



Health
Industry
Adv



Issue # 243
Tuesday, December 22, 2020
COVID-19
Report

Highlights

- Surging new cases in certain geographies
 - United Kingdom has raised concerns about a new strain of Covid-19, which some fear could be 70% more transmissible than earlier strains. **The UK's infection rate has already more than doubled in December**
 - Sweden's "hands-off" approach to controlling the virus has always been controversial. Criticisms have mounted recently, as infection rates have risen - against the tide of much of the rest of Europe. **Sweden's rate is up by just more than 1/3 during December**
 - California's Governor Gavin Newsom has imposed stricter mandates recently, in an effort to contain an infection surge in that state; **California's infection rate has more than tripled already in December**
 - At least two other areas deserve note for high and surging infection rates: **both Tennessee and the Netherlands have experienced more than a doubling in these rates during December**
- **For much of the rest of the U.S. and the world, infection rates seem to be stabilizing, if not declining**
 - **Outside the U.S. newly detected cases peaked in early November and have been relatively stable since**
 - Several European countries have experienced significant declines in infection rates over the past four weeks, including Austria, Bulgaria, Croatia, France, Italy, Luxembourg, Macedonia, Poland, Portugal and Romania
 - **For the U.S., 7-day average new cases have leveled off over the past week; the infection rate per capita peaked three days ago**
- The three states that posted the highest rates of new infections to-date - North Dakota, South Dakota and Wisconsin - now have rates less than 1/2 of these peak levels
- Using [Youyang Gu's model](#), estimated actual infections peaked around Thanksgiving and have gently declined since
- **Gu estimates that the Reproduction Rate (R_t) has declined fifteen consecutive days and has been < 1 for four consecutive days**
- Healthcare resource use continues to raise concern
 - Covid-19 patients occupied 36.8% of all inpatient beds in the U.S. yesterday, up from 35.5% a week ago
 - **There are fourteen states where this rate exceeds 40%, including heavily-populated California, New Jersey, New York and Pennsylvania**
 - **Over the past 4-6 weeks, an increasing % of hospitalized Covid-19 patients are on ventilators, while a declining % are in the ICU**
- Vaccine distribution and administration continues to build in the U.S.
 - According to the [Centers for Disease Control and Prevention \(CDC\)](#), 4.6 million doses have been shipped and 614k doses have been administered in the U.S.
 - The number of persons that would need vaccinations, in order to achieve herd immunity, is dependent on the prevalence of infections in the population. **In Gu's model referenced above, he places the infection prevalence at just under 19%. [Oliver Wyman](#) independently estimates this at 16%**

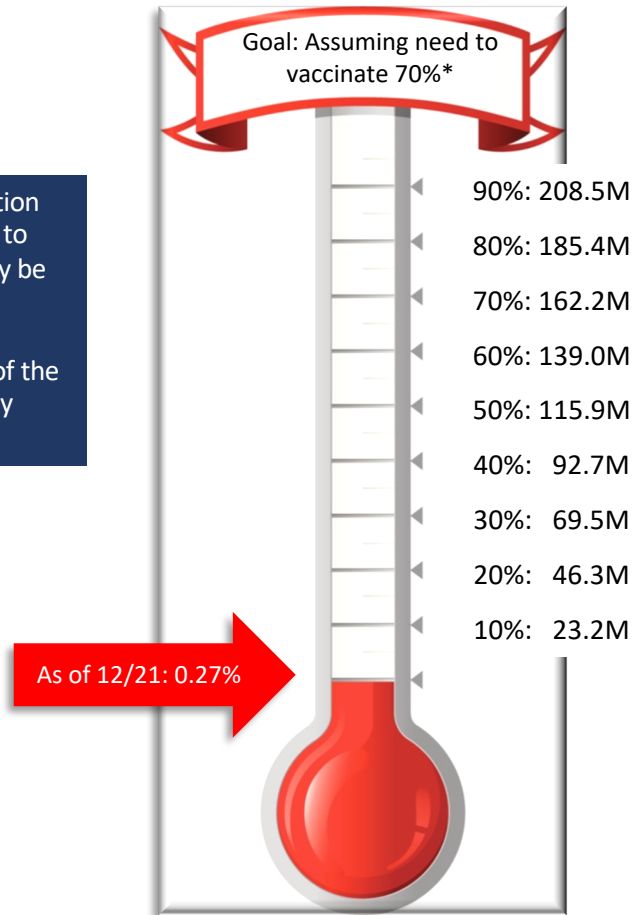
Vaccine Tracking – U.S.

Distribution and administration of the Pfizer vaccine began in the U.S. last week

More than 600k people have received the initial dose - a small fraction of how many will need to be vaccinated

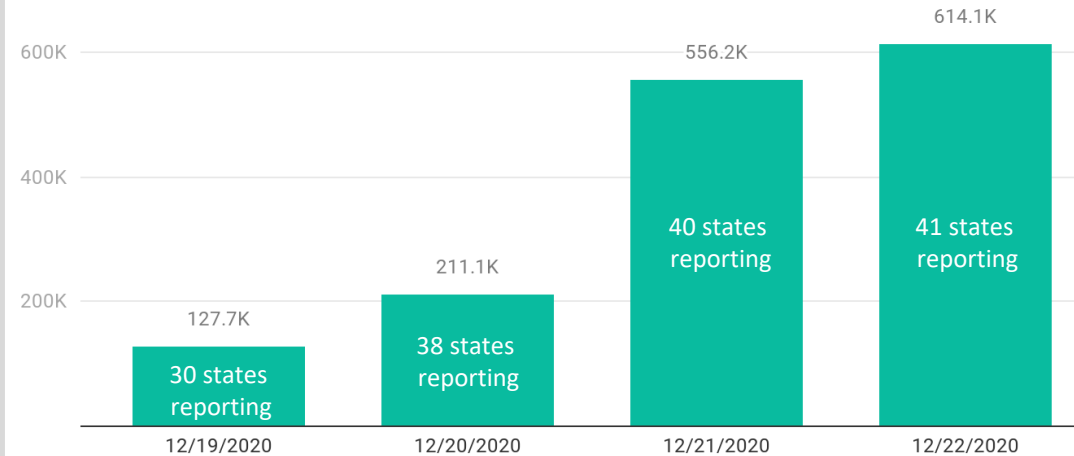
* 70% is used for illustration only. Actual rate needed to reach herd immunity may be higher or lower.

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 22



If 70% are required for herd immunity, 231.7 million people will need to be vaccinated

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

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

We are averaging ~647k new cases worldwide each day, as of Monday

The United States is now averaging 219k new cases each day . . . and, seems to have plateaued over the past week

* - 7-day moving average basis

Newly Detected Daily Cases - U.S. & Worldwide

7-Day Moving Average, As of December 21

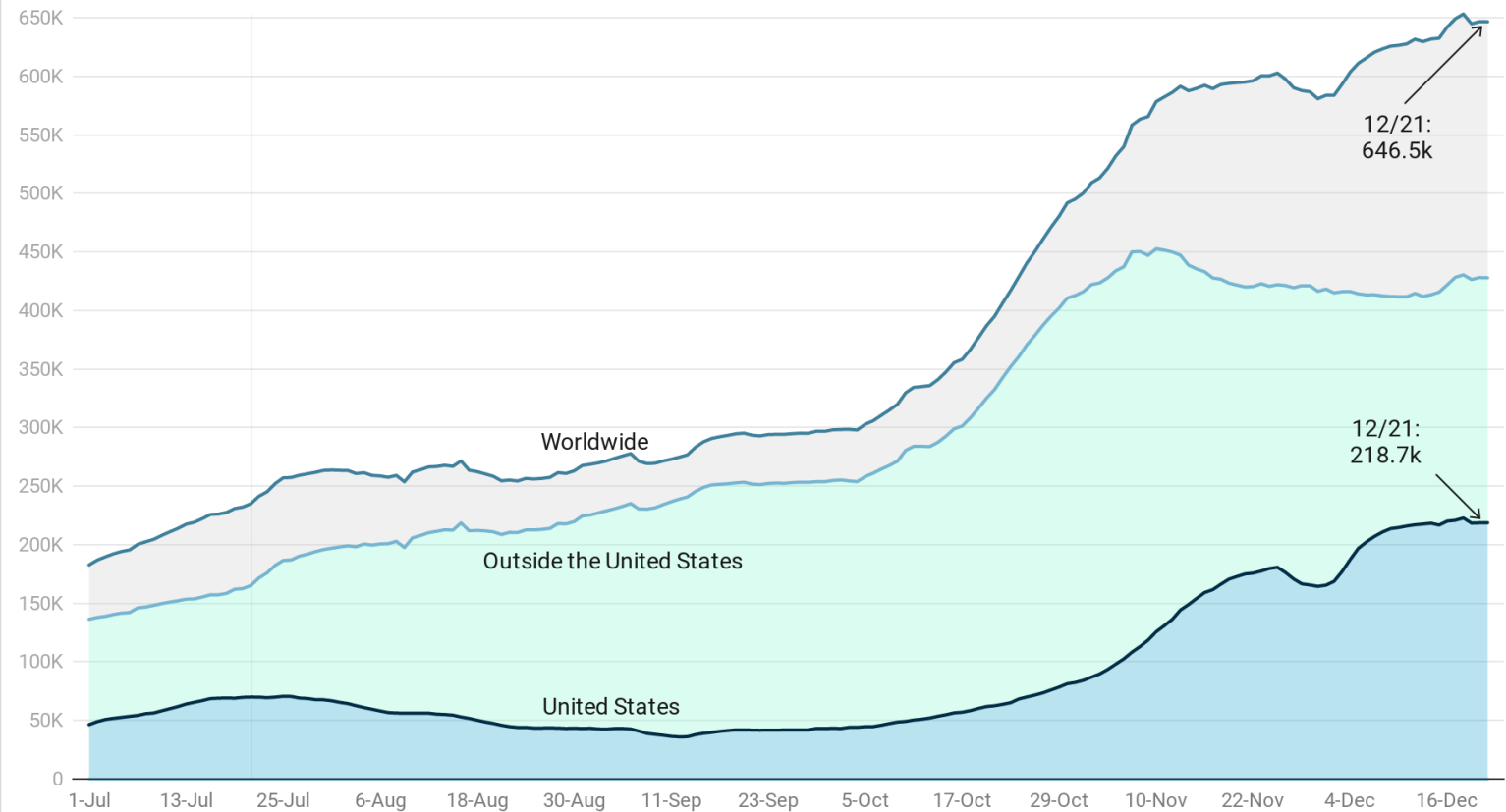


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

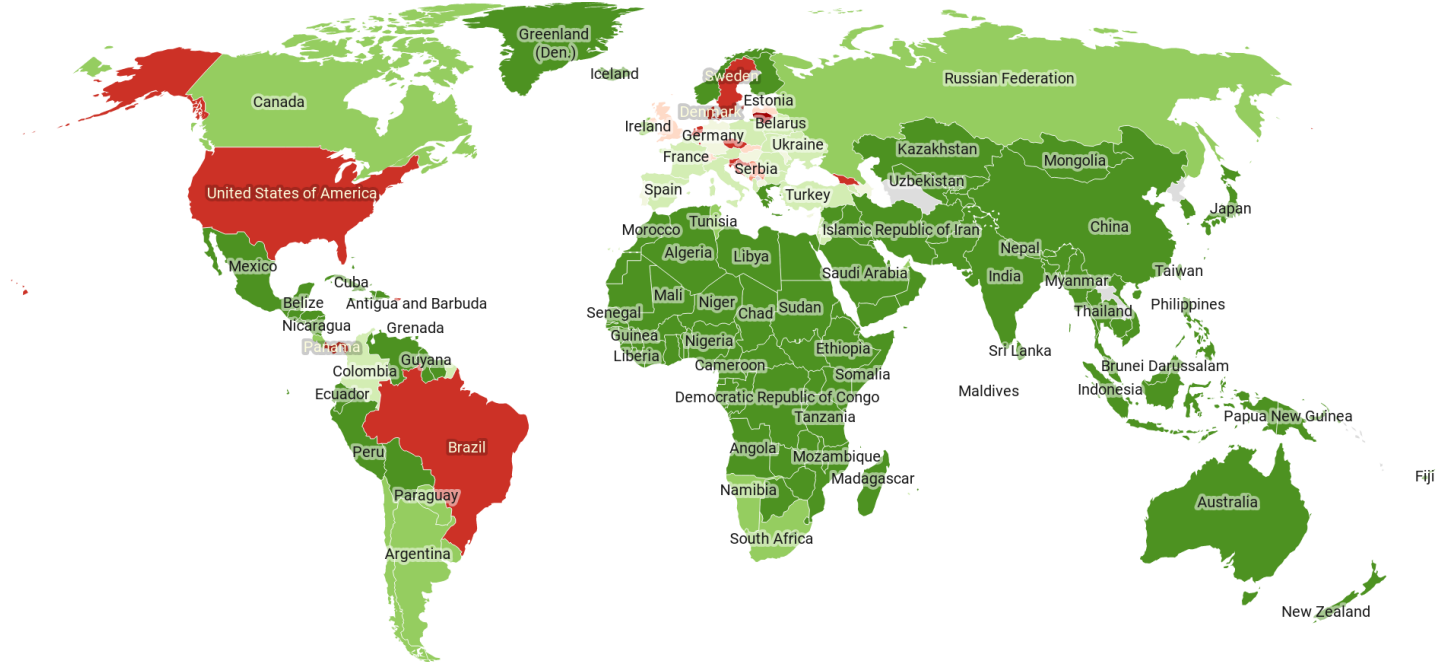
The infection spread is highest in Brazil, the United States and several European countries

* - 7-day moving average basis

New Infections / Million

7-Day Moving Average, As of December 21

< 100 100-200 200-300 300-400 400-500 500-600 600-700 ≥ 700



Map: Health Industry Advisor LLC • Source: worldometer.info • Created with Datawrapper

The infection spread eased across much of Europe over the past four weeks, notably in Austria, Bulgaria, Croatia, France, Italy, Luxembourg, Macedonia, Poland, Portugal and Romania

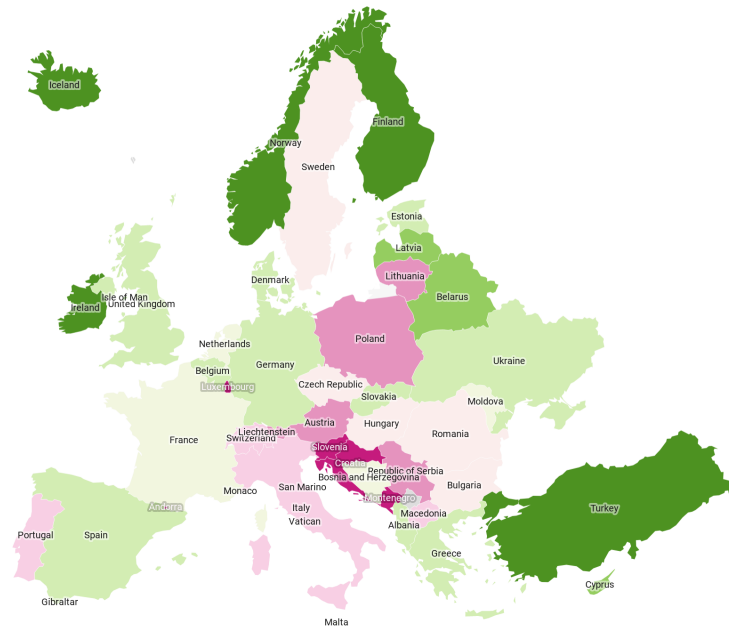
The spread worsened, however, in the Czech Republic, Denmark, Latvia, Lithuania, Slovakia, Sweden, Turkey and the United Kingdom

4 weeks Ago: November 24

New Daily Infections / Million - Europe

7-Day Moving Average, As of November 23

< 100 100-200 200-300 300-400 400-500 500-600 600-700 ≥ 700



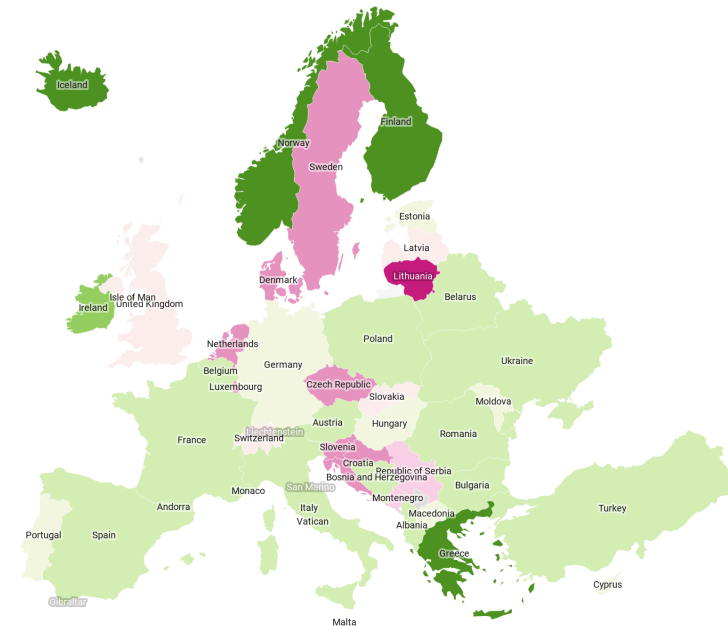
Map: Health Industry Advisor LLC • Source: Worldometer.info • Created with Datawrapper

December 21

New Daily Infections / Million - Europe

7-Day Moving Average, As of December 21

< 100 100-200 200-300 300-400 400-500 500-600 600-700 ≥ 700



Map: Health Industry Advisor LLC • Source: Worldometer.info • Created with Datawrapper

California, Sweden and the United Kingdom have been in the news lately, based on concerns about increasing infection rates

UK's rate has doubled already in December; California's has more than tripled; Sweden's is up by more than 1/3

Tennessee and the Netherlands also have experienced surging infections: Rates have more than doubled already in December in both cases

Newly Detected Cases / Million

7-Day Moving Average

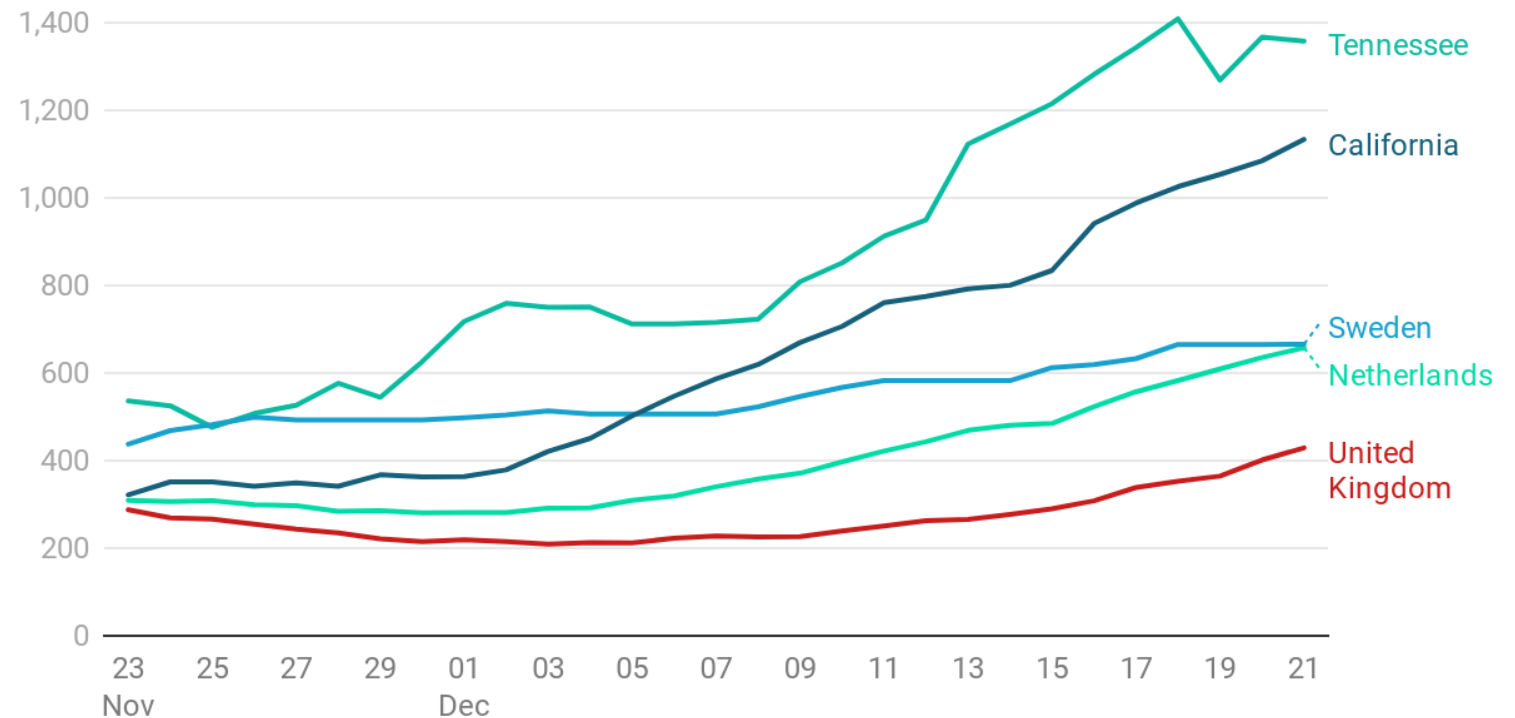


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

On a week-over-week basis, the number new cases in the U.S. has barely changed over the past three days

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

7-Day Moving Average, As of December 21

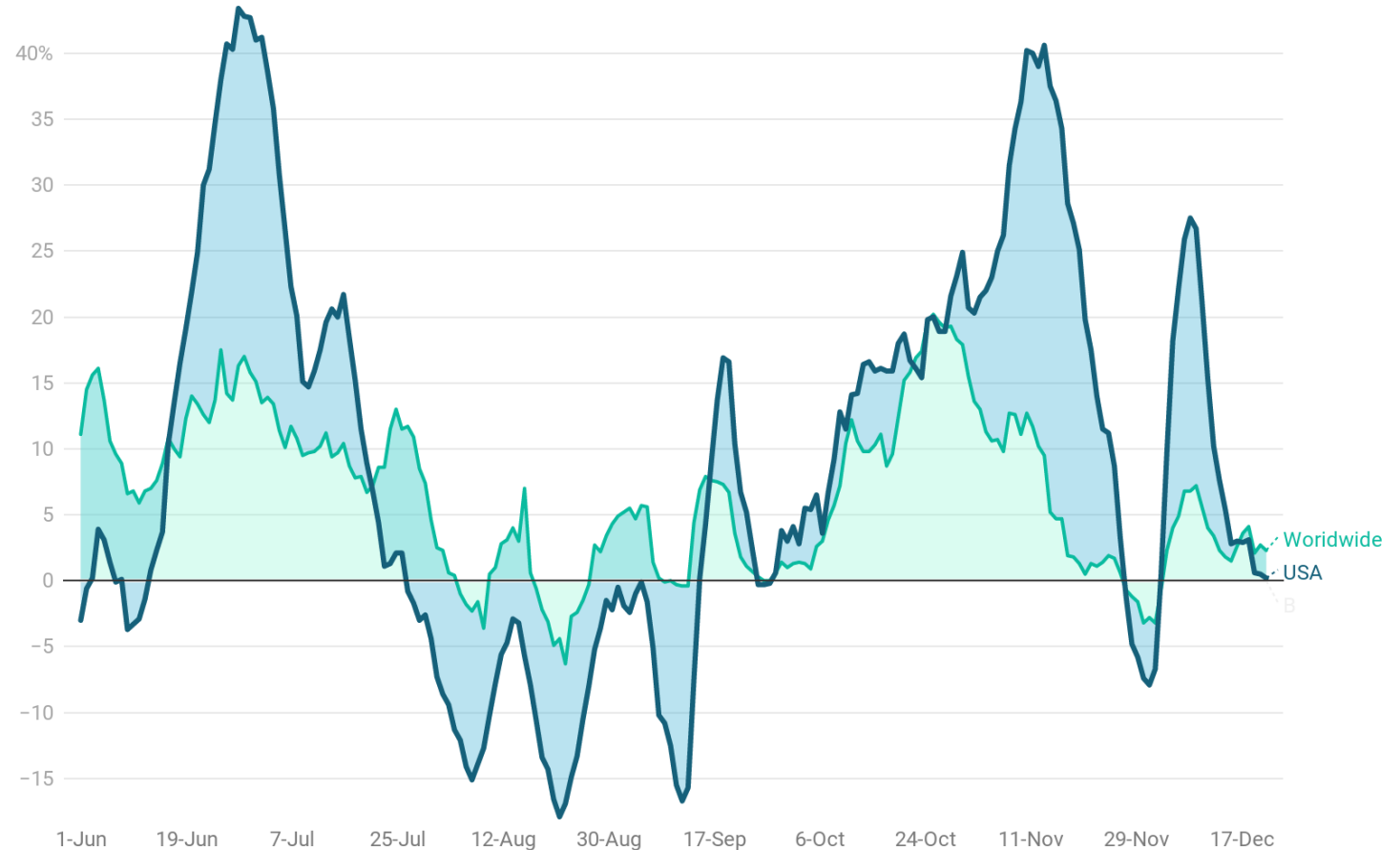


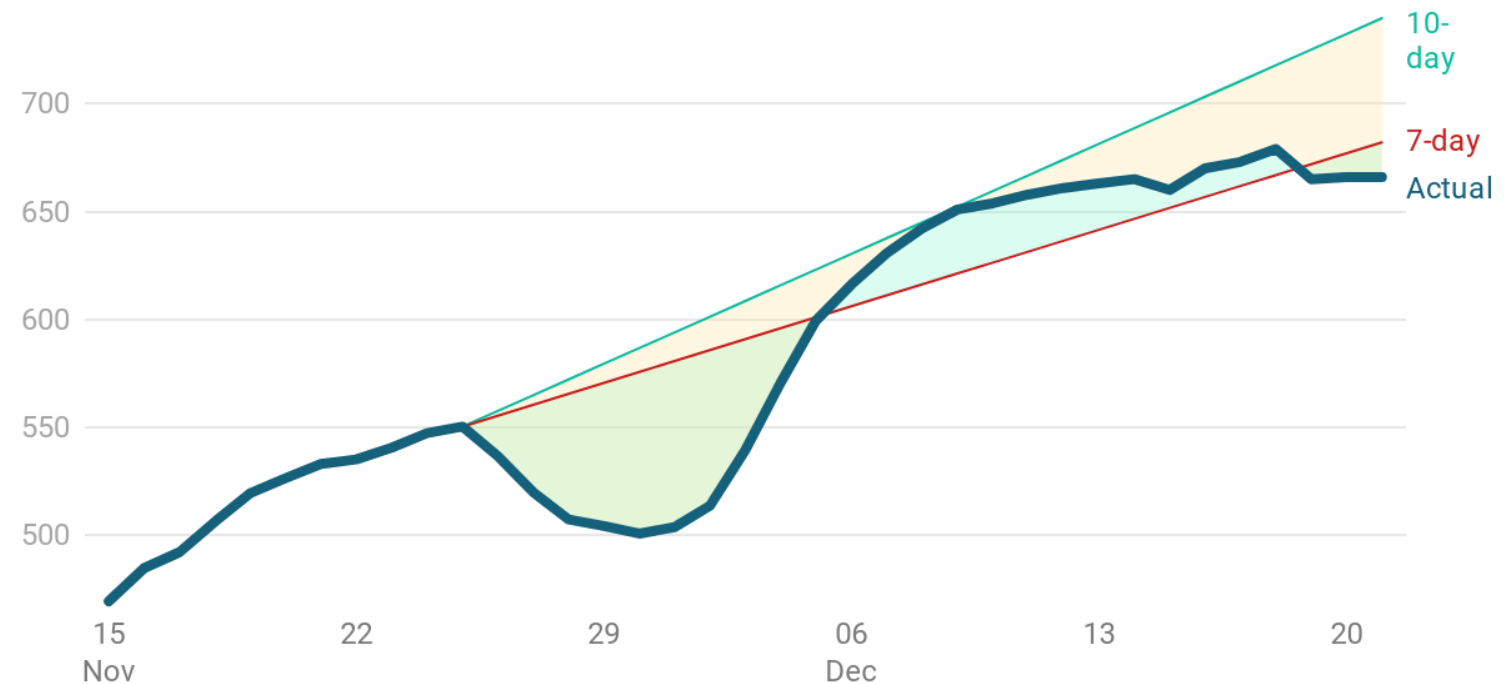
Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

7-day new infection rates peaked on December 18 and have stabilized over the past three days

These rates have dropped below where they had been trending pre-Thanksgiving

New Infections / Million

7-Day Moving Average v. Pre-Thanksgiving Trends



7- & 10-day trends are extrapolation of trends leading up to Thanksgiving Day

Chart: Health Industry Advisor LLC • Created with Datawrapper

According to Gu's model, the reproduction rate declined 15 consecutive days . . . And has been below 1.0 for four consecutive days

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

Notes:

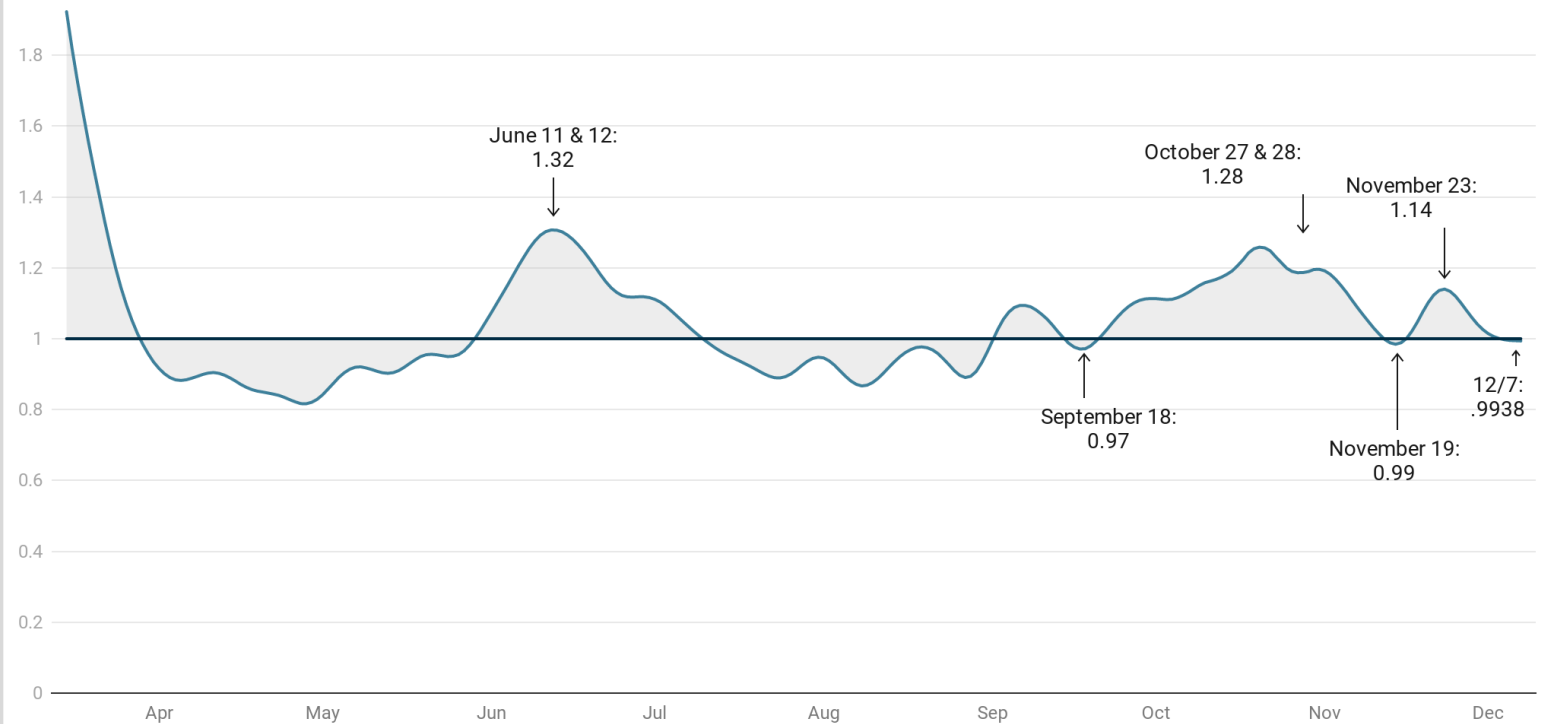
- Gu uses deaths to estimate actual infections and the reproduction rate (R_t), using a machine learning model

- 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, Through December 7



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 around Thanksgiving and have gently declined since

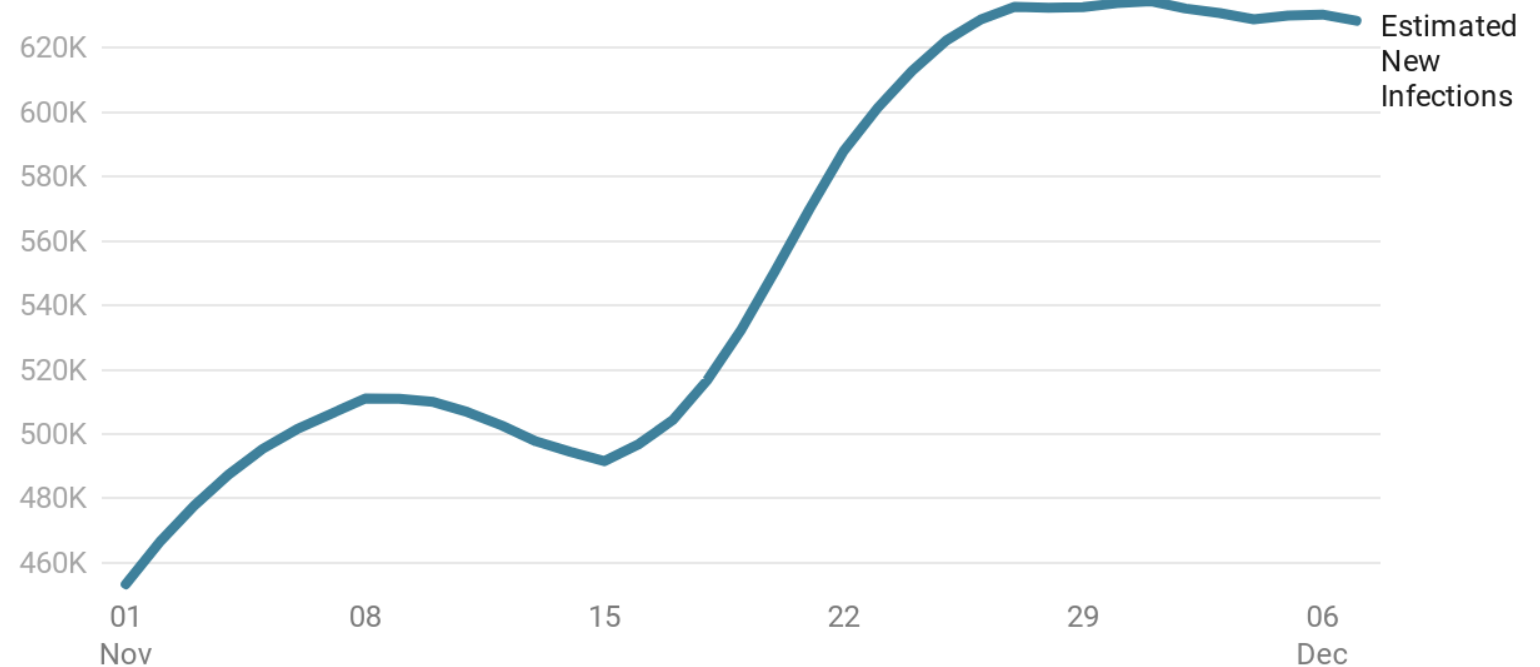
Gu estimates that nearly 19% of the U.S. population has been infected by the SARS-CoV-2 virus (range of 12.5-28%)

An independent estimate by Oliver Wyman* places this at 16%, with a range of 9-29%

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

Estimated New Daily Infections

Youyang Gu's Covid19-Projection Model (Mean Value)



Gu backdates from daily deaths to estimate the number of new infections that occurred two weeks earlier

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

Tennessee, California and Oklahoma – in order – have the highest current newly detected cases per capita*

Each of these states are at or near the highest rates they have experienced at any time during the pandemic

The three states with the next highest current rates - Rhode Island, Arizona and Indiana – are somewhat lower than their earlier highest levels

The three states with the highest rates ever during the pandemic – North Dakota, South Dakota and Wisconsin – are now significantly below these peak levels

New Daily Detected Cases Per Million - By State

7-Day Average As of December 21 & Difference From State's Highest Rate To-Date

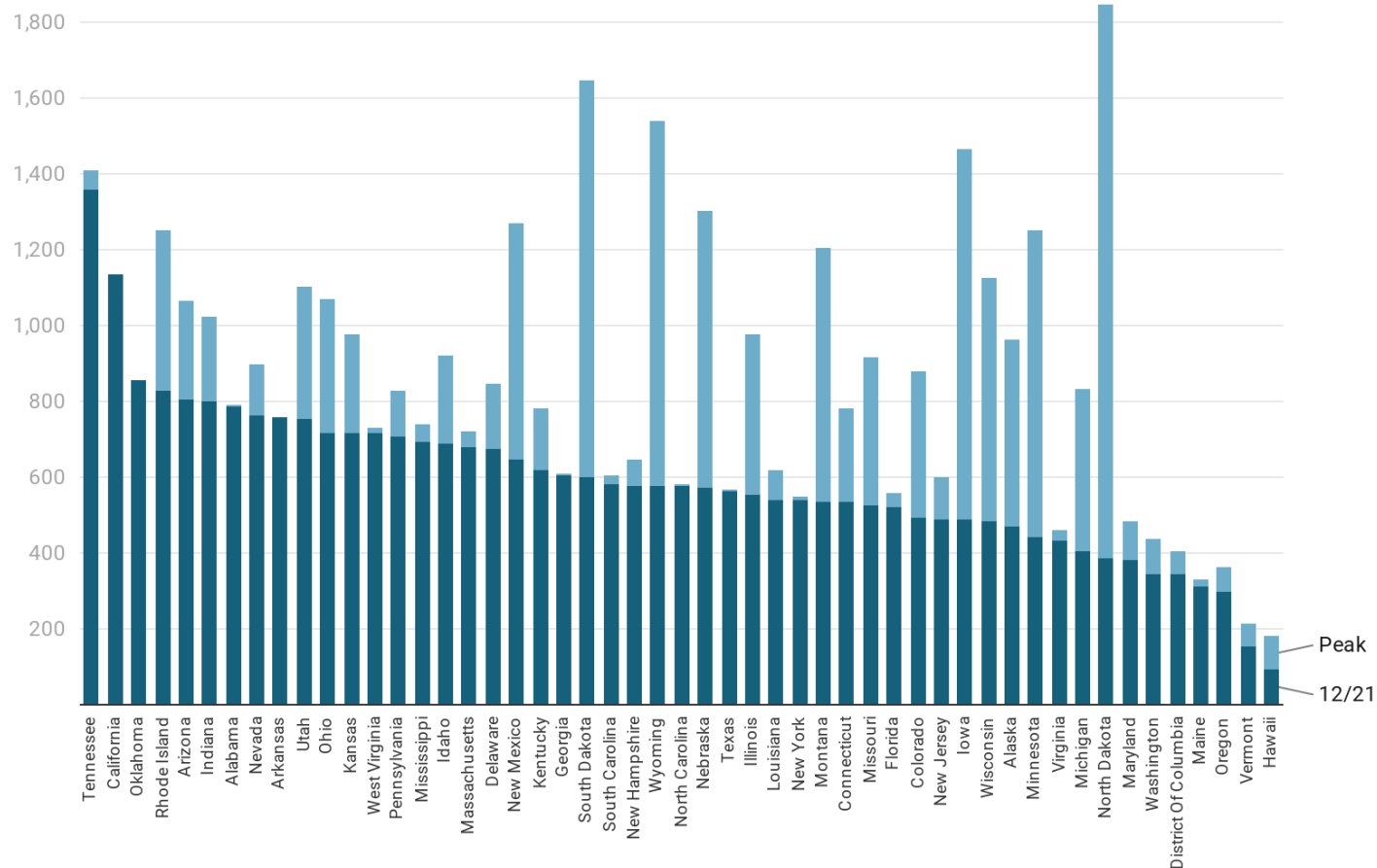


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

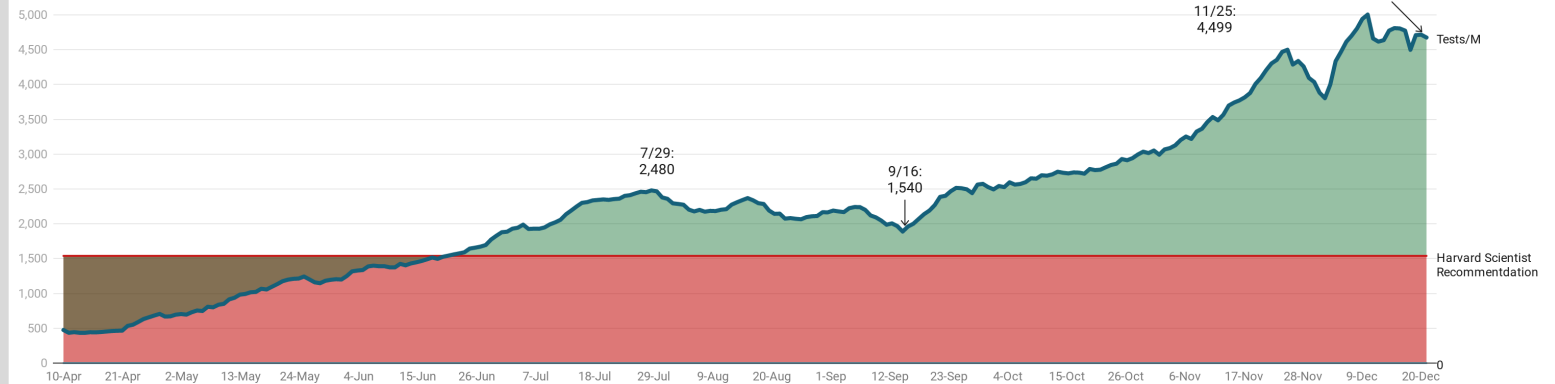
Testing seems to have plateaued over the past several days – Lower than its recent peak yet, higher than any time prior to December

The 7-day average test-positive rate was lower the past three days relative to last week. Nonetheless, it remains higher than desired

On an encouraging note, test volume on two of the past three days was relatively high; on both days, the test-positive rate dropped to 10%

Daily Tests Per 1 Million - United States

Trailing 7-Day Moving Average, As of December 21



Health Industry Advisor LLC analysis

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

Test-Positive Rate - United States

7-Day Moving Average, As of December 21

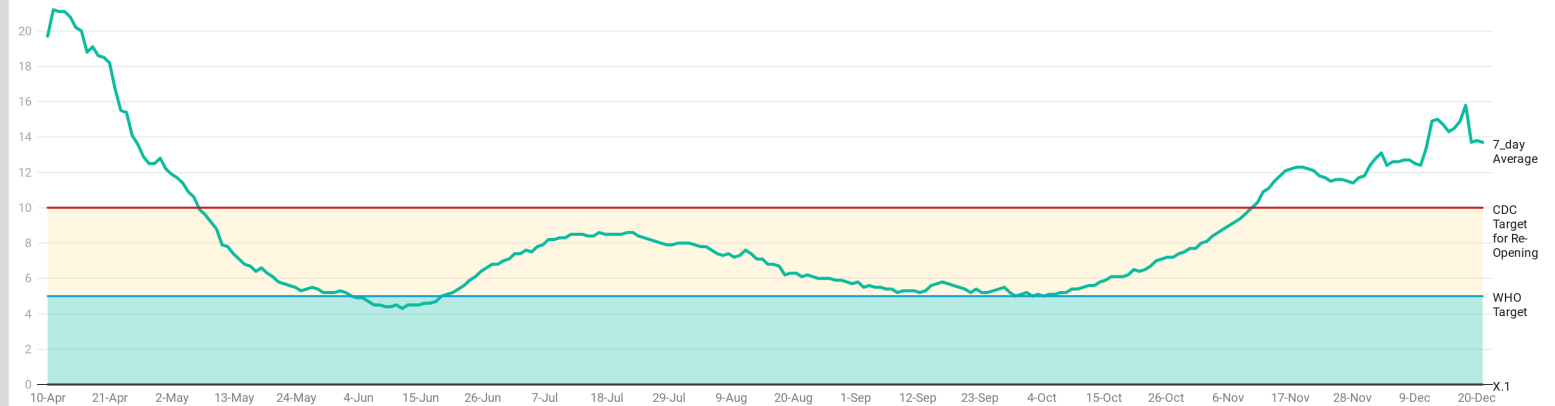


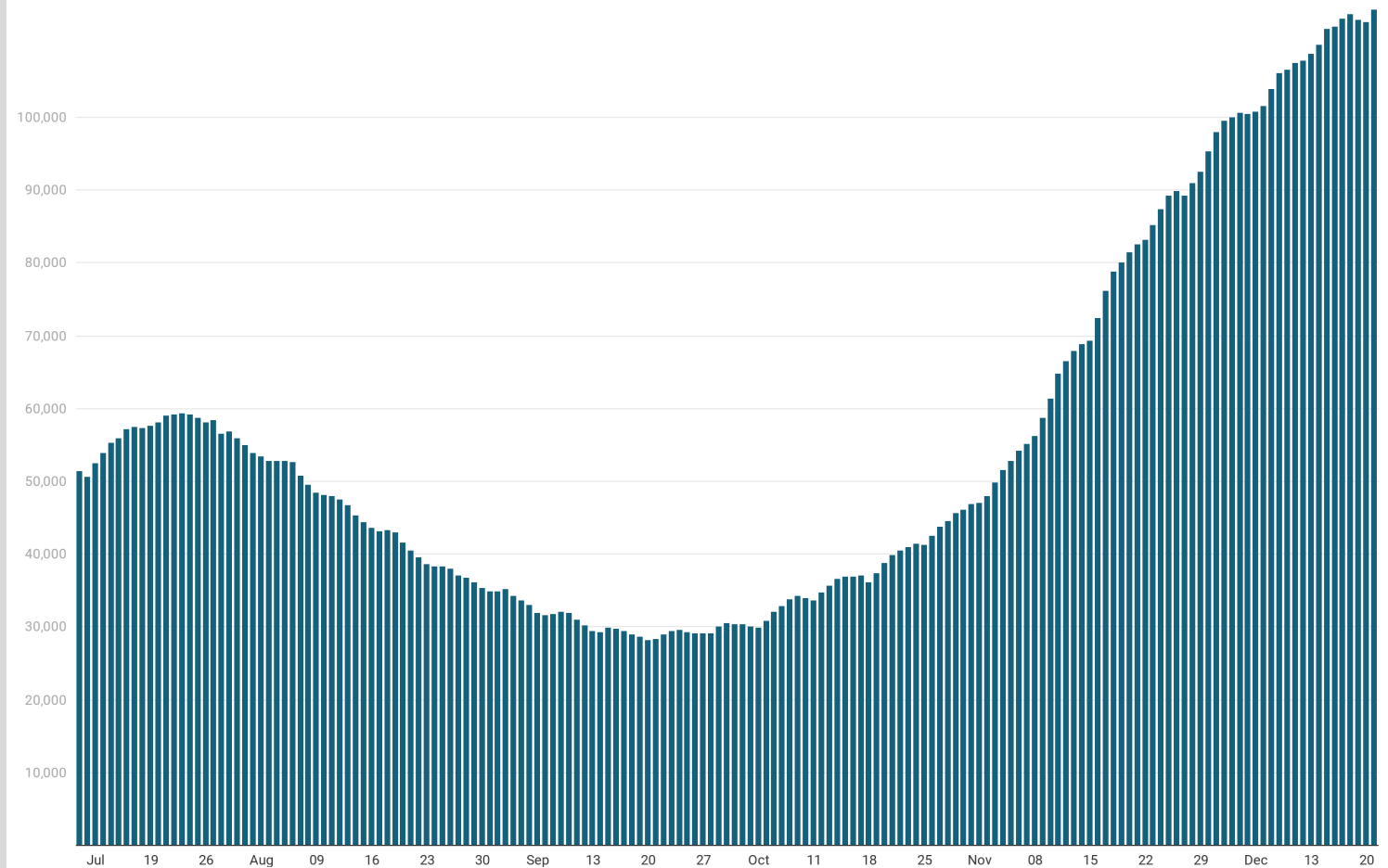
Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking Project • Created with Datawrapper

Typical for a Monday, the number of Covid-19 patients in the hospital picked from the weekend

Yesterday, there were nearly 115,000 Covid-19 patients in the hospital

Hospital Census: COVID-19 Patients

As of December 21



Florida data first available on July 10

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

Overall, Covid-19 patients occupy 36.8% of inpatient beds in the U.S., up from 35.2% one week ago

There are fourteen states where Covid-19 patients occupy 40% or more of all inpatient beds

All except four of these fourteen states are at or near their highest Covid-19 patient census since the pandemic began

Of note, three states – New York, Connecticut and New Jersey – experienced a higher % of Covid-19 patients at some point, than any state is currently experiencing (this peaked in New York at 140%!)

Covid-19 Patients / Total Inpatient Beds

7-Day Moving Average, As of December 21 v. Peak During Pandemic

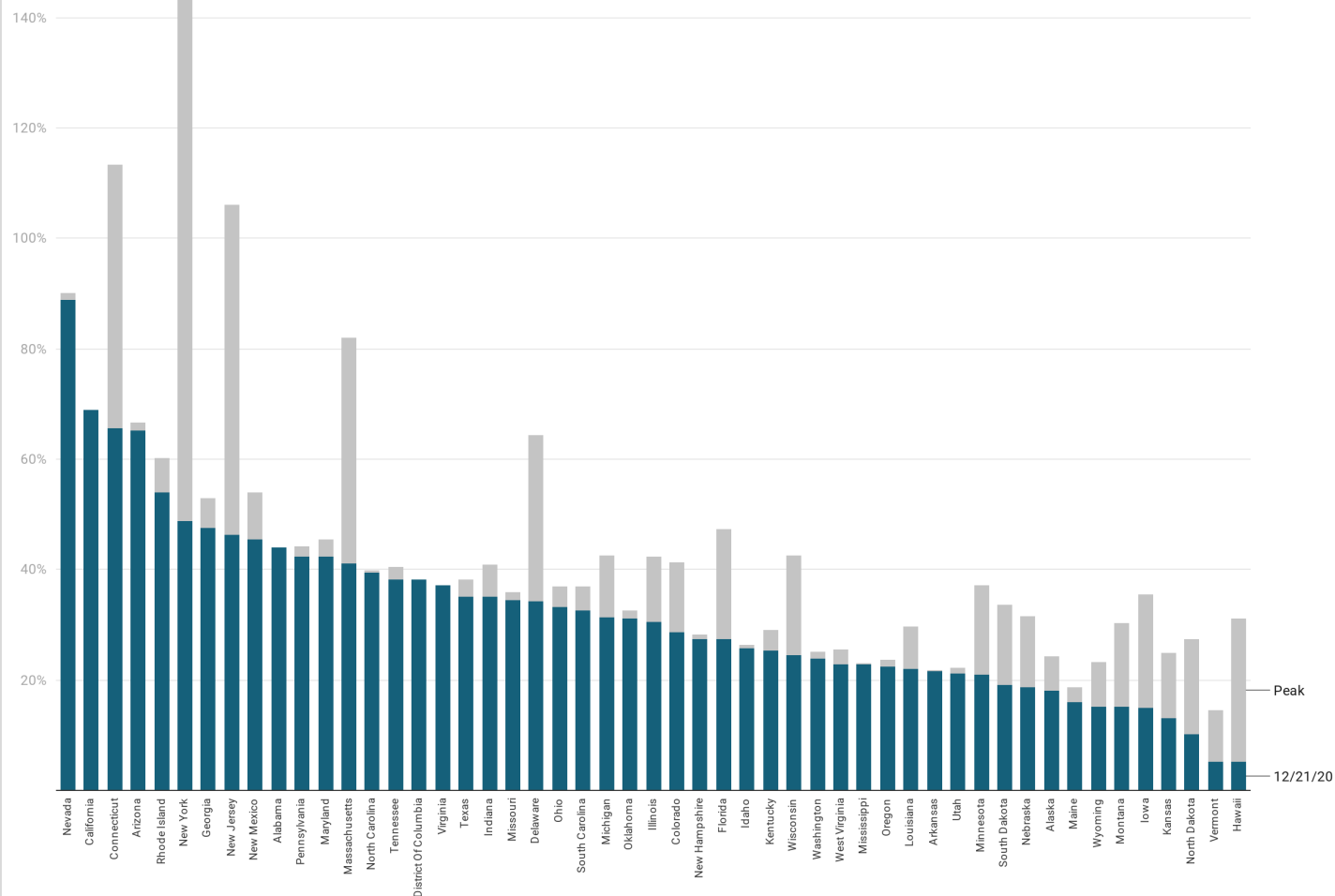


Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking project & worldometers.info • Created with Datawrapper

Every two new cases equates to just more than one day in a hospital bed

The average Covid-19 census per 100 new-cases seems to be trending slightly upward; it continues to be relatively low, however, compared to earlier in the pandemic

Covid-19 Hospital Census / 100 Daily New Detected Cases

7-Day Moving Average, As of December 21

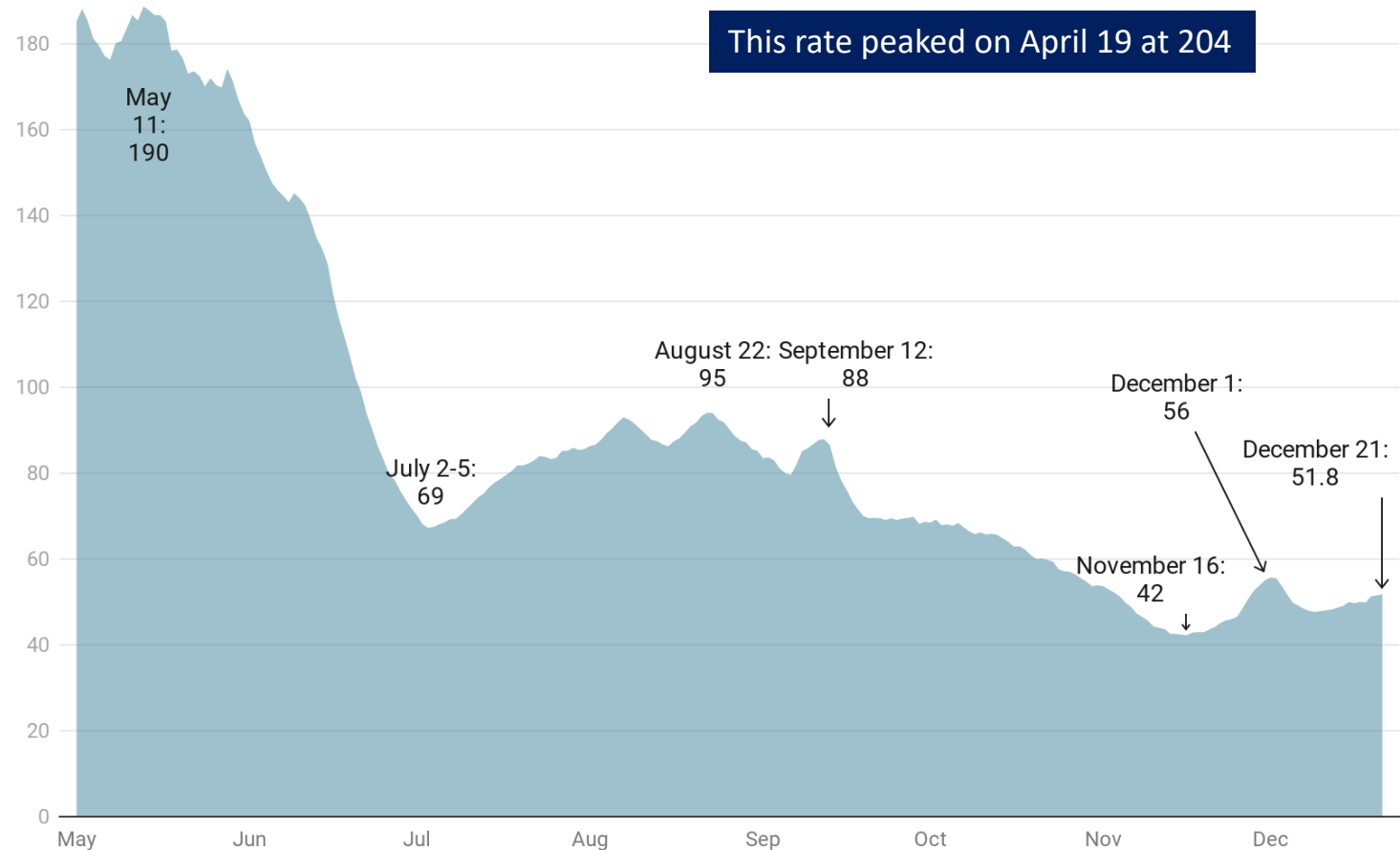


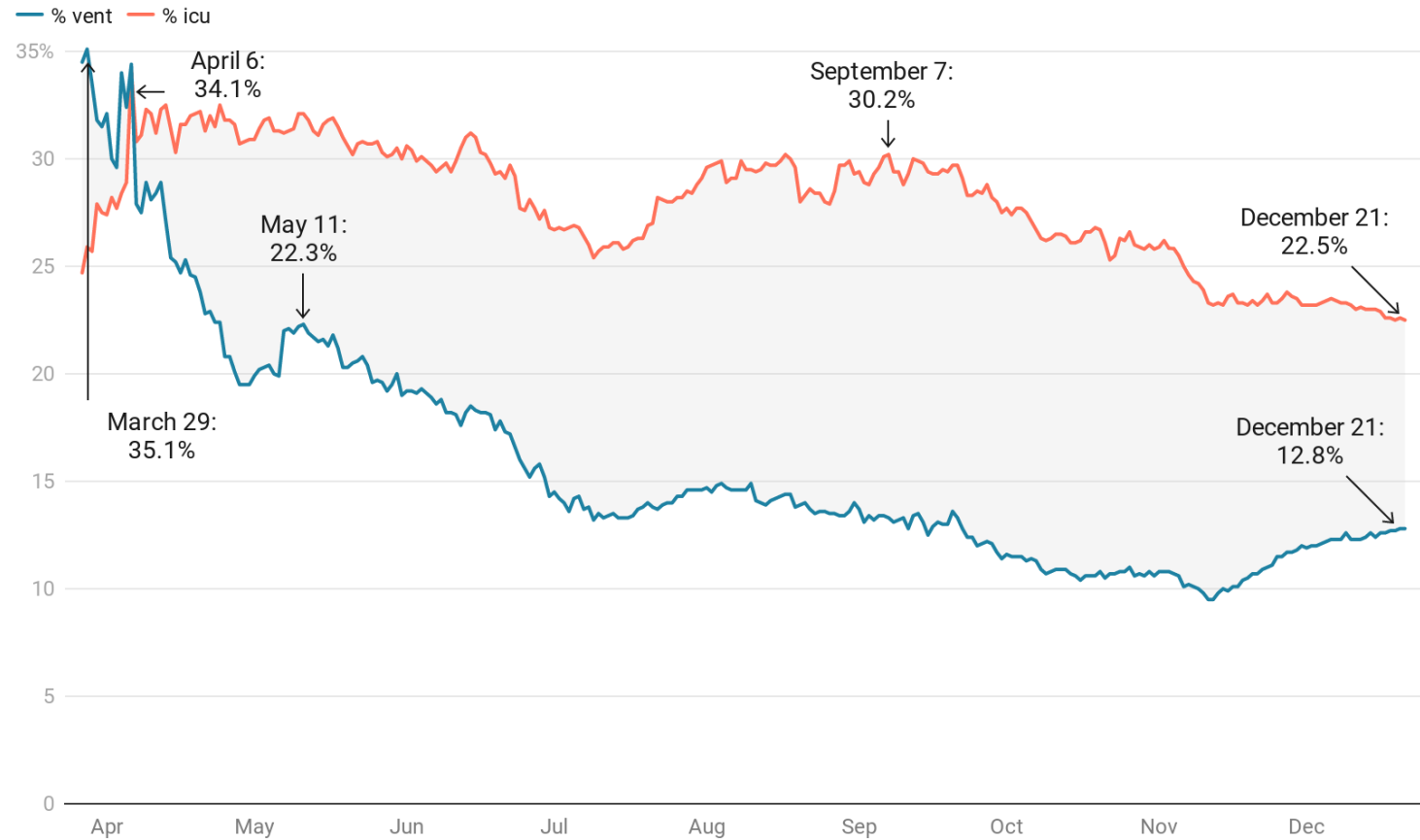
Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking project & worldometers.info • Created with Datawrapper

Over the past 4-6 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

Severity of Hospitalized Patients

% of patients on ventilators and in the ICU, As of December 21



Health Industry Advisor LLC analysis

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

The 7-day average deaths have been increasing since Thanksgiving . . . And are higher than at any point during the pandemic

The current 7-day rate is 2,669 deaths per day in the U.S.

Deaths Reported With Coronavirus in the U.S.

Trailing 7-Day Moving Average, As of December 21



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>