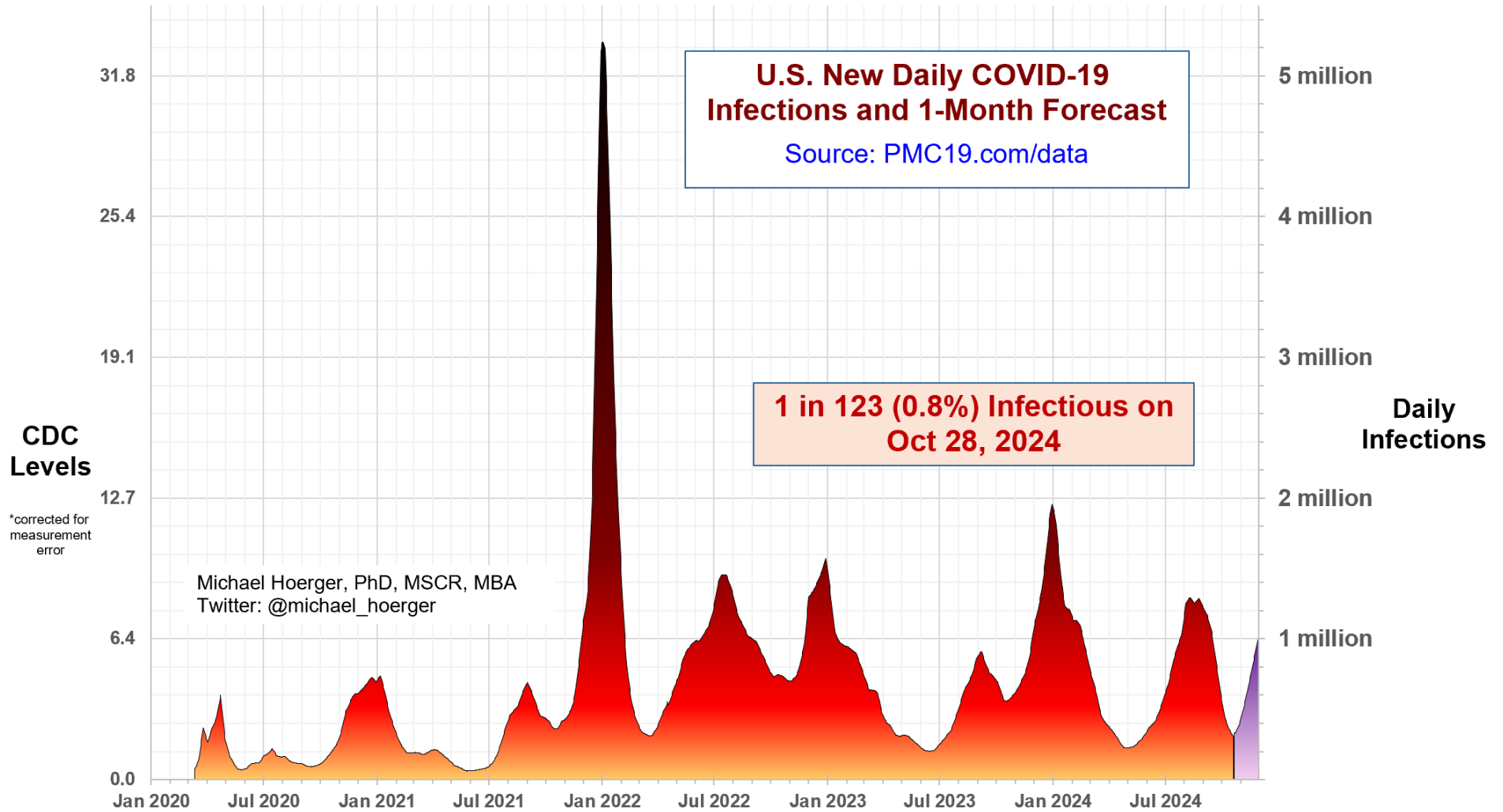


PMC U.S. COVID-19 Case Estimation and Forecasting Model: Report for October 28, 2024, pmc19.com/data

Michael Hoerger, PhD, MSCR, MBA, Pandemic Mitigation Collaborative (PMC)



Cite as: Hoerger, M. (2024, Oct 28). *PMC U.S. COVID-19 Case Estimation and Forecasting Model: Report for October 28, 2024*. Pandemic Mitigation Collaborative. <http://www.pmc19.com/data>

Join the Team!

Dr. Hoerger is accepting students for the Health Psychology PhD program at Tulane University. Applications are due November 30. Please share the graphic below on listservs and social media.

Websites of relevance:

- Hoerger – psychmike.com
- Cancer Research – psych-onc.com
- Pandemic Program – pmc19.com
- Doctoral Program – HealthPsychPhD.com

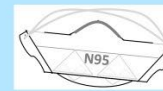
Tulane University - Health Psychology PhD

Seeking applicants to our PhD program who

- 1) Understand and are cautious about COVID,
- 2) Have a background in psychology or a closely-related undergraduate or Master's degree program,
- 3) Plan to pursue a research-intensive career spanning multiple scientific disciplines, and
- 4) Have a desire to help people with serious health conditions like cancer.

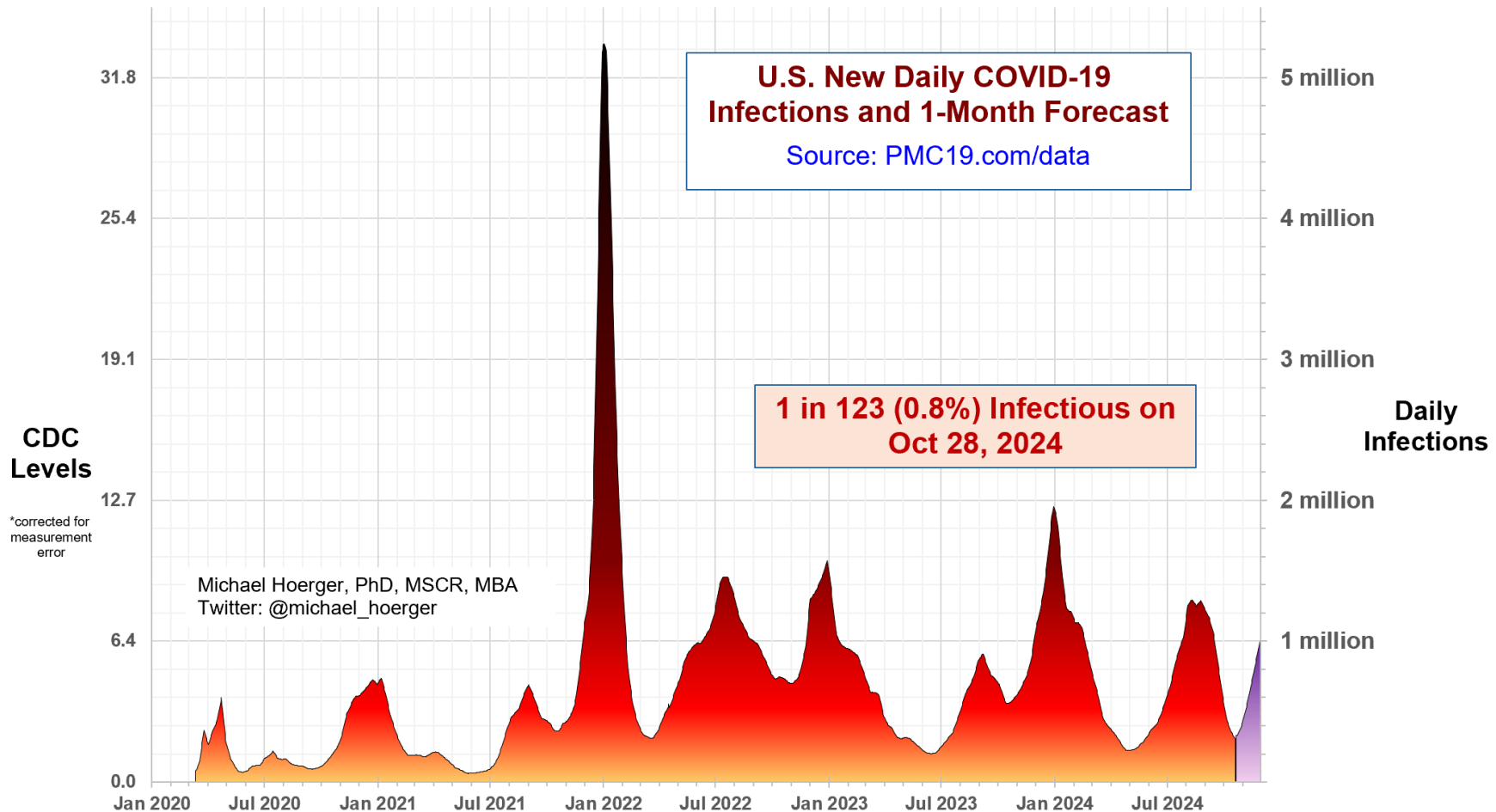


Learn more: HealthPsychPhD.com or mhoerger@tulane.edu



The Big-Picture View of the Pandemic

We are coming down from the 9th wave of the pandemic, which peaked at 1.3 million infections per day, and are heading into a 10th wave of COVID. We are presently in a very high between-wave “lull” with 1 in 123 (0.8%) actively infectious, nearly identical to last week. If the data hold, the lull point has passed, but it is possible the levels will be similar the next week. We expect high transmission the remainder of 2024.



Here is some additional context quoting Dr. Hoerger on Twitter. References to “@” usernames are Twitter users.

Every indication is that the 10th wave is on the way. I expect to see levels qualitatively higher next week. If lucky, that could be another 1-2 weeks off. However, based on the WastewaterSCAN and Walgreens data, I doubt we're so lucky.

I'll walk you through some of the main dashboards I track regularly.

1) CDC: They post wastewater data on Fridays with a 7-day reporting lag. Note that because their data are stale (10 days old as of today), our stats for "today" are always a forecasts ahead of their raw data. The CDC posts high-quality data. They normalize them well to facilitate year-over-year comparisons that correlate near-perfectly with estimates of transmission as well as other indicators of transmission. Their reporting lag and retroactive corrections to real-time data are the main challenges. It gives you a reasonable picture of where things were 1-2 weeks ago. Their data show flat transmission, which is why when one carries the forecast forward, you see an increase on the way, as the lull ends. That assumes "normal" shapes of waves and lulls and that transmission picks up "as usual" this time of year. It does not factor in year-over-year atypical variation, such as by changes in mitigation policies.
<https://www.cdc.gov/nwss/rv/COVID19-nationaltrend.html>

2) Biobot: Biobot reports wastewater data, often on Fridays and with about a 9-day average lag (so 12 days as of today). When estimating case levels from CDC and Biobot, we get near-identical estimates. Sometimes people worry about whether one source or another is experiencing "drift" (bias toward higher or lower levels), and we don't see evidence of that. Even the past 60 days, the correlation between case estimates derived from Biobot and CDC are $r=.95$, near perfect. More simply, when I graph the lines, they are so on top of each other, it's hard to see them both, so it's not as though CDC data lead to overestimates or underestimates of cases. We sunsetted Biobot from our current case estimation model when they experienced an unexplained 3-week reporting delay. However, their reporting has been fine of late, and we're likely to reintegrate them into the model. That will help if the CDC runs into a reporting gap in the winter.
<https://biobot.io/data/>
(scroll to the bottom and click Latest Report)

3) Walgreens: They post on Monday and have only a 1 day lag at that time. However, consider the lag more like 4-5 days since it takes time for people to get Covid, realize they are sick, and go get tested. Also, it's a positivity ratio, so it's affected by levels of Covid circulating AND levels of other illness circulating that also lead people to go test. It's good to look at number of positive cases, in addition to just the positivity ratio, or note that one should mentally inflate the size of winter waves (or deflate the size of their summer waves) so account for non-Covid illness circulating. Next Monday, we will probably see an uptick at Walgreens, but I wouldn't be surprised if it takes another week given the infection-to-testing time lag. It's as flat as flat can be, consistent with the existing lull.

<https://www.walgreens.com/healthcare-solutions/covid-19-index>

4) WastewaterSCAN: They update frequently, but in my experience, the data within the past 48 hours bounce around a lot and can lead people to jump to conclusions. In my experience, their data are very solid after 9-13 days. So, it's good for getting a quicker clue as to what's happening, but you have to take it with more of a grain of salt. Also, they don't normalize the data in a way that facilitates year-over-year comparisons very well, so there is a drift toward apparently larger and larger waves. Between the CDC's site and WWS, most can find some useful local/regional data.

<https://data.wastewaterscan.org/>

5) Iowa COVID-19 Tracker: [@amethystarlight](#) compiles different data sources very well. It's nice to see everything in one place, as opposed to with the CDC site where you have to click on so many different drop downs. You can see several states already going up, though many still headed down (though remember the reporting lags from the underlying sources).

<https://iowacovid19tracker.org/>

6) World Health Network: They have a wastewater-derived case estimation similar to our own. However, they are also branching out to add additional countries. I see a graph for Germany that is new to me. [@jlerollblues](#) can tell you more about what's on the way.

<https://whn.global/estimation-of-infections-based-on-wastewater-data-us/>

7) COVID-19 Resources Canada: [@MoriartyLab](#) runs a forecast for Canada. It's presently showing much higher

levels of transmission than in the U.S. Her Tweets provide an excellent snapshot of the picture. Non-Twitter users can also monitor current data on their website.

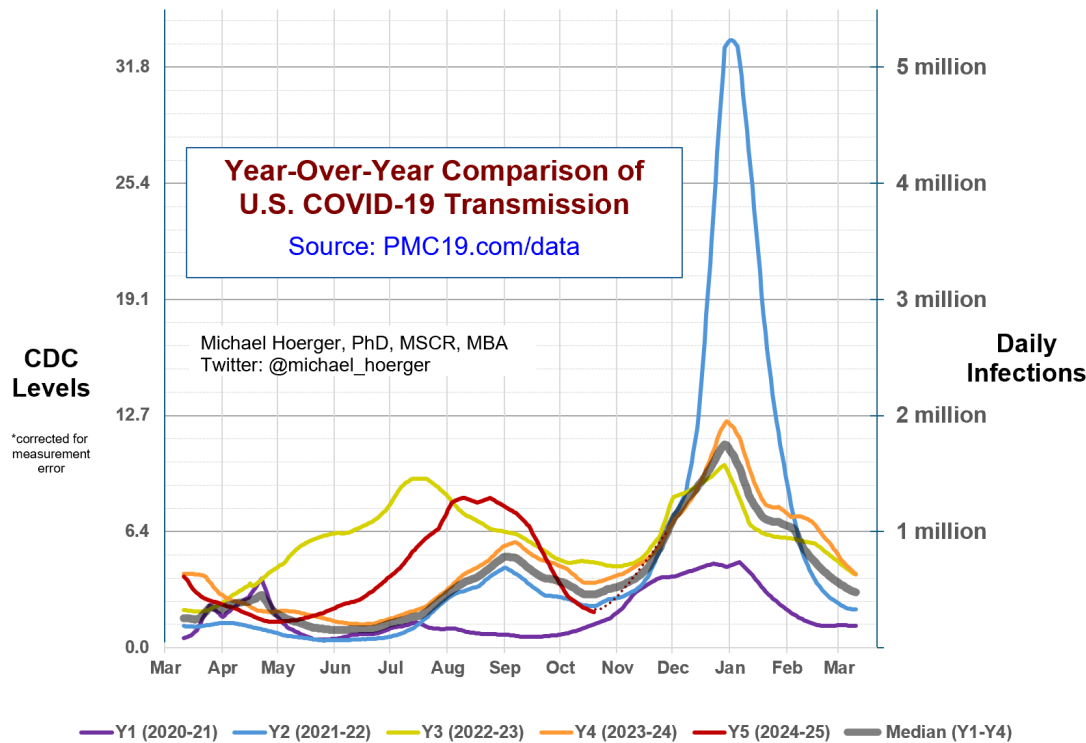
<https://covid19resources.ca/covid-hazard-index/>

8) UKHSA: They report on various surveillance statistics. Last winter, they had a testing-based surveillance program that was impeccable and tracked closely with the PMC (U.S.) and Moriarty (Canada) estimates of transmission.

<https://www.gov.uk/government/statistics/national-flu-and-covid-19-surveillance-reports-2024-to-2025-season/national-flu-and-covid-19-surveillance-report-24-october-week-43>

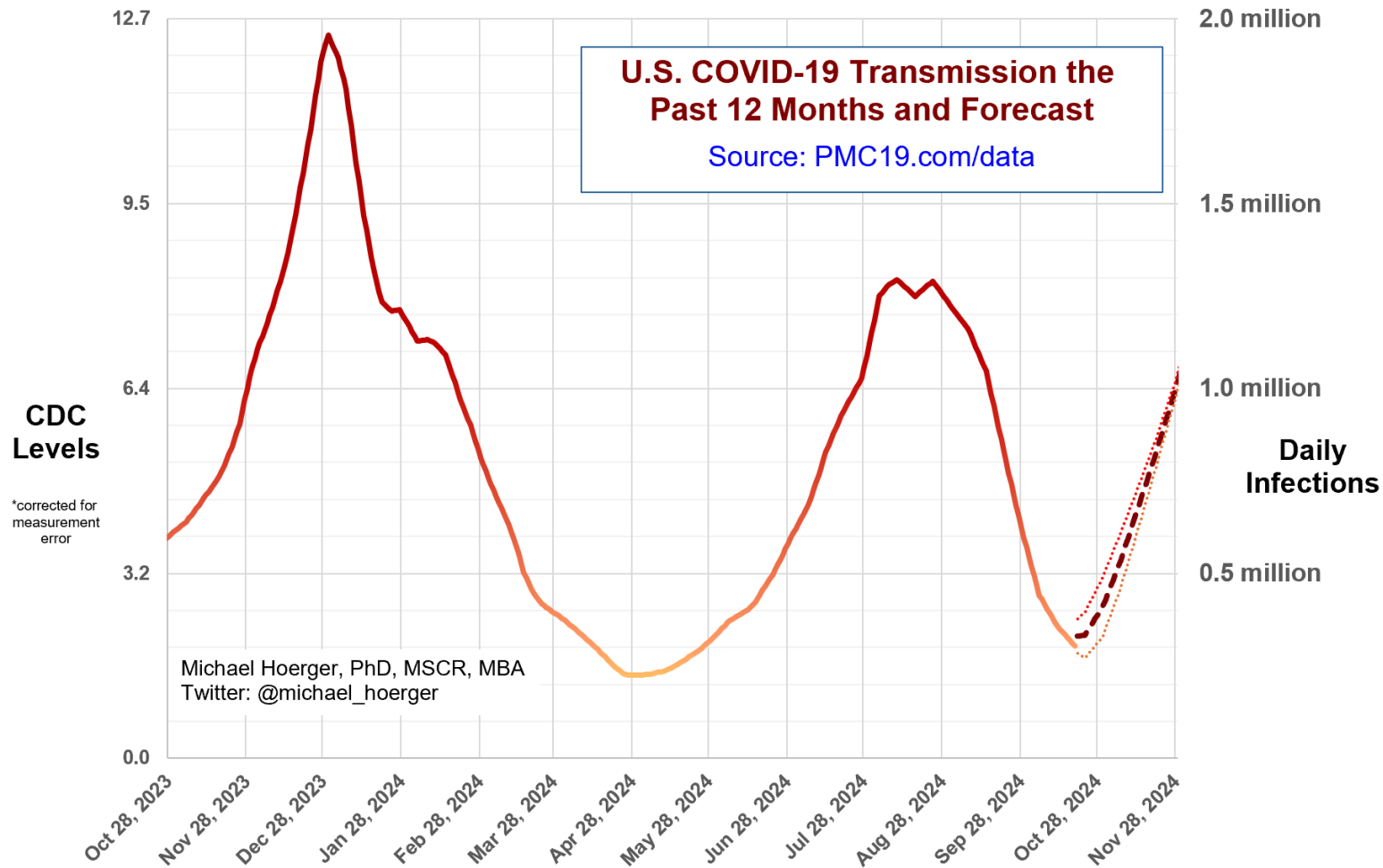
Year-Over-Year Comparisons

The year-over-year comparisons show that we have experienced an unprecedented decline in transmission for the back end of summer/fall wave. October now looks similar to the historical median. Transmission is anticipated to be similar from late September through early November, before picking up quickly. If we are lucky, the lull will go a bit lower and later (early November). For example, our estimates of transmission for the 2024 summer wave are likely minor underestimates, given potentially higher than average school transmission and that wastewater underestimates pediatric infections. To the extent that wave was larger than depicted, that would explain why transmission fell more rapidly than anticipated and could lead to a slightly later/lower lull. Regardless, the next couple weeks are a good time to catch up on activities like dental/medical visits that one may have put off during the summer wave. Top medical centers have begun re-requiring masks, and more will on November 1.



Close-up on the Current Forecast

The forecasted trajectory of transmission is largely the same as that of last week. The low point for the remainder of 2024 may have just occurred or could occur between today and early November. It is common for the most recent CDC data to get corrected upward or downward marginally in hindsight, and the dashed lines show how the point estimate of the forecast would change given errors of +/-8% in real-time reports. The differences in transmission over the next couple weeks are likely negligible from a big-picture perspective.



Supplemental Statistics

These supplemental statistics may prove useful in conversations about transmission and mitigation. The numbers are comparable to last week. We see that 1 in 123 are actively infectious. Over the next month, expect 550-700,000 infections/day on average, if the numbers hold. In a university classroom of 75-100 people, it should be assumed that someone (about a 50% chance) has infectious COVID. Transmission is higher than 42% of the pandemic and lower than 58% of the pandemic. The impact on potential Long COVID cases the next month will be staggering, and expect high transmission throughout the remainder of 2024.

| Current Levels for Oct 28, 2024 | |
|--|--------------------|
| % of the Population Infectious | 0.8% (1 in 123) |
| New Daily Infections | 388,000 |
| New Weekly Infections | 2,716,000 |
| Resulting Weekly Long COVID Cases | 136,000 to 543,000 |

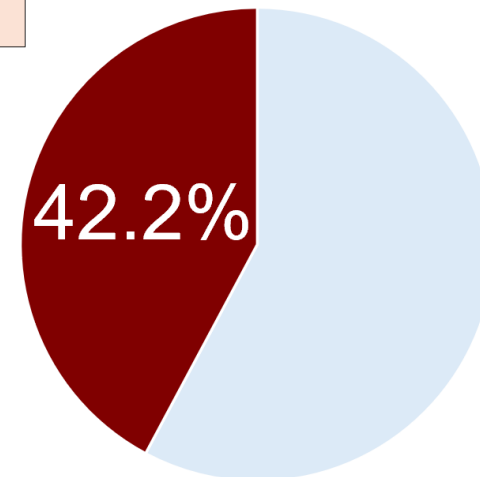
| Monthly Forecast | |
|---|----------------------|
| Average % of the Population Infectious | 1.4% (1 in 73) |
| Average New Daily Infections | 655,367 |
| New Infections During the Next Month | 19,661,000 |
| Resulting Monthly Long COVID Cases | 983,000 to 3,932,000 |

| Running Totals | |
|---|-------------|
| Infections Nationwide in 2024 | 227,106,000 |
| Average Number of Infections Per Person All-Time, U.S. | 3.46 |

| How Does Risk Increase with More Social Contacts? | | | |
|---|------------------------------|------------------|------------------------------|
| Number of People | Chances Anyone Is Infectious | Number of People | Chances Anyone Is Infectious |
| 1 | 0.8% | 15 | 11.5% |
| 2 | 1.6% | 20 | 15.0% |
| 3 | 2.4% | 25 | 18.4% |
| 4 | 3.2% | 30 | 21.7% |
| 5 | 4.0% | 35 | 24.8% |
| 6 | 4.8% | 40 | 27.8% |
| 7 | 5.5% | 50 | 33.5% |
| 8 | 6.3% | 75 | 45.7% |
| 9 | 7.1% | 100 | 55.7% |
| 10 | 7.8% | 300 | 91.3% |

pmc19.com/data

Michael Hoerger, PhD, MSCR, MBA
 Twitter: @michael_hoerger



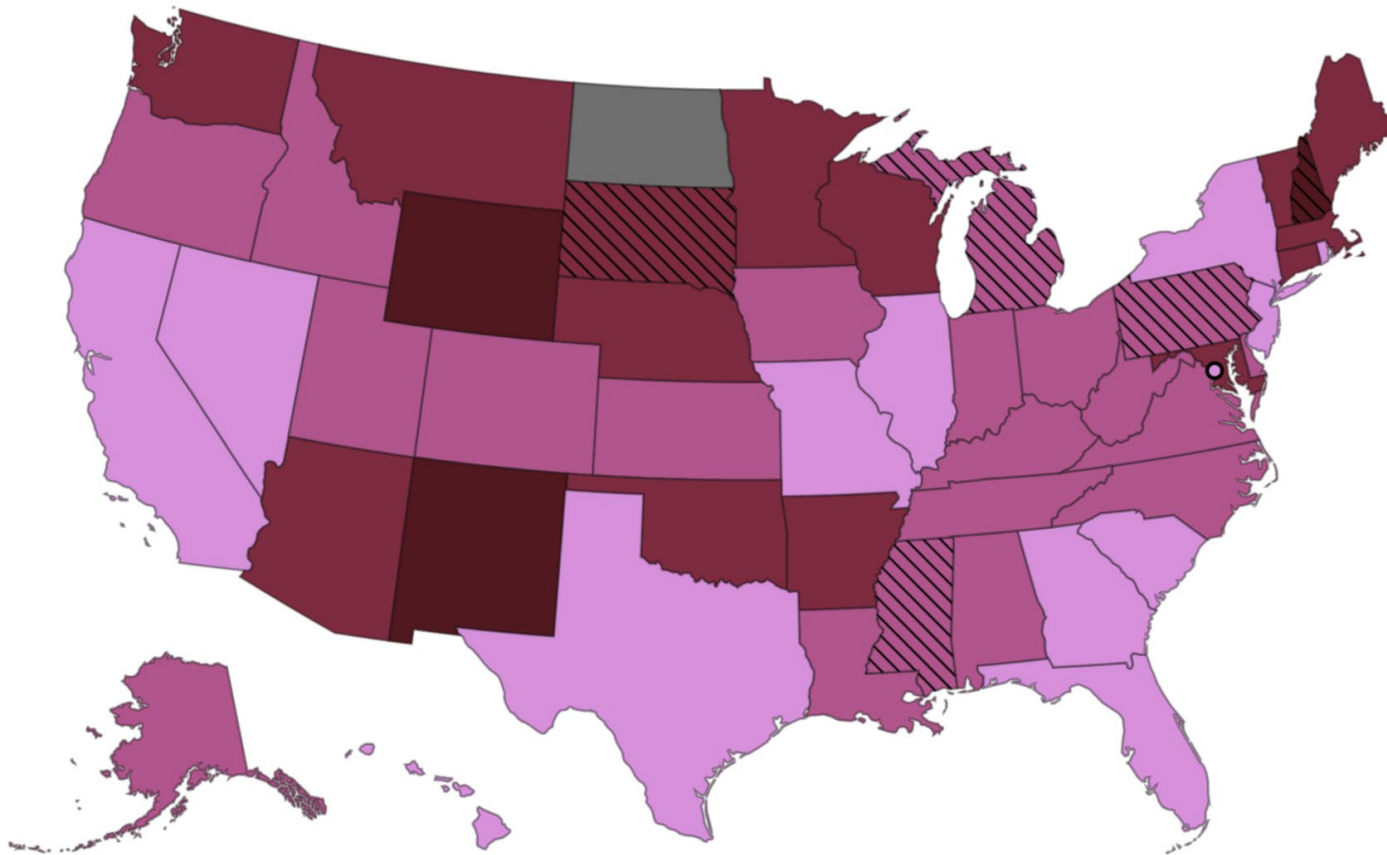
There is more COVID-19 transmission today than during 42.2% of the pandemic.

CDC COVID-19 Heat Map

This map uses the CDC state-by-state data to show areas with higher transmission in deeper red. Notice the considerable geographic variation. The CDC version of the map, colored in cool blue is available online. Blue tends to confuse people into thinking transmission is “cool” or low, so we and various popular media outlets (e.g., Newsweek) tend to recolor. The dashed lines indicate atypically low representation from the wastewater sites within a state.

<https://www.cdc.gov/nwss/rv/COVID19-currentlevels.html>

CDC COVID-19 Heat Map, Higher Transmission Shown with Deeper Red



Regional Case Estimation

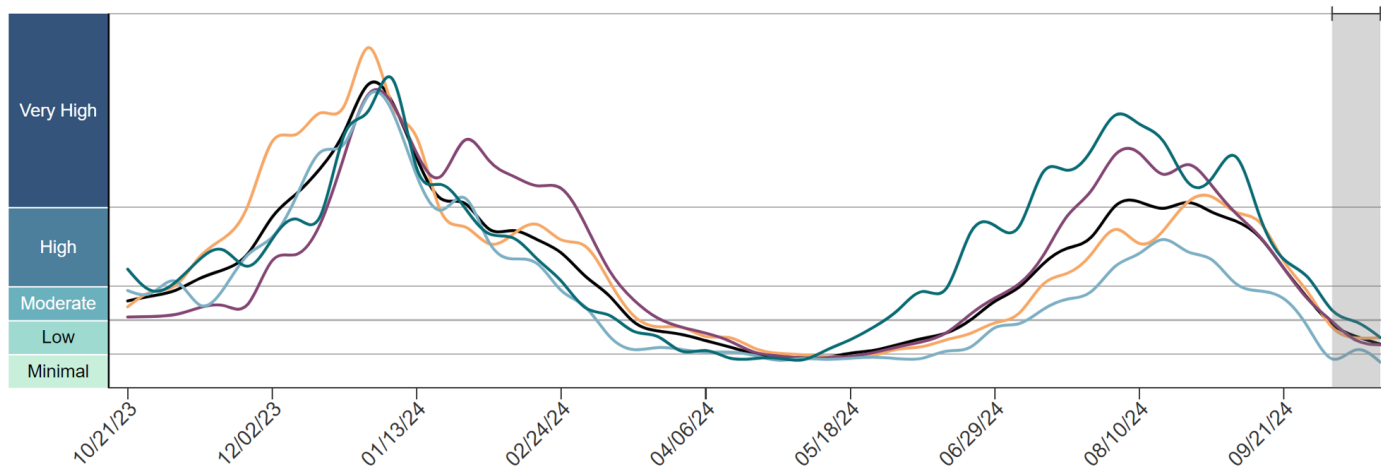
This graph from the CDC shows regional variation in transmission. You can use the “PMC Regional Multiplier” to get a ballpark estimate the proportion of a given region actively infectious with COVID-19 (see Technical Appendix document on the dashboard page). Notice how the Northeast (on average) and many particular regions are presently experiencing a considerable lull in relative terms.






The CDC regional data are available online:

<https://www.cdc.gov/nwss/rv/COVID19-nationaltrend.html>

State-level data are also available: <https://www.cdc.gov/nwss/rv/COVID19-statetrend.html>

CDC Regional Levels with PMC Estimates of the Percentage Actively Infectious



| Estimated Percentage Actively Infectious* | | | |
|---|-----------|-----------------|-----------------|
| | | PMC Model | Raw CDC Data |
|  | National | 0.8% (1 in 123) | 0.6% (1 in 157) |
|  | Northeast | 0.5% (1 in 209) | 0.4% (1 in 267) |
|  | Midwest | 0.9% (1 in 108) | 0.7% (1 in 137) |
|  | South | 0.8% (1 in 125) | 0.6% (1 in 160) |
|  | West | 0.9% (1 in 107) | 0.7% (1 in 136) |

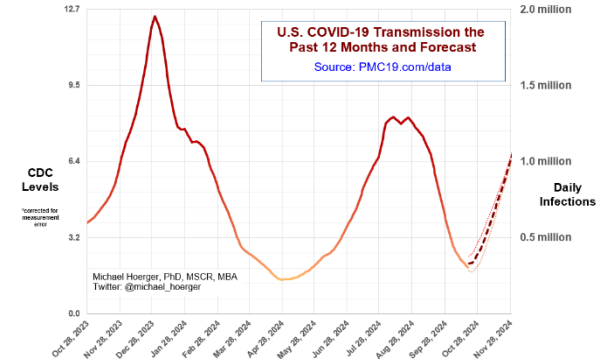
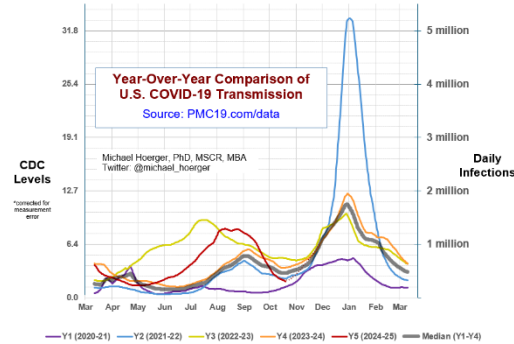
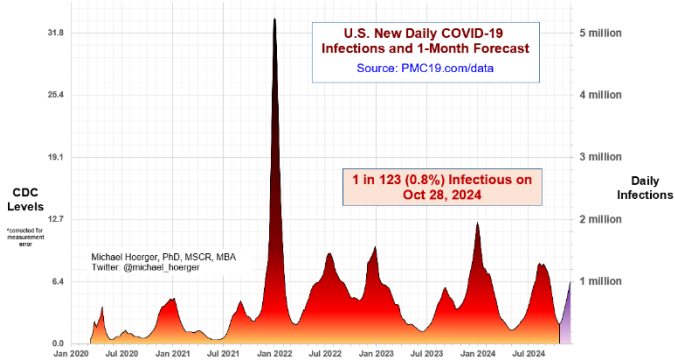
| PMC Regional Multiplier* |
|--------------------------|
| 0.329 |

* CDC level multiplied by the PMC Regional Multiplier provides an approximate estimate of the percentage actively infectious.

* The "Raw CDC" values are simply the value in the CDC chart multiplied by the PMC Regional Multiplier. The "PMC Model" estimates adjust those data by accounting for reporting time lag.

PMC COVID-19 Dashboard

Here is the complete PMC COVID-19 Dashboard. Please share the images across social media and other websites.
 Michael Hoerger, PhD, MSCR, MBA | Pandemic Mitigation Collaborative | pmc19.com/data



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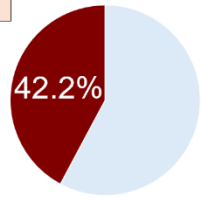
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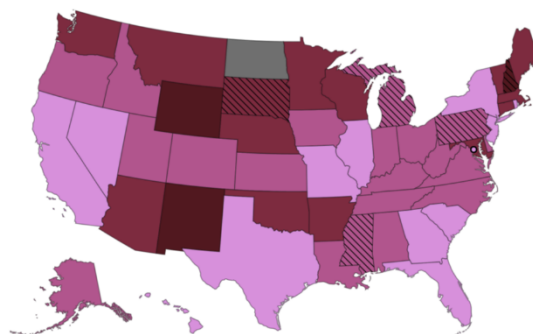
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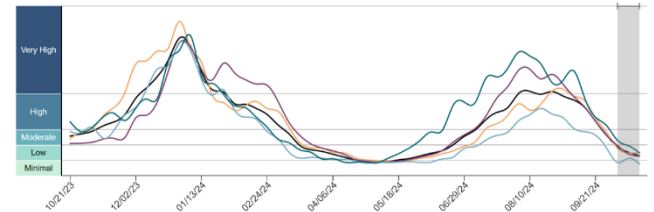


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CDC COVID-19 Heat Map, Higher Transmission Shown with Deeper Red



CDC Regional Levels with PMC Estimates of the Percentage Actively Infectious



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Announcements

Aug 1

Check out our new empirical article in JAMA-NO framing masking in healthcare as a healthcare quality indicator.

Article: <https://jamanetwork.com/journals/jamanetworkopen/article-abstract/2821699>

Summary: <https://www.msn.com/en-gb/health/other/masking-policies-prevalent-in-top-cancer-centers-amid-winter-covid-wave/ar-BB1qZWnr>

Twitter Spaces Conversation: <https://x.com/i/spaces/1OdKrXllryAJX>

*If new to Twitter, it is not terribly challenging to create an account. Do so, and check in once a month or so.

You may find it more useful than realized. I did.

PPT for the Space: <https://pmc19.com/jama.pdf>

Aug 15

The dashboard and a related pilot project were featured on CBS, NBC, and FOX:

<https://www.wvltv.com/article/news/health/new-orleans-free-home-air-filters-for-cancer-patients-covid-cases-special-kit-safe/289-5d873151-7069-478a-ab03-2260cd08c22a>

Sep 17

Dr. Hoerger joined Dr. Moriarty and COVID-19 Resources Canada. We will post a link when the archived video is available. We received an update that the archived version is in progress.

A separate document called a Technical Appendix appears on the dashboard page and has more methodologic info.