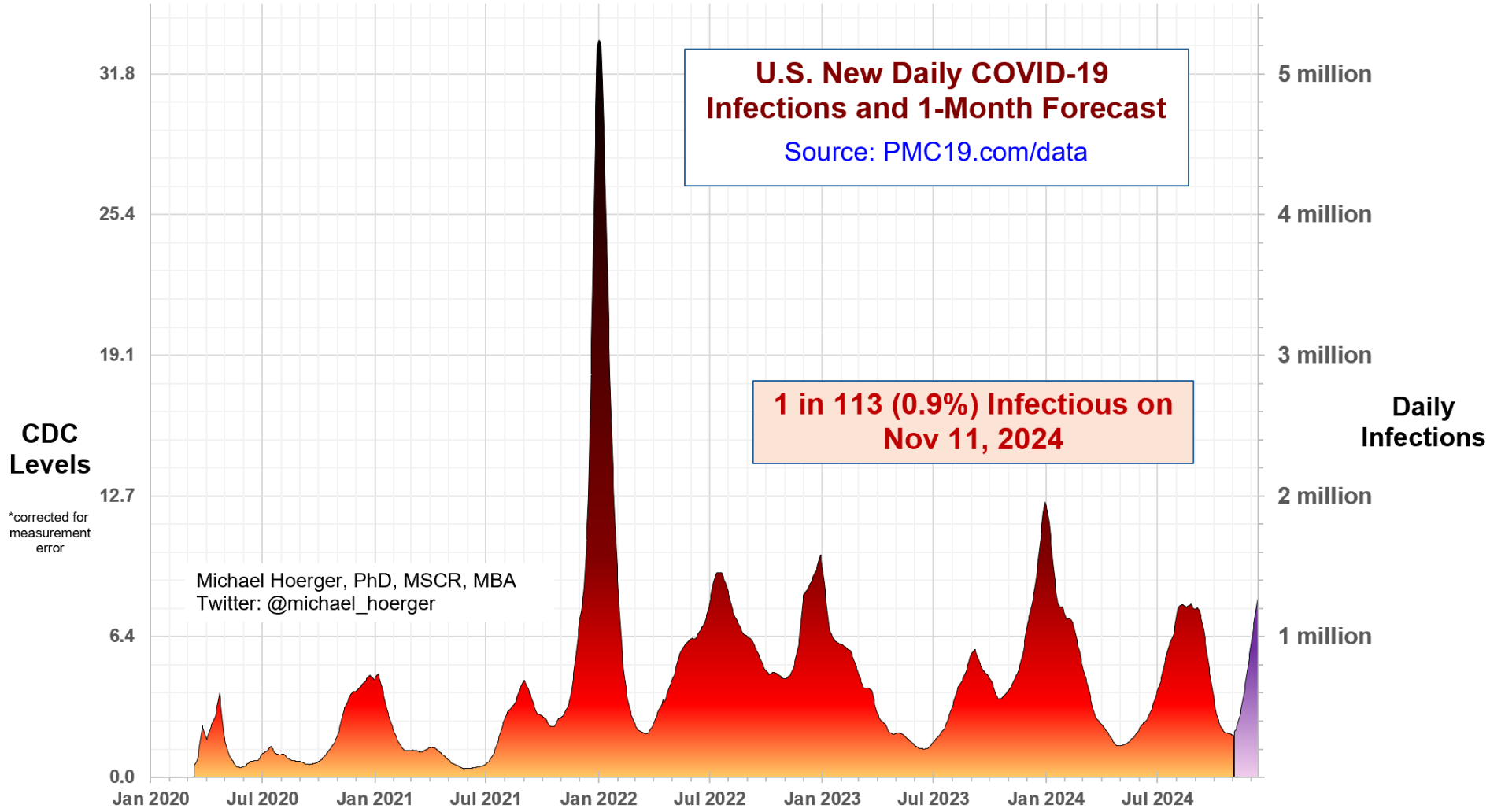
PMC U.S. COVID-19 Case Estimation and Forecasting Model: Report for November 11, 2024, pmc19.com/data

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



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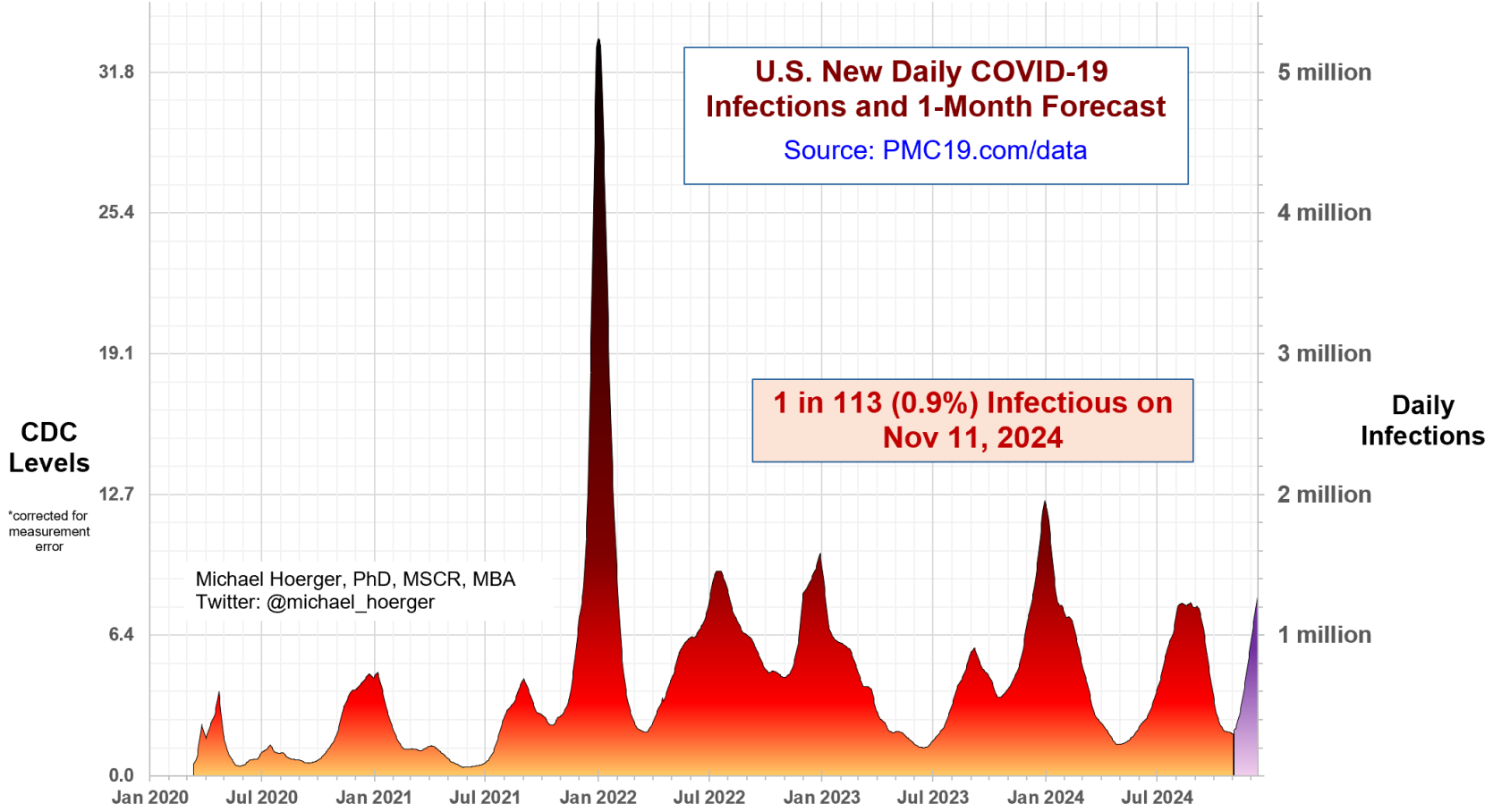
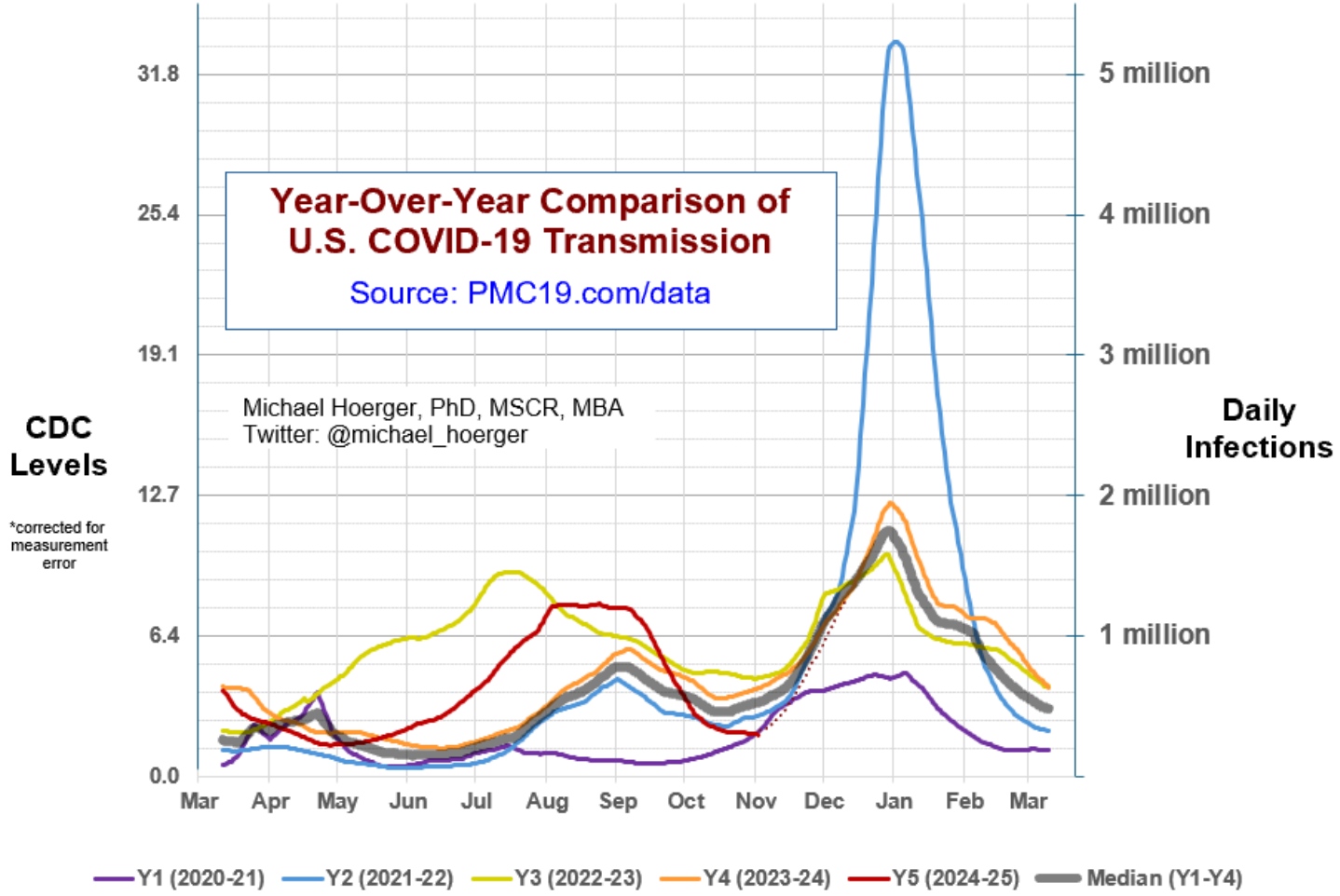
The Big-Picture View of the Pandemic

The 10th wave of COVID in the U.S. has quite likely begun. We estimate that the low point of the “lull” was approximately October 18, but as one will note looking at the summer wave, the most extreme level is a bit moot over the course of a month and likely will not be known with great certainty except in hindsight. Transmission is expected to increase rapidly the next 3 weeks, if following historical patterns of transmission and the shape of waves. We expect high transmission the remainder of 2024.



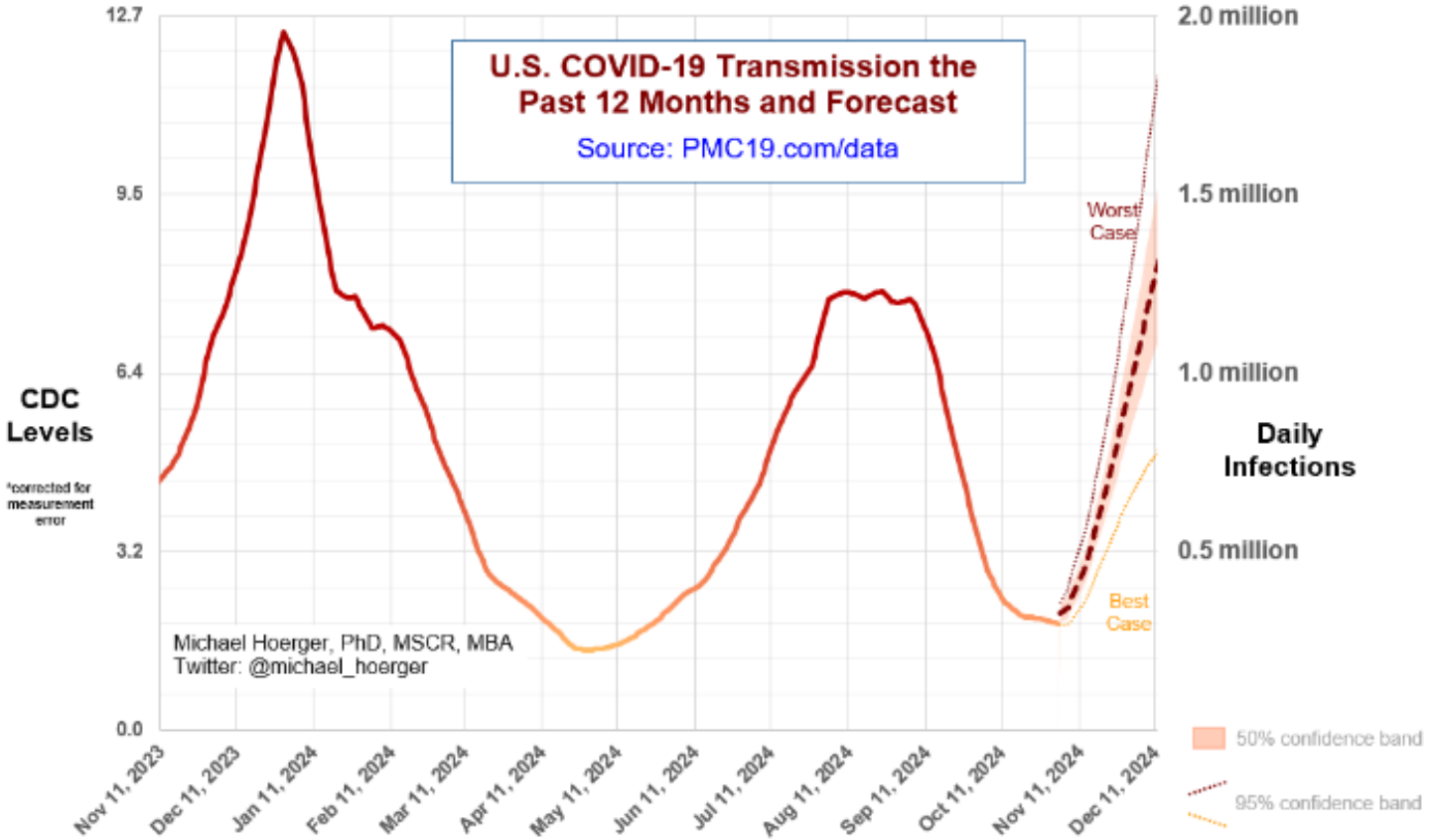
Year-Over-Year Comparisons

The year-over-year comparisons suggest transmission may increase with a pattern very similar to prior years, very close to the gray line for median transmission. It is hard to see the red dashed line on top of it. Accordingly, top medical centers, including the NIH Clinical Center, have begun re-requiring masks.



Close-up on the Current Forecast

We are getting our first look at the potential shape of the winter wave. In a month, the model suggests we may be close to 1.3 million daily infections in the U.S., but basically there is nothing evident in current transmission patterns to suggest transmission will be higher or lower that what has been “typical” (median levels) in prior years. The best-case scenario for a month from now would be about 0.7 million daily infections, and the worst-case scenario would be about 1.8 million daily infections. By December 1, we will start to get a better sense of which trajectory we are on and get a peak at the potential magnitude of the winter wave. Prepare for the winter ahead assuming it may be similar to last year, with substantial infections, daily disruptions, and resulting long-term health consequences.



Supplemental Statistics

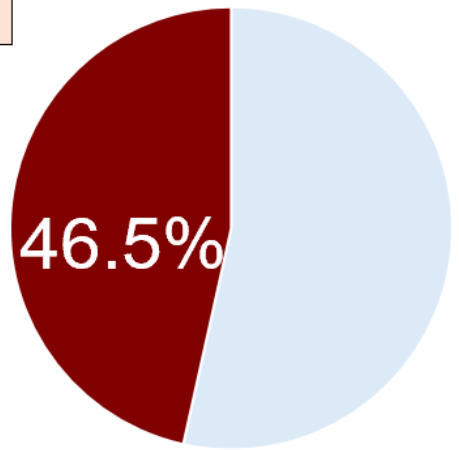
These supplemental statistics may prove useful in conversations about transmission and mitigation. The numbers are comparable to last week. We see that 1 in 113 are actively infectious, or 0.9% of the population, an inconsequential increase over last week. In a university classroom of 75 people, it should be assumed that someone (about a 50% chance) has infectious COVID. Transmission is higher than 47% of the pandemic and lower than 53% 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 Nov 11, 2024
% of the Population Infectious
0.9% (1 in 113)
New Daily Infections
423,000
New Weekly Infections
2,961,000
Resulting Weekly Long COVID Cases
148,000 to 592,000

Monthly Forecast
Average % of the Population Infectious
1.7% (1 in 59)
Average New Daily Infections
807,400
New Infections During the Next Month
24,222,000
Resulting Monthly Long COVID Cases
1,211,000 to 4,844,000

Running Totals
Infections Nationwide in 2024
230,231,000
Average Number of Infections Per Person All-Time, U.S.
3.47

How Does Risk Increase with More Social Contacts?			
Number of People	Chances Anyone Is Infectious	Number of People	Chances Anyone Is Infectious
1	0.9%	15	12.5%
2	1.8%	20	16.3%
3	2.6%	25	19.9%
4	3.5%	30	23.4%
5	4.3%	35	26.7%
6	5.2%	40	29.9%
7	6.0%	50	35.9%
8	6.9%	75	48.7%
9	7.7%	100	58.9%
10	8.5%	300	93.1%



There is more COVID-19 transmission today than during 46.5% of the pandemic.

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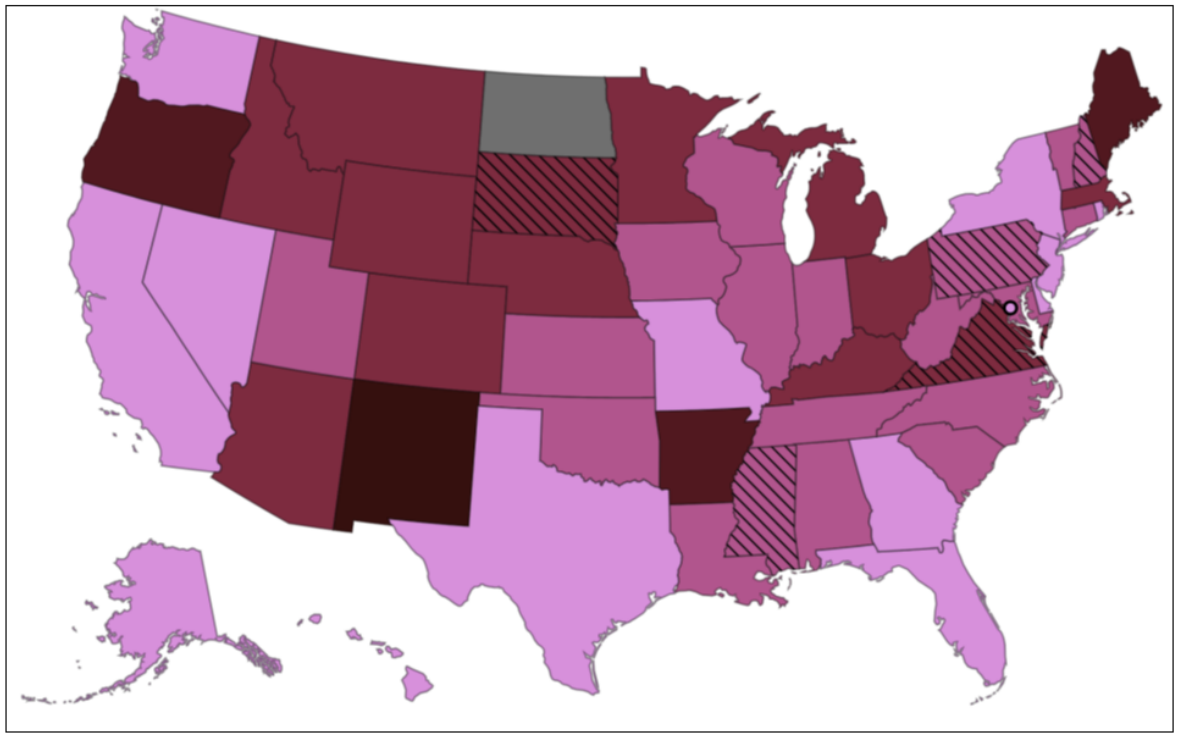
CDC COVID-19 Heat Map

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 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

Note, the university has provided an institutional license for ArcGIS, and we hope to have an automated and improved version of the map available soon.

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

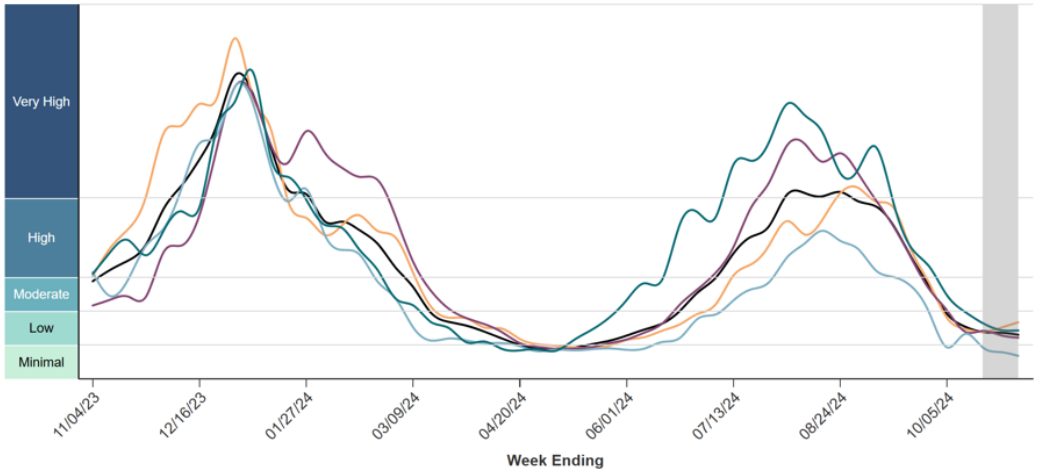


Regional Case Estimation

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 that the Midwest was highest and increasing in these data from 10 days ago.

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	0.9% (1 in 113)	0.6% (1 in 156)
Northeast	0.5% (1 in 217)	0.3% (1 in 299)
Midwest	1.1% (1 in 88)	0.8% (1 in 122)
South	0.8% (1 in 121)	0.6% (1 in 167)
West	1.0% (1 in 103)	0.7% (1 in 142)

* 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 Regional Multiplier*
0.329

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

PMC COVID-19 Dashboard

Here is the complete PMC COVID-19 Dashboard. Please share the images across social media and other websites.
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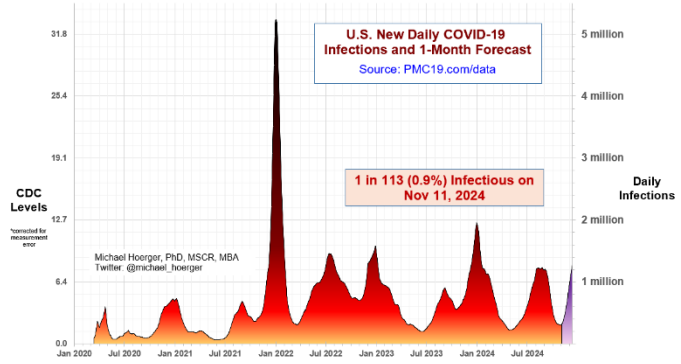

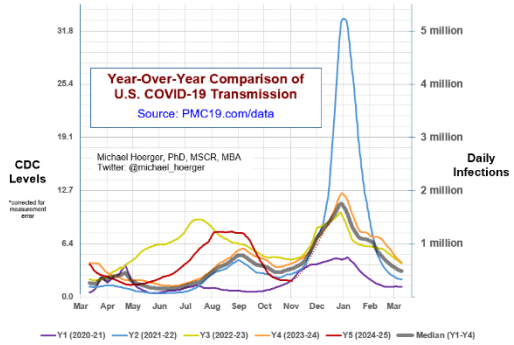

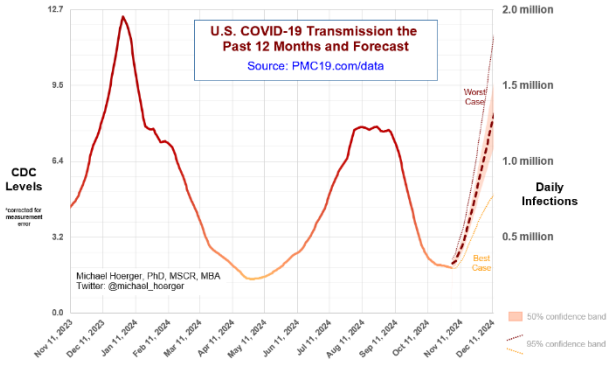

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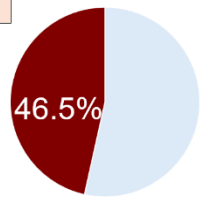

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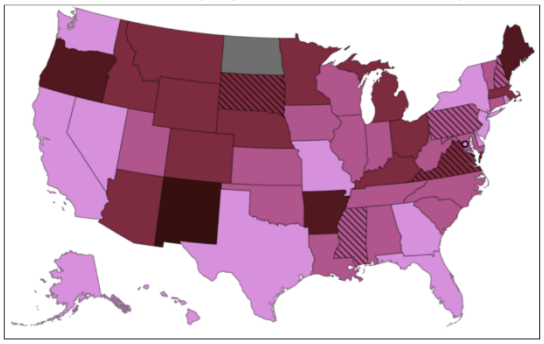

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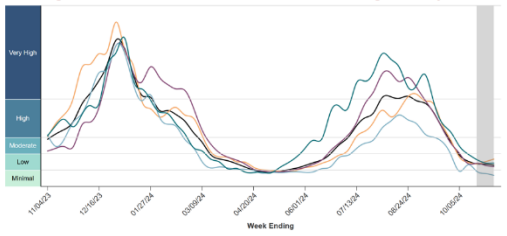

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Announcements

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.wwltv.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.

Later in 2024
Dr. Hoerger joins as a guest on the new podcast, Public Health Is Dead. No financial COIs. Catch the trailer online:
https://www.publichealthisdead.com/

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