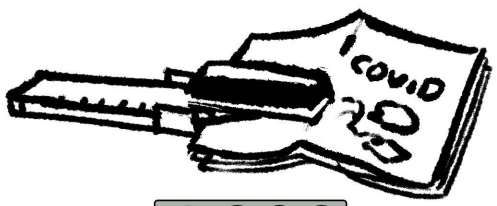
"Every chain of transmission that is broken is VALUABLE. Every person that doesn't GET SICK, that doesn't lose that WEEK of WORK, that doesn't become DISABLED or DIE, from the minorest of inconveniences, to the GREATEST of losses: every single one of those things is VALUABLE."

-Becca on DEATH PANEL
podcast 2/16/23

Print and distribute this zine yourself! Download a PDF here.



citations:

newlevant.com/COVIDzine

ALWAYS FREE

WHAT'S UP WITH COVID AND WHAT WE CAN DO ABOUT IT

2026 EDITION

by HAZEL NEWLEVANT

There are a lot of vested interests[1] in ignoring a simple truth:

COVID is an airborne disease which is still a danger to everyone.

But there's so much we can do to prevent it!

If COVID spread by droplets and surfaces, then it could be prevented by handwashing--conveniently, an *individual responsibility*.

However, study since 2020 has made it clear:

Many diseases are airborne![2]

Including:

MERS, Measles, COVID, Chicken-pox[3], SARS-1, Common Cold, Flu, RSV, Tuberculosis

THIS IS A HUGE PARADIGM SHIFT.

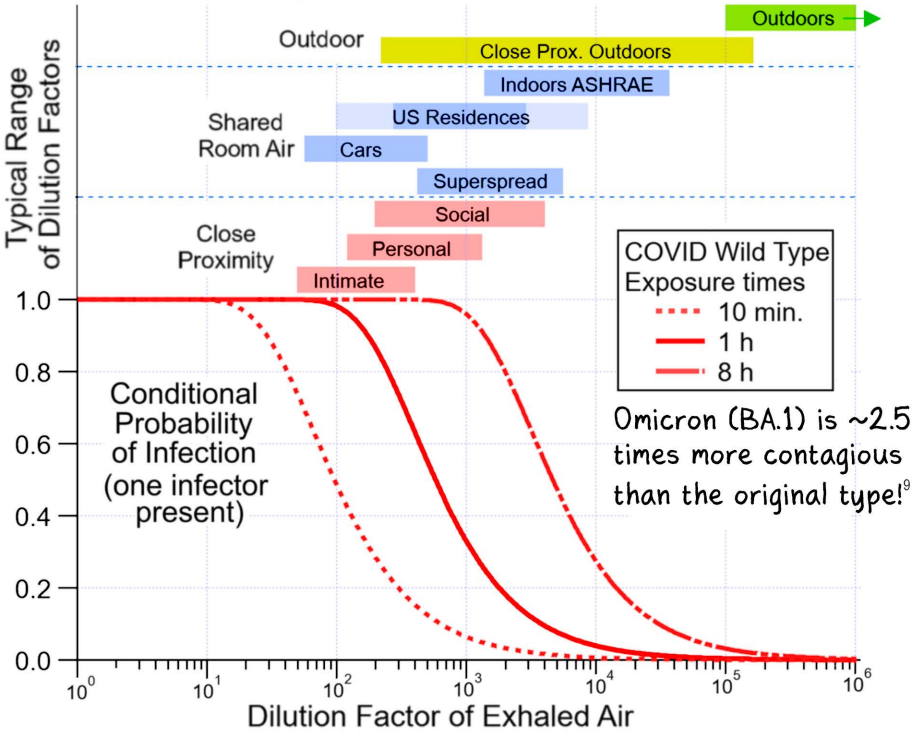
Airborne transmission means that *building owners* need to provide *clean indoor air*, just like clean water.[4] They can't "wash their hands" of COVID.

Airborne diseases such as COVID are spread by *respiratory aerosols*, which we're always exhaling--increasing with how loudly we speak, yell, or sing.[5]

Infectious aerosols spread and linger like smoke.[6]

Less inhaled=Lower infection risk

Less exposure time, *more distance*, and *more clean airflow* can stop airborne disease transmission.[8]



Omicron (BA.1) is ~2.5 times more contagious than the original type![9]

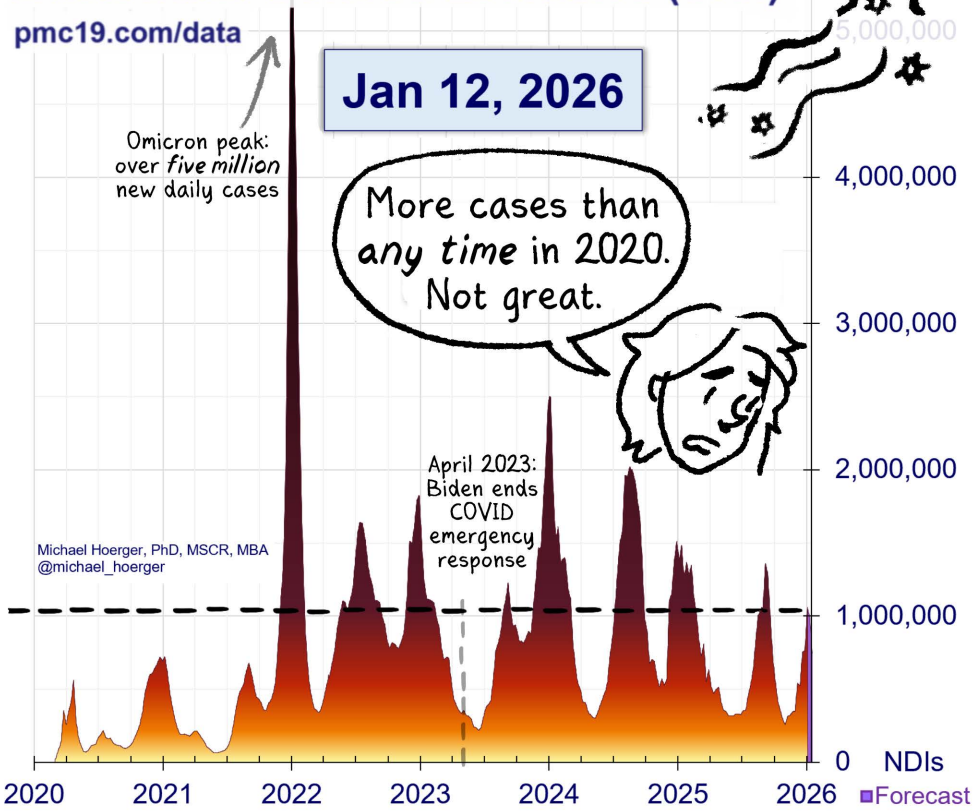
Jimenez JL, Peng Z, Pagonis D. Systematic way to understand and classify the shared-room airborne transmission risk of indoor spaces. *Indoor Air*. 2022; 32:e13025. Figure SI-4

COVID is still everywhere.

At least half of COVID spread starts from people *without symptoms.*[10] Either before symptoms develop, or the ~40% of cases that are *asymptomatic!*[11]

Without available testing, the best way we have to estimate how many people have COVID: *wastewater data.* Virus levels in sewage closely follow actual cases.[12]

SARS-CoV-2 New Daily Infections, Wastewater-Derived Estimates (U.S.)



COVID-19 State Prevalence Estimates

pmc19.com/data

Jan 12, 2026

State	CDC Level	PMC Estimate, % Actively Infectious	Chances anyone is infectious in a room of 10 to 100 people			
			10	25	50	100
Missouri	**Very High***	1 in 22 (4.5%)	37%	68%	90%	99%
Montana	**High**	1 in 36 (2.8%)	25%	51%	76%	94%
Nebraska	**High**	1 in 28 (3.6%)	30%	60%	84%	97%
Nevada	Very Low	1 in 142 (0.7%)	7%	16%	30%	51%
New Hampshire	Moderate	1 in 42 (2.4%)	21%	45%	70%	91%
New Jersey	Low	1 in 67 (1.5%)	14%	31%	53%	78%
New Mexico	Moderate	1 in 55 (1.8%)	17%	37%	60%	84%
New York	**High***	1 in 29 (3.5%)	30%	59%	83%	97%

* Limited reporting

In my state, at time of writing, an estimated **1 in 29** people were infectious with COVID.

30% chance in an uncrowded subway car.

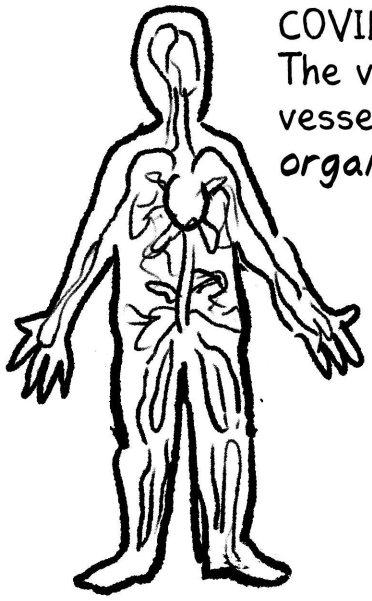
97% chance in a packed subway car!

You can see how the risk skyrockets with crowds.

Estimate of how many people are infectious in *your* U.S. state *now:*

pmc19.com/data

COVID is really dangerous.



COVID isn't just a respiratory disease. The virus infects the lining of blood vessels,[13] which can damage *every organ system, all over the body.*[14]

It disrupts the blood-brain barrier. COVID "brain fog";[15] loss of taste and smell? *That's brain damage.*[16]

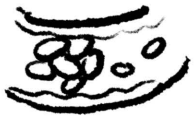
At least *1 in 10* infections cause new, lasting symptoms,[17] aka Long COVID. The more times you get it, the higher the risk.[18]

Causes of Long COVID include:

Persistent virus[19]

causes: chronic inflammation, immune system exhaustion

microclots[20]

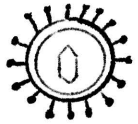


cause: tissue hypoxia, stroke, organ failure

organ damage[21]

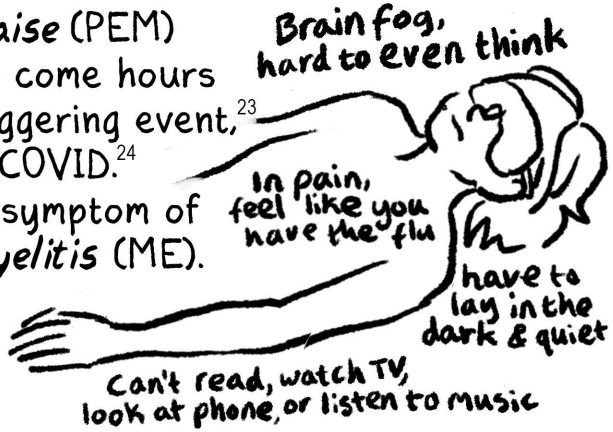
causes: heart problems, gray matter loss

reactivating other viruses



such as: EBV (mono), other herpesviruses

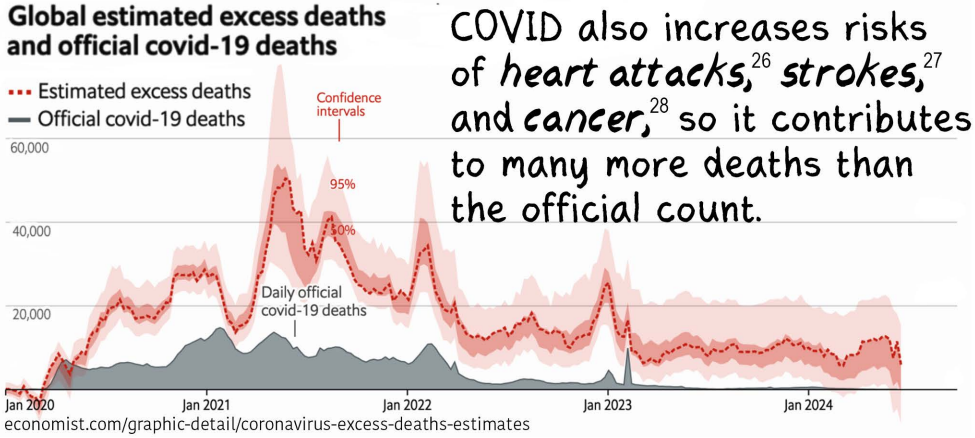
Post-exertional malaise (PEM) *"crashes,"* which may come hours or days after the triggering event,[23] are common in Long COVID.[24] PEM is the hallmark symptom of *myalgic encephalomyelitis* (ME).



Long COVID resources:

whn.global/longcovidresources

In the U.S. alone, hundreds of people are still dying, every week, *officially* from COVID.[25]



COVID also increases risks of *heart attacks,*[26] *strokes,*[27] and *cancer,*[28] so it contributes to many more deaths than the official count.

The pandemic's toll can be seen in *excess deaths,* compared to a 2019 baseline.[29]

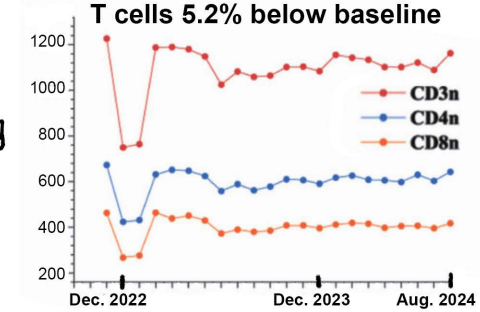
COVID causes immune system dysfunction.

COVID exhausts T cells-- the same infection-fighting cells depleted by HIV.[30] Getting it makes *other infections more likely,* for at least a year after.[31]

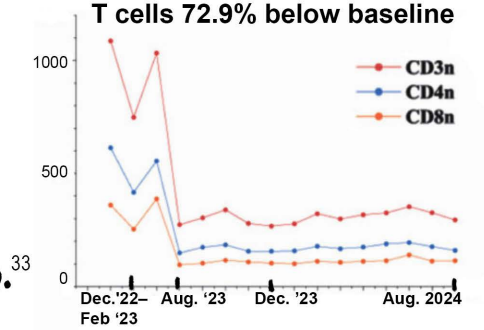
Kids are *twice as likely* to develop Long COVID from their *second* infection.[32]

Long COVID has already overtaken asthma in the U.S. as the *most common chronic illness in children.*[33]

20 months post-infection:
T cells 5.2% below baseline



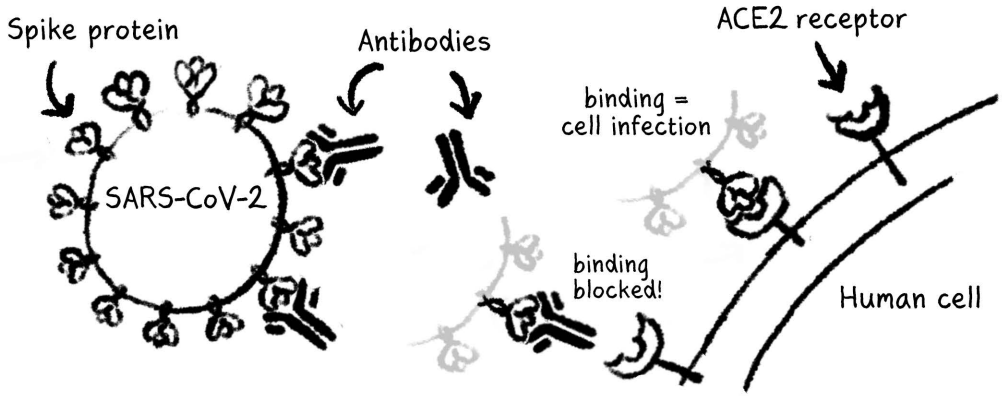
Cardiovascular disease patients, 20 months post-infection:
T cells 72.9% below baseline



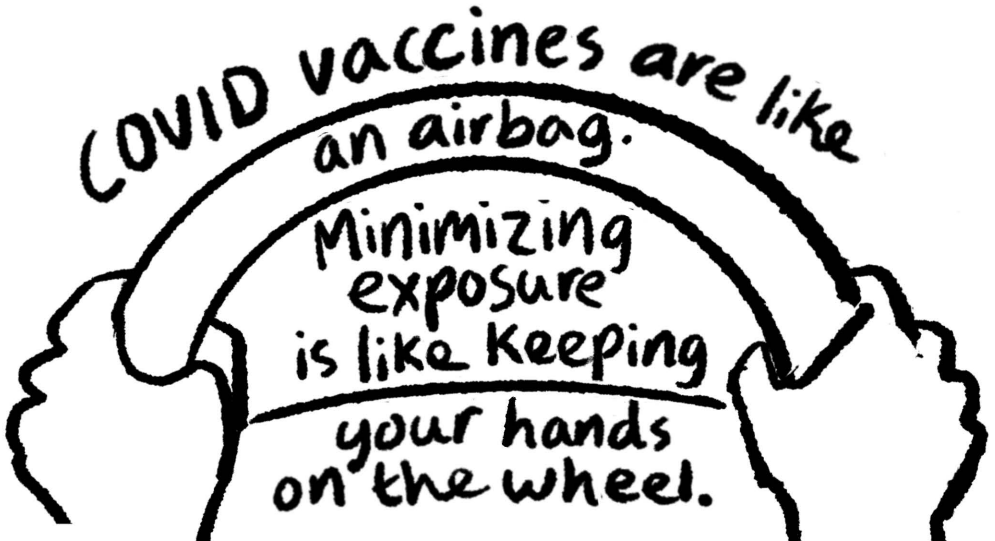
Jiang et al, "Peristent Attenuation of Lymphocyte Subsets After Mass SARS-CoV-2 Infection," *International Journal of Infectious Diseases* (2025). Graphics annotated by Hazel Newlevant.

Vaccines are important but not sufficient.

Vaccines have significantly reduced *hospitalization* and *death* from acute COVID,[34] but they only *modestly* reduce risk of *infection*[35] and *Long COVID*.[36] Antibody levels quickly decline post-shot (or acute infection).[37]

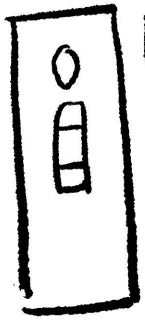


SARS-CoV-2 keeps mutating, with new shapes in the spike protein that evade old antibodies.[38] That's why it's important to get *updated shots* that are better matched to currently-circulating variants.[39]



Rapid tests fail to detect a lot of COVID cases.

Rapid antigen tests (RATs) only detect high virus levels--typically when you already feel sick.[40] If you've been exposed but don't have symptoms, wait at least 5 days post-exposure for more accurate test results.



Positive: You <u>do</u> have COVID.

Negative: You *might* have COVID. Test again in 48 hours, or get a PCR.

Free RATs (if covered by insurance):

walgreens.com/find-care/covid19/otc-test

PCR tests from a clinic or at-home molecular tests (like Metrix or Lucira) are much more sensitive.

Improve rapid test accuracy by swabbing the throat <u>and</u> nose![41]

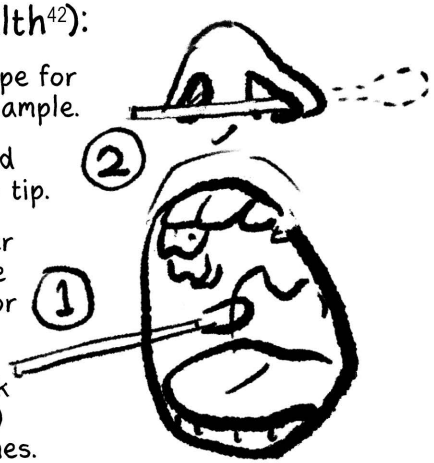
Instructions (from Ontario Health[42]):

Do NOT eat, drink, chew gum, smoke, or vape for at least 30 minutes before collecting the sample.

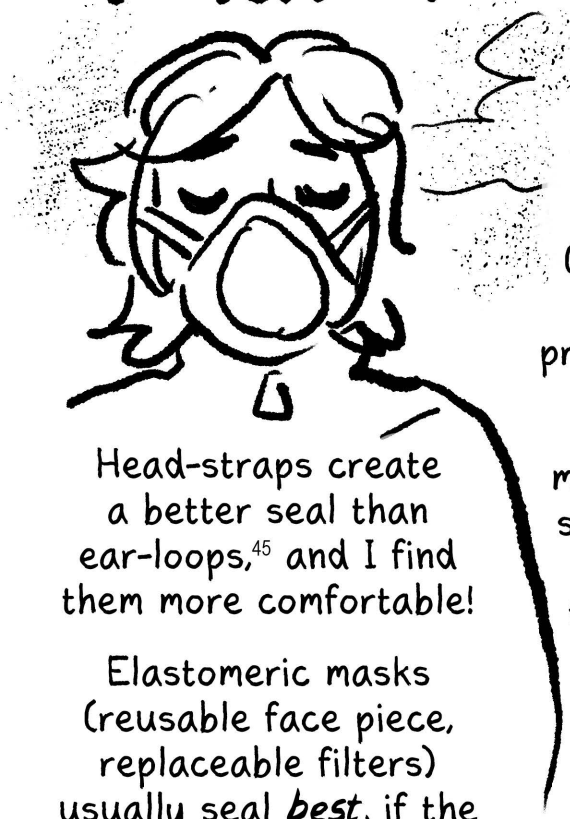
Blow your nose first. Wash your hands and only hold the swab opposite the soft swab tip.

1. Swab between the inner cheek and lower gum on both sides. Then, swab your tongue as far back as you can. *Or,* look in a mirror and swab your tonsils.[43]

2. Swab the nasal wall. Tilt your head back and insert the swab straight back (not up) until you hit resistance. Rotate several times. Then, swab the other nostril.



What we can do:



Don't breathe COVID in. It's all about *MASKS* and *AIRFLOW*.

Respirator masks (like N95s or FFP2s) are excellent at filtering air, protecting you *and* others.[44]

Unlike cloth or surgical masks, they're designed to seal to the face and have an electrostatic charge that traps tiny particles.

Air has to go *through* the mask for it to work. *A mask is only as good as its seal!*

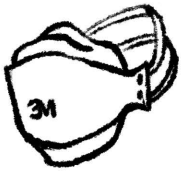
Head-straps create a better seal than ear-loops,[45] and I find them more comfortable!

Elastomeric masks (reusable face piece, replaceable filters) usually seal *best*, if the model fits your face![46]

Finding a good mask:

Which respirators work for you depends on your face shape and head size. Some models have been shown to fit a *wider range* of faces *better*.

The 3M Aura is a good, widely-available respirator.[47]



Mask recs and where to buy them:

reddit.com/r/Masks4All/wiki

Seal check: Cover the surface of the mask with your hands. Can you feel it going *IN* when you inhale and *OUT* when you exhale? That's good.

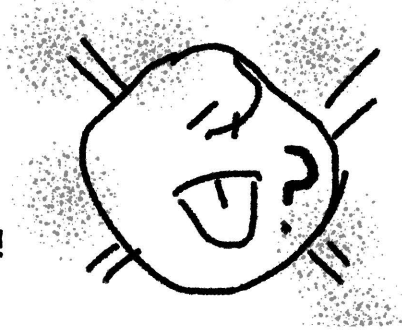
If you feel any air leaking around the edges, the mask doesn't fit properly.[48]

youtube.com/watch?v=TRCZ8Qnf0Z0

To more accurately detect leaks, try a *DIY fit test*.[49]

Basically, you use a nebulizer to fog around your mask with a saccharine or Bitrex solution.

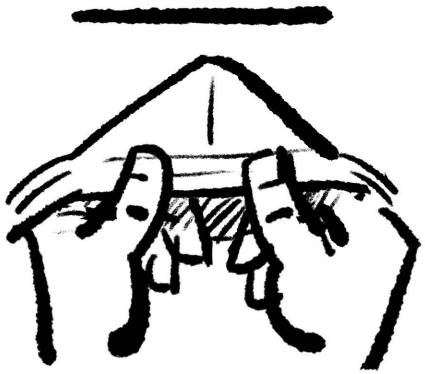
If you can taste the solution inside your mask, there's a leak!



Improving mask fit

Pre-shaping the nose wire of your mask can improve its fit factor by *5 to 10x!*[50]

1 Flatten out nose wire.



2 Shape wire with fingers.

3 Smoosh onto face.

Fit factor is a measurement of how well a mask fits you. It estimates how much *lower* the concentration of external pollutants is, *inside* your mask.

Respirators must have a fit factor of at least *100* to pass an OSHA fit test.[51]

Adding a *staple* can close up a gap at the chin.[52] *Medical tape* at the edges is another option. If possible, fit test your mask after modifications!

If you have to wear a surgical mask...

They were not designed to control infectious aerosols, but their fit can be improved with a *mask brace.*

Free: Two 8-inch rubber bands[53]

1 Put band 1 around head, under nose.

2 Put band 2 underneath.

3 Flip band 1 above nose, fold band 2 over and use it as a chin strap.

Average fit factor, unmodified surgical mask: *3.8*

Average fit factor, surgical mask with rubber band brace: *151*

Cheap: Cut from a rubber sheet

1/32" 40A rubber recommended.

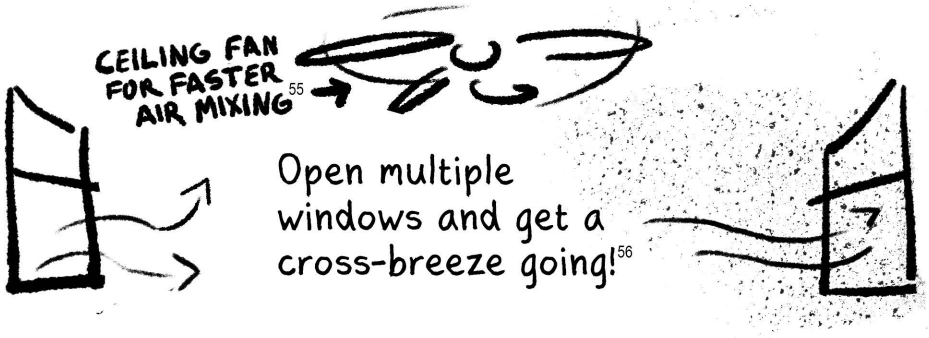
Free template:

fixthemask.com/products/v2-diy-rubber-sheet-brace

$15: Fix The Mask mask brace

The more ventilation, the lower the risk!

Fresh air dilutes the infectious aerosols! That's why COVID spreads less outdoors, especially long-range.[54]

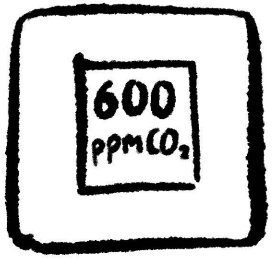


Open multiple windows and get a cross-breeze going![56]

CO_2 monitors can help us judge air quality.

Since we exhale CO_2 as well as respiratory aerosols, the difference between indoor and outdoor CO_2 levels indicates how good the ventilation is.[57]

Outdoor CO_2 level (2024 global avg.)[58]

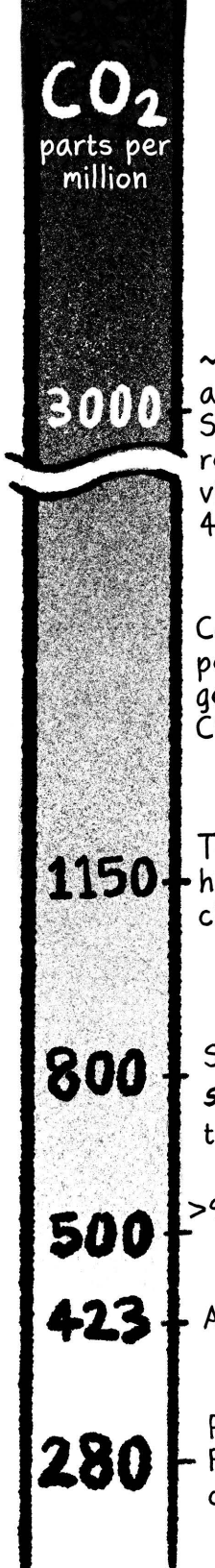


Excellent ventilation[59]

Intro to CO_2 Monitoring

itsairborne.com

See how much you can lower the CO_2 with different windows open and fan placements!



Higher CO_2 levels make COVID aerosols *stay infectious longer.*

~30% of airborne SARS-CoV-2 remains viable after 40 mins[60]

Cognitive performance gets worse as CO_2 increases[61]

Typical high school classroom[62]

SARS-CoV-2 decays *significantly slower* than at 500ppm[60]

>97% of SARS-CoV-2 decays in 40 mins[60]

Avg. outdoor level

Pre-Industrial Revolution outdoor level[60]

SARS-CoV-2 eventually decays from exposure to ambient air. But higher CO_2 levels *slow the decay process.*[60] Yet another reason to ventilate!

CO_2 isn't 1:1 with infection risk.

Masks and air filters can capture infectious aerosols, but not CO_2. Airplane cabin air is heavily filtered, but the CO_2 level still gets high![63]

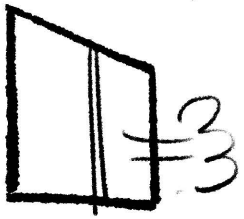
We exhale *way more* aerosols when vocalizing than when silent, but not more CO_2.[63] Thus, CO_2 levels would tend to *under-*estimate risk at events with lots of talking and singing.

Close contact with an infectious person is risky even if CO_2 levels are low.[63]

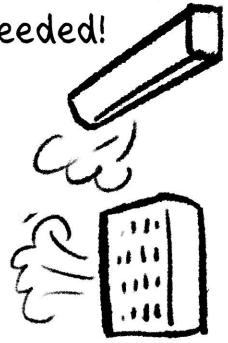
We can have safer indoor air!

Released in 2023, ***ASHRAE 241*** is a new ventilation standard,[65] designed based on infection risk modeling,[66] to ***reduce airborne disease transmission.***

It specifies a minimum ***clean air delivery rate*** (CADR) per person, measured in cubic feet per minute (cfm). The more people, the more clean airflow needed!



This clean air can come from outdoors, air purifiers, or an HVAC system with MERV-11 or better filters.[67]



Conveniently, air purifiers are sold by CADR. ***Any space could hit these targets*** with enough purifiers and/or few enough people!

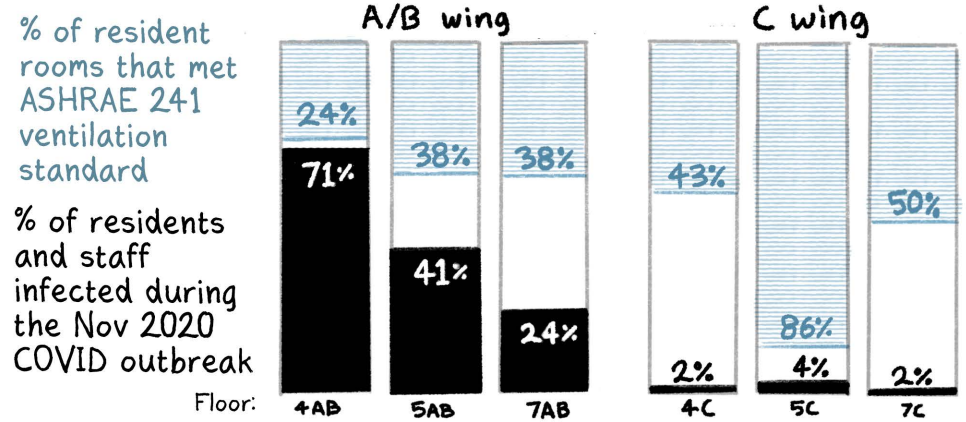
Minimum for low-occupancy spaces: ***350 cfm.***[68] For group singing events, double these rates.[69]

How much clean air? To meet ASHRAE 241[70]

20 cfm/person	30 cfm/person	40 cfm/person	50 cfm/person	60 cfm/person	70 cfm/person	80 cfm/person	90 cfm/person
Warehouse	Residential dwelling unit	Retail	Lobby	Food & bev. facilities	Healthcare group treatment area	Gym	Healthcare waiting room
Sorting, packing, light assembly.	Office	Classroom	Residential common space	Transit waiting			
	Prison cell	Healthcare exam room	Healthcare resident room	Museum	Healthcare patient room		
		Prison day room	Auditorium	Convention			
			Spectator Area				
			Place of Worship				
			Manufacturing				

ASHRAE 241 works.

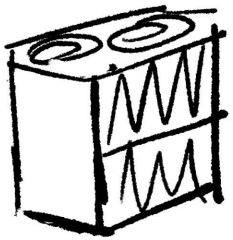
Meeting this ventilation standard greatly reduces COVID spread. Example from a long-term care facility:



"Optimizing Ventilation Strategies for Mitigating SARS-CoV-2 Transmission in Long-Term Care Facilities: A Collaborative Study with Practical Implications," Wagg and Zhong, 2024. Data visualization by Hazel Newlevant.

ASHRAE 241 isn't enforced anywhere...yet. But we don't have to wait to assess and improve our spaces!

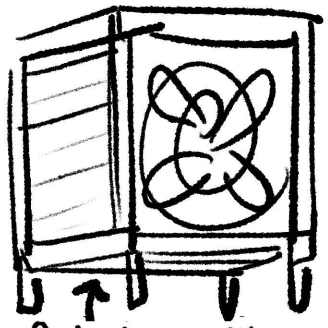
DIY air purifier made with cardboard and two PC fans: ***88 cfm.***[71]



DIY box fan air purifier with five MERV-13 filters: ***600 to 850 cfm***[72]

Air purifier finder tool:

filters.cleanairstars.com



"I have COVID, now what??"

What I'm planning to do if/when I get COVID again. Not medical advice. I am not a doctor.

People's CDC has a detailed "What to Do if You Have COVID" guide. Gather supplies *before* you get sick!

There's still a chance to stop the spread!

Reduce the chances of infecting others in your household by isolating ASAP, maximizing ventilation, and everybody wearing masks. ***People stay infectious for at least 10 days on average!***[73] Exit isolation after two negative tests, at least 24 hours apart.[74]

Don't go out if you can possibly help it. If it's an emergency that can't be delegated or postponed, *wear a respirator!!!*

REST.

Dehydration is *also* linked to Long COVID, so drink up![75]

Inadequate rest can *worsen* or potentially even *cause* Long COVID.[76] ***Don't work out!!*** Avoid exertion as much as possible, during infection and in the weeks after. Rest and pacing are also crucial for coping with post-exertional malaise, a common Long COVID symptom.[77]

Saline irrigation

Frequent saline gargling and nasal rinses can help resolve symptoms earlier[78] and reduce the risk of transmitting COVID to others in your household.[79]

Others in your household doing frequent saline rinses, as well as masking, may also help them stay negative![80]

Antihistamines may calm the inflammatory "cytokine storm" that causes organ damage.[81] People on chronic antihistamine treatments appear to have lower rates of Long COVID.[82]

Prescription medications

Paxlovid is an antiviral which reduces the severity of acute COVID infection. The older you are, the more it reduces your risk of developing Long COVID.[83] (No apparent risk reduction for adolescents.)

It's prescribed for those at increased risk of severe illness...which is 75% of U.S. adults.[84] It should be started within 5 days of symptom onset.

Assessment for Paxlovid (in New York State):

Virtual ExpressCare
ondemand.expresscare.video/landing

Reporting on Metformin and Long COVID:

thesicktimes.org

Metformin, a common diabetes drug, has been shown to reduce Long COVID risk by ***41-63%*** when taken during acute COVID infection![85]

AgelessRX.com prescribes Metformin off-label for longevity and weight loss. Your PCP might also be willing to prescribe it. If you'd want to take it during a COVID infection, stock up in advance.