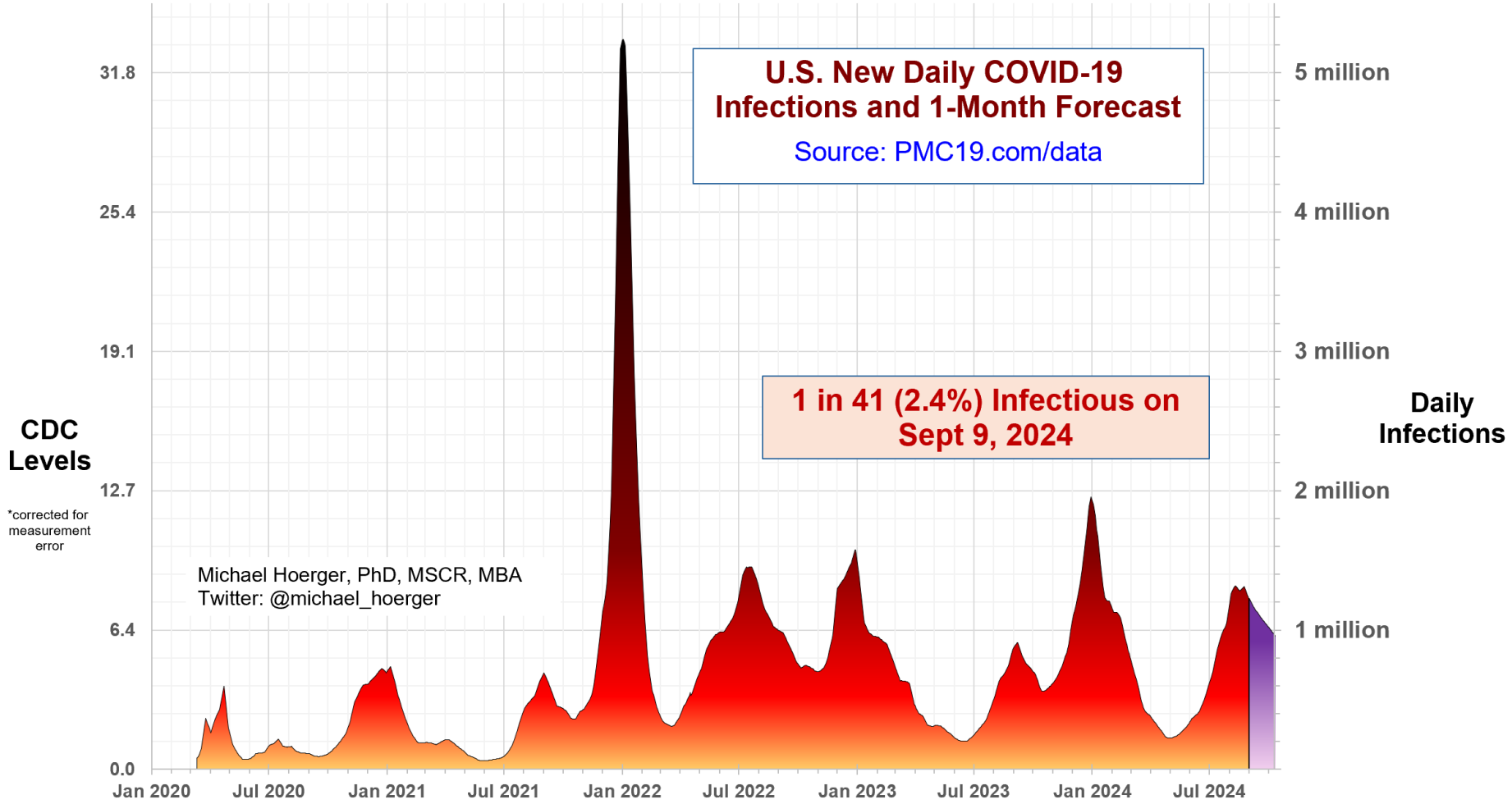
PMC U.S. COVID-19 Case Estimation and Forecasting Model: Report for September 9, 2024, pmc19.com/data

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



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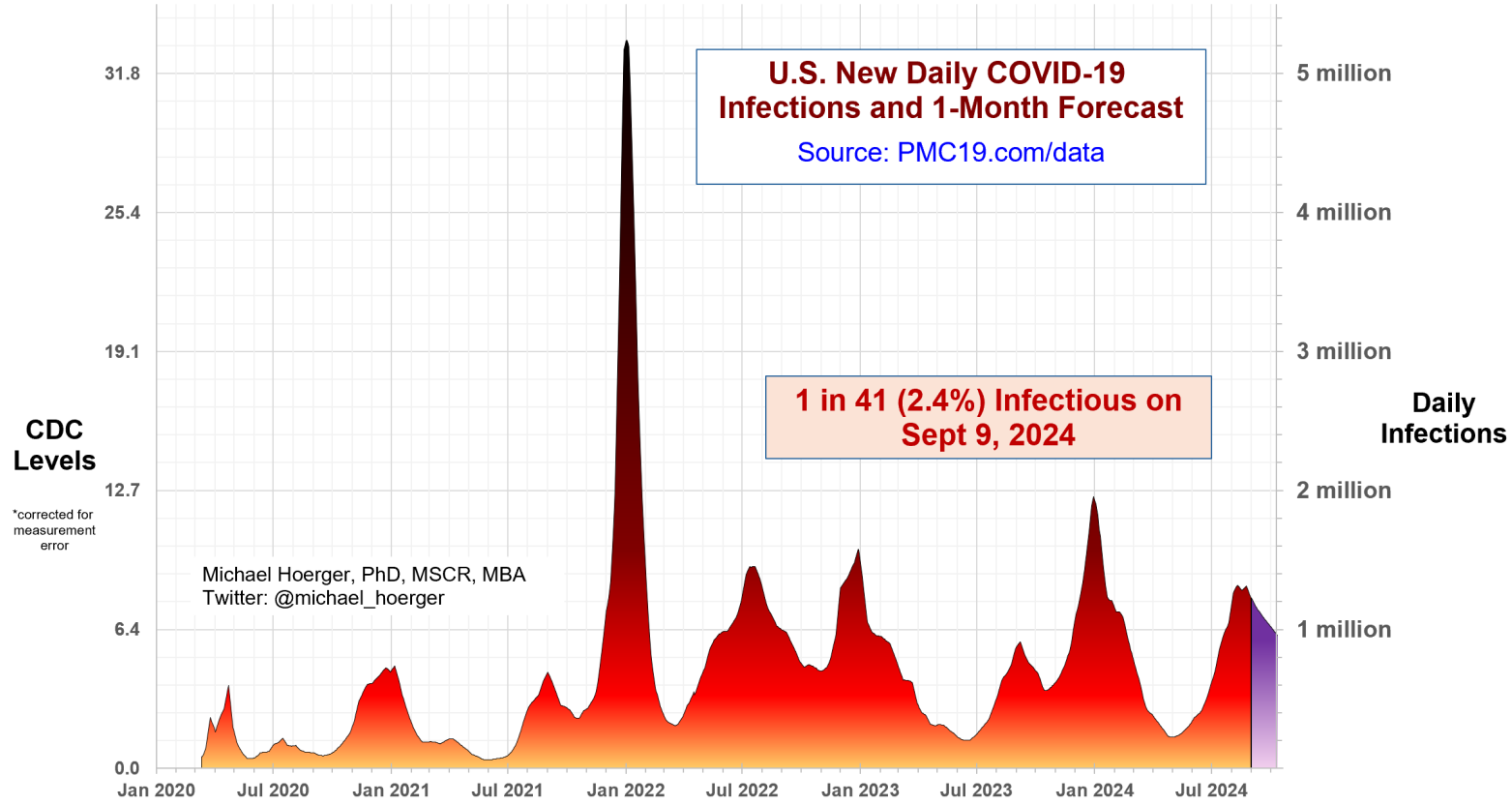
The Big-Picture View of the Pandemic

We are passing through the 9th wave of the pandemic, which appears to have peaked at just over 1.3 million infections per day, barring retroactive corrections. The CDC retroactively corrected last week's transmission levels downward by approximately 5%, and we presently estimate this as the 2nd highest-peaking summer wave all time. Expect an average of approximately 1.1 million infections per day over the next month. Currently, we are expecting an extremely high "lull" between the summer and winter waves the first week of November at around 850,000 daily infections. We and other modelers suggest more personal uncertainty than usual for the next three months. In recent waves, 50-60% of transmission has occurred after the peak day, and notice the back-end slope of the current surge is much more gradual than the rise. We expect high transmission the remainder of 2024.

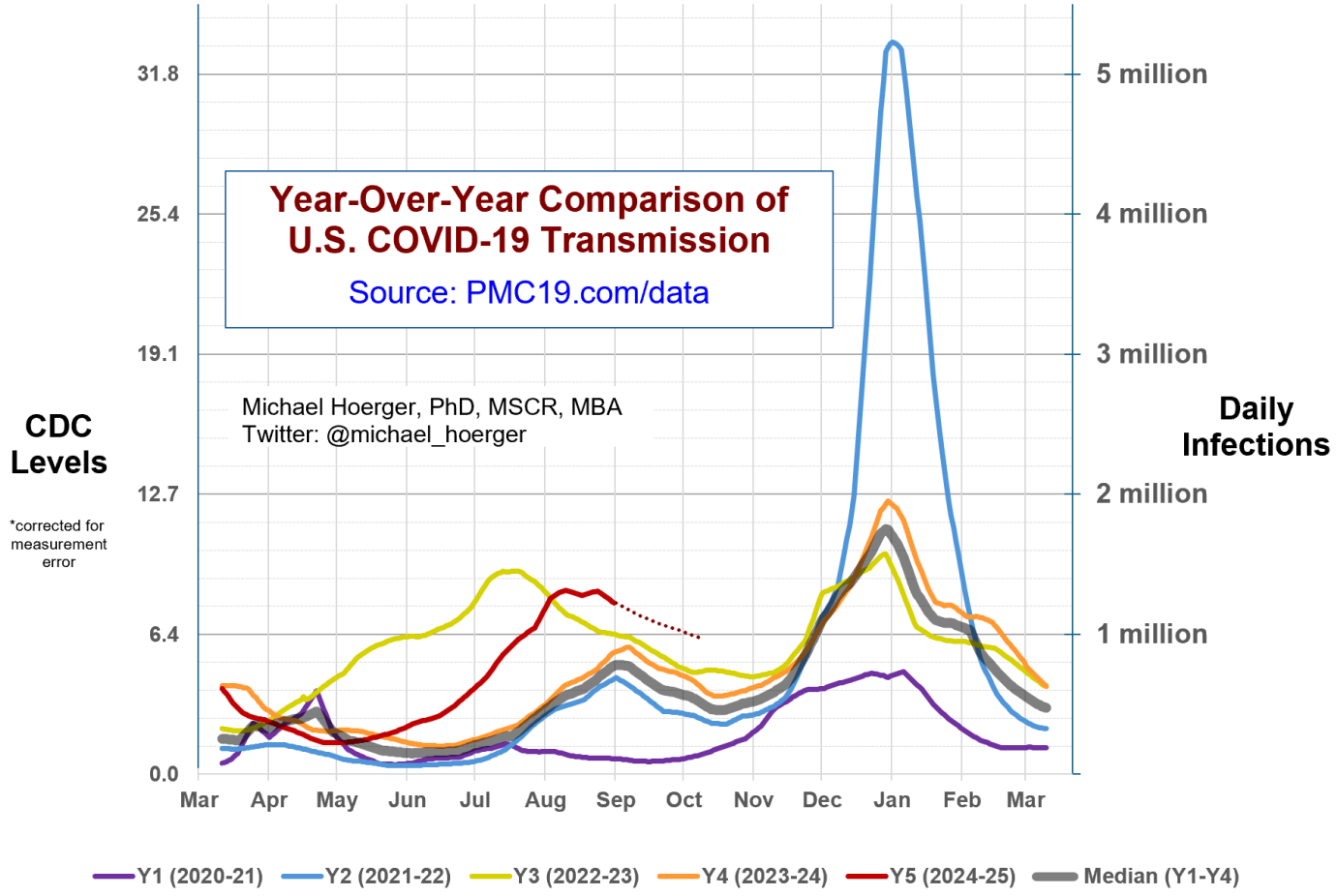


Technical Update

In the Technical Appendix, we note advancing from version 2.0.0 to version 2.0.1 of the model. The main changes include the following. For incoming data, we have switched from using Biobot and CDC data to solely using CDC data. Biobot has become much less consistent the past year, did not update their public data the past 3 weeks during the height of the surge, and did not make any known public comments on their decreased focus on their COVID surveillance program. We considered solely using CDC data at the start of the version 2.0.0 model, and many modelers already made the switch. The CDC has excellent wastewater surveillance data quality, correlating near-perfect with Biobot and IHME estimates, r = .94 to .96. It is always better to have two excellent data sources instead of one, but only one is providing timely data presently. We have also updated the heat map and various references in the Technical Appendix. Users should have continued confidence in the model and will not notice significant changes. We have plans to continue the dashboard with high-quality data through 2030 regardless.

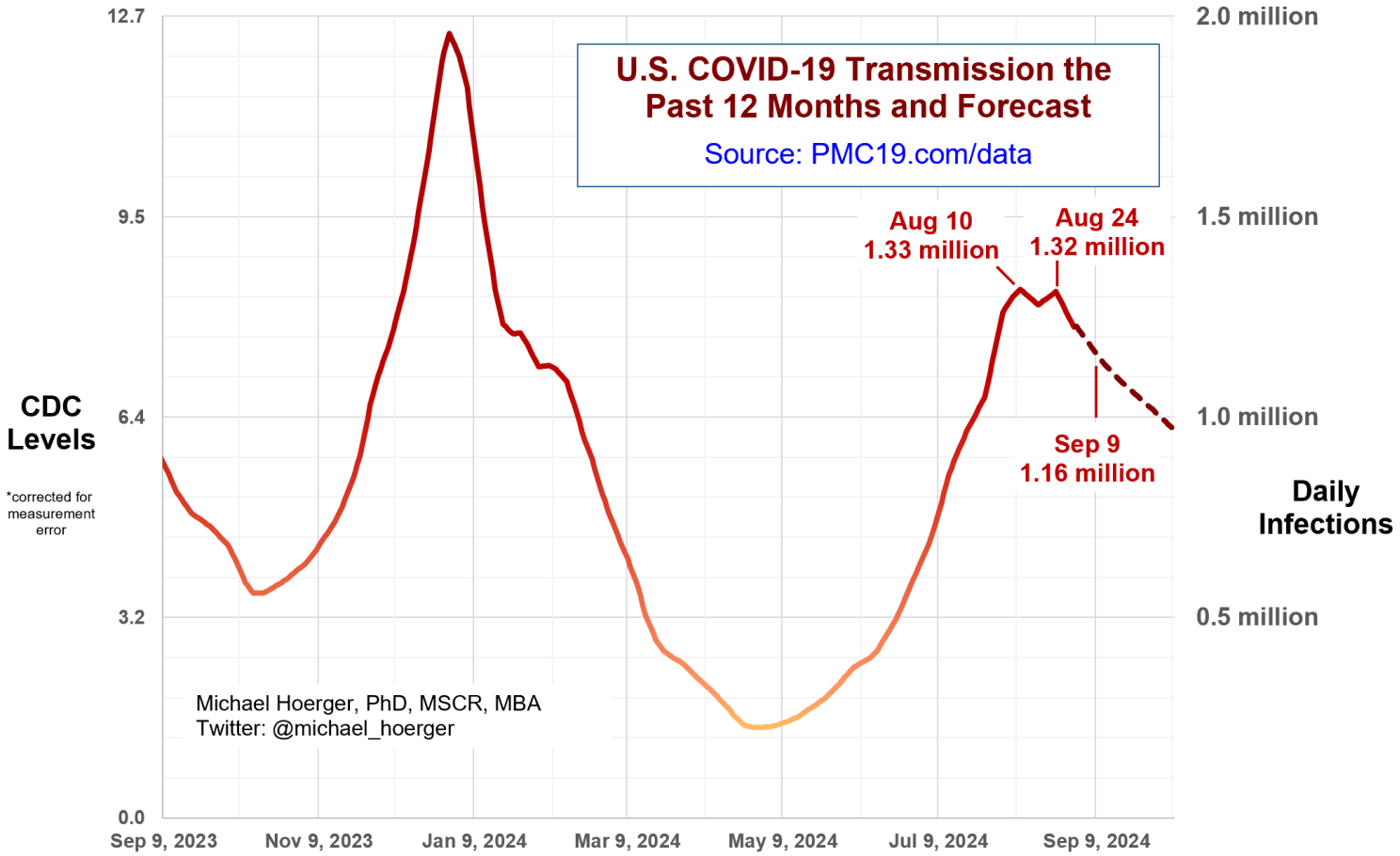
Year-Over-Year Comparisons

The year-over-year comparisons suggest that we are experiencing the highest-level of transmission all-time during the back-to-school period of August/September and the 2nd-highest peaking summer wave all time. The surge is both high and wide, meaning sustained high levels of transmission. Notice the graph suggests the worst all-time COVID transmission for August, September, October, and likely November. Schools and businesses that lack multilayered mitigation (vaccines, masking, excellent indoor air quality, better-than-CDC isolation guidance, testing) should expect illness and absences.



Close-up on the Current Forecast

This is our most granular graph of the current wave. We are currently at 1.2 million infections per day. Notice that the surge likely peaked at >1.3 million daily infections, with a “bimodal” (two-hump camel) distribution. Often, data corrections push cases earlier, so we may see the front bump increase to 1.35 or 1.40 million and the 2nd bump lower marginally. This clarifies the point that the “peak” date is often quite arbitrary, as nationally cases are often very near the peak for about 2 weeks, and there is significant regional variation.



Supplemental Statistics

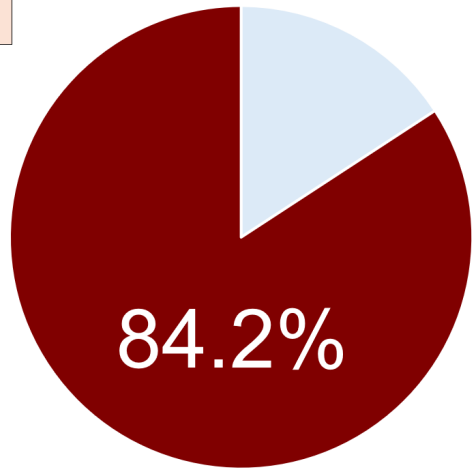
These supplemental statistics may prove useful in conversations about transmission and mitigation. We see that 1 in 41 are actively infectious. Over the next month, expect about 1.1 million infections/day on average. In a school classroom of 25-30 people, it should be assumed that someone (about a 50% chance) has infectious COVID. Transmission is higher than during 84.2% of the pandemic, lower than just 15.8% of pandemic days. 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 Sep 9, 2024
% of the Population Infectious
2.4% (1 in 41)
New Daily Infections
1,157,000
New Weekly Infections
8,099,000
Resulting Weekly Long COVID Cases
405,000 to 1,620,000

Monthly Forecast
Average % of the Population Infectious
2.2% (1 in 45)
Average New Daily Infections
1,061,933
New Infections During the Next Month
31,858,000
Resulting Monthly Long COVID Cases
1,593,000 to 6,372,000

Running Totals
Infections Nationwide in 2024
199,788,000
Average Number of Infections Per Person All-Time, U.S.
3.38

How Does Risk Increase with More Social Contacts?			
Number of People	Chances Anyone Is Infectious	Number of People	Chances Anyone Is Infectious
1	2.4%	15	30.8%
2	4.8%	20	38.7%
3	7.1%	25	45.8%
4	9.3%	30	52.1%
5	11.5%	35	57.6%
6	13.7%	40	62.5%
7	15.8%	50	70.6%
8	17.8%	75	84.1%
9	19.8%	100	91.4%
10	21.7%	300	99.9%



There is more COVID-19 transmission today than during 84.2% of the pandemic.

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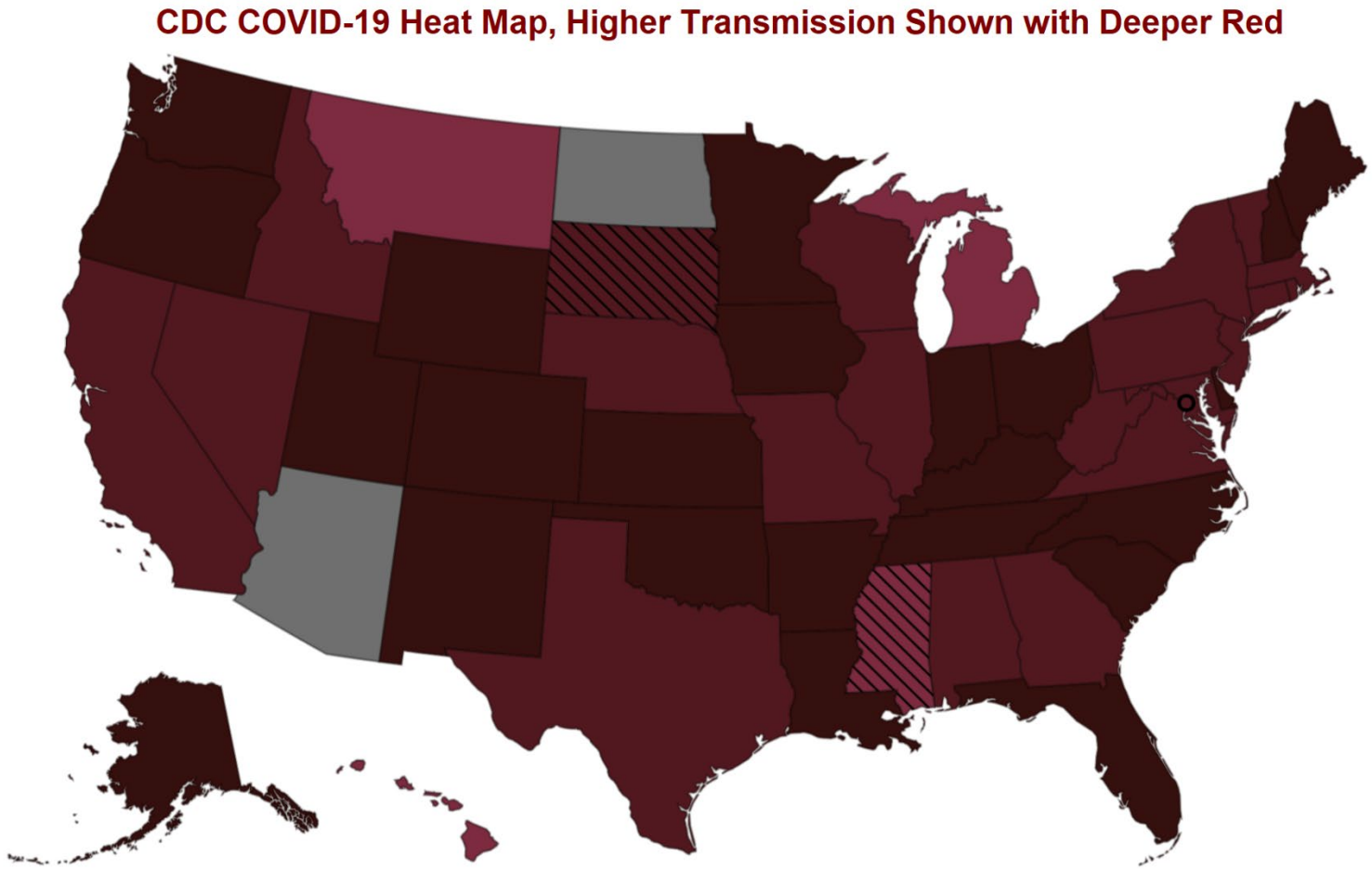
Michael Hoerger, PhD, MSCR, MBA
Twitter: @michael_hoerger

CDC COVID-19 Heat Map

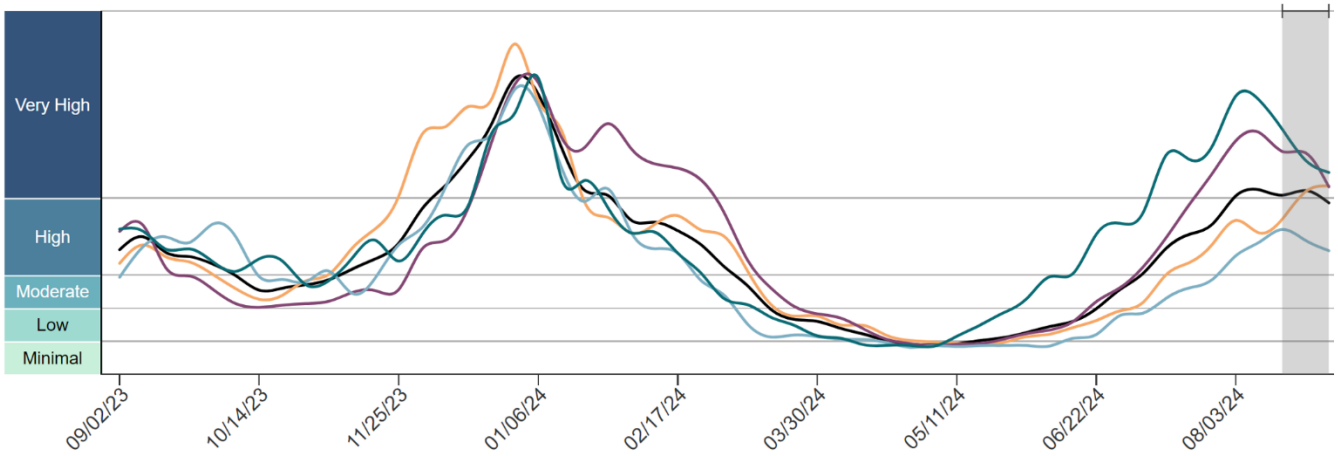
This map uses the CDC state-by-state data to show areas with higher transmission in deeper red. The West and South likely have peaked, while the Midwest and Northeast are approaching the peak, so there is extreme regional volatility, as indicated by the lack of clear regional pattern on the map. The CDC version of the map, colored in cool blue is available online. They recently switched from an 11-shade to 6-shade map, both blue, which tends confused people into thinking transmission is “cool” or low: https://www.cdc.gov/nwss/rv/COVID19-currentlevels.html



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). 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	2.4% (1 in 41)	2.6% (1 in 39)
Northeast	1.7% (1 in 57)	1.8% (1 in 54)
Midwest	2.7% (1 in 38)	2.8% (1 in 35)
South	2.6% (1 in 38)	2.8% (1 in 36)
West	2.9% (1 in 35)	3.0% (1 in 33)

* 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*
0.330

* 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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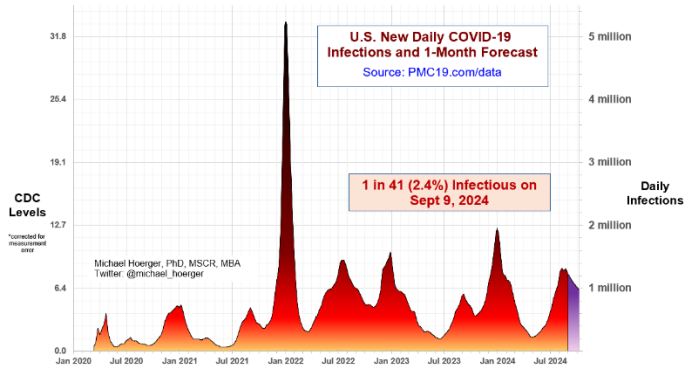

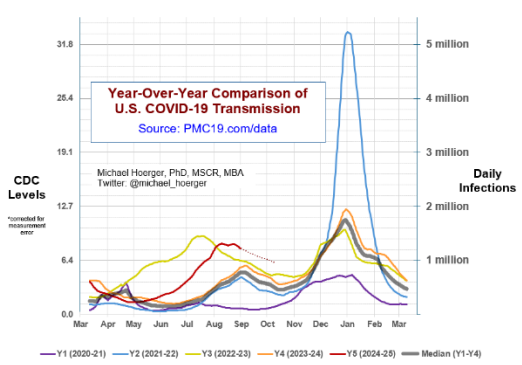

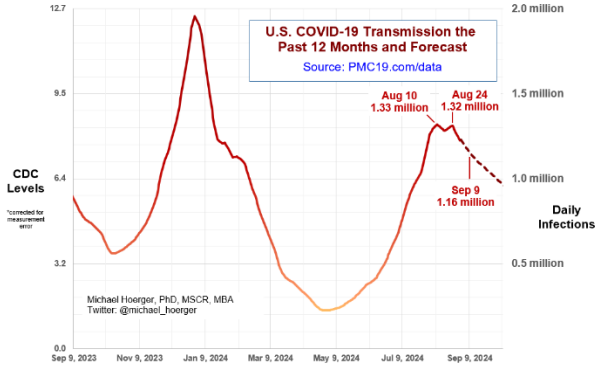

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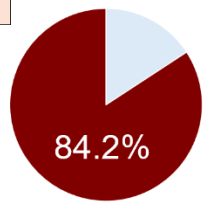
pmc19.com/data Michael Hoerger, PhD, MSCR, MBA Twitter: @michael_hoerger



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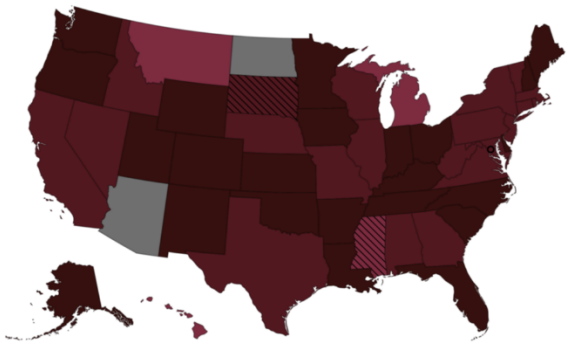
CDC COVID-19 Heat Map, Higher Transmission Shown with Deeper Red



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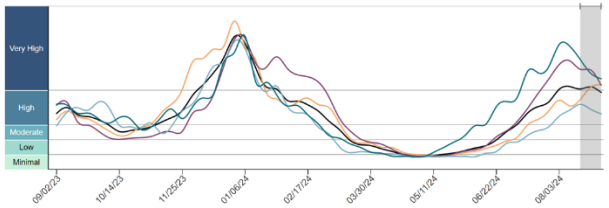

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Announcements

July 11
Recent COVID chat on Twitter had >2,000 listeners:
https://x.com/AnciraBecky/status/1808429122831401145

July 24
TODAY covers the PMC Forecast for the summer wave:
https://www.today.com/health/coronavirus/states-with-highest-covid-rates-2024-rcna163403

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
Pencil in a Data Discussion between Drs. Hoerger and Moriarty who run the top public COVID case estimation models in the U.S. and Canada, respectively. The tentative time is 8-10 PM ET (7-9 PM CT). More details to follow.

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