

## Summary of COVID-19 Information as of 3/24/2020

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### What is it?

-COVID-19 is the name of the disease caused by the corona virus called SARS CoV2—one member of a family of viruses. It is part of a very large family of corona viruses that includes a previous version of SARS we have seen, as well as MERS.

-This particular virus has not been seen before so anything said about it is based on what we have observed so far and/or assuming it is like other corona viruses.

-COVID-19 has been referred to as a “flu.” However it is very different from the flu. To see some of the differences go to the image from Vox in the Resources section below.

-There has been some hope that the virus, again comparing it to the flu, will prove to be seasonal and the rates of infection will go down in the summer. Unfortunately, it is not clear yet whether that will happen, as there are outbreaks in areas such as Singapore or parts of China that are very warm year-round.

-COVID-19 may have originated in a bat or a pangolin, and finally passed to a human in a seafood and poultry market in Wuhan, China in late December 2019. It is now worldwide and classified as a pandemic.

-Close contact between animals and humans that don't have much contact in nature can result in a virus crossing over into humans. Many cultures worldwide have large meat and seafood markets that include animals of all kinds, often still alive, that provide ideal conditions for this.

-The key symptoms are a fever, dry cough, shortness of breath and fatigue. They can also include sore throat, difficulty breathing, and aches and pains. It is not **usually** associated with nausea, diarrhea, or runny nose and so is different from gastrointestinal illnesses, the common cold, sinus infections, and the flu.

-This is a very contagious disease, easily passed between people. Unfortunately it is contagious even if the “host” is not having any symptoms. The main way it is passed is by the virus traveling in mucus expelled from an infected person's mouth, nose or throat and then entering another person's eyes, nose or mouth.

-It has been said that this happens most often when an infected person coughs or sneezes and you are within 6 feet (approximately 2 meters) from them.

-It is passed either directly, by breathing in the virus droplets, or by touching a contaminated surface (which could be your face), and then touching one's nose, eyes or mouth.

-The emphasis on a distance of six feet is based on studies of how far the mucus droplets expelled by a cough or sneeze can travel. It assumes that the virus is not "airborne" like the measles.

-However, studies have found that there are also tiny little droplets called aerosols that can travel much further. (See detailed discussion in Wired below.)

-Since the virus establishes itself in one's throat, it is probably also passed in these finer droplets through breathing and talking. Ultimately it primarily invades the respiratory tract.

### **Observations about infection and death rates from China**

-Without any special precautions, this virus is so contagious that it will spread in a population at an exponential rate. When graphed it is a line that at first slowly increases and then shoots up—almost vertically. (See the Washington Post report on simulations of viral growth in the Resource section.)

-On average, without controls, each infected person infects 2 to 3 other people.

-If you want to obsessively watch a live update on COVID-19's spread, check the world odometer site listed in Resources.

-While it is bad news that the virus is so contagious, the good news is there are key things we can do to protect ourselves.

-It needs a host to survive so we can refuse to give it one!

-We can take very broad measures and shut down all non-essential social interaction (described in the next section) following in China's footsteps and stop spreading the virus. (As of March 19th, there were no new cases reported in China!)

-At the same time, or alternatively, we can take a very targeted approach: test everyone for it, identify those who are carrying it and who they have been in contact with, and quarantine them (either voluntarily or by order). Then we could require that they be tested again and be clear of the infection before lifting the quarantine.

-Fortunately, when the virus is outside of a host and on a surface, it is readily destroyed. Soap disrupts its lipid and protein outer layer so it can't infect anyone. Alcohol, bleach, or hydrogen peroxide in the right concentrations can deactivate it.

## Who It Hurts

-The sickness that results when you have COVID-19 is very different depending on how old you are, what other medical conditions you have and whether you are a man or a woman.

-China's Center for Disease Control has released figures about the 44,672 cases of COVID-19 they faced as of 2/11/2020. (Updates from China, Italy and other outbreaks will keep coming.) See the graphs showing death rates and the BBC article from which they were taken in Resources.

-They report that for almost 81% of the population the disease was mild. However, the overall death rate was 2.3%, which is much higher than the flu (0.1%).

-Also, bear in mind that when we are talking about the average death rate being "only" 2.3%, with the U.S. population of roughly 327 million, we are talking about 7.5 million deaths if everyone is infected.

-Men were more likely to die from this virus than women: 2.8% vs. 1.7%.

-As age increases the death rate went up: Below 50 it was around 1% or less with no deaths for children under 9. However at 40-49 it went slightly above 1%, at 50-59 it was higher than 2%, at 60-69 it was about 3.5%, at 70-79 it was up to 8%, and at 80 or above it was almost 15%.

-Other reports from China in late February on 72,314 cases have been even more extreme: 60-69 at 4.6%, 70-79 at 9.8%, and 80+ at 18%.

-The current explanation for why older people have a higher death rate is that they have a weakened immune system that is less resistant to the virus and to complicating illnesses such as pneumonia. There can also be a severe immune over-reaction to the virus known as a cytokine storm, which results in fluid building up in the lungs. This is an "inflammatory response."

-However, medical conditions also are related to the death rate apart from age. For cardiovascular disease the death rate was over 10%, diabetes around 7%, respiratory disease 6.5%, and hypertension approximately 6%. (These are approximate figures estimated from a graph.) This means that a young person who has a medical condition can have a risk of death like that of an older person.

-Individuals with cardiovascular disease are particularly susceptible since when the lungs don't work properly the heart has to compensate and work harder.

-Hopefully these reported death rates are higher than the actual death rates because not everyone who had the virus was counted. They may have had a mild version and not have reported to medical facilities. Nonetheless, it is an important approximation.

-A very important proviso: a virus can mutate, and what it does in the U.S. or Europe may be very different from what happened in China. As of 3/23/20, we are hearing in the U.S. that many more young people are becoming severely ill than expected from the Chinese reports.

## HOW TO PROTECT YOURSELF AND OTHERS

### The Big Picture

-It is crucial that as early as possible, people “socially isolate.” See the match image in Resources for a quick visualization of the importance of isolating.

-The simplest level is to maintain **at least** six feet of distance between yourself and others.

-While it might appear very extreme, full social distancing would mean a “stay at home” or “shelter in place” order in your area right away. This means working from home whenever possible, no travel, shutting down all nonessential businesses and gatherings including schools, universities, gyms, theaters, restaurants, bars, and workplaces.

-It means everyone stays home and leaves only to shop for food, drugs, necessary home supplies, to take a walk, or to visit a doctor. It means home schooling for families with children.

-What this means also is that you socialize in person only with those living with you and you get together with others—family, colleagues, or friends—virtually. Zoom, Skype and FaceTime are great ways to do this.

-There is an important difference between whether a government “orders” such changes or just issues guidelines. It hinges on whether compliance is legally enforceable, or simply highly recommended.

-As of 3/23/20, twelve states have issued stay at home orders but so far most are not actively enforcing them. As a result, during Spring Break many young people were out socializing and not maintaining distance at beaches and parks.

-On the national level, the administration issued a “15 Day Guideline” on March 16<sup>th</sup> that suggests staying at home if you or a member of your family is sick or if you are

elderly or have a medical condition. It also advises against: visiting nursing or retirement homes, discretionary travel, eating or drinking in bars or restaurants, or gathering in groups larger than 10. Additionally, it provides suggestions for maintaining good hygiene. These guidelines are due to be reviewed shortly.

### **More Detail**

-The virus is stealthy. You can be contagious for up to 14 days before showing symptoms and feeling sick. And you can be sick and have only very mild symptoms and not even realize that you are sick. Therefore, it is all too easy to ignore warnings and be out and about.

-When outside your home you should stay at least six feet away from others, avoid touching your face, and don't touch public surfaces such as door handles, keypads, handrails, etc. directly.

-When shopping, wear gloves to pick up items and to pay for your purchases. You might consider calling ahead and having your order available for pickup or delivered.

-Do your banking online if possible.

-In addition there is much you can do at the boundary between the outside world and entering your home.

-If you have deliveries see if you can pay in advance and simply have them dropped off at your door. If they are delivered in person, keep at least six feet away from the delivery person. Given the possibility of spreading by aerosols, the greater the distance, the better.

-COVID-19 can be detected in the air on aerosols for up to 3 hours, on copper for up to four hours, on cardboard up to 24 hours and on stainless steel or plastic for up to three days. Other reports suggest it can be active for up to 9 days on a hard surface.

-Therefore it is essential that door knobs, computer keyboards, phones, handrails—anything that others may have touched or that you have touched while you were out and about—are sanitized. This includes your cellphone.

-It probably also means that any objects delivered or brought to your house—mail, groceries, deliveries—are sanitized.

-Mail could be handled by discarding the envelope or packaging outside of the house. You can try wiping down books, magazines or any cardboard items with disinfectant wipes.

-Hands are best sanitized through washing with soap and water for at least 20 seconds. (Sing “Happy Birthday” twice.) The virus’ outer protective layer is destroyed by soap. You want to scrub, build up bubbles and scrub some more, getting into every crack and crevice of your hands and fingers, including your fingernails. The lather and bubbles are important. See the CDC description of proper hand washing in Resources.

-Next best to soap and water is using an alcohol pad or sanitizer containing more than 60% alcohol. Hand sanitizers need to be alcohol based. Do not use any other kind of sanitizers. It is not enough to just do a quick wipe. You've got to use enough and get it all over the surfaces. Rub it all over your hands, between your fingers and on the backs of your hands.

-Fortunately, it doesn’t appear likely that COVID 19 is spread through food and into the digestive tract. Still, it is good to immediately get rid of the outer packaging, when present, (boxes, plastic containers, plastic bags, etc.) and to transfer foods into home containers.

-If you are keeping jars, bottles and cans it would be good to wash them with the same care as washing your hands. Then dry them and wipe them down with a disinfectant.

-Vegetables and fruits can also be given the same hand-washing style treatment.

-In the Resource section see the excellent guide to all of these home protection measures.

### **If You May Be Sick**

-If you think you may have been exposed to the virus through travel or through contact with another person who had or has it, you should self-isolate for 14 days— not leaving your home, and minimizing in-person interactions with others for that period.

-If you develop symptoms during this period, you should call your doctor to see if you need to be tested (either a swab test or a blood test for antibodies) to know for sure if you have COVID-19 vs. something else.

-It is also important if testing reveals that you have the virus, that you tell your doctor about everyone you have been in contact with so they can notify the medical authorities tracing this infection. And, it is important to notify your contacts, so that they can self-isolate and call their doctor if they develop symptoms.

-People who are sick but must leave their home should wear a surgical or preferably an N95 mask to protect others. If they remove the mask to cough or sneeze they should do so into a tissue (and then dispose of it) or into the crook of their elbow.

-People who are not sick but will be around those who are (such as nurses and doctors or family members) should wear an N95 mask (after learning how to properly fit and use it), gloves, and eye protection.

-If someone in your home group falls sick and is not hospitalized, you should isolate them as much as possible within a separate space of your home, wear an N95 mask properly fitted and gloves when caring for them, and disinfect surfaces, dishes, and laundry they have touched.

### **Protecting the Larger Community**

-The faster extreme social isolating is done, the better we can control the rate of infection. Every day matters. Experts say that an approach that is actually good enough will feel like over-doing it to most people.

-As full social isolation comes at an economic cost, there are those arguing for more of a “mitigation” approach—simply slow down the spread to flatten the curve (reducing the otherwise exponential increase in new infections) enough so that we have time to strengthen our medical options—but perhaps not so much as to damage the economy over a longer period. Unfortunately it does not necessarily lower the total number of infections but only makes the number at any one time more manageable medically.

-Others argue for the “Hammer” approach—do everything you can **immediately** and for only a few weeks to really suppress, not just “mitigate,” the spread of the virus by combining very strong measures for social distancing with widespread testing, contact tracing and quarantine of all infected persons.

-See the in-depth article by Tomas Pueyo discussing these different approaches in the Resource section as well as the interesting graph showing the difference in how countries have differed in controlling the rate of infection.

- Also see the computer simulation published by the Washington Post of the spread of the virus under four different conditions of isolation in the Resource section.

-In the U.S. we do not as yet have an agreed upon national strategy although we did have the Administration’s *15 Day Guidelines*. Most of the action is at the state, county or city level.

-We are also currently facing a shortage of tests and so not yet able to do the precise contact tracing and quarantine that has been so effective in several other countries.

-As of 3/19/2020 all across the U.S. there were not enough ICU beds, ventilators, nurses, doctors, or protective gear for medical personnel to meet a rapid surge in cases. As of 3/24, there are now numerous efforts to fill this gap.

-Without effective social distancing, doctors in other countries have reported that they have had to “triage” patients, and let the sickest patients die so that they can treat those with a better chance to recover. We don't want to get there!

-Achieving social distancing can be difficult. Young people often feel they are impervious to illness. Given that many will be incubating the virus and considering how light their symptoms could be even if they get an infection, some might be inclined to ignore instructions to socially isolate. In fact we have already seen them engage in large social gatherings in California and in Florida.

-As a result they can pass this virus to others and rather than the curve flattening, it could continue to rise at an exponential rate.

-The focus in communicating to the young so far has been on how their behavior could indirectly lead to the death of an older person. And the plea has often been focused on how they could hurt their grandmother or grandfather.

-However, it will have much more impact on them than they realize. Many may have medical conditions such as diabetes, which makes them as vulnerable as the elderly.

-Even if they do not fall sick themselves, when the medical system is on overwhelm due to the numbers of patients who have the virus, it can lead (and has already led) to the deaths of doctors and nurses.

-Without adequate medical professionals, it leads as well to having to limit medical care for all other issues. This will affect everyone.

-Also, while it will hit the 80+ age group most severely, the graphs from the Chinese Center for Disease Control that we've already discussed show that the virus also seriously impacts people in their 50s and 60s. Many of our professionals fall into this age range. Our CEO's, legislators, professors—professionals of all kinds—are at risk. These are some of our most experienced and capable people and without them it will be as if a portion of society's “brain” has been lost.

-Furthermore, as we are discovering, it is having drastic effects on our economy, including jobs, income, etc.

-Finally there is much we don't know about this virus. For example, we don't know how long your immunity will last if you have been sick from the illness and have recovered. We don't know if it will become a yearly threat to our lives.

-So, here is a time when the “precautionary principle” is best—if something might be dangerous but you don't know for sure, take protective measures.

-In truth, this is a situation that calls for thinking bigger than one's own convenience and lifestyle, and for a commitment to the good of the community. And it wakes us up to the fact that what you do to support your community, ultimately is support for yourself!

## Resources

-For an excellent guide on how to protect yourself:

<https://bit.ly/3bgF1SG>

To see how to wash your hands:

<https://www.cdc.gov/handwashing/videos.html>

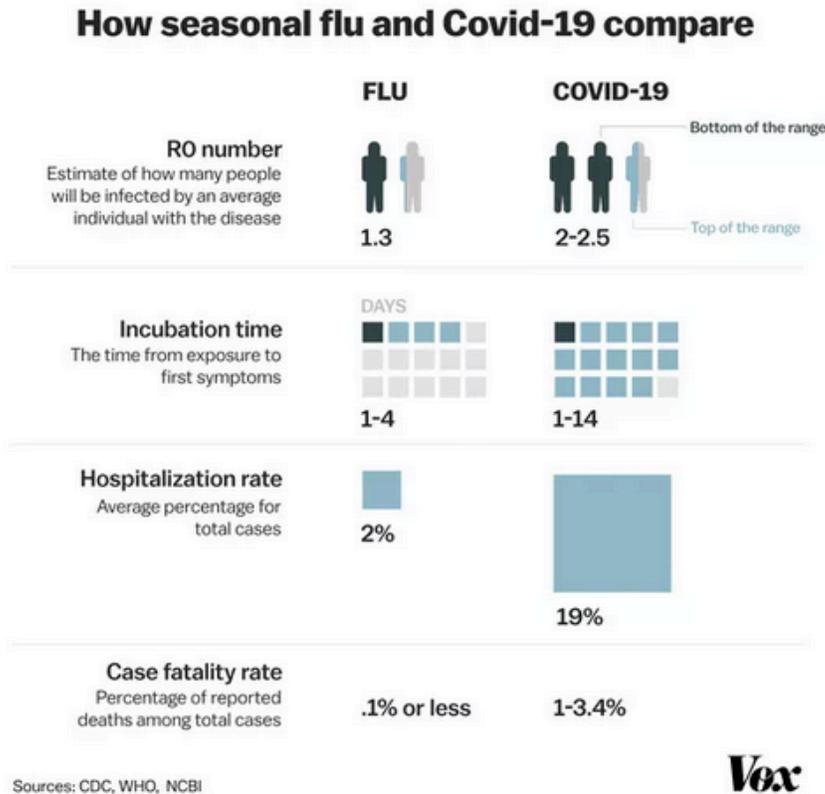
For CDC Guidelines for cleaning and disinfecting:

<https://www.cdc.gov/coronavirus/2019-ncov/prepare/cleaning-disinfection.html>

-Watch it spread globally, by country, etc:

<https://www.worldometers.info/coronavirus/>

-To visualize the difference between the flu and the coronavirus from Vox:



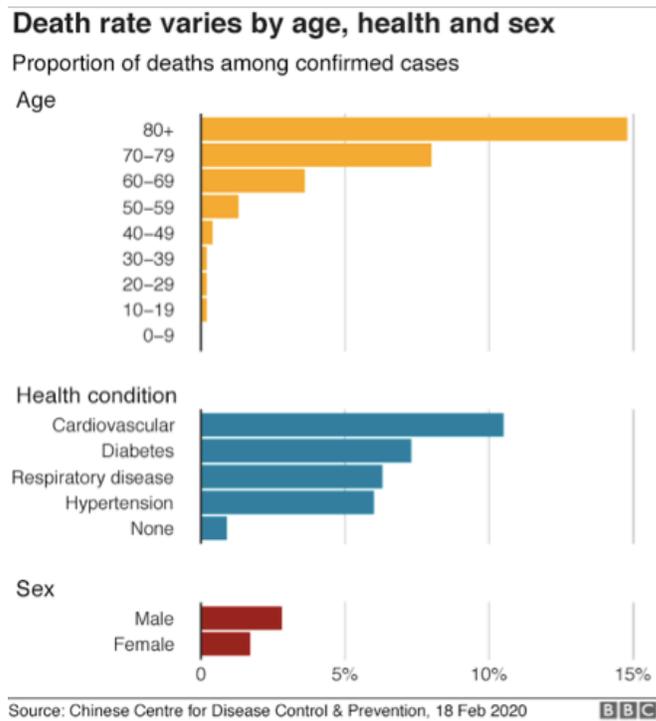
-For a detailed discussion of how the virus spreads further through tiny droplets or aerosols:

<https://bit.ly/33AaJaN>

-To see a really clear visualization of: 1) How the virus spreads on its own, 2) With an attempted quarantine but 25% don't comply, 3) When there is moderate distancing and 4) When there is extreme distancing see:

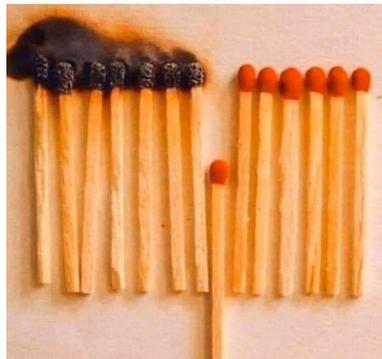
<https://www.washingtonpost.com/graphics/2020/world/corona-simulator/>

-For the BBC's report on the death rates in the Chinese outbreak see below or go to: <https://www.bbc.com/news/world-asia-china-51540981>



-For yet another visualization of the importance of social distancing see how one actor can stop the spread of fire!

This photo has been shared by doctors in Greece. "The one who stayed away saved all the rest"

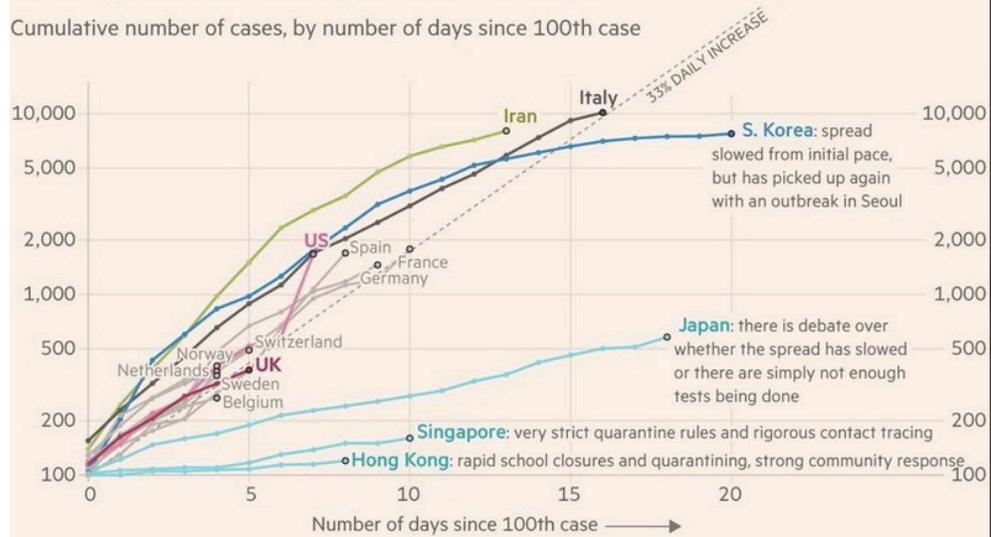


-To consider, in depth, the best approach to stopping COVID-19:

<https://bit.ly/2WEBroA>

### Most western countries are on the same coronavirus trajectory. Hong Kong and Singapore have managed to slow the spread

Cumulative number of cases, by number of days since 100th case



Source: FT analysis of Johns Hopkins University, CSSE  
FT graphic: John Burn-Murdoch / @jburnmurdoch  
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