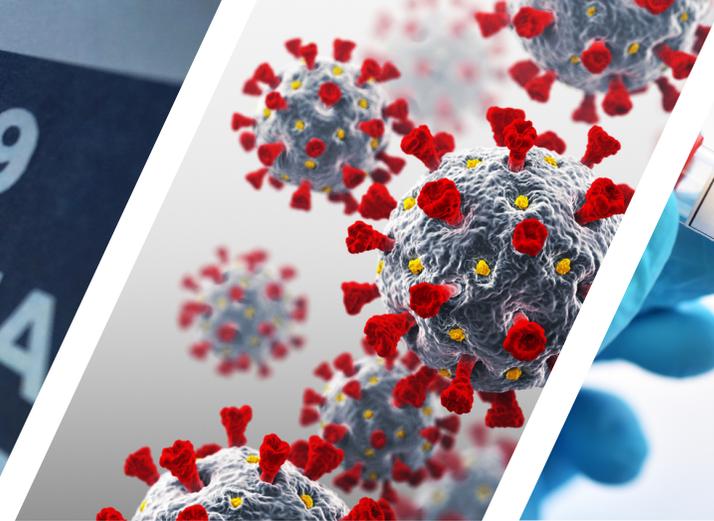
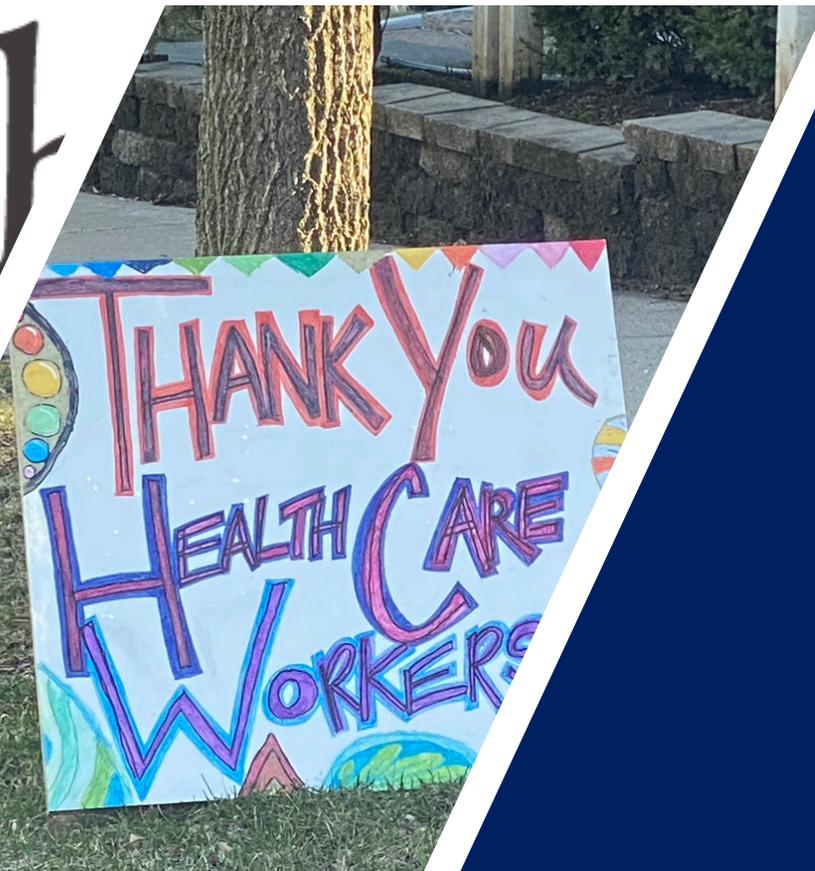


COVID-19
REOPENING PHA
CONGREGATE
SETTINGS
BUSINESSES



Health Industry Adv



Issue # 249

Wednesday, December 30, 2020

COVID-19 Report

Highlights

Vaccines

First, the AstraZeneca/University of Oxford vaccine received emergency use authorization in the United Kingdom. The UK previously authorized the Pfizer/BioNTech vaccine, but has yet to approve the vaccine from Moderna. **In a break from plan, the UK is allowing single dose administration of as many people as possible, instead of reserving doses for the expected second dose.**

The AstraZeneca vaccine offers several advantages and one key disadvantage, relative to both the Pfizer and Moderna vaccines: It can be maintained at refrigeration temperatures, rather than the frozen or super-cold temperature required of the Pfizer and Moderna vaccines; it can be manufactured at a lower cost; and, the company has the ability to produce significantly higher volumes of the vaccines - it plans to produce 3 billion doses in 2021. The primary disadvantage of the vaccine is its lower efficacy (62% for two-dose administration) than for the Pfizer and Moderna vaccines (94-95% efficacy)

Originally the front-runner in the vaccine development process, AstraZeneca encountered issues during its Phase 3 clinical trial - most notably, a counter-intuitive higher efficacy from a single-dose administration versus the planned two-dose regimen. This was subsequently discounted, due to limited size of the single-dose trial. Nonetheless, it slowed the trial and delayed approval in the U.S. **Last week, Moncef Slaoui, the head of Operation Warp Speed suggested that emergency use approval in the U.S. for the AstraZeneca vaccine could come in February or March. The U.S. has contracted for 300 million doses of this vaccine.**

Next, there are growing concerns about the slow pace of vaccinations in the U.S. While there is likely justification for these concerns, a reasonable assessment suggests that the concerns are somewhat exaggerated. As of yesterday, only 2.3 million doses are reported as administered in the U.S. This is far short of the commitment to vaccinate 20-22 million healthcare personnel and long-term care residents by the end of the first week of January (first dose only). President-elect Biden, as well as members of his transition team, have expressed alarm about the slow pace to-date.

Data on administered vaccines is from the CDC vaccine tracking site. The CDC clearly stresses that there are significant delays in reporting these data, from the point of administration to the states and again, from the states to the CDC. Given that the Pfizer vaccine has only been available for just over two weeks and Moderna's just over a week, these delays (up to or exceeding 3 days, per the CDC - perhaps longer because of holiday reporting interruptions), it is highly likely that the 2.3 million doses is significantly understated.

New, More Highly-Transmissible Strain of the Virus

Recent reports from the UK have raised concerns about a new strain of the virus, which may be transmissible at a far greater rate than earlier strains. **This is credited with the near- doubling of infections in the UK over the past two weeks.**

Yesterday, the initial instance of the new strain in the U.S. was reported in Colorado. It also raises the question whether this strain is behind the significant increase in infections in California and New York recently.

Projected Cases and Deaths

Each Tuesday, [the Covid-19 Projection Hub](#) releases a four-week ensemble forecast of new cases and deaths with the coronavirus in the U.S. This ensemble forecast comprises projections from more than 50 university and research organization-based models.

This model suggests that both cases and deaths will be lower during each of the next four weeks than during the week prior to Christmas. It projects new cases falling week-over-week throughout the four-week projection period; it projects deaths to remain relatively constant for the next three weeks, then decline during the third week of January.

Concerns with Hospitalization Rates

This remains a significant concern in the U.S., and in Arizona, California, Georgia and New York, in particular. As of yesterday, nearly four-in-ten inpatient beds in the U.S. were occupied by Covid-19 patients.

In seven states - [Arizona](#), [California](#), [Connecticut](#), [Georgia](#), [Nevada](#), [New York](#) and [Rhode Island](#) - Covid-19 patients occupy at least half of the inpatient beds in the state

Nine states - [Arizona](#), [California](#), [Georgia](#), [Massachusetts](#), [New York](#), [North Carolina](#), [South Carolina](#), [Texas](#) and [Virginia](#) - accounted for more than three-fourths of the week-over-week increase in Covid-19 patient days

Nine states - [Arizona](#), [California](#), [Georgia](#), [Massachusetts](#), [New York](#), [North Carolina](#), [South Carolina](#), [Texas](#) and [Virginia](#) - saw their Covid-19 hospital census increase by 5% or more week-over-week

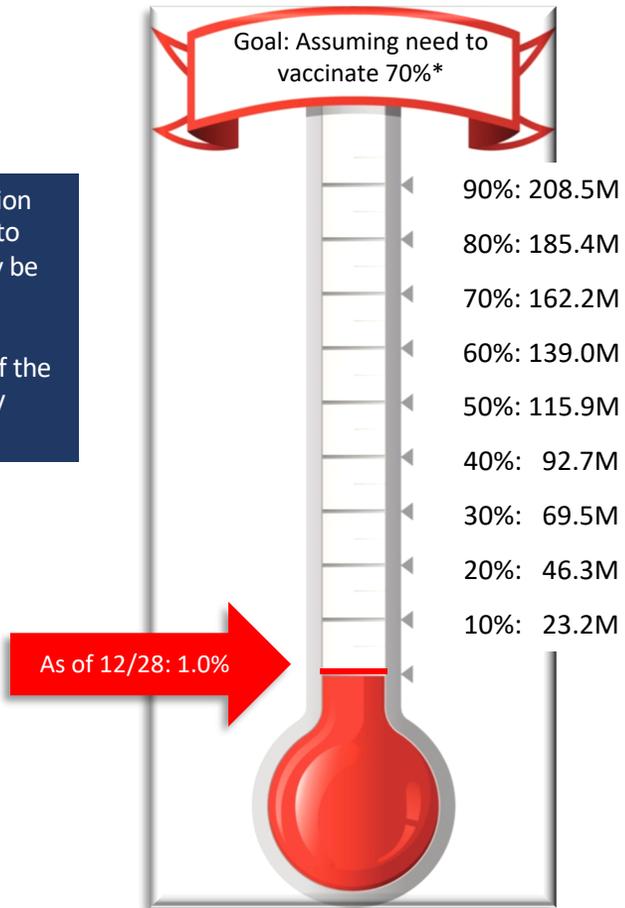
Vaccine Tracking – U.S.

Vaccinations have ramped slowly in the U.S. – whether due to distribution or reporting delays

As of 12/29, at least 2.3M people have received the initial dose; 15.7M doses have been allocated to the states and 11.4M have been distributed

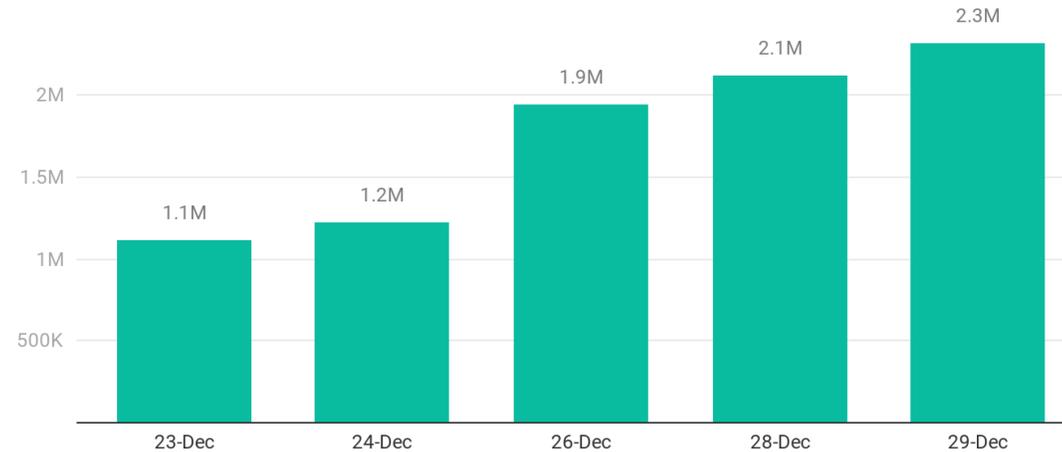
* 70% is used for illustration only. Actual rate needed to reach herd immunity may be higher or lower.

Does not reflect impact of the number of people already infected by the virus



Vaccine: Number of Persons Having Received First Dose (U.S.)

Per Bloomberg Vaccine Tracker, Accessed December 29



If 70% are required for herd immunity, 231.7 million people will need to be vaccinated (ignoring immunity via infection)

Chart: Health Industry Advisor LLC • Source: Bloomberg • Created with Datawrapper

From the CDC vaccine webpage: “Healthcare providers report doses to state, territorial, and local public health agencies up to 72 hours after administration. There may be additional reporting lag for data to be transmitted from the state, territorial, or local public health agency to CDC.”

Vaccine data from: [Centers for Disease Control and Prevention](#) and [Bloomberg Vaccine Tracker](#)

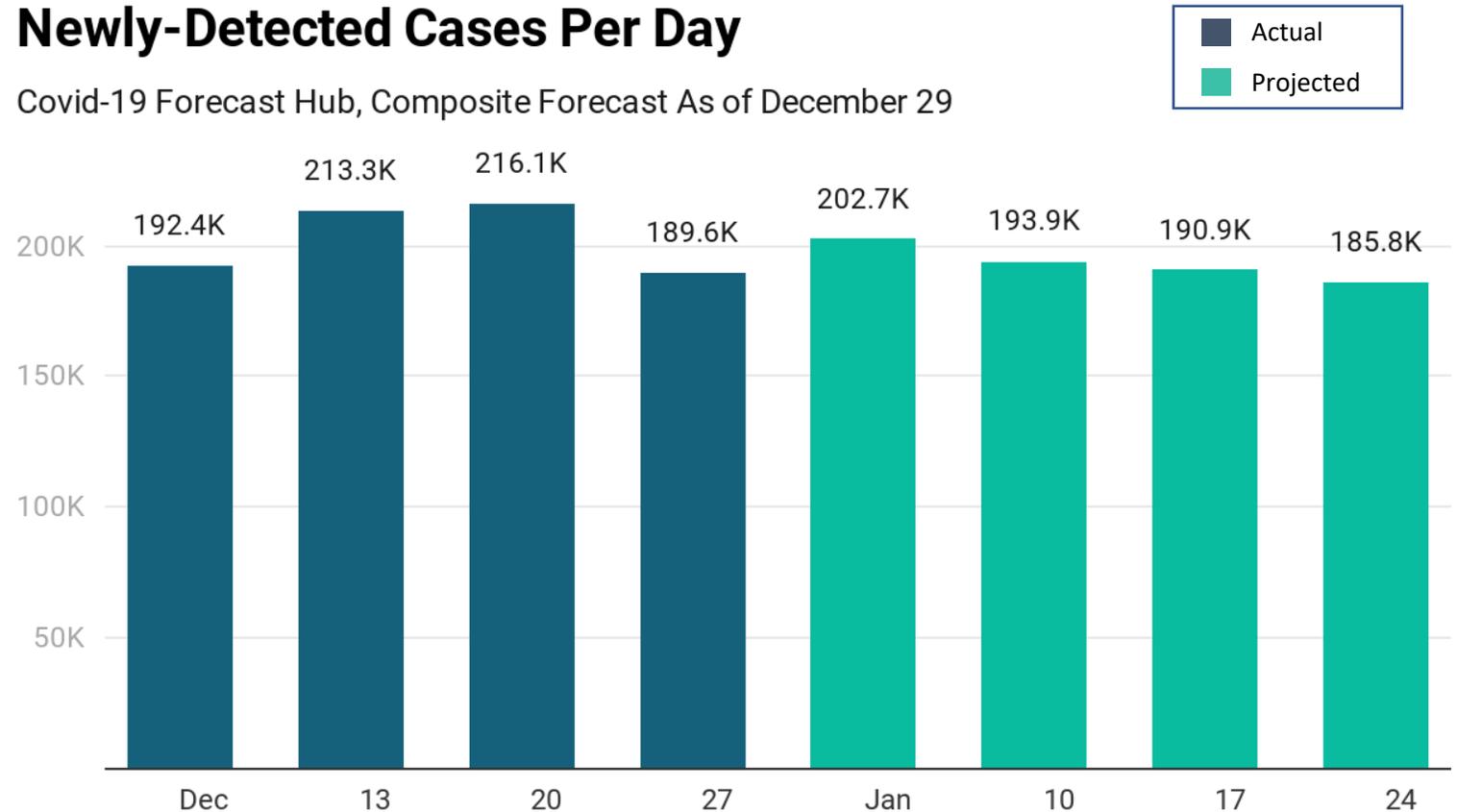
The ensemble forecast of more than 50 organizations suggests that new cases peaked the week prior to Christmas

New cases are projected to decline each week during January

Source: Covid-19 Forecast Hub, accessed December 29, 2020

Newly-Detected Cases Per Day

Covid-19 Forecast Hub, Composite Forecast As of December 29



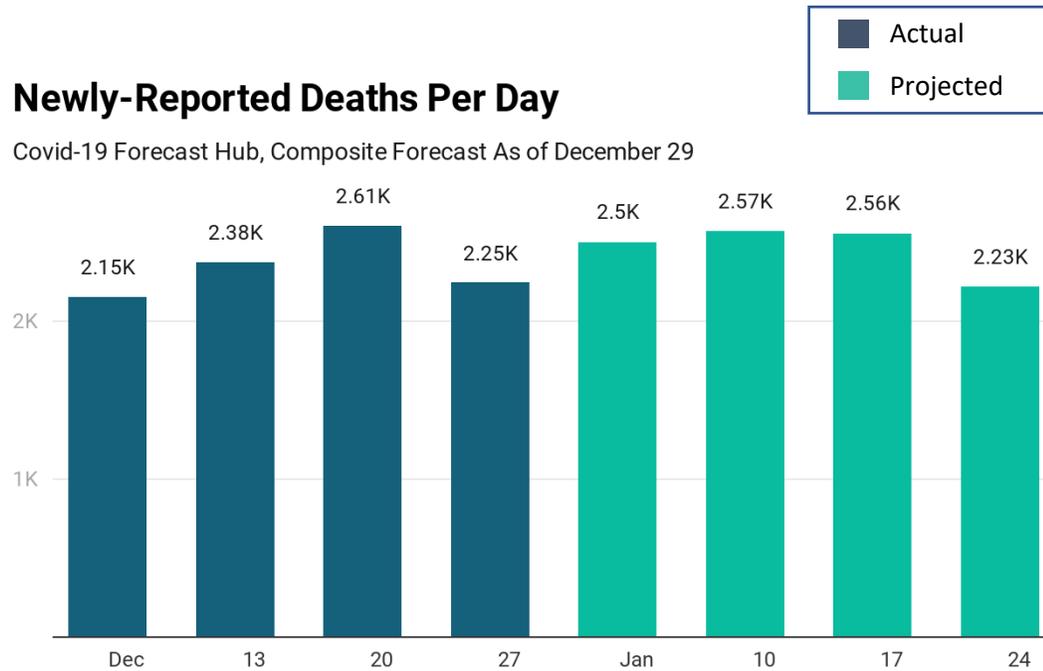
For the week ending on the date shown

Chart: Health Industry Advisor LLC • Source: Covid-19 Forecast Hub • Created with Datawrapper

The ensemble forecast of more than 50 organizations suggests that deaths with coronavirus peaked the week prior to Christmas
 Deaths will increase slightly the next few weeks, then decline the third week of January are projected to decline each week during January
 Source: Covid-19 Forecast Hub, accessed December 29, 2020

Newly-Reported Deaths Per Day

Covid-19 Forecast Hub, Composite Forecast As of December 29

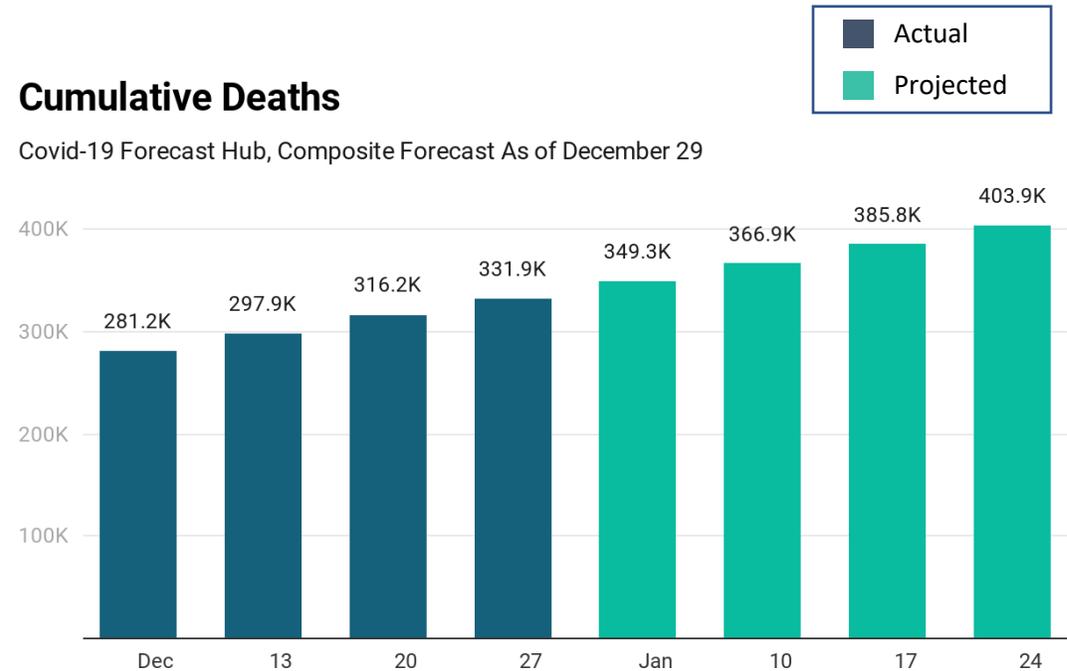


For the week ending on the date shown

Chart: Health Industry Advisor LLC • Source: Covid-19 Forecast Hub • Created with Datawrapper

Cumulative Deaths

Covid-19 Forecast Hub, Composite Forecast As of December 29



For the week ending on the date shown

Chart: Health Industry Advisor LLC • Source: Covid-19 Forecast Hub • Created with Datawrapper

According to Gu's model, the reproduction rate been declined twenty-two consecutive days . . . And has been below 1.0 for thirteen consecutive days

This suggests that the virus spread slowed through and since the Thanksgiving holiday

The most-recent rate is as low as it has been since August 27

Notes:

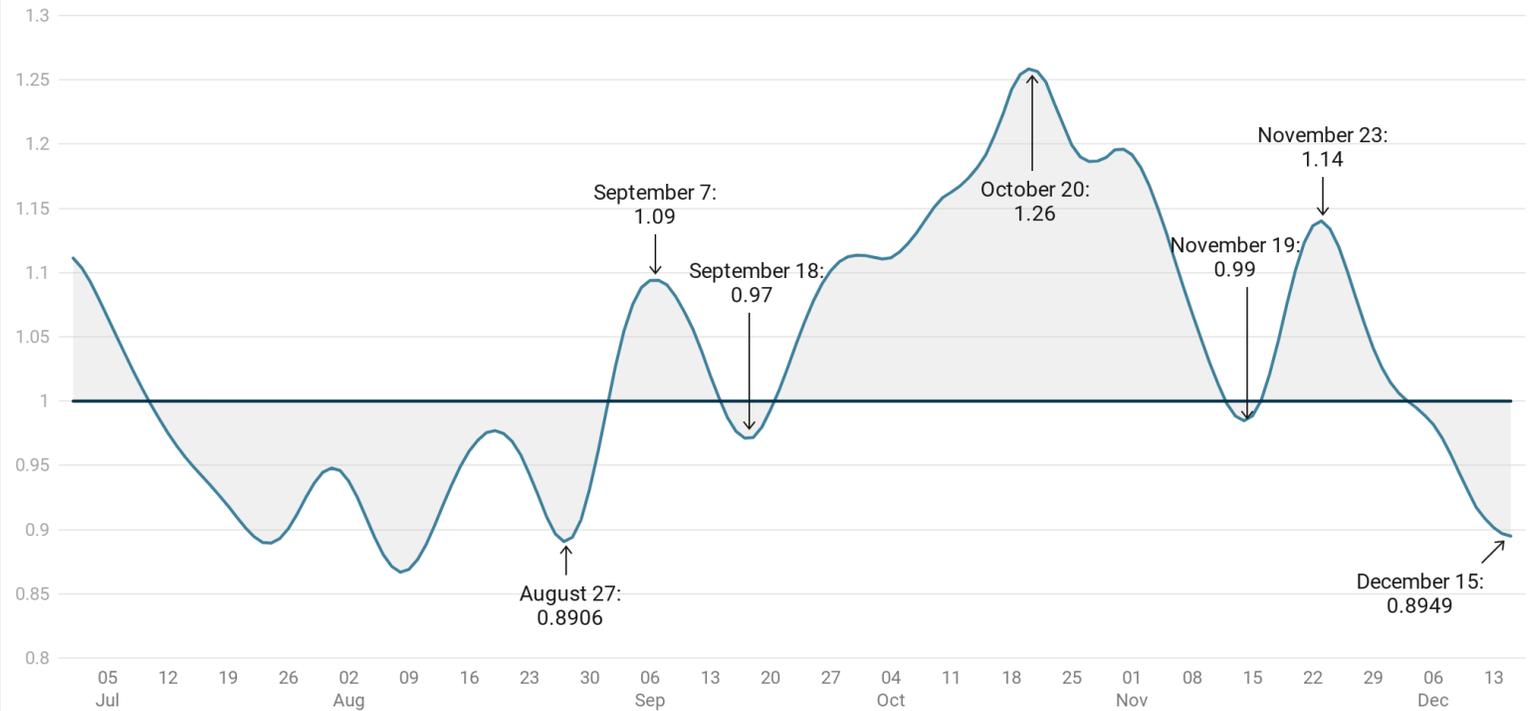
- Gu uses deaths to estimate actual infections and the reproduction rate (R_t), using a machine learning model

- Gu backdates two weeks from the death date to estimate when an infection likely occurred

* - Youyang Gu: Covid-19projections.com

Reproduction Rate (R_t) - U.S.

Youyang Gu Estimate, July 1 - December 15



R_t is an estimate of how many additional people a single person will infect

Chart: Health Industry Advisor LLC • Source: Youyang Gu • Created with Datawrapper

According to Gu's estimates, new infections in the U.S. peaked on December 1 and have declined ~18% since

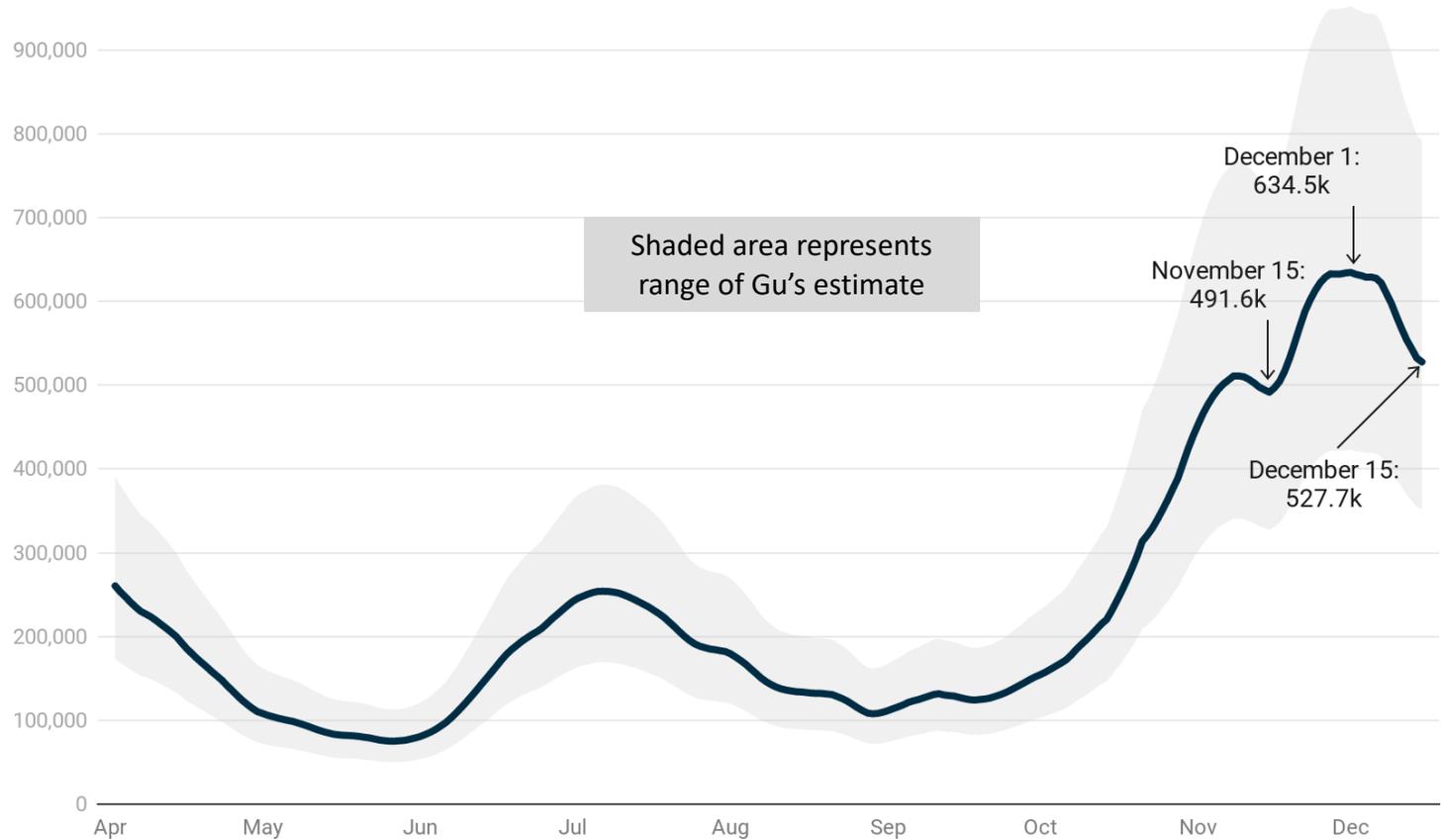
This decline has erased ~3/4 of the increase in new daily infections posted from November 15 – December 1

Gu estimates that 20.2% of the U.S. population has been infected by the SARS-CoV-2 virus (range of 13.5-30.3%)

*<https://pandemicnavigator.oliverwyman.com/forecast?mode=country®ion=United%20States&panel=baseline>

Estimated New Daily U.S. Infections

Youyang Gu Model, Through December 15



Using Youyang Gu's COVID-19 Projection Model

Chart: Health Industry Advisor LLC • Source: Youyang Gu • Created with Datawrapper

Reporting interruptions around the Christmas holidays compromises our ability to compare weekly cases counts

So, we are concentrating on same-day, prior week comparisons to elicit insight to any emerging trends

On that basis, fewer cases were this past Monday than on each of the three prior Mondays; the trend was more pronounced on Tuesday, with newly-detected cases falling on consecutive weeks

We await the Wednesday case report to see if this pattern continues

Newly Detected Cases - United States

Most Recent Mondays

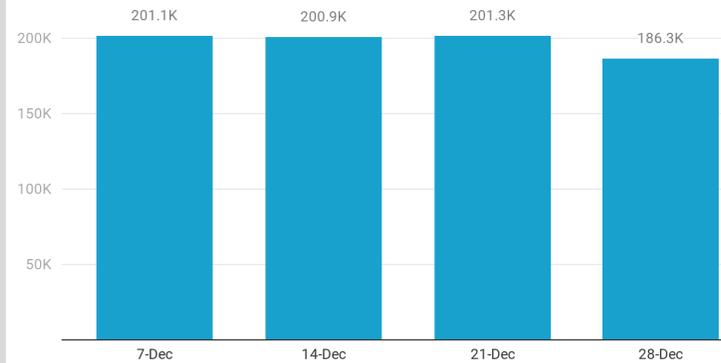


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Newly Detected Cases - United States

Most Recent Tuesdays

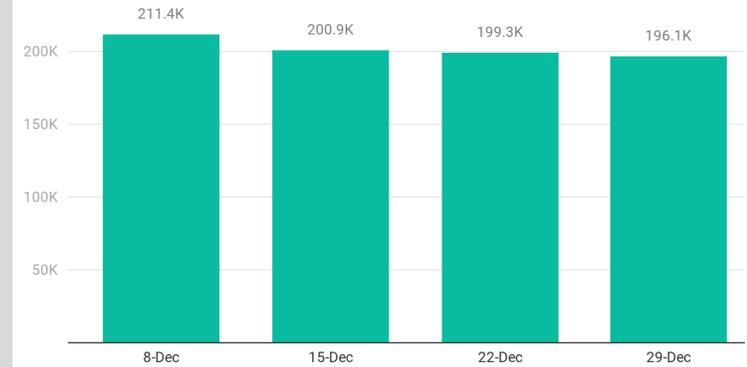


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Newly Detected Cases - United States

Most Recent Wednesdays

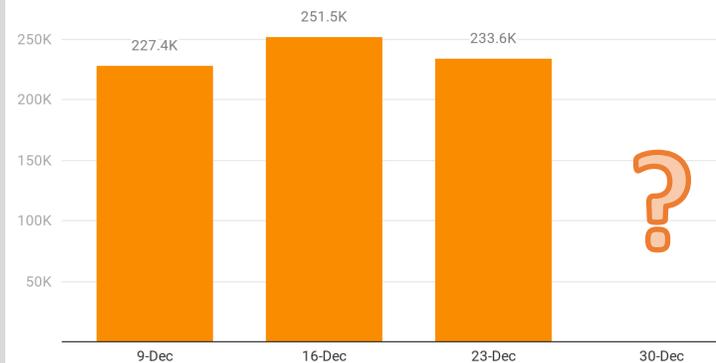


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Newly-detected cases had already been declining for a week prior to the Christmas holiday

The impact of holiday reporting interruptions exacerbated this trend

The question is – once states (and countries) catch-up on the delays, where will new cases stand?

On Tuesday, the 7-day average cases declined slightly in the U.S but, rose outside the U.S.

* - 7-day moving average basis

Newly Detected Daily Cases - U.S. & Worldwide

7-Day Moving Average, As of December 29

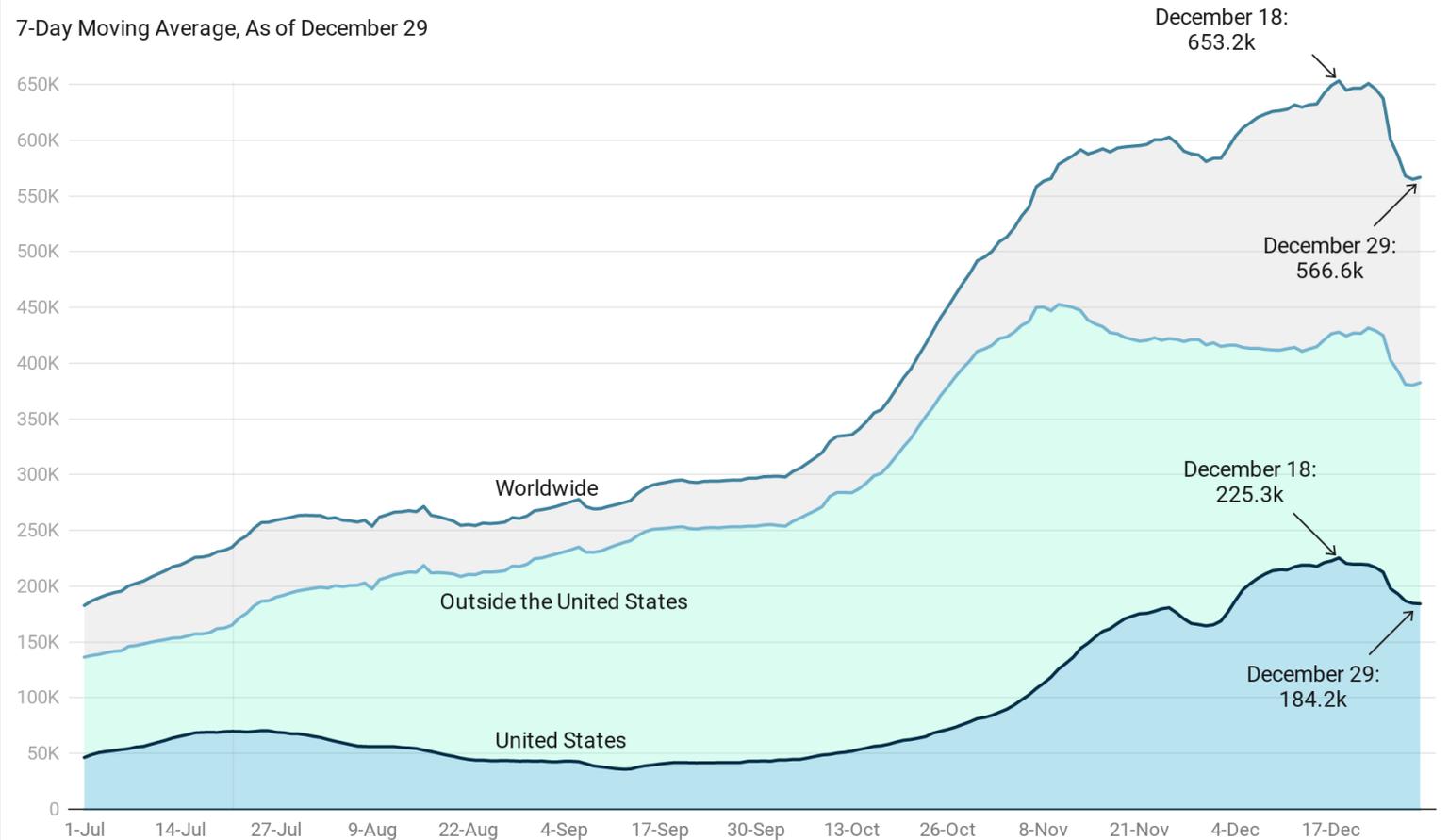


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

The high rates of newly-detected cases we have been experiencing were driven by two periods of accelerating growth – An extended period from September 26 – November 13, followed by a brief one December 1-9

Since December 9th, this growth has slowed - even starting to recede several days prior to Christmas

The decline since Christmas is driven in significant part by reporting interruptions

Week-Over-Week Changes in Newly-Detected Cases: USA v. Worldwide

7-Day Moving Average, As of December 29

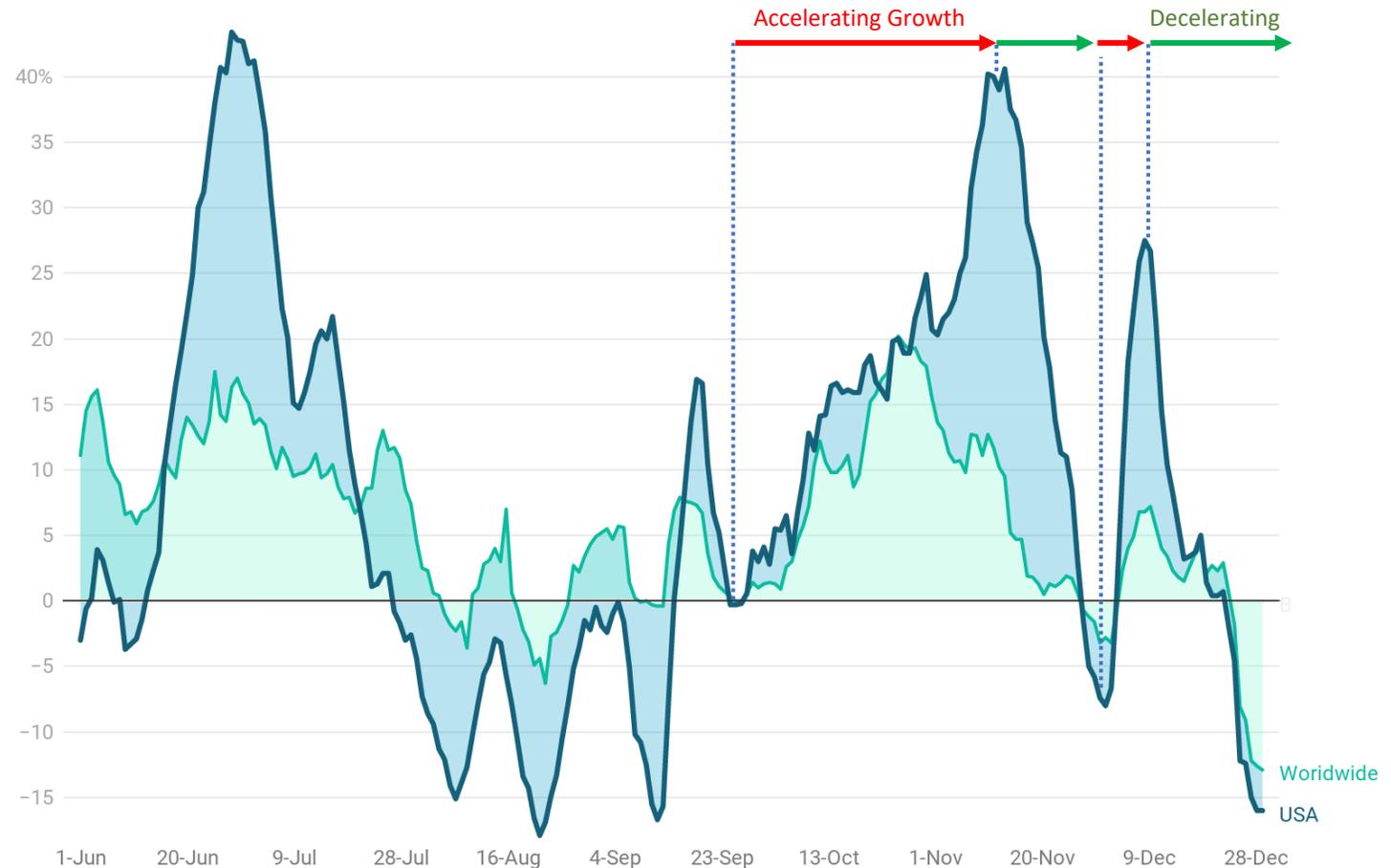
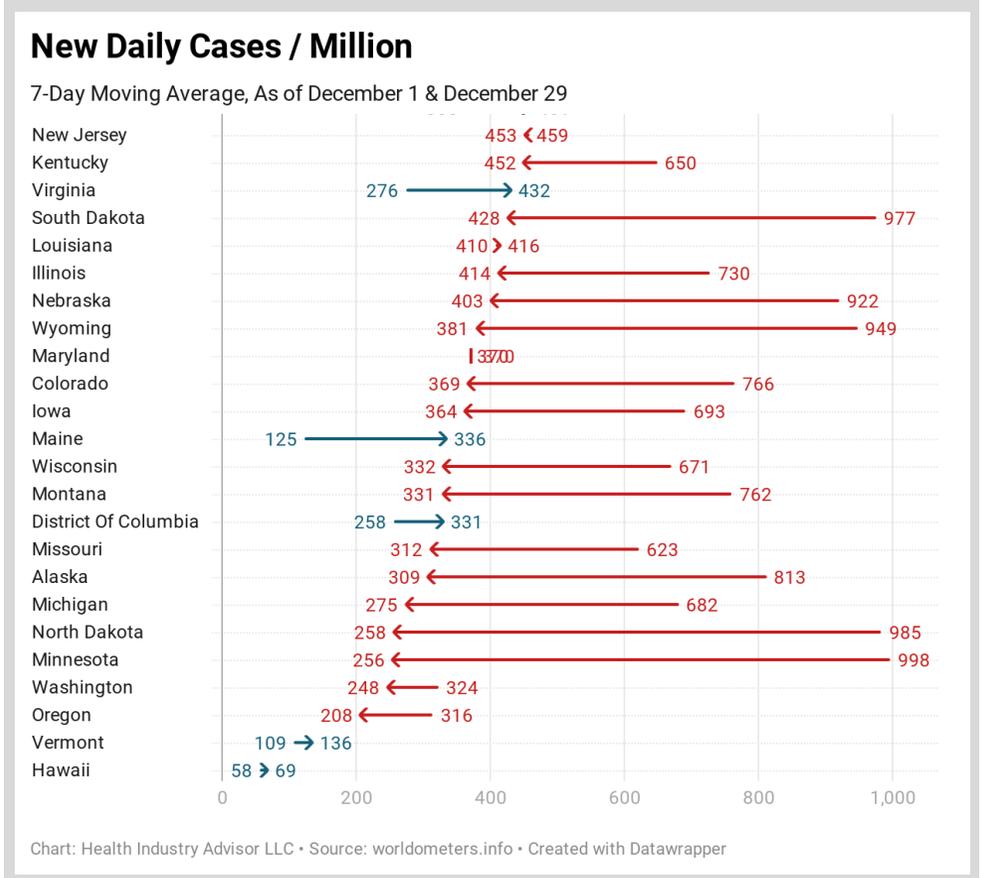
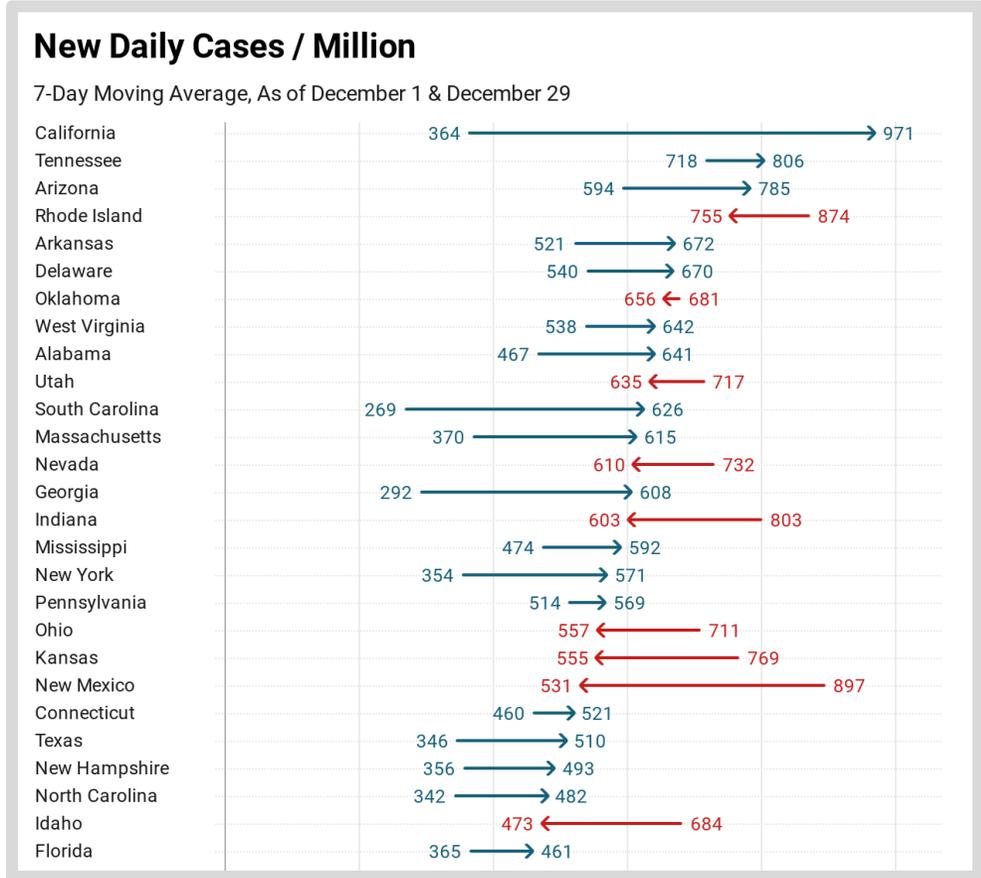


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Comparing 7-day rates of newly detected cases – yesterday v. the Tuesday following Thanksgiving:
 Arizona, California and Tennessee, which currently have the highest rates in the U.S., have seen these rate increase in the past four weeks – rather dramatically in California; Georgia, New York and South Carolina each have seen large rate increases
 Several Midwestern state, however, have seen huge rate declines in this time



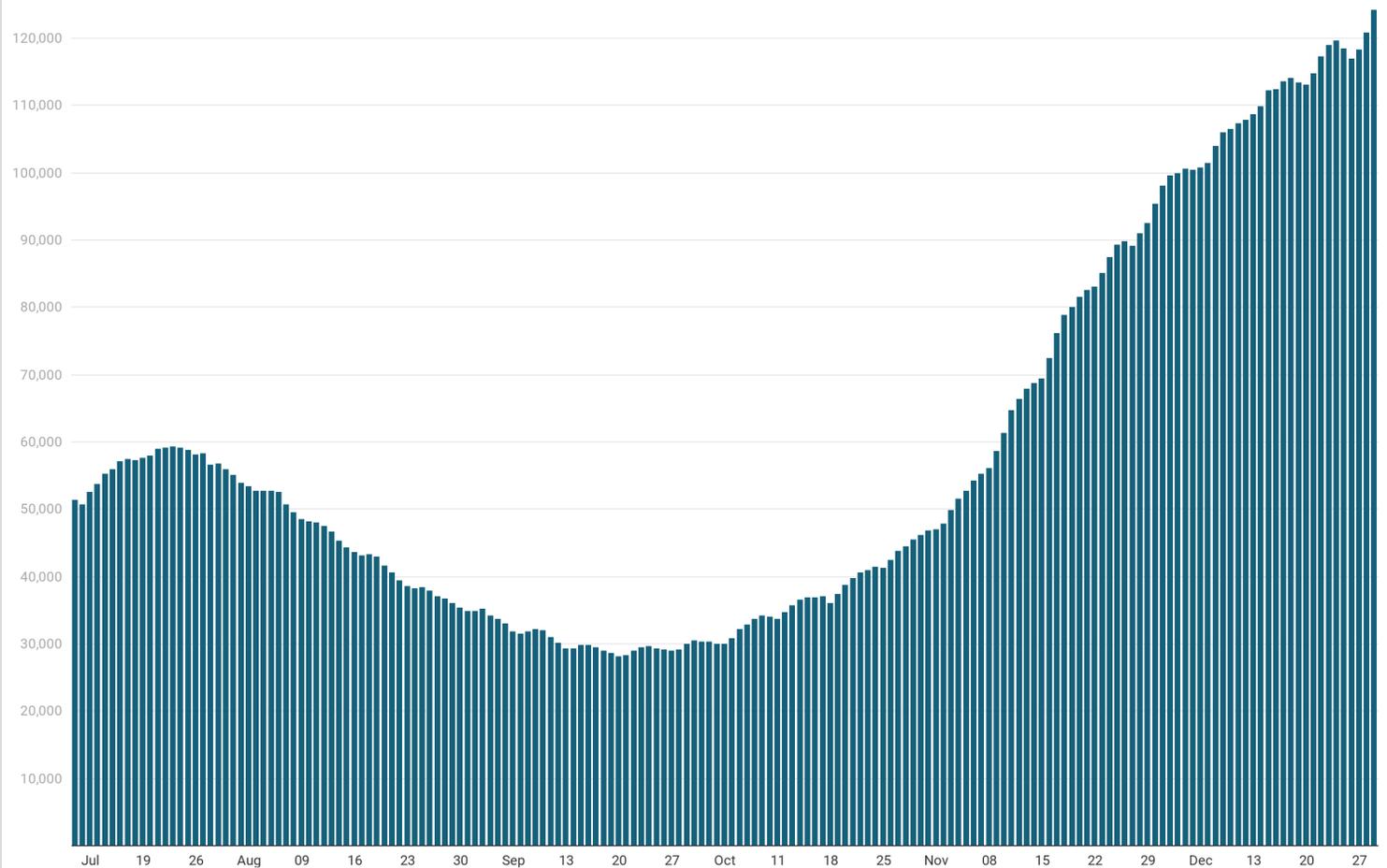
Despite the apparent decline in newly-detected cases, the number of Covid-19 patients in the hospital continues to increase

Yesterday, there were more than 124,000 Covid-19 patients in U.S. hospitals

The day-over-day increase in Covid-19 patients yesterday was the largest since November 17

Hospital Census: COVID-19 Patients

As of December 29



Florida data first available on July 10

Chart: Health Industry Advisor LLC • Source: the Atlantic's Covid Tracking Project • Created with Datawrapper

Covid-19 patients occupy three of every four beds in Arizona, California and Nevada; more than every other bed in Connecticut, Georgia, New York and Rhode Island

For the U.S. it is four in every ten beds

Based on the information on this and the following page, Arizona, California, Georgia and New York are of the greatest concern

Covid-19 Patients / Total Inpatient Beds

7-Day Moving Average, As of December 29

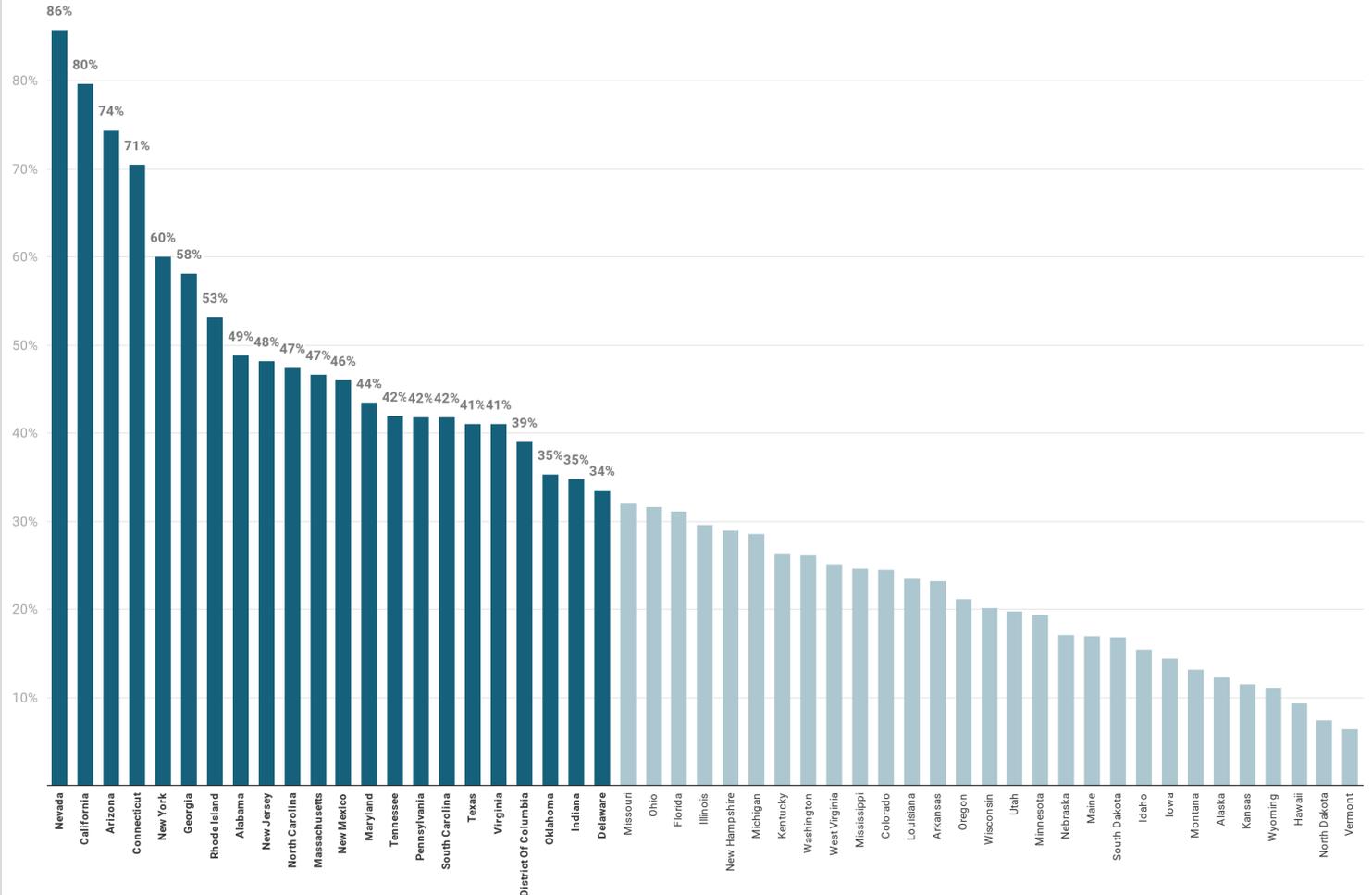


Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking project & worldometers.info • Created with Datawrapper

Nine states – Arizona, California, Georgia, Massachusetts, New York, North Carolina, South Carolina, Texas and Virginia – account for more than three-fourths of the increase in Covid-19 patients in the past week

These same states also have seen their Covid-19 occupancy increase by 5% of more during this week

Week-Over-Week Change in Covid-19 Patients

December 22-29

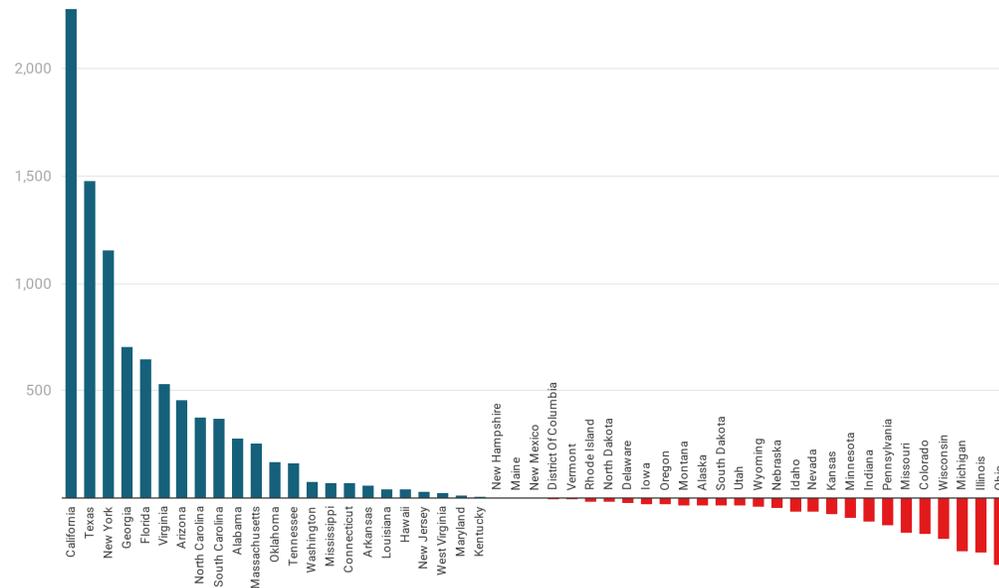


Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking project & worldometers.info • Created with Datawrapper

Week-Over-Week Change in Covid-19 Bed Occupancy

December 22-29

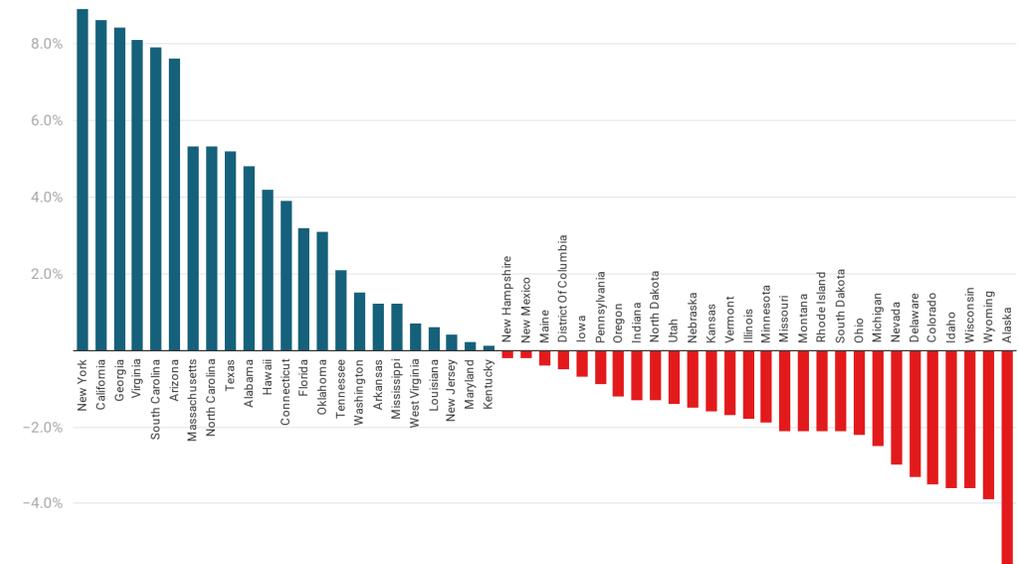


Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking project & worldometers.info • Created with Datawrapper

Observing trends in Covid-19 inpatient days per 100 new cases:

Increasing rates since Christmas are likely influenced by case reporting interruptions

Arizona and Georgia appear to see relatively high rates of hospital days per new case, while California's rate is relatively low

Inpatient Days / 100 New Cases

7-Day. Moving Average

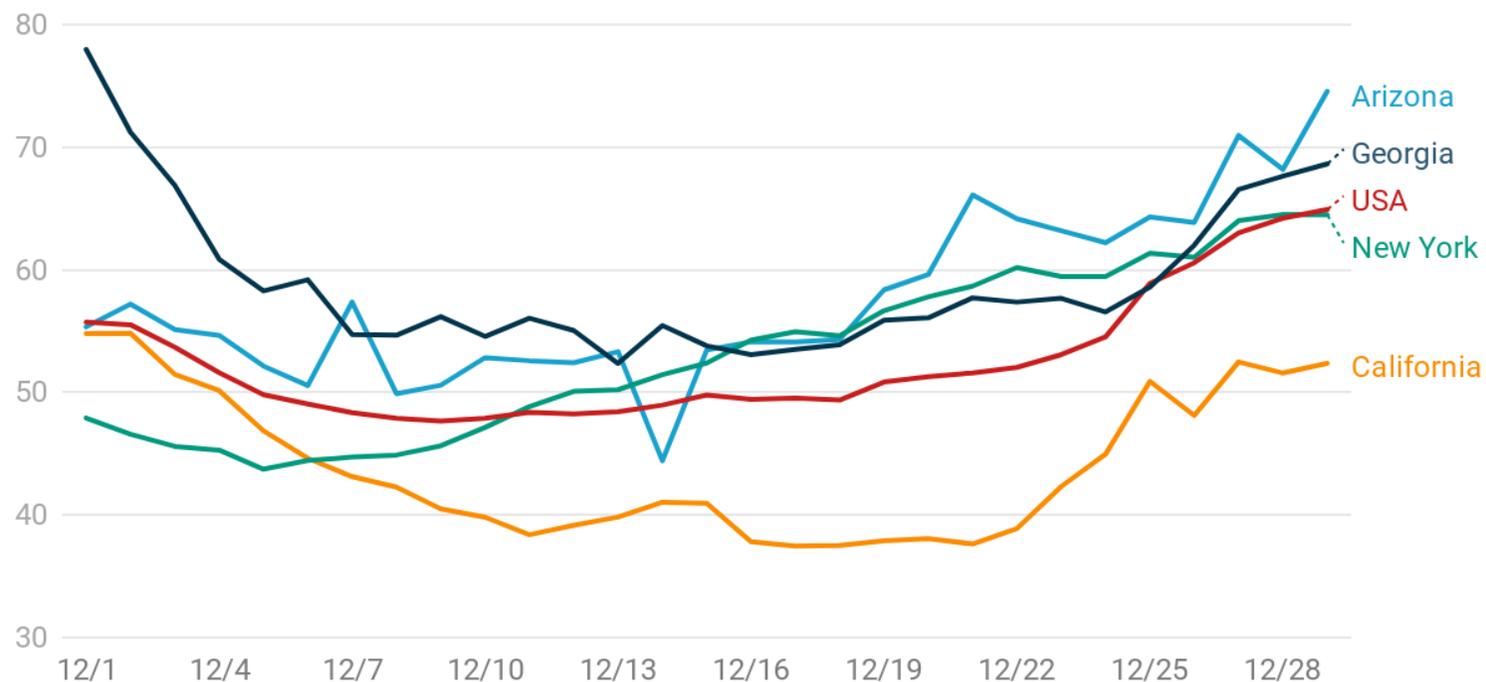


Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking Project & worldometers.info • Created with Datawrapper

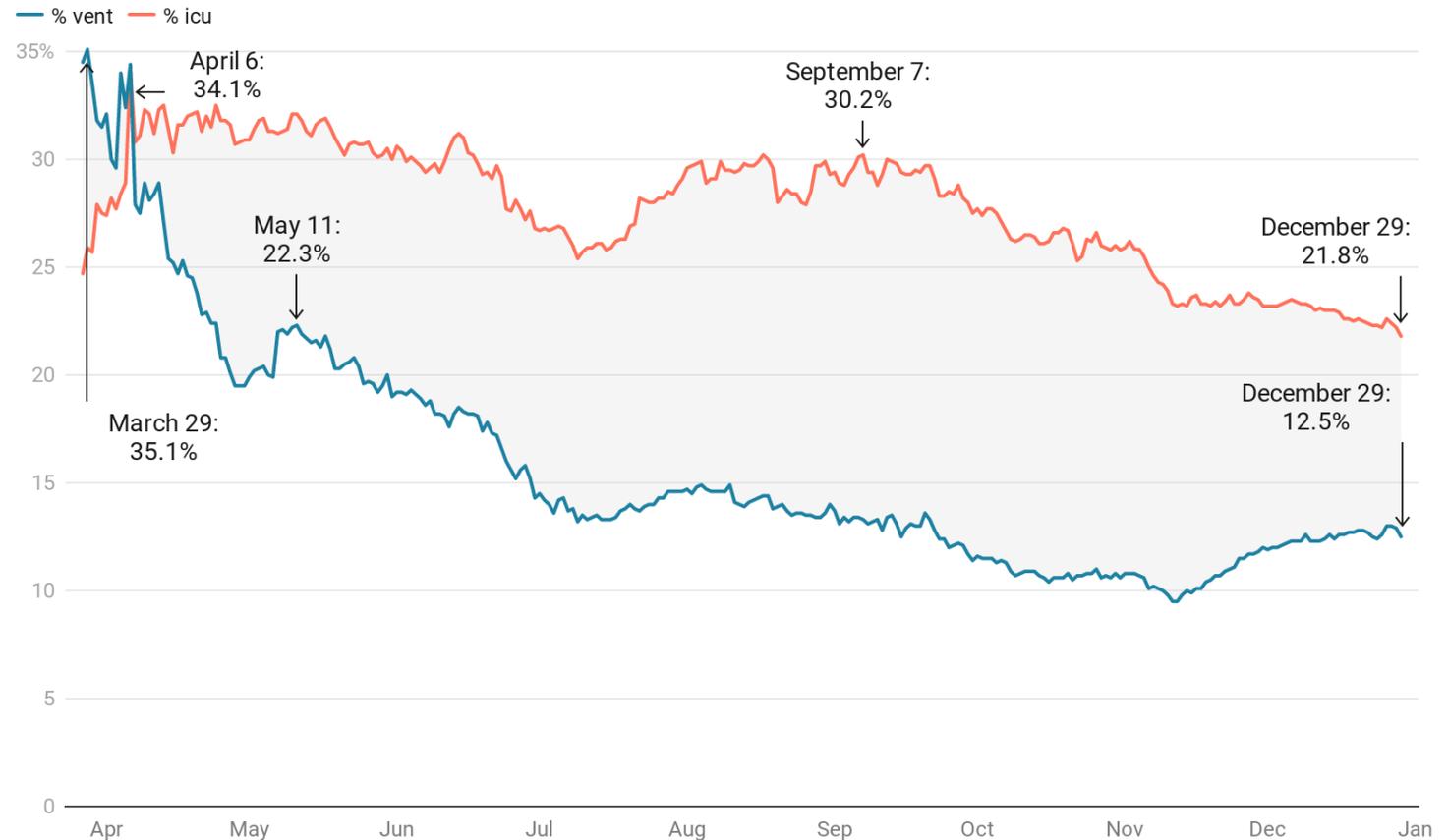
Over the past 6-8 weeks:

- the likelihood of a Covid-19 inpatient would require ICU care has declined

- the likelihood a Covid-19 inpatient would require ventilator care has increased – however, it now appears to have stabilized somewhat

Severity of Hospitalized Patients

% of patients on ventilators and in the ICU, As of December 29



Health Industry Advisor LLC analysis

Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking Project • Created with Datawrapper

Yesterday, there were nearly 3,400 reported deaths with coronavirus in the U.S. – significantly more than each of the past few days yet, consistent with the number reported last Tuesday

The reported 7-day average death rate remains far lower than its peak on December 22 - much of this decline, however, may be due to reporting interruptions during the holiday

Deaths Reported With Coronavirus in the U.S.

Trailing 7-Day Moving Average, As of December 29



Health Industry Advisor LLC analysis

Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Data Sources

The following data sources are accessed on a daily or weekly basis:

- The Atlantic's Covid Tracking Project: <https://covidtracking.com>
- Worldometers.info: <https://www.worldometers.info/coronavirus/>
- Centers for Disease Control and Prevention, National, Regional, and State Level Outpatient Illness and Viral Surveillance
<https://gis.cdc.gov/grasp/fluview/fluportaldashboard.html>
- Centers for Disease Control and Prevention, COVID-19 Laboratory-Confirmed Hospitalizations https://gis.cdc.gov/grasp/COVIDNet/COVID19_5.html
- Centers for Disease Control and Prevention, COVID Data Tracker
<https://www.cdc.gov/covid-data-tracker/index.html#mobility>
- Centers for Disease Control and Prevention, Vaccines,
<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/index.html>
- Institute for Health Metrics and Evaluation, COVID-19 estimate downloads
<http://www.healthdata.org/covid/data-downloads>
- New York Times, Covid-19 data <https://github.com/nytimes/covid-19-data>
- COVID-19 Data Repository by the Center for Systems Science and Engineering (CSSE) at Johns Hopkins University <https://github.com/CSSEGISandData/COVID-19>
- COVID-19 Projections Using Machine Learning, <https://covid19-projections.com>
- Oliver Wyman Pandemic Navigator,
<https://pandemicnavigator.oliverwyman.com/forecast?mode=country®ion=United%20States&panel=mortality>
- Bloomberg Vaccine Trackers, <https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/?sref=Z0b6TmHW>