1016/S2468-2667(20)30164-X

[33] Wang X, Ferro EG, Zhou G, et al. Association between universal masking in a health care system and SARS-CoV-2 positivity among health care workers. *JAMA*. 2020;324(7):703. doi:10.1001/jama.2020.12897

[34] https://jamanetwork.com/journals/jama/fullarticle/2773128?utm_source=silverchair&utm_campaign=jama_network&utm_content=covid_weekly_highlights&utm_medium=email

[35] Petrilli CM, Jones SA, Yang J, et al. Factors associated with hospital admission and critical illness among 5279 people with coronavirus disease 2019 in New York City: Prospective cohort study. BMJ. 2020; 369.

[36] https://academic.oup.com/cid/advance-article/doi/10.1093/cid/ciaa1806/6017811?searchresult=1

The highest respiratory support received was as follows: invasive mechanical ventilation (9.9 per cent), continuous positive airway pressure (1.2 per cent), and high flow nasal cannula (6.2 per cent). Based on discharge summaries, 51.1 per cent of patients had pneumonia, 37.4 per cent developed acute respiratory failure, and 16.6 per cent developed sepsis during hospitalisation. Three patients (0.6 per cent) died during hospitalisation.

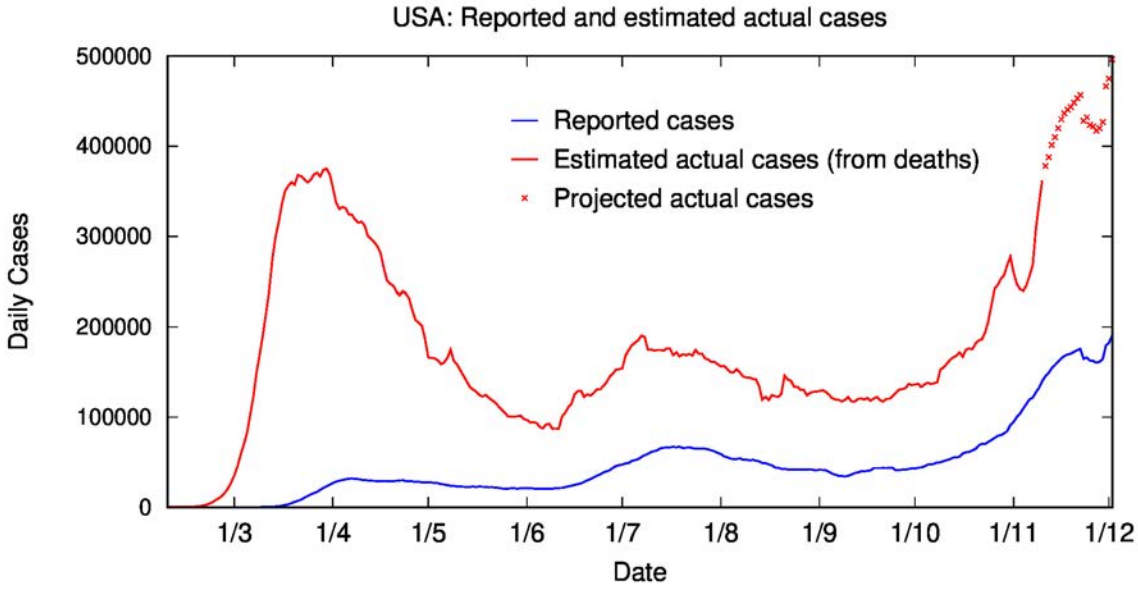
Summary: In this large, multi-state sample, one in three people hospitalised with COVID-19 were aged 18-49 years of age, compared with 13-23 per cent hospitalised with influenza over the past five seasons. These findings suggest that adults 18–49 years without underlying medical conditions can experience severe COVID-19-related illness.

Estimate of Actual Number of COVID-19 Cases in The US

Researchers estimated the true number of cases over time based on deaths, a case fatality ratio of 0.6 per cent and a delay between reported cases and deaths of 22 days[37]. The comparison between reported and estimated actual cases is shown in the following figure.

Furthermore, they estimated that the number of actual daily cases is recently trending around two to three times the reported number of cases, indicating that the current case numbers are now probably around 400,000-500,000 per day, which is around 0.12-0.15 per cent of the population of the USA per day (1 per cent per week). This means that the third wave has probably surpassed the first wave in true case numbers.

They calculated the total number of people likely to have been infected since the start of the epidemic at around 16 per cent of the population of the USA. While high, this level of infection is not sufficient to provide population immunity.



Overdose-Related Cardiac Arrests During the US COVID-19 Epidemic

The COVID-19 pandemic gripped the US two decades into an accelerating overdose crisis that caused more than 70,000 deaths in 2019 alone[38]. US researchers conducted a retrospective observational analysis using the National Emergency

[37] https://curtinic.github.io/covid-data-parser/analysis/20-11-16_USA.html?fbclid=IwAR1siPu_lWWyUO3v1SPCp5BxwGM0Kkxy3r0IfCOqEoV7TYEL2_kN-Kpjvcs&s=03

[38] Katz J, Goodnough A, Sanger-Katz M. In shadow of pandemic, U.S. drug overdose deaths resurge to record. New York Times. July 15, 2020. Accessed September 6, 2020. https://www.nytimes.com/interactive/2020/07/15/upshot/drug-overdose-deaths.html

Medical Services Information System (NEMSIS), a large registry of more than 10,000 EMS agencies in 47 states, which contribute data in near real time and represent more than 80 per cent of EMS activations nationally in 2020[39].

They calculated weekly overdose-related cardiac arrests (determined on-site) and overdose-related EMS activations (determined by dispatch). They compared 2020 values with a baseline, defined as the weekly average of 2018 and 2019 values. Excess values for 2020 were compared temporally with a cell phone–based mobility score—a measure of social distancing.

The 2020 NEMSIS database represents 25.9 million EMS activations, 50.5 per cent from female patients and 50.2 per cent from patients 61 years or older. Overdose-related cardiac arrests rose sharply during April 2020, reaching 74.1 per 100,000 EMS activations (**123.4 per cent above baseline**) by 4 May. Overdose-related cardiac arrests subsequently decreased but remained elevated. Overall, through 1 August, overdose-related cardiac arrests in 2020 totalled 49.5 per 100,000 EMS activations (48.5 per cent above baseline). These trends corresponded temporally with a sharp drop in mobility beginning 16 March, reaching a minimum of –51.8 per cent of baseline by 13 April and slowly increasing to –24.3 per cent by 27 July.

Summary: Peak rates of overdose-related cardiac arrests in May 2020 were more than double the baseline from 2018 and 2019, and **overall 2020 values were elevated by approximately 50 per cent.** The temporal similarities to decreased mobility suggest that the fallout from the COVID-19 pandemic—perhaps especially social isolation—is sharply accelerating fatal overdose trends.

COVID-19 is Currently the Number One Cause of Death in The US

In a report by the Institute for Health Metrics and Evaluation (IHME), despite vaccination scale-up, they expect 539,000 cumulative deaths in the US by 1 April, with peak daily deaths reaching 3,000 in mid-to-late January. Vaccination is likely to speed the transition back to normal later in the year but will prevent only 9,000 deaths by 1 April in the reference scenario. A further 14,000 lives can be saved with more rapid vaccine scale-up targeting high-risk individuals. Scaling up mask use to 95 per cent can save 66,000 lives by 1 April.

Daily deaths in the week of 26 November to 2 December increased to 1,660 per day on average compared to 1,470 the week before. This made COVID-19 the number 1 cause of death in the United States of America in that week.

Ranking of COVID-19 among the leading causes of mortality the week of 26 November – 2 December, assuming uniform deaths of non-COVID causes throughout the year

Cause	Weekly Deaths	Ranking
COVID-19	11,820	1
Ischaemic heart disease	10,724	2
Tracheal, bronchus and lung cancer	3,955	3
Chronic obstructive pulmonary disease	3,766	4
Stroke	3,643	5
Alzheimer's disease and other dementias	2,768	6
Chronic kidney disease	2,057	7
Colon and rectum cancer	1,616	8
Lower respiratory infections	1,575	9
Diabetes mellitus	1,495	10

[39] https://jamanetwork.com/journals/jamapsychiatry/fullarticle/2773768?resultClick=1

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