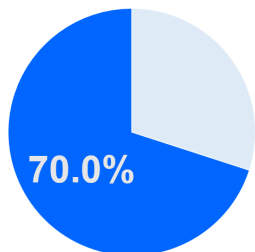
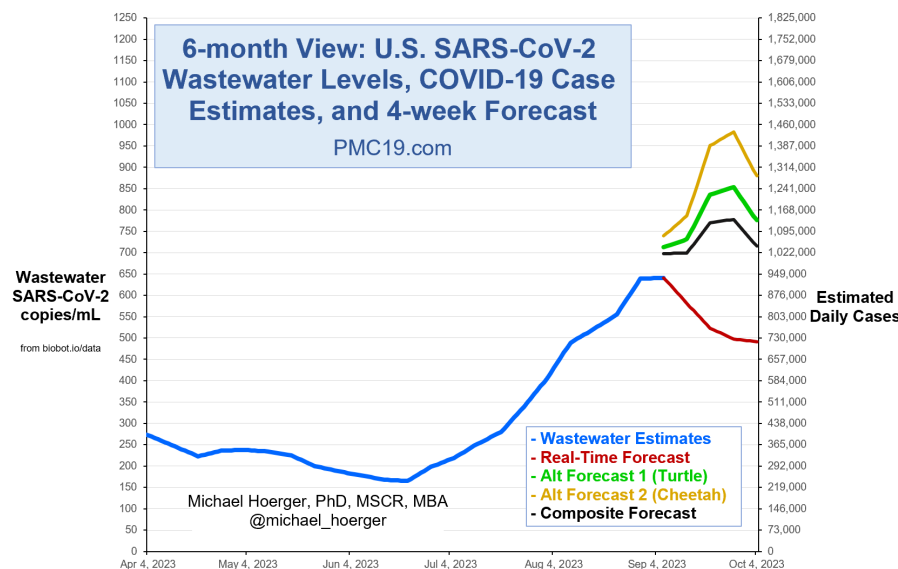
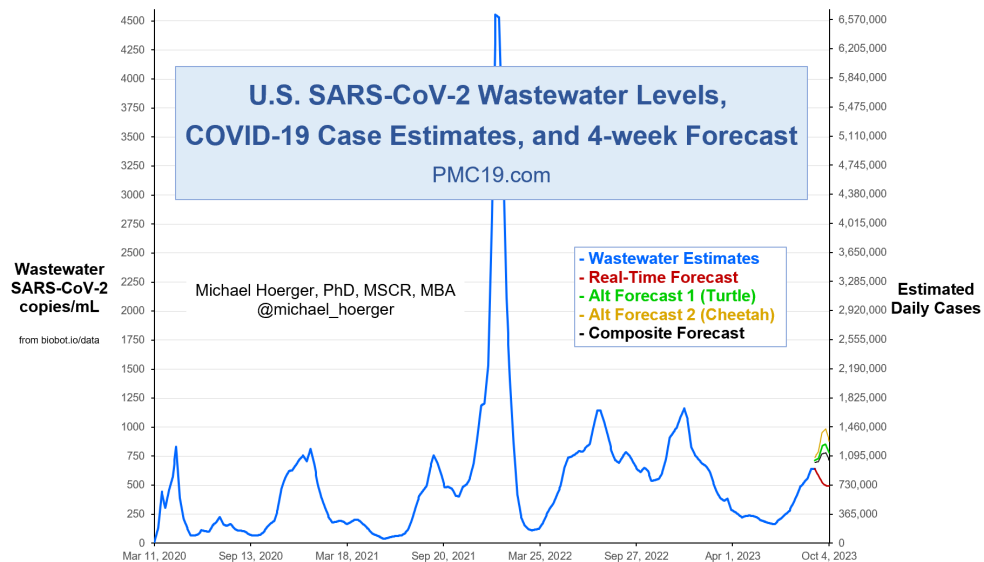


Michael Hoerger, PhD, MSCR, MBA, Pandemic Mitigation Collaborative
U.S. SARS-CoV-2 Wastewater Levels, COVID-19 Case Estimates, and 4-Week Forecast: Report for September 6, 2023, pmc19.com/data



There is more COVID-19 transmission today than during 70% of the pandemic.

CURRENT ESTIMATES FOR September 6, 2023	
Wastewater Levels (copies/mL)	641
New Daily Cases	933,000
% of Population Infectious	1.95% (1 in 51 people)
New Daily Long COVID Cases	47,000 to 187,000

WEEKLY ESTIMATES FOR September 6, 2023	
New Weekly Cases	6,500,000
New Weekly Long COVID Cases	327,000 to 1,306,000

2023 CUMULATIVE ESTIMATES AS OF September 6, 2023	
Total 2023 Cases To Date	178,600,000
Total 2023 Long COVID Cases To Date	8,930,000 to 35,720,000

4-WEEK FORECAST FOR October 4, 2023	
Wastewater Levels (copies/mL)	716 (12% higher)
New Daily Cases	1,042,000
% of Population Infectious	2.18% (1 in 46 people)
New Daily Long COVID Cases	52,000 to 208,000

Number of People	Chances Anyone is Infectious	Number of People	Chances Anyone is Infectious
1	2.0%	25	38.9%
2	3.9%	30	44.6%
3	5.7%	35	49.8%
4	7.6%	40	54.5%
5	9.4%	50	62.7%
6	11.2%	75	77.2%
7	12.9%	100	86.1%
8	14.6%	150	94.8%
9	16.3%	200	98.1%
10	17.9%	300	99.7%
15	25.6%	400	>99.9%
20	32.6%	500	>99.9%

Cite as: Hoerger, M. (2023, September 6). *U.S. SARS-CoV-2 wastewater levels, COVID-19 case estimates, and 4-week forecast: Report for September 6, 2023*. Pandemic Mitigation Collaborative. <http://www.pmc19.com/data>

Informal Commentary:

U.S. #wastewater levels are higher than during the majority (70%) of the pandemic:

- ◆ 1.95% (1 in 51 people) are infectious
- ◆ >930,000 new daily COVID-19 cases
- ◆ Causing >40,000 new #LongCOVID cases per day

What's the Current State of the Pandemic?

We are near the peak (hopefully) of a 7th U.S. COVID wave. Transmission remains very high. The U.S. has seen >178 million infections this year, leading to at least 8.9 million #LongCOVID cases.

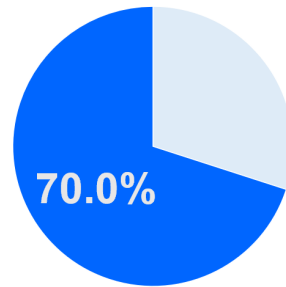
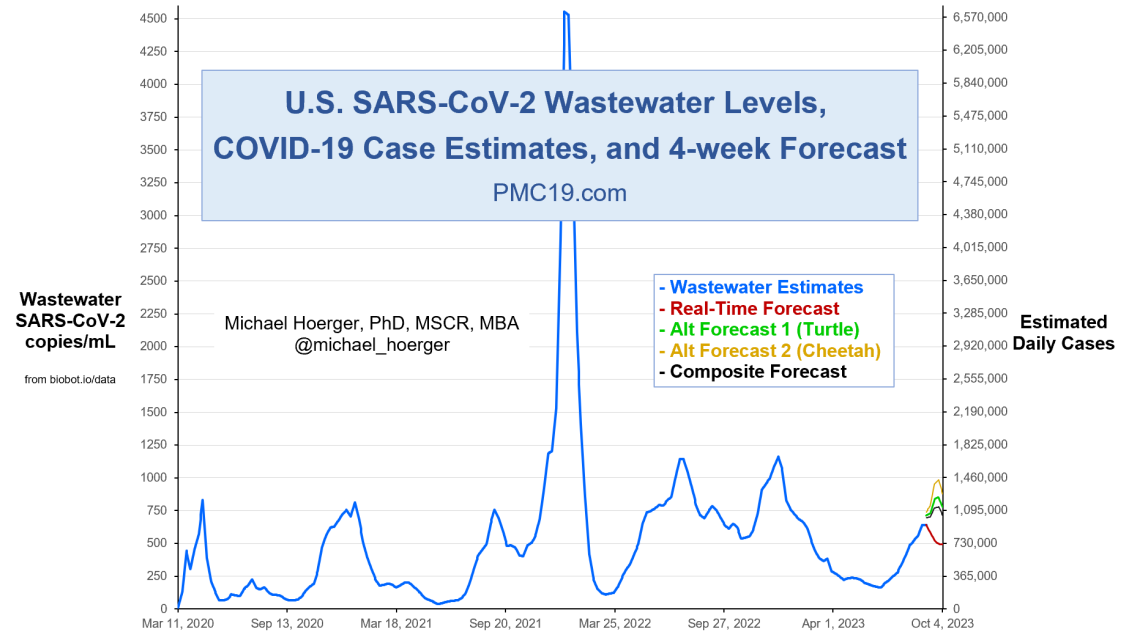
What's the COVID Forecast for the Next Month?

The current state of the pandemic is extremely bad. Expect approximately 1 million new U.S. cases per day the next several weeks. Less if we're lucky, and more if we're not.

Real-time Model: If you assume Biobot is reporting accurate real-time wastewater data each week, follow the red line. This says we have peaked on our late summer wave. That would be great news in terms of less morbidity and mortality. The problem is that real-time reports have been prone to error lately, more often than not underestimating wastewater levels, and then corrected later.

Alt Model 1 (Turtle): The turtle model moves slow, like a turtle. It assumes the most recent week's data from Biobot are useless and ignores them. By ignoring the most recent data, it will be slow to detect a quick change in transmission, like a peak. It basically expects "more of the same" for a little longer. See green line.

Alt Model 2 (Cheetah): The cheetah model moves fast, like a cheetah. It assumes that if last week's Biobot wastewater data underreported levels by X% that this week's current real-time data are also underreporting by that same percent. Last week's real-time data were corrected upward by 15%,



There is more COVID-19 transmission today than during 70% of the pandemic.

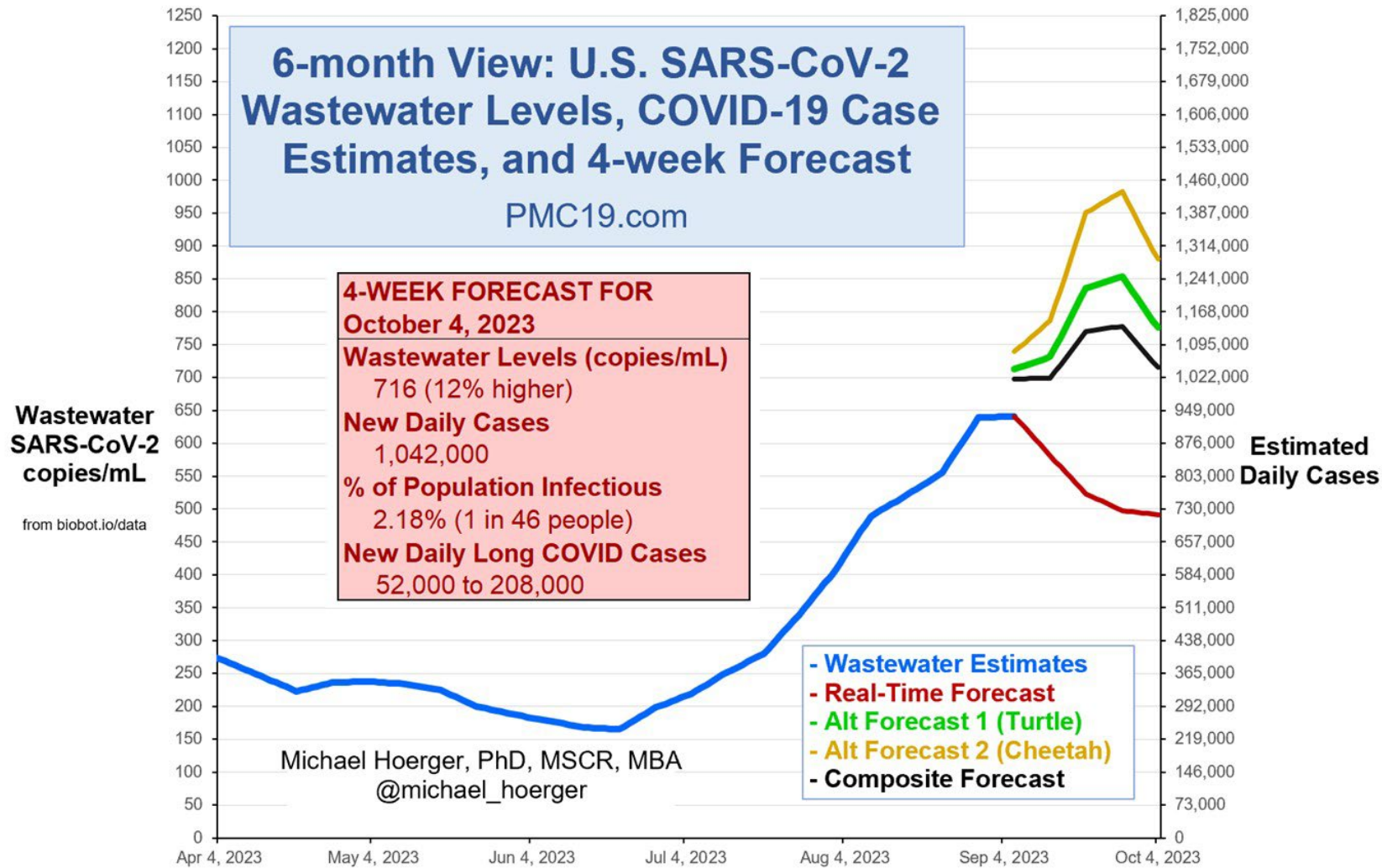
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which makes a huge difference in forecasting whether we're leveling off or on a steep incline. The cheetah model has us getting up to 1.4 million cases/day, so this is a good model for a worst-case scenario. See yellow line.

Composite Model: This is the average of the three models. It's what we use in the red box for estimating cases 4 weeks from now. It's a good estimate if trying to cite a point estimate to coworkers (e.g., "The U.S. will see about 1 million new cases/day the next several weeks). However, from a forecasting perspective, it's less useful because the underlying models are so divergent. See black line.



What's the Risk in an Office or in a Classroom?

The office and classroom risks remain quite bad. In a group of 10 people (daycare, team meeting, etc.), there's a >17% chance someone will have infectious COVID. In a group of 20-25 people (e.g., K-12 classroom, department meeting, busy hospital waiting room, etc.), there's 30-40% chance someone would have infectious COVID. In a university classroom of 35-40 people, it should be assumed someone has infectious COVID. This is quite troubling for instructors or students who mix time with multiple groups of classmates each week.

Not all classrooms and meetings are the same. Virtual meetings reduce risk close to zero. Outdoor meetings are often safer than indoors. Testing reduces risk, as do policies that encourage people to stay home when symptomatic. High-quality, well-fitting masks greatly reduce risk. Air quality monitoring and improved air cleaning reduce risk. Recent boosters reduce risk. It remains troubling that elected leaders and public health officials choose to model poor mitigation when ongoing risk is so high.

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