

COVID-19 Preparedness & Response

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Gryphon Scientific
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Overview

1

WHAT IS COVID-19?

Basic information about SARS-CoV-2 and the disease it causes

2

HOW DO I PROTECT MYSELF & MY COMMUNITY?

A primer in pandemic biosafety

3

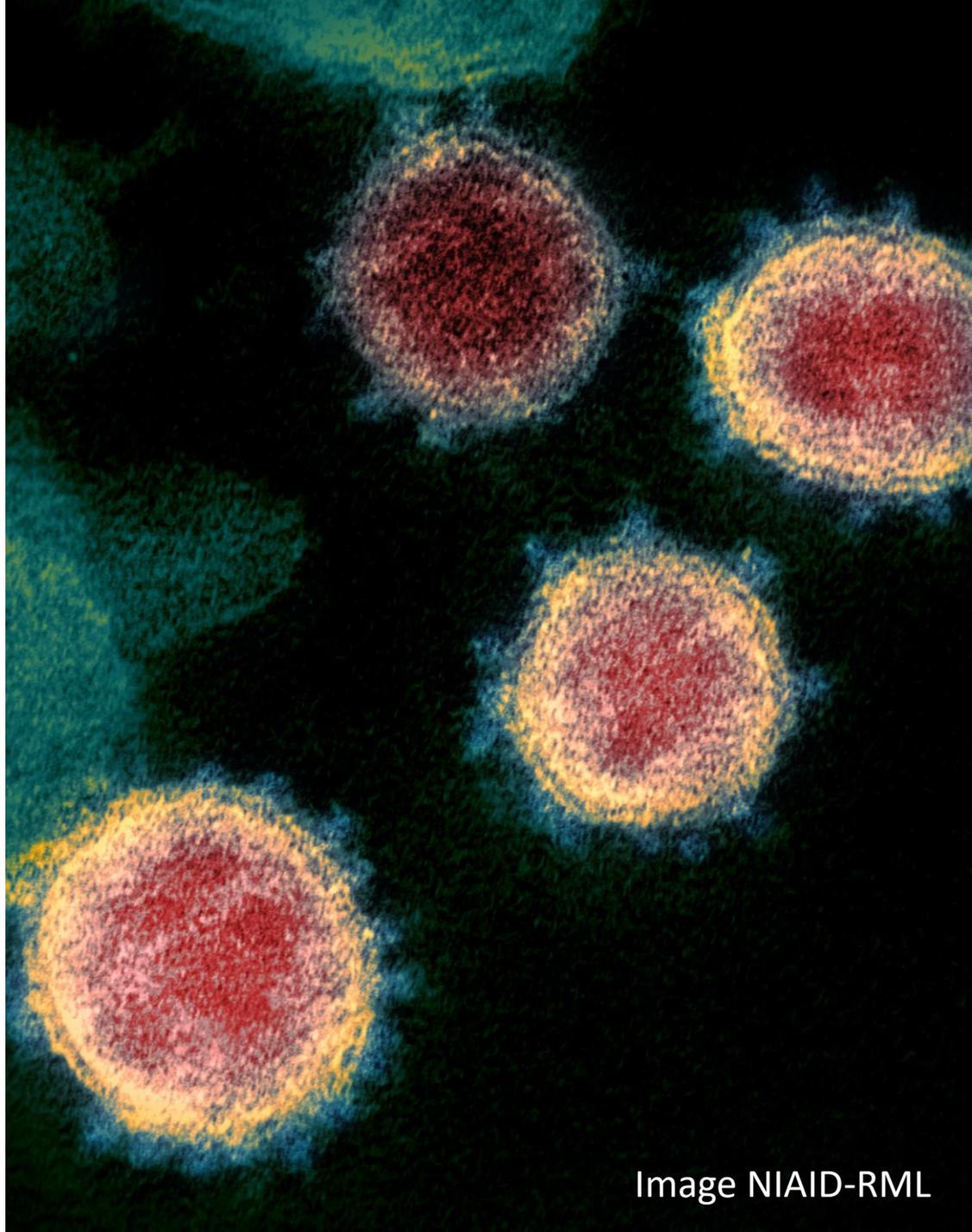
HOW DO I LEARN MORE ABOUT COVID-19?

Tips on how to be an informed consumer of scientific information



What is COVID-19?

An infectious disease caused by
novel coronavirus SARS-CoV-2





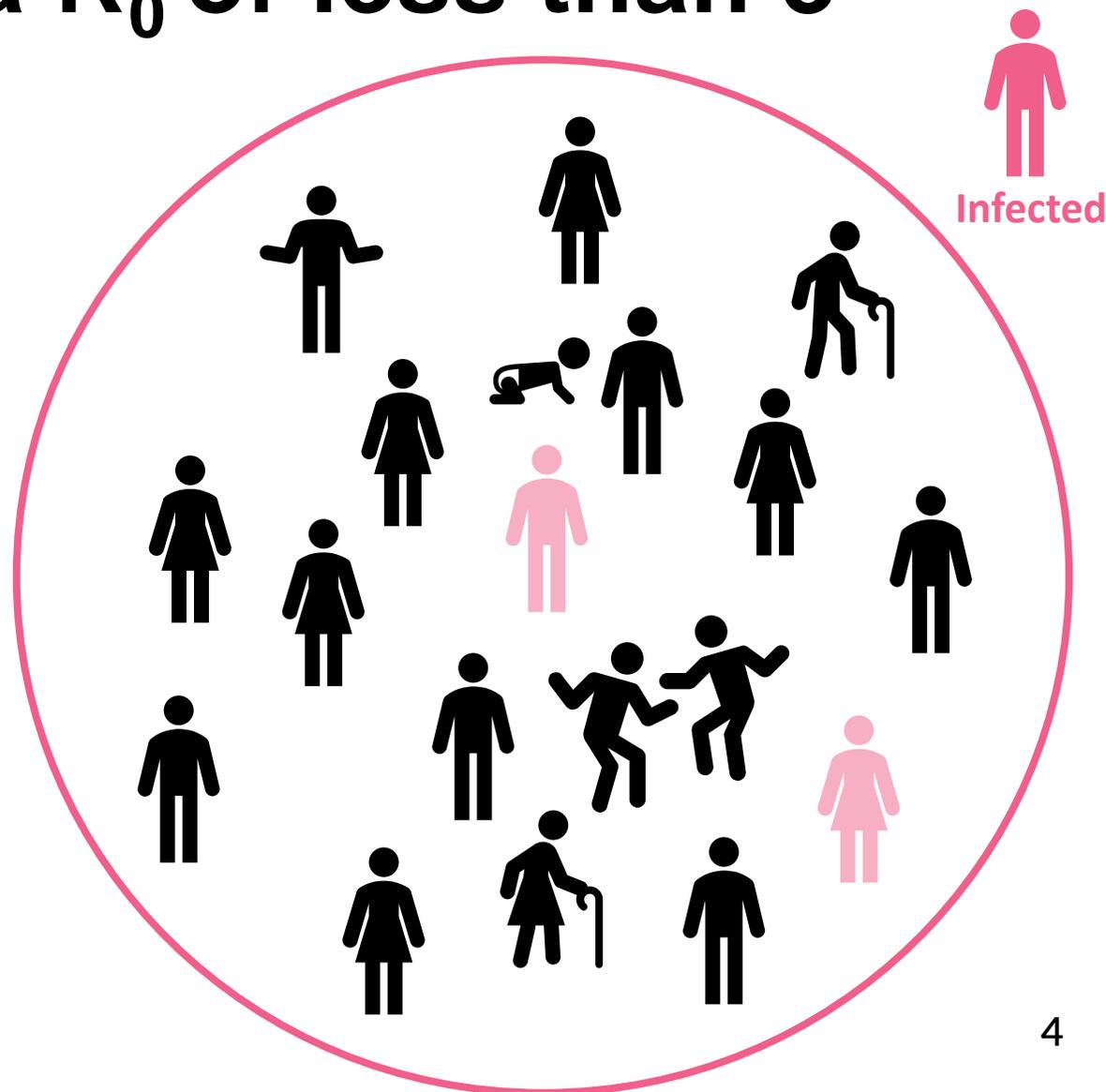
SARS-CoV-2 has a R_0 of less than 3

- R_0 is an estimate of the average number of people an infected person infects
- Current publications put SARS-CoV-2 R_0 between 0.25-3, with several estimating it near 2.3

Key Points:

***Most people who come in contact with a COVID-19 patient won't get sick.**

***The ill population may at least double every generation.**





How does SARS-CoV-2 enter the body?

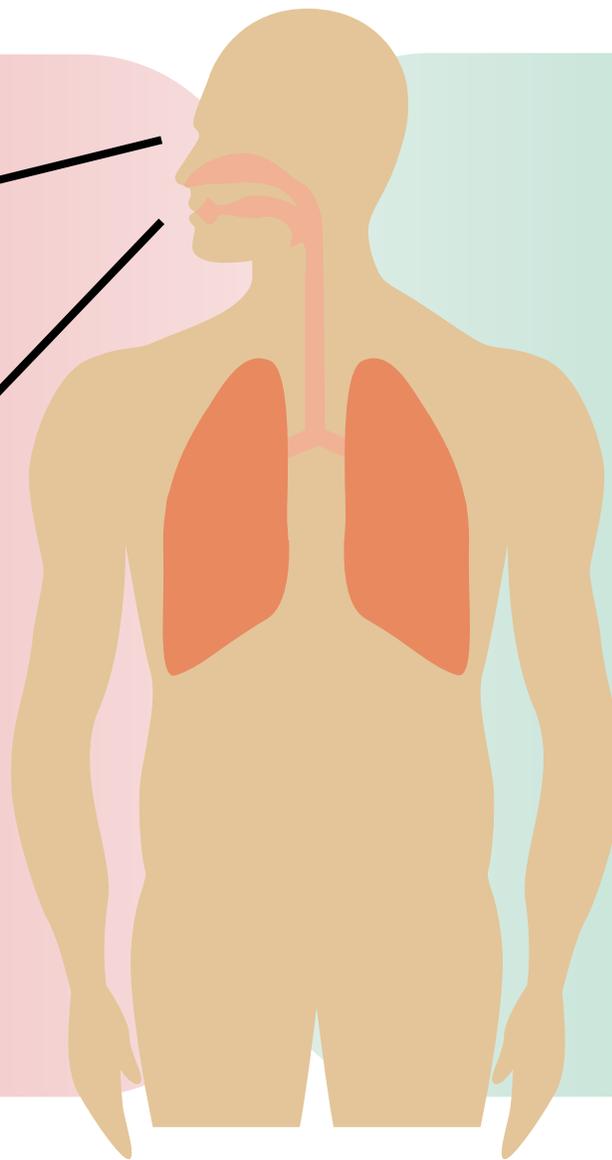
Mucus Membranes

Mucus membranes, like your **eyes, nose, and mouth** can be routes of entry for the virus, especially if you touch or rub them with a contaminated hand.

Inhalation of respiratory droplets

If someone nearby is infected with SARS-CoV-2 and coughs, they will generate small drops of fluid that contain the virus; if these land in our **nose or mouth** you may become infected.

Currently assume aerosol spread



Skin is not crossed

Your skin is an effective barrier against SARS-CoV-2. However, if you get the virus on your hands and then touch your mouth, nose or eyes you could infect yourself. So, wash your hands!



More on aerosol spread



We follow the **precautionary principle**:

Assume aerosol spread
can happen



Why: The goal is to keep from harm; given this goal, the safest assumption in the absence of clear data and given data on similar organisms is that aerosol spread may be possible.



How does SARS-CoV-2 primarily spread?



Someone with COVID-19 coughs.

Respiratory droplets containing the virus fly through the air.



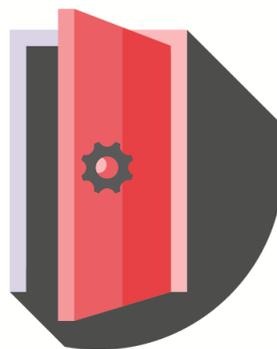
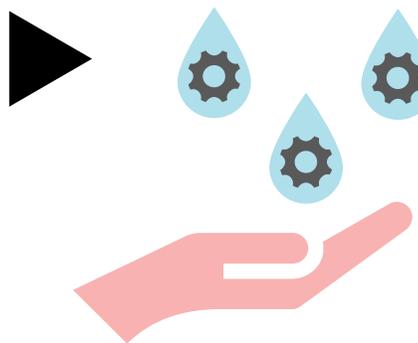
The droplets land in the mouth of a nearby person, and she becomes infected.



SARS-CoV-2 may also spread through contamination on surfaces



Respiratory droplets containing the virus land on his hand.



A co-worker opens the same door, on the way to lunch, transferring the virus to her hand.

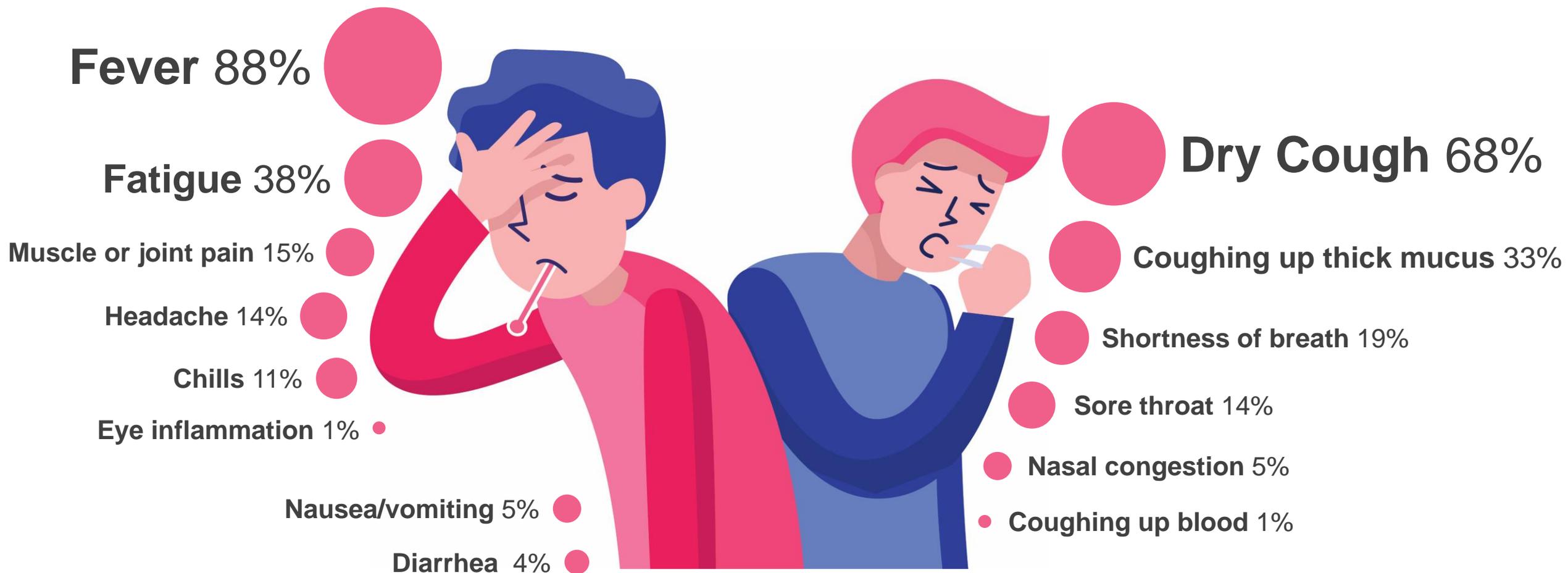
Someone with COVID-19 coughs.

He touches a metal doorknob, and the virus transfers. Surfaces can remain dangerously contaminated for days.

She does not wash her hands and becomes infected.



Symptoms of COVID-19





“Older people [60+], and those with pre-existing medical conditions (such as cardiovascular disease, chronic respiratory disease or diabetes) are at risk for severe disease”

Report of the WHO-China Joint Mission on Coronavirus Disease 2019 (COVID-19) , 16-24 February 2020.





Lancet Article: Risk factors for mortality of adult inpatients with COVID-19 in China

- Top tier, peer-reviewed medical journal article (Zhou 2020)
- Developed several logistic regression models using hospitalized patient data to explore the relationship between different risk factors and mortality
 - Univariable models looked at one variable at a time
 - One multivariable model looked at lymphocyte count, d-dimer, SOFA score, coronary heart disease, and age together

	Univariable OR (95% CI)	p value	Multivariable OR (95% CI)	p value
Demographics and clinical characteristics				
Age, years*	1.14 (1.09-1.18)	<0.0001	1.10 (1.03-1.17)	0.0043
Female sex (vs male)	0.61 (0.31-1.20)	0.15	..	..
Current smoker (vs non-smoker)	2.23 (0.65-7.63)	0.20	..	..
Comorbidity present (vs not present)				
Chronic obstructive lung disease	5.40 (0.96-30.40)	0.056	..	..
Coronary heart disease	21.40 (4.64-98.76)	<0.0001	2.14 (0.26-17.79)	0.48
Diabetes	2.85 (1.35-6.05)	0.0062	..	..
Hypertension	3.05 (1.57-5.92)	0.0010	..	..





Lancet Article: Risk factors for mortality of adult inpatients with COVID-19 in China

- These models examined effect of risk factors on likelihood for patient survival/death
 - Model results presented as odds ratios (OR)
 - OR > 1 indicates a positive relationship between variable and death (increased likelihood of death)
 - OR < 1 indicates negative relationship (decreased likelihood of death)
 - 95% confidence intervals
 - Greater range of numbers indicates greater uncertainty in OR estimate
 - If 1 is included in the range, then the effect is not statistically significantly different from 1
 - Statistical significance thresholds: $p < 0.05$

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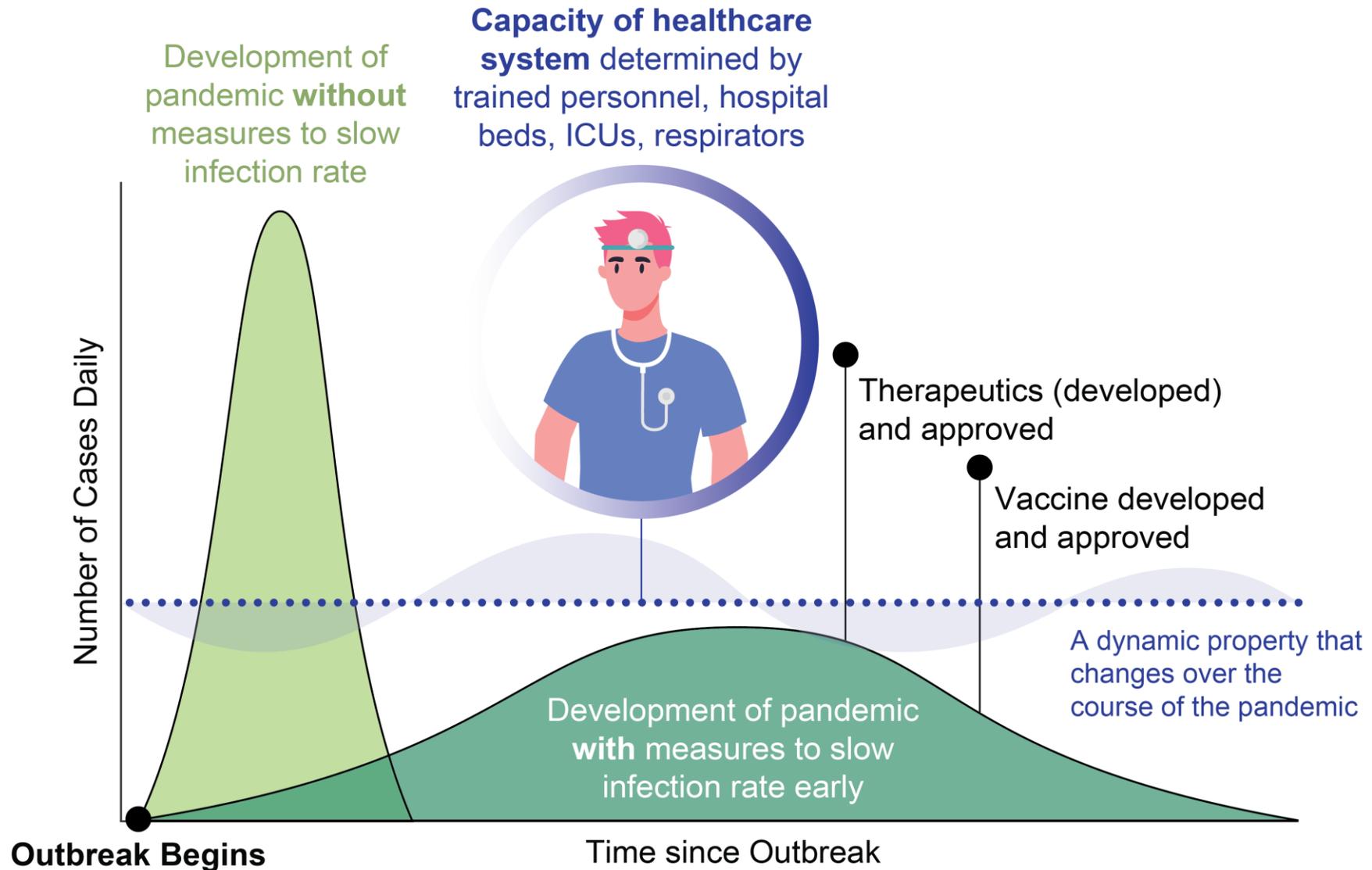


**How do I protect
myself and my
community?**





Don't overwhelm the healthcare system





Everyone should:

Wash your hands



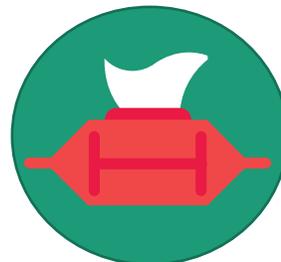
When you arrive at work or home, and before you eat.

Don't touch your face



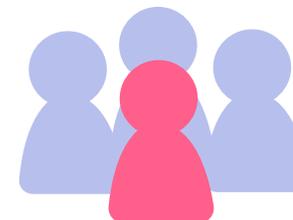
Your eyes, nose, and mouth are the areas vulnerable to introduction of the virus.

Regularly clean common areas



Clean and disinfect common areas at least daily following [cdc.gov](https://www.cdc.gov) guides.

Practice social distancing



When advised by authorities, practice social distancing.



In an office, you should:

Make & follow a Workplace Plan



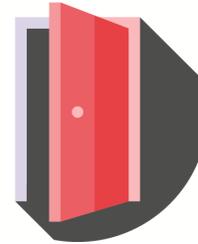
Review NIEHS COVID-19 training tool and make a workplace plan.

Put space between co-workers



Make meetings virtual, or leave 6 feet between co-workers, including in meetings.

Keep doors open



Keep office doors open if possible, to minimize touch points.

Telework



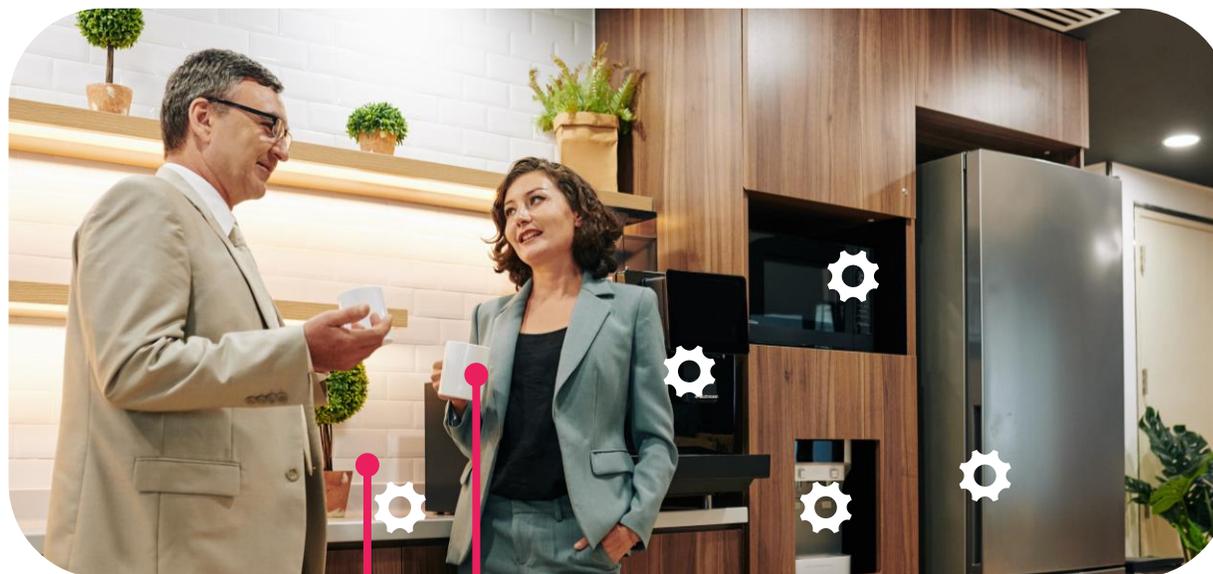
If possible, arrange for staff to work from home.



Biosafety in common areas

The Disinfection Check List

- ✓ Faucets
- ✓ Shared containers
- ✓ Tables
- ✓ Counters
- ✓ Chairs
- ✓ Cabinets
- ✓ Doors
- ✓ Remote Controls
- ✓ Coffee Maker
- ✓ Shared Equipment
- ✓ White Board Markers
- ✓ Etc.



Clean up your own dishes

Maintain social distance



Other workplace considerations:

Wear recommended PPE



Some professions will require masks or gloves, depending on job exposures.

Frequently clean & disinfect more



If you have high consumer traffic, you should increase cleaning frequency.

Do more frequent hand hygiene



If your job involves lots of close contact, refresh your training on hand hygiene.

Skip hand shakes & card exchange



If you still attend meetings, greet others without physical contact.



Handwashing can be fun



Lord of The Rings One Ring Chant

Brought to you by: Audible's Facebook Account



Vietnam's COVID-19 Handwashing Dance

Vietnam produced a video that teaches how to stay safe from COVID-19, but also the basics of handwashing.



Nine Atlanta Rap Songs

Atlanta magazine found nine songs choruses that meet the 20 second requirement, including "No Scrubs."



Happy Birthday, Twice

The classic...sing happy birthday twice.



If you are feeling ill, you should:

Isolate yourself



Stay home if you are feeling sick.

Cough into a tissue or your elbow



Cover your mouth with a tissue and then dispose of it, or cough into your elbow.

Wear a face mask



If you must go out in public, for example to the doctor, wear a mask.

Call a doctor first



Before visiting a healthcare facility, call ahead for medical advice.



How do you wear a face mask?

- The WHO has a great set of resources for that, including infographics and YouTube videos.
- Only wear a face mask if:
 - You need it for PPE (the type of mask will be recommended by your job, but will likely be at least a N95 respirator mask)
 - You are ill (this is likely just a surgical mask)
 - You are a caregiver for someone with COVID-19
- Don't wear it if you don't need it
 - Research suggests wearing a mask increases face touching, which could increase your risk of exposure



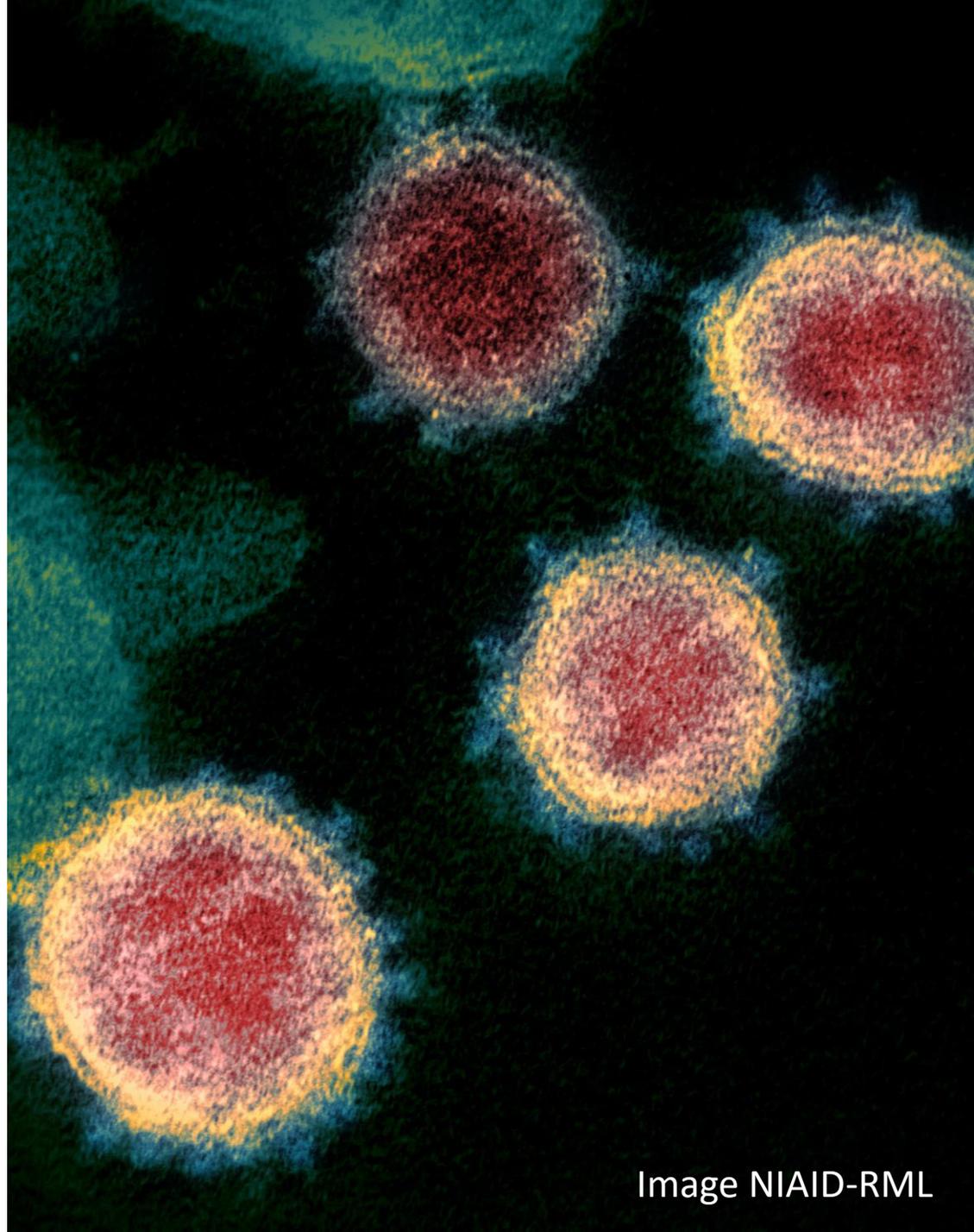
Image WHO.INT





**Information
changes everyday.**

**How do I learn
more?**





Select the best data sources

Strong Data Sources

- CDC
- NIAID, NIEHS & NIH
- WHO
- Your State and Local Public Health Department
- Your Physician's Office
- Peer-review Journals

Poor Data Sources

- Facebook
- Reddit
- Twitter
- Your neighbor (unless they are an infectious disease doctor)
- Mass media



Articles: Critically evaluate all your sources

- Who wrote the article?
- Where is it posted?
- Does the author cite reliable data sources?
- Was it peer-reviewed?
 - Was it published in a scientific journal?
 - Did it cite a scientific journal?
- Do they have a perspective or agenda?
- When was this published?

CDC.NEWS

POPULAR ARTICLES

-  **Bombshell Flashback: Merck FAKED mumps vaccine research, released faulty vaccine that didn't work, say virologists in False Claims Act filing**
May 01, 2019 / Mike Adams
-  **N95 Masks USELESS, Coronavirus Enters Body Through EYEBALLS, Warns Infected Doctor in Wuhan, China**
January 26, 2020 / Mike Adams
-  **Flu vaccine propaganda: Real science vs the CDC**
September 23, 2018 / Vicki Batts
-  **Measles vaccines kill more children than the measles... and it's not even close**
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September 23, 2018 / Vicki Batts
-  **Measles vaccines kill more children than the measles... and it's not even close**
May 01, 2019 / Ethan Huff
-  **The WHO and UNICEF just admitted Natural News was right all along: Polio outbreaks really are caused by polio vaccines**



Journal articles: Surface Stability of SARS-CoV-2

- Still undergoing peer review, but preliminary findings are important
- Viable virus could be detected in:
 - aerosols up to 3 hours* post aerosolization
 - up to 4 hours on copper
 - up to 24 hours on cardboard
 - up to 48-72* hours on plastic and stainless steel

**In these cases, the limit indicates the maximum time measured in the experiment (not max survival)*

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Aerosol and surface stability of HCoV-19 (SARS-CoV-2) compared to SARS-CoV-1

Neeltje van Doremalen, Trenton Bushmaker, Dylan Morris, Myndi Holbrook, Amandine Gamble, Brandi Williamson, Azaibi Tamin, Jennifer Harcourt, Natalie Thornburg, Susan Gerber, Jamie Lloyd-Smith, Emmie de Wit, Vincent Munster

doi: <https://doi.org/10.1101/2020.03.09.20033217>

This article is a preprint and has not been peer-reviewed [what does this mean?]. It reports new medical research that has yet to be evaluated and so should *not* be used to guide clinical practice.

Abstract

Info/History

Metrics

[Preview PDF](#)

Abstract

A novel human coronavirus, now named severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2, referred to as HCoV-19 here) that emerged in Wuhan, China in late 2019 is now causing a pandemic. Here, we analyze the aerosol and surface stability of HCoV-19 and compare it with SARS-CoV-1, the most closely related human coronavirus.² We evaluated the

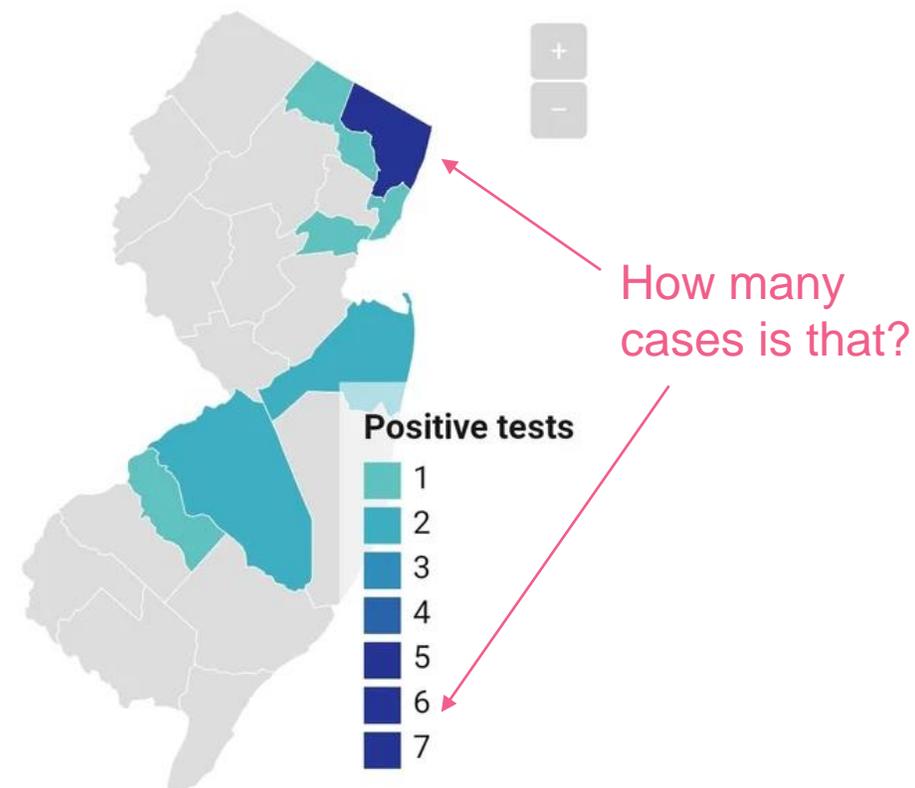




Images: Critically evaluate all your sources

- Are all the parts of the figure labeled?
- What units/scales are used?
 - Do those make sense?
- Does the image impart useful information?

N.J. coronavirus cases by county



Map: NJ Advance Media • Source: N.J. Department of Health
• Created with Datawrapper

Image <https://www.reddit.com/r/dataisugly/>



Graphs: Critically evaluate all your sources

- Do the things being compared make sense?
- Does the y-axis go to zero?
- If there are two graphs, do they use the same scale?
- Did they use a log scale in any part of the figure?

Linear scale

Log scale

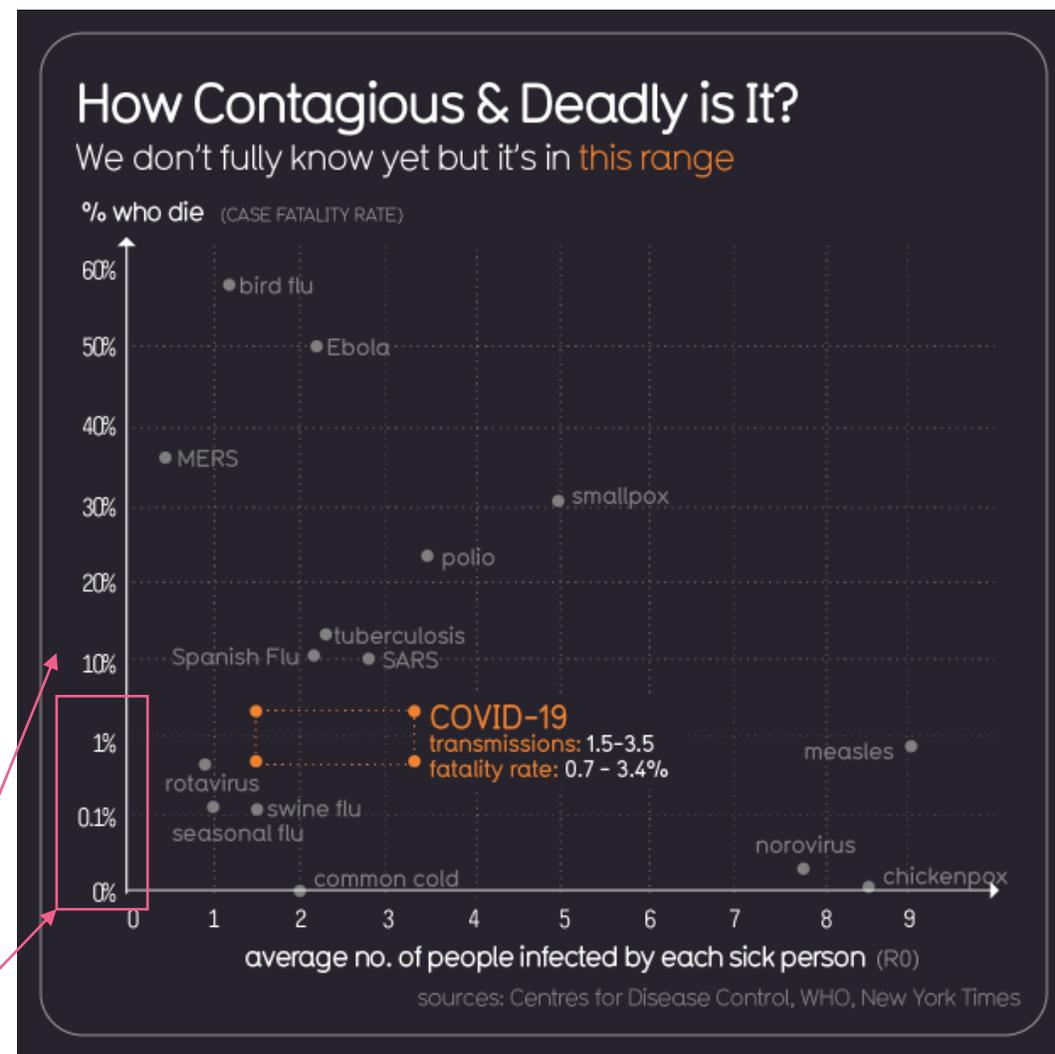


Image <https://www.reddit.com/r/dataisugly/>



Conclusion

1

WHAT IS COVID-19?

A novel coronavirus SARS-CoV-2 causing a global pandemic in 2020

2

HOW DO I PROTECT MYSELF & MY COMMUNITY?

Follow biosafety principals outlined in this presentation to help decrease acceleration of the COVID-19 outbreak

3

HOW DO I LEARN MORE ABOUT COVID-19?

Use reliable sources, such as government websites and peer reviewed literature to stay up to date on the latest recommendations



THANK YOU!

QUESTIONS? COMMENTS?

You can reach me at margaret@gryphonscientific.com