

XdHacks-COVID 2020

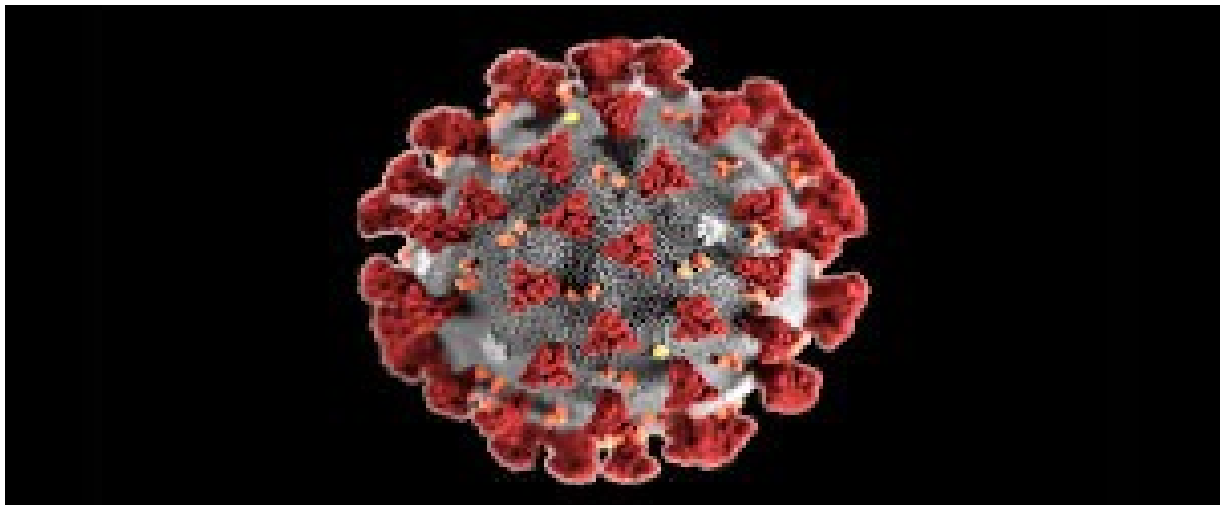
Theme Brief: COVID-19 Pandemic

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Background Information:

The theme for XdHacks-COVID 2020 is the coronavirus pandemic, or COVID-19 pandemic. The following theme brief is intended to guide the participants in creating a solution to mitigate the damage of COVID-19. Participants are encouraged to review all essential information below and conduct further research on their own about the current situation in order to apply important information to their projects.



What is COVID-19?:

As COVID-19 is an ongoing pandemic, billions of people in the world are affected by the virus. According to the World Health Organization, “Coronavirus disease (COVID-19) is an infectious disease caused by a newly discovered coronavirus.” As of May 2020, there are more than 6,000,000 total cases and 380,000 deaths caused by the virus worldwide.

People who are infected with the virus will experience severe respiratory illness. Although the vaccine or a formal cure for the virus has yet to be fully developed, people can recover the virus without requiring special treatment. It is also

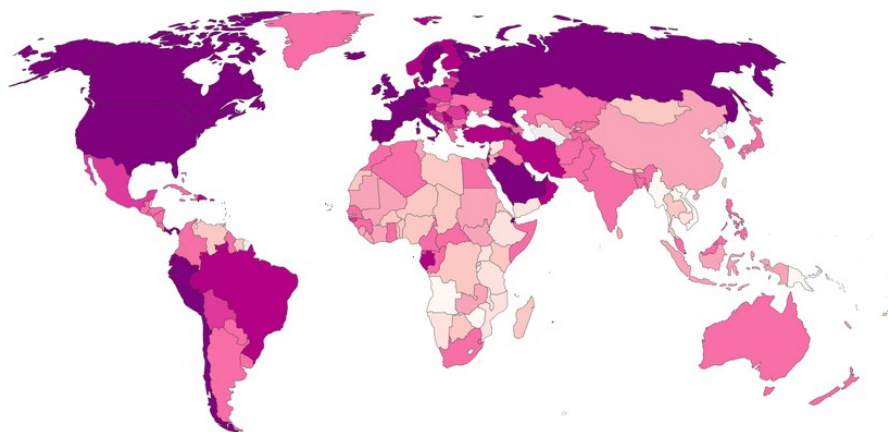
known that senior citizens and people with serious medical conditions such as respiratory diseases and cancer have a higher chance to develop serious illness.

Cases and Notable Statistics:

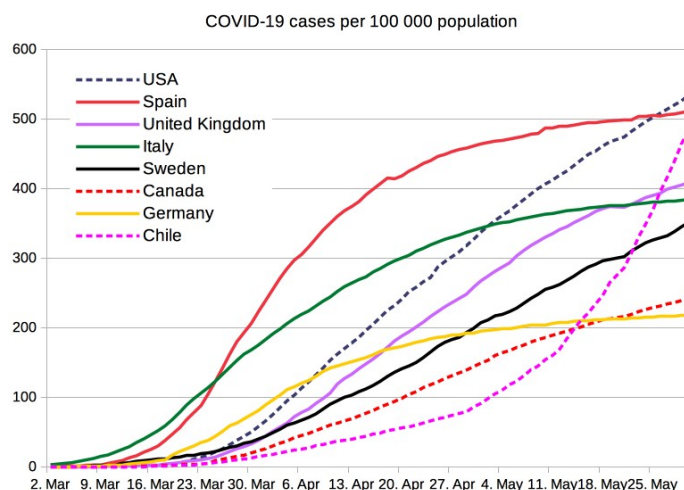
As of May 2020, countries that publicly released their testing data on average have performed tests equal to 2.6%. No country has tested samples to more than 17.3% of its population.

Total confirmed COVID-19 cases per million people, May 27, 2020

The number of confirmed cases is lower than the number of total cases. The main reason for this is limited testing.



Source: European CDC – Situation Update Worldwide – Last updated 27th May, 11:00 (London time) OurWorldInData.org/coronavirus • CC BY



How did the Corona Virus Start?

While the start of the virus is still debated, it is known as of June 2020 that the first known symptoms of COVID-19 were detected in Wuhan City, Hubei Province of

China. With a population of more than 11 million people, the Wuhan city countered the virus through shutting down their city. It is known that the virus began in a seafood market in Wuhan and to have started from a zoonotic source. Similar to past instances of COVID-19 such as SARS and MERS-CoV, concerns for the virus reached its peak due to its human to human transmission.



Timeline:

- Dec 31, 2019: Cases of pneumonia emerge in Wuhan, Hubei Province. A novel coronavirus was eventually identified.
- January 5, 2020: WHO published first Disease Outbreak News on the new virus.
- January 11, 2020: First death caused by the coronavirus announced by the Wuhan Health Commission.
- January 12, 2020: China publicly shared the genetic sequence of COVID-19.
- January 13, 2020: The first recorded case outside of China in Thailand.
- January 20, 2020: First case of corona virus in U.S.
- January 24, 2020: First case of corona virus in Europe.
- February 2, 2020: A man in the Philippines dies from the coronavirus (first death outside of China).

- February 3, 2020: WHO releases the international community's Strategic Preparedness and Response Plan to help protect states with weaker health systems.
- February 11, 2020: The WHO names the coronavirus Covid-19.
- March 8, 2020: Italian Prime Minister places travel restrictions on the entire Lombardy region and 14 other provinces, restricting the movements of more than 10 million people.
- March 13, 2020: Trump declares a national emergency in the U.S. and frees up \$50 billion in federal resources to combat coronavirus.
- April 8, 2020: China reopens Wuhan after a 76-day lockdown.
- May 23, 2020: China reports no new symptomatic coronavirus cases, the first time since the beginning of the outbreak in December.



Causes & Symptoms

The time between the infection and the signs for the symptoms to emerge takes around 14 days. However, it is also possible for people with the virus to show no symptoms.

Although dozens of symptoms are related to the virus, the two most common symptoms are fever, which is shown as high as 88%, and dry cough with 68%.

Fatigue, respiratory sputum production, loss of the sense of smell, loss of taste, shortness of breath, muscle and joint pain, sore throat, headache, chills, vomiting, coughing out blood, and diarrhea are other symptoms of the virus.

Prevention:

Handwashing:

Hand washing is one of the most feasible and effective ways professionals recommend to prevent the spread of the virus. It is recommended for people to use soap and water for at least twenty seconds, especially after visiting a new location. The WHO advises people to avoid touching the eyes, nose, or mouth with unwashed hands.



Social-Distancing/ Self-Isolation:

Health agencies have issued detailed instructions for proper self-isolation. Many governments have mandated self-quarantine since the inception of the virus in their countries. While the method of self-isolation is relatively simple, other factors should be considered such as economic impacts.



Facemasks:

The use of masks has been a subject of debate. The WHO has recommended healthy people wear masks only if they are at high risk, such as those who are caring for a person with COVID-19. Face masks are used generally by members of the public to limit the spread of the virus by asymptomatic individuals. Countries that require mandatory masks include Vietnam and Venezuela.



Impact:

Economy:

The major impact of the virus can be seen on the national scale in terms of the economic impacts. One estimate from an expert at Washington University in St. Louis gave a \$300+ billion impact on the world's supply chain that could last up to two years. Lloyd's of London has estimated that the global insurance industry will absorb losses of US\$204 billion, suggesting that the COVID-19 pandemic will likely go down in history as the costliest disaster ever in human history. Hundreds of millions of jobs could be lost globally and more than 70 million people in North America lost their jobs and filed unemployment insurance claims.

Another economics impact of the corona virus is supply shortages, which has been exasperated due to a psychological phenomenon known as the panic buying.

Examples of items that are commonly targeted are food, toilet paper, and bottled water.

Culture:

Since the outbreak, occurrences of racism have been documented around the world toward people of Chinese and East Asian descent. Citizens in more than a dozen countries lobbied to ban Chinese people from entering their countries and these countries have reported increasing levels of racist abuse and assaults. Moreover, U.S. president Donald Trump has been criticized for referring to the virus with racist remarks.

Other industries have also been heavily affected. For example, the 2020 Tokyo Olympic has been delayed and many areas of the entertainment industries such as movies have been affected by the virus.



Education:

Another impact of the virus is seen in the education industry. Schools have been temporarily shut down worldwide. Although some institutions such as universities have transitioned to online learning, online classes have limitation to the students learning experience.

Notable Facts:

- The number of infected in South Korea increased from 30 to 5,000 in ten days.
- The mortality rate from Covid-19 is still difficult to calculate with accuracy, but most studies estimate it at 1-3%.
- On plastic and steel surfaces, SARS-CoV-2 remains dangerous for up to three days, while on paper and cardboard it remains up to a day.
- Antibiotics against coronavirus are useless.

- The majority of patients (over 80%) do not need medical assistance at all. They treat themselves at home, with the help of ordinary flu, and usually recover in about a week.



Successful Examples:

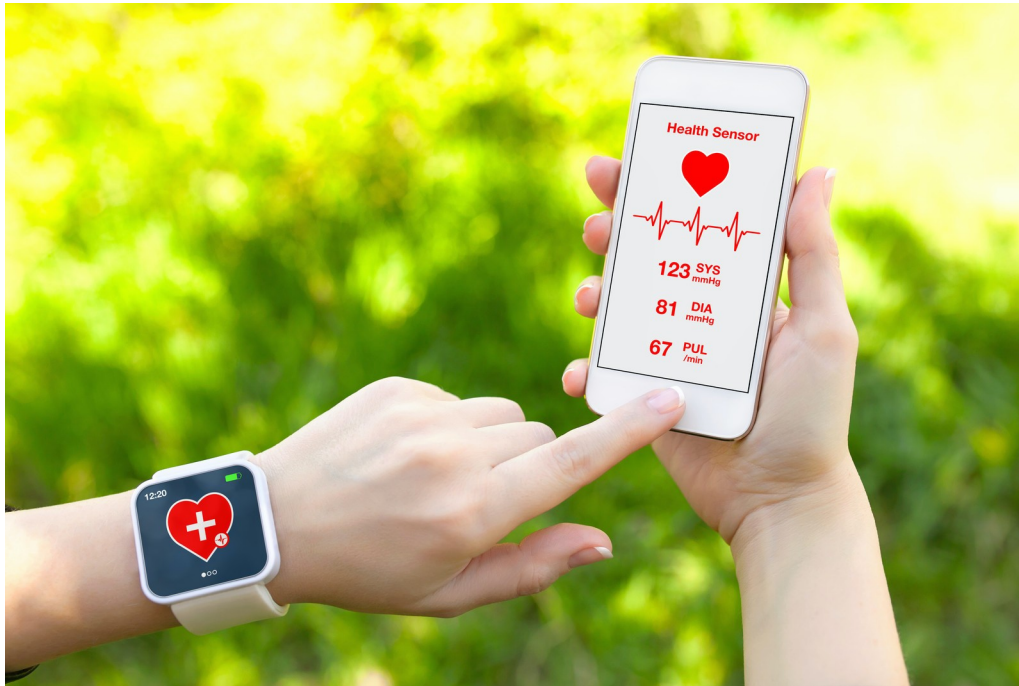
Positioning Technologies (e.g. Drones, satellites)

Governments have implemented positioning technologies such as satellites to precisely position and pinpoint risky cities in their countries. For example, in Ruichang, China, the police forces are using BeiDou-enabled drones for monitoring public areas and sent emergency messages to over 6 million connected. These drones are not only able to move without human to human contact, but also enable authorities to effectively monitor large groups of people.



Health Apps:

Many governments have collaborated with large tech companies to implement online self-assessment tools and health apps that contain vital information regarding the virus. These apps allow users to check their status in a cost-effective way.



Big Data & Statistics

Using big data and statistics, professionals are able to understand more about the virus each day. Many notable institutions such as Johns Hopkins University and MIT are working with governments to predict the patterns of the virus by utilizing algorithms.



Trackers (e.g. wristbands)

While self-isolation has been conducted in a voluntary basis in most areas of the world, some countries require certain groups of people to wear wristbands to track their location. Although the impacts of these wristbands are debated as there are issues of privacy, these trackers effectively allow governments to keep a record of large number of people.



Other

There are other products that can be developed even if they are not directly related to COVID-19. For example, Shai Dinnar and her team, the winners of the MIT COVID-19 Challenge, developed a web-based platform called Distance Domestic Violence that connected individuals forced to quarantine with abusive families with local community-based services.

Guiding Questions:

- What is the biggest problem (e.g. economy, social, education) caused by the corona virus?
- Is there a specific vulnerable group of people in the society to the virus? What can we do to specifically help these people?
- What can governments implement in order mitigate the damages done to companies? Are there any other organizations or companies that are taking steps to support people?
- Are there any problems with the current prevention methods? What challenges are governments facing to combat the virus?
- Which countries have successfully mitigated the damages of COVID-19? What have these countries implemented to ensure the safety of their citizens?
- What factors should we consider before implementing a solution (e.g. privacy)?
- What measures can governments implement to prevent damages in the future? Are there any ways we can effectively predict or prevent outbreaks?

Work Cited

Al Jazeera. "Which Countries Have Made Wearing Face Masks Compulsory?" News | Al Jazeera, Al Jazeera, 29 May 2020, www.aljazeera.com/news/2020/04/countries-wearing-face-masks-compulsory-200423094510867.html.

Bogart, Nicole, and Melanie Nagy. "Coronavirus Outbreak among Homeless Would Be 'Devastating,' Experts Warn." Coronavirus, CTV News, 19 Mar. 2020, www.ctvnews.ca/health/coronavirus/coronavirus-outbreak-among-homeless-would-be-devastating-experts-warn-1.4859225.

Colvin, Jill, et al. "Trump Shifts Tone as U.S. Struggles to Contain Coronavirus Outbreak." Global News, Global News, 18 Mar. 2020, globalnews.ca/news/6688143/coronavirus-trump-shifts-tone/.

"Coronavirus." World Health Organization, World Health Organization, www.who.int/emergencies/diseases/novel-coronavirus-2019.

Henley, Jon. "Covid-19 Clusters Emerge as Lockdowns Ease across Europe." The Guardian, Guardian News and Media, 28 May 2020, www.theguardian.com/world/2020/may/28/covid-19-clusters-emerge-as-lockdowns-ease-across-europe.

"Provincial/Territorial Public Health Authorities Should Report Confirmed and Probable Cases of COVID-19 Nationally to the Public Health Agency of Canada within 24 Hours of Their Own Notification." IPAC Canada, ipac-canada.org/coronavirus-resources.php.

Sheikh, Knvul, et al. "How Bad Will the Coronavirus Outbreak Get? Here Are 6 Key Factors." The New York Times, The New York Times, 31 Jan. 2020, www.nytimes.com/interactive/2020/world/asia/china-coronavirus-contain.html.

"Total Confirmed COVID-19 Cases per Million People." Our World in Data, ourworldindata.org/grapher/total-confirmed-cases-of-covid-19-per-million-people.

Tremlett, Giles. "US Germ Warfare Research Leads to New Early Covid-19 Test." The Guardian, Guardian News and Media, 1 May 2020, www.theguardian.com/world/2020/may/01/us-germ-warfare-lab-creates-test-for-pre-infectious-covid-19-carriers.

"Verdict Media Limited." Pharmaceutical Technology, www.pharmaceutical-technology.com/news/coronavirus-a-timeline-of-how-the-deadly-outbreak-evolved/.