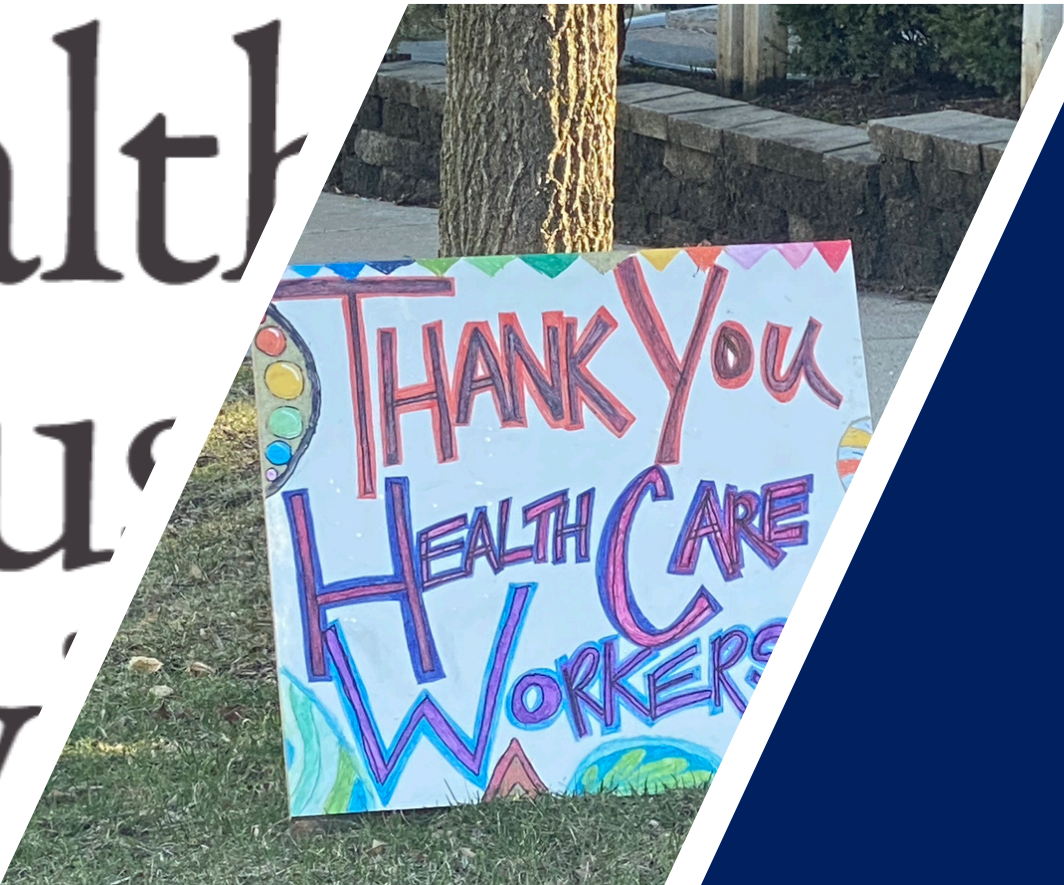




Health
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Issue # 244
Wednesday, December 23, 2020

COVID-19 Report

Highlights

- Case, Hospitalization & Death Projections
 - Each Tuesday, the [Covid19 Forecast Hub](#) produces an ensemble, 4-week forecast from more than 50 research and academic organizations
 - **The ensemble forecast suggests a modest increase in detected cases next week, before these level off through mid-January**
 - **Deaths with the coronavirus are projected to increase, albeit slightly, this week and each of the next three weeks of the projection**
 - By the middle of January, the ensemble forecast projects just fewer than 400,000 total deaths with the coronavirus in the U.S
 - The Institute for Health Metrics and Evaluation (IHME) routinely produces its own forecasts; two advantages of the IHME model - first, it extends to April 1 and, it includes scenarios for rapid vaccine rollout, mask mandates and easing of restrictions
 - **IHME's model suggests that true infections (as opposed to detected cases) may have peaked on December 19**
 - **Under most of its scenarios, IHME projects that infections will decline significantly each month, from January through the beginning of April** (the eased restrictions model suggests increasing infections until January 23)
 - **Average daily deaths with the coronavirus are projected to continue to increase until about January 6, under the IHME's current projection** (even later under the eased restrictions scenario). Following that, IHME projects a slowing in deaths in January and then more significant slowing in February and March
 - **Tragically, IHME projects more than 500,000 cumulative deaths by March**
- **IHME's projection of Covid-19 hospital bed requirements suggests that the strain from Covid-19 patients will increase for another three weeks - peaking at 40% higher than current levels - before falling sharply from that point forward**
- Current case and infection rates
 - Consistent with both IHME's and Gu's models ([presented yesterday as linked here](#)), newly-detected cases have been relatively flat for the past ten days
 - **Countering expectations, the trend for 7-day new cases per capita is running lower than the pre-Thanksgiving trend and is now showing no increase in new cases per day**
 - **On a state-level, newly-detected cases per capita declined week-over-week in thirty-four states, including thirteen of the fifteen states that had the highest rates a week ago. The most significant exceptions to this are California and Tennessee, which now have the highest rates in the country**
- Hospital Use
 - There were 117,000 Covid-19 patients in the hospital yesterday, occupying 37.6% of all inpatient beds
 - Nevada, California and Arizona have the highest occupancy rates, with more than 2/3 of beds in use by Covid-19 patients; Hawaii, Vermont and North Dakota have the lowest rates, with fewer than 10% of beds in use by Covid-19 patients
 - **Twenty-four states experienced increasing Covid-19 inpatient census week-over-week; twenty-four states experienced declining census; two states held steady week-over-week**

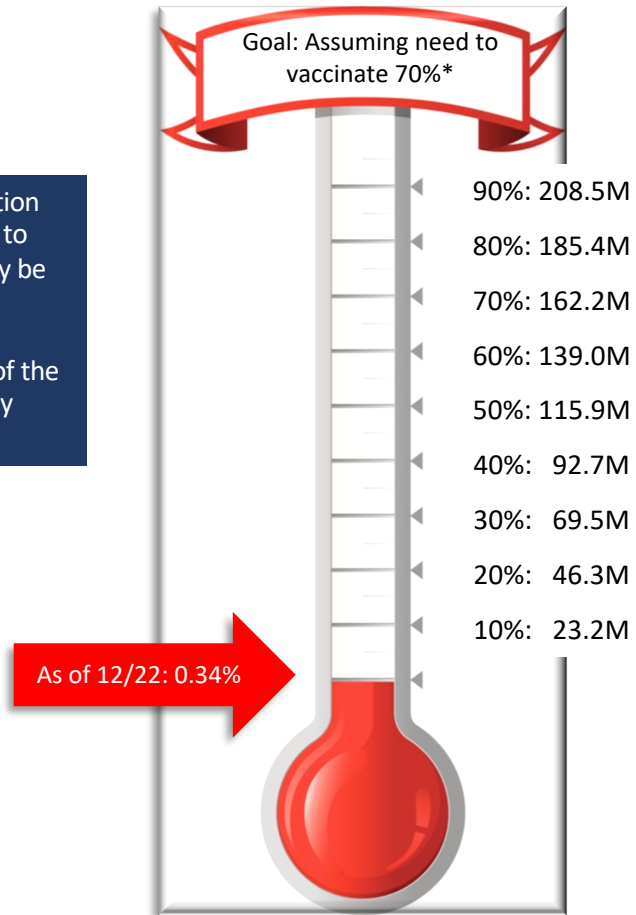
Vaccine Tracking – U.S.

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

More than 775k people have received the initial dose - a small fraction of how many will need to be vaccinated

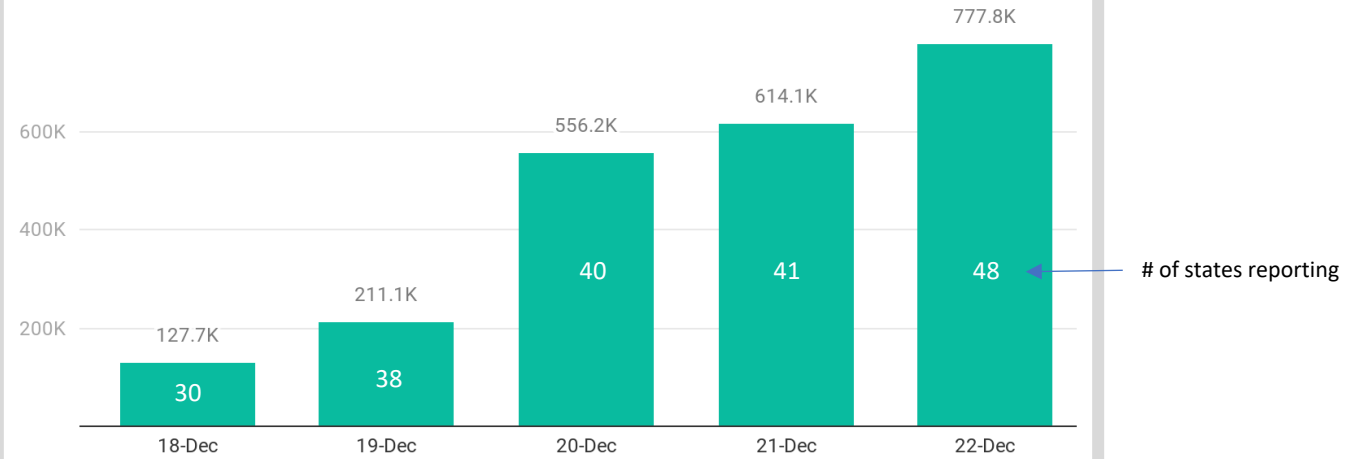
* 70% is used for illustration only. Actual rate needed to reach herd immunity may be higher or lower.

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 23



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

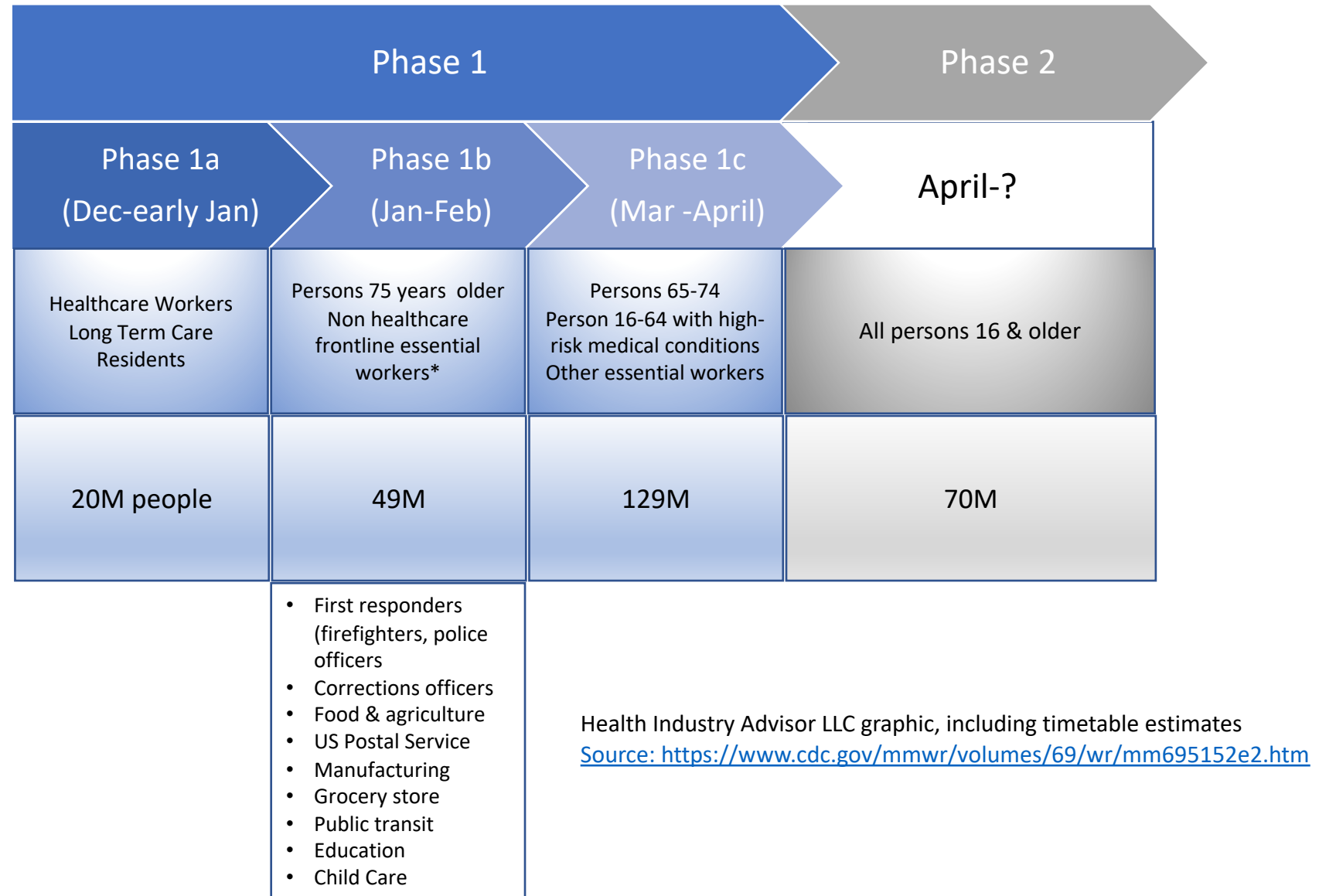
Chart: Health Industry Advisor LLC • Source: Bloomberg • Created with Datawrapper

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

Who has priority?

On December 1, the Advisory Committee on Immunization Practices updated its guidance for priority of receiving Covid-19 vaccines

These guidelines may be modified at the state-level

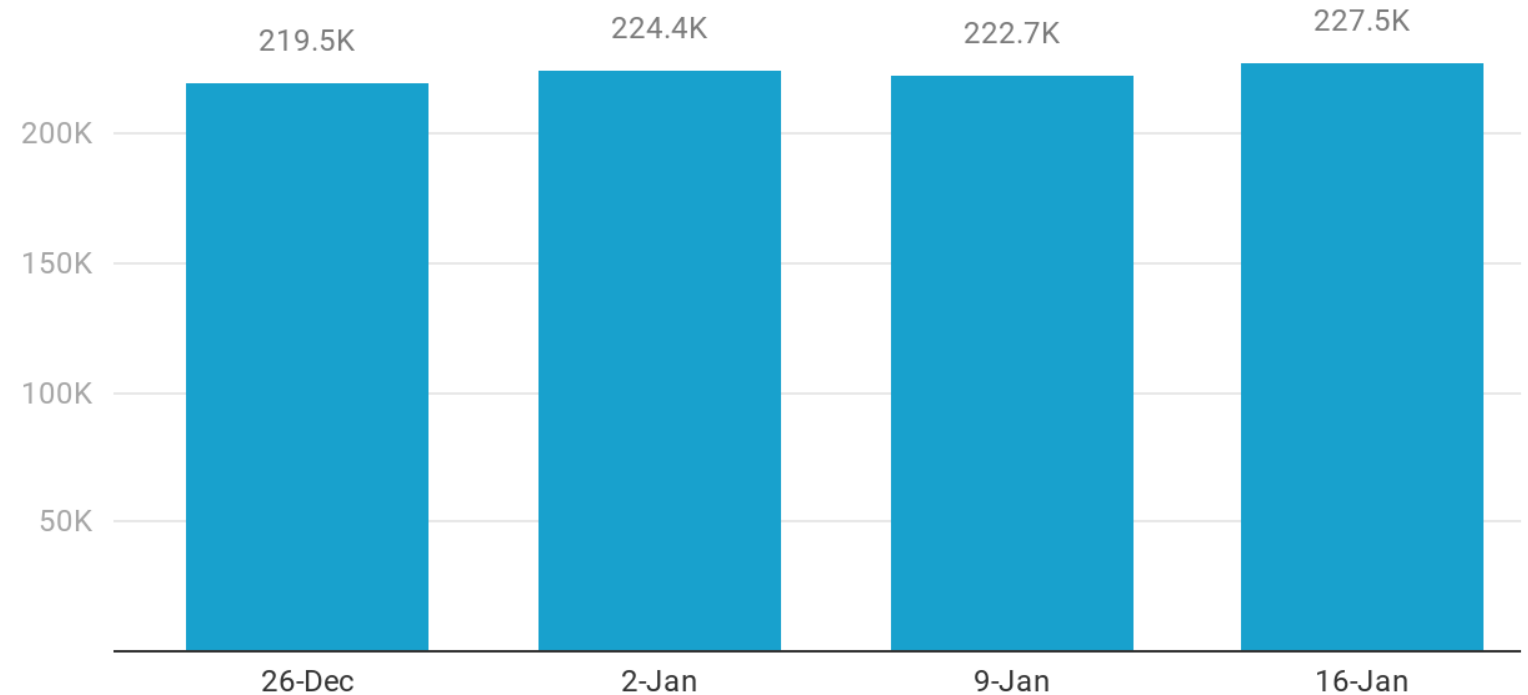


The COVID-19 Forecast Hub serves as a central repository of forecasts and predictions from more than 50 international research groups

The composite forecast suggests that newly-detected cases could level-off after New Year's Day

Newly-Detected Cases per Day

Covid-19 Forecast Hub, Composite Forecast As of December 22



For the week ending on the date shown

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

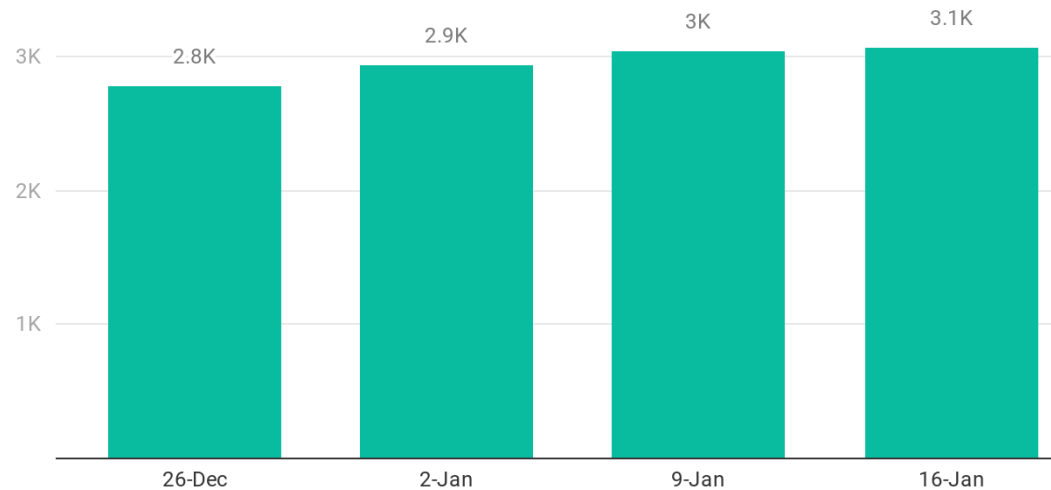
The composite forecast suggests that daily deaths will continue to rise each of the next four weeks and could average > 3,000 daily by the first full week of January

This composite forecast estimates that total deaths will near 400k by mid-January

Daily Deaths

Average Daily Deaths

Covid-19 Forecast Hub, Composite Forecast As of December 22



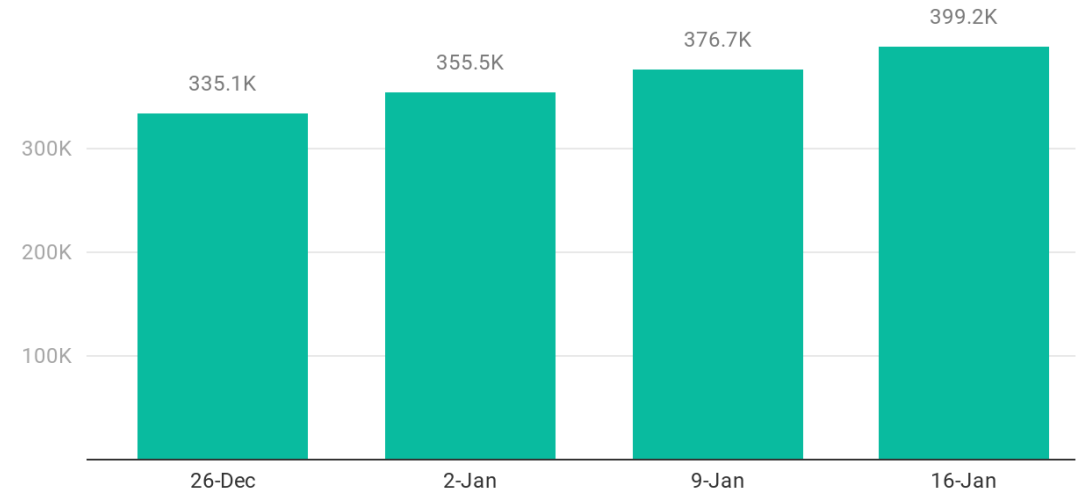
For the week ending on the date shown

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

Total Deaths

Total Deaths

Covid-19 Forecast Hub, Composite Forecast As of December 22



For the week ending on the date shown

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

The Institute for Health Metrics and Evaluation (IHME) updated its Covid-19 projections for the U.S. on December 17

IHME current projections suggests that new daily cases peaked on December 19

Rapid vaccination efforts are not expected to have a discernable impact on daily infection estimates until February

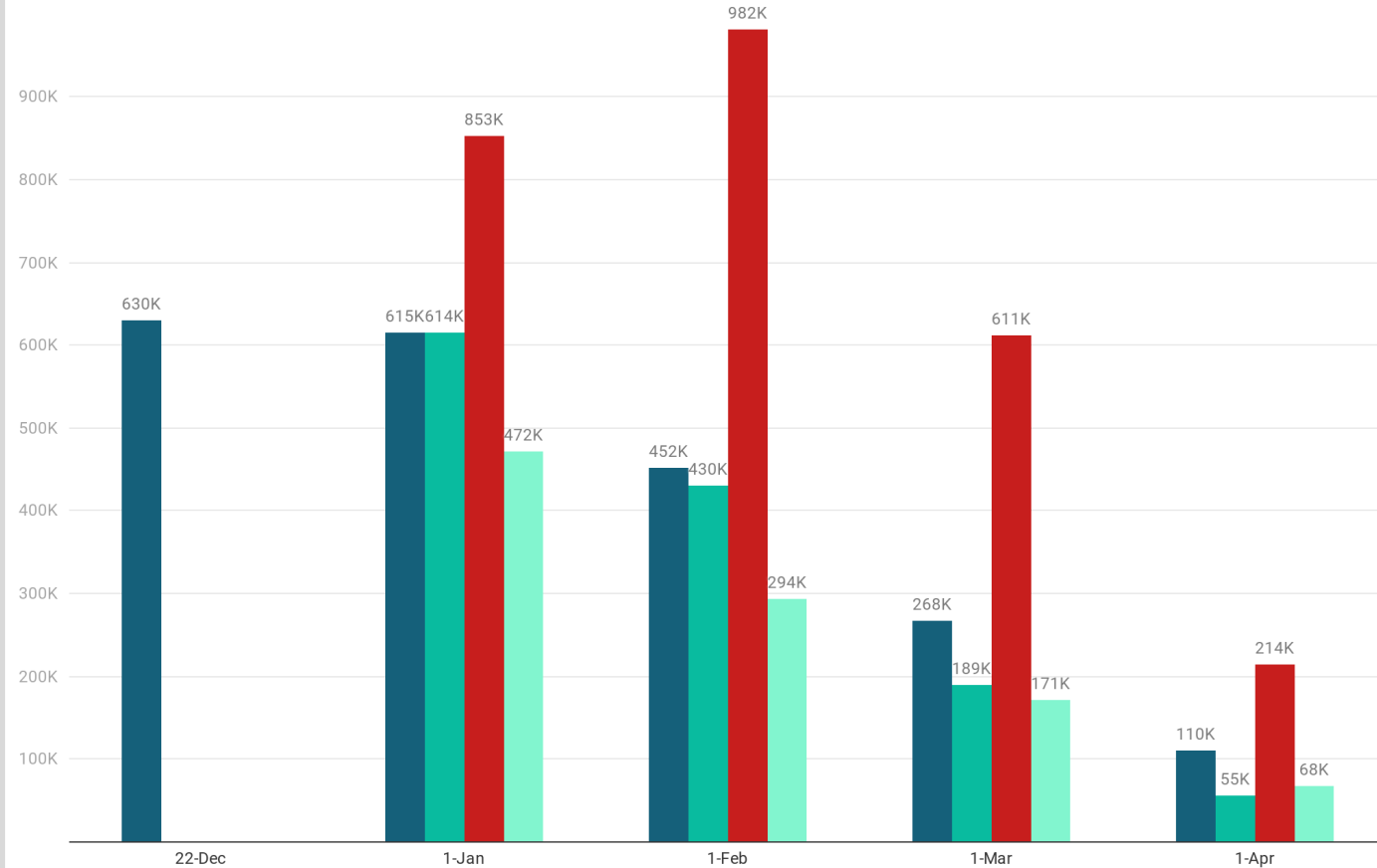
If restrictions are eased, IHME suggests that new infections could accelerate - not peaking until January 23

IHME is a strong advocate for heavy-restrictions, including mask mandates. This is reflected in the rapid decline in infections in this scenario

Estimated Daily Infections

Institute for Health Metrics and Evaluation (IHME) Projections

■ Current ■ Rapid Vaccination ■ Eased Restrictions ■ Universal Masks



As of December 10

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

The Institute for Health Metrics and Evaluation (IHME) updated its Covid-19 projections for the U.S. on December 17

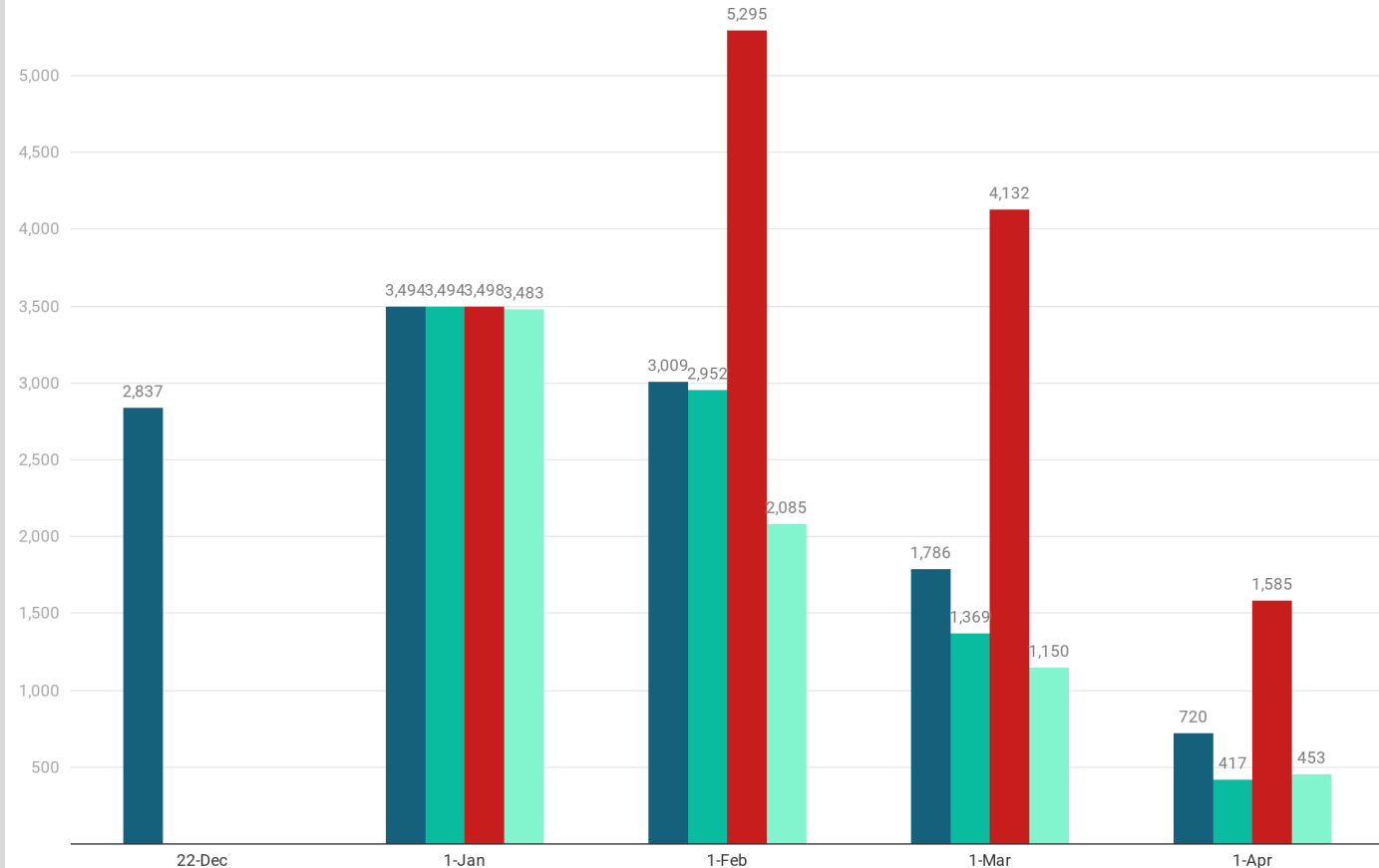
IHME's current projections suggests that new daily deaths will continue to increase until peaking on January 6

From January 6th forward, IHME projects daily deaths to fall under each scenario, except for "eased restrictions"

Estimated Daily Deaths

Institute for Health Metrics and Evaluation (IHME) Projections

Current Rapid Vaccination Eased Restrictions Universal Masks



As of December 10

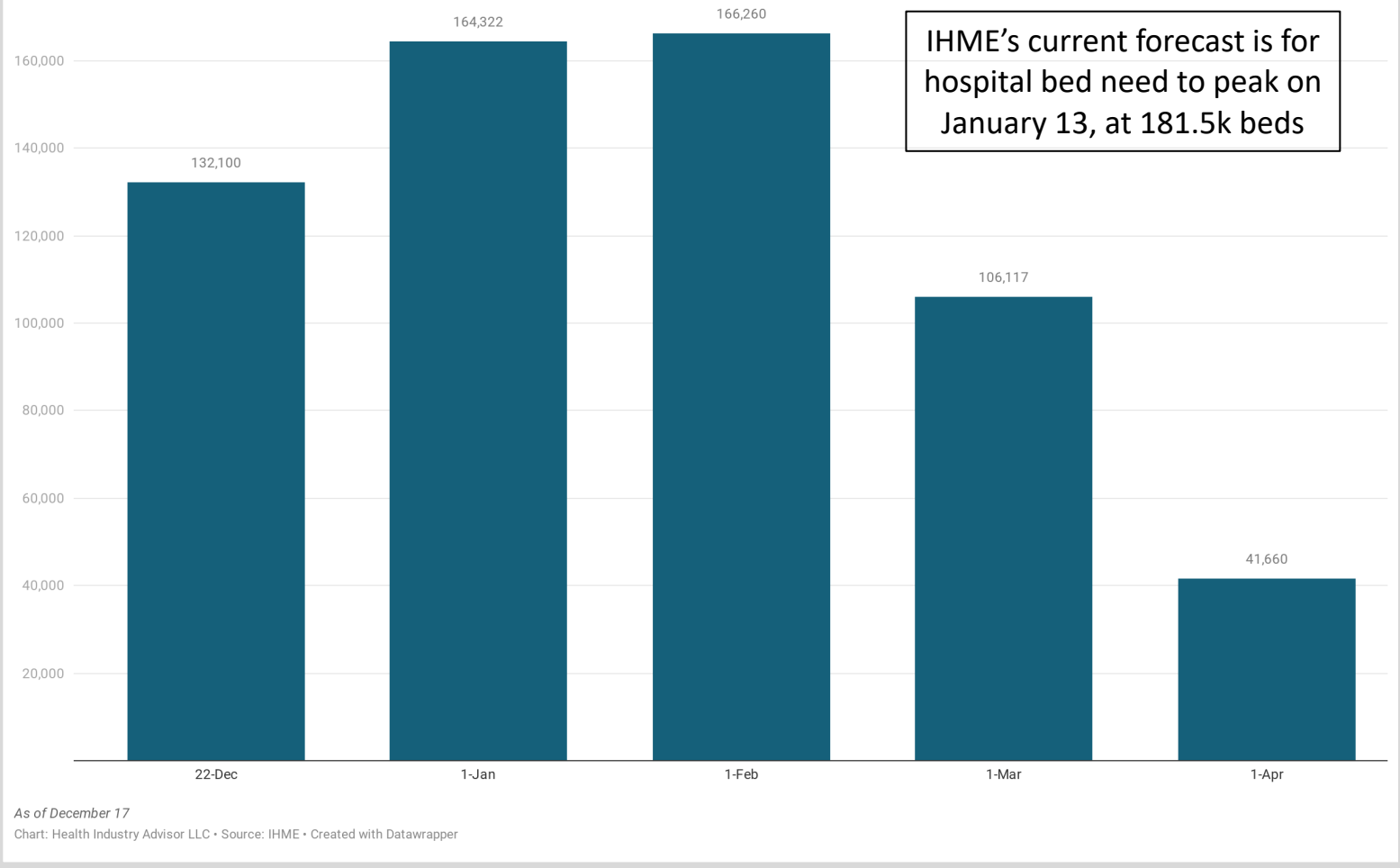
Chart: Health Industry Advisor LLC • Source: IHME • Created with Datawrapper

IHME projects the strain on hospital beds will intensify for the next six weeks, before peaking on January 13

This peak is projected to be 40% higher than the current level

Projected Hospital Beds Occupied By Covid-19 Patients

Institute for Health Metrics and Evaluation (IHME) Projections



We are averaging ~651k new cases worldwide each day, as of Tuesday

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

* - 7-day moving average basis

Newly Detected Daily Cases - U.S. & Worldwide

7-Day Moving Average, As of December 22

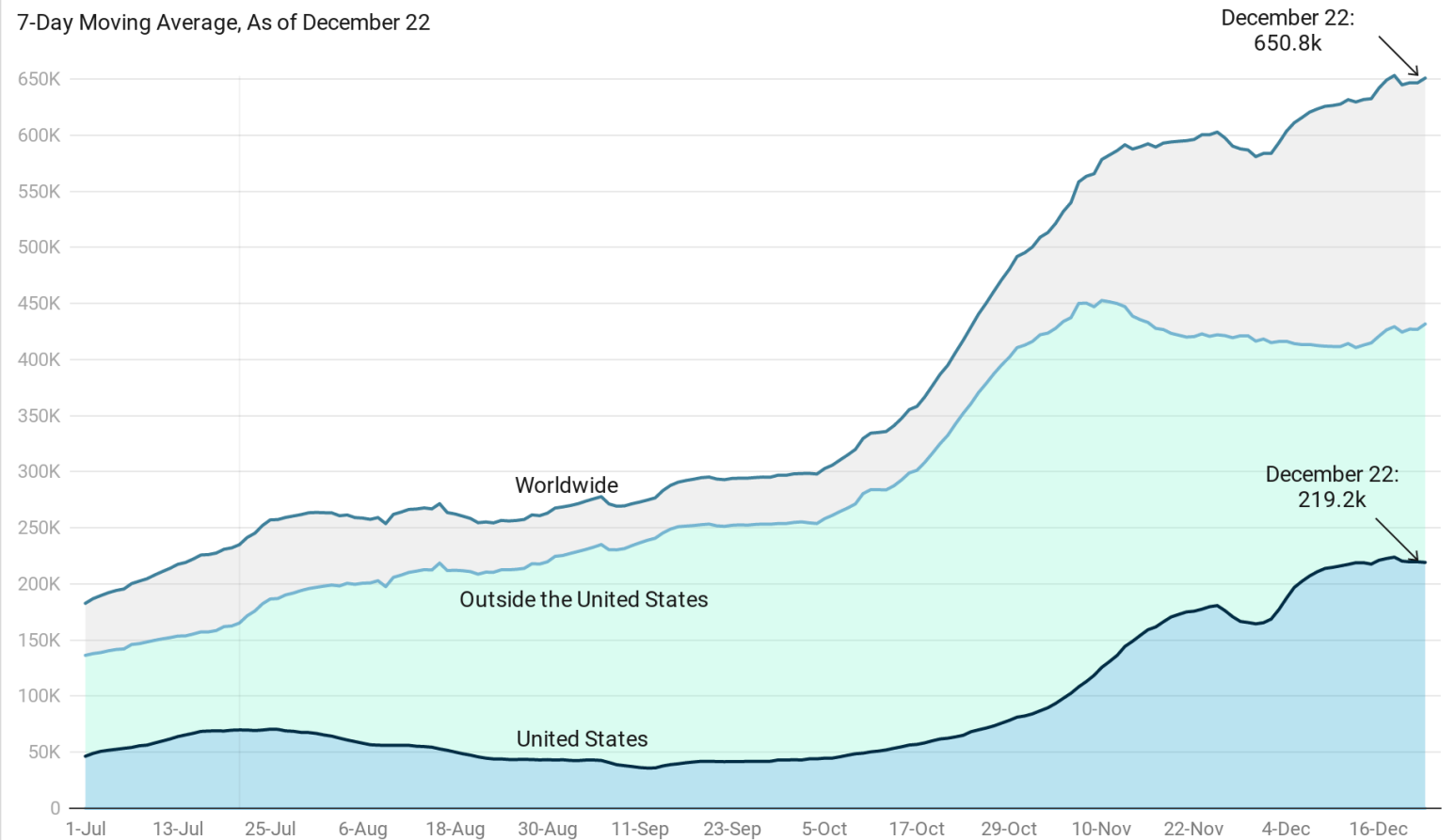


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

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 22

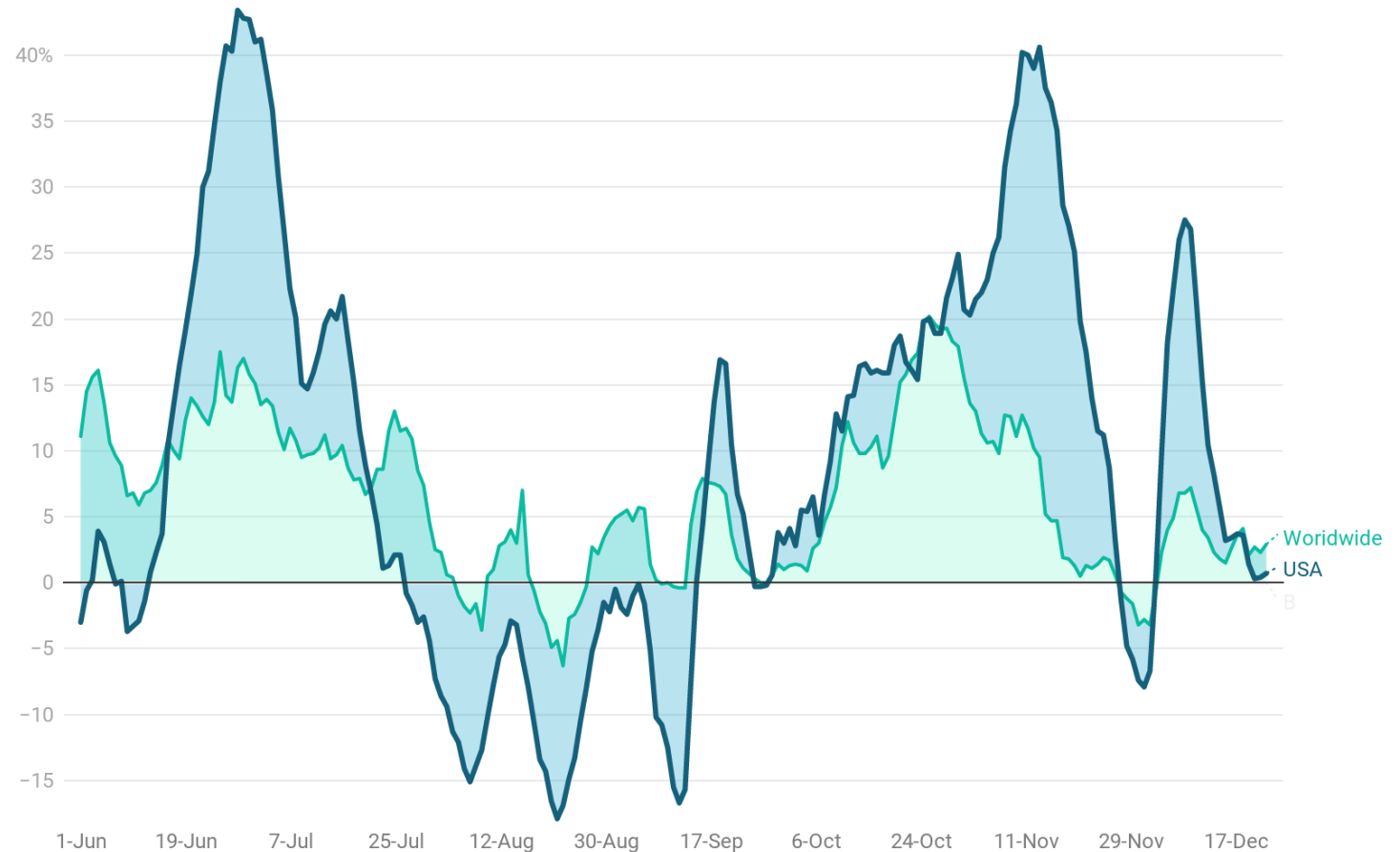


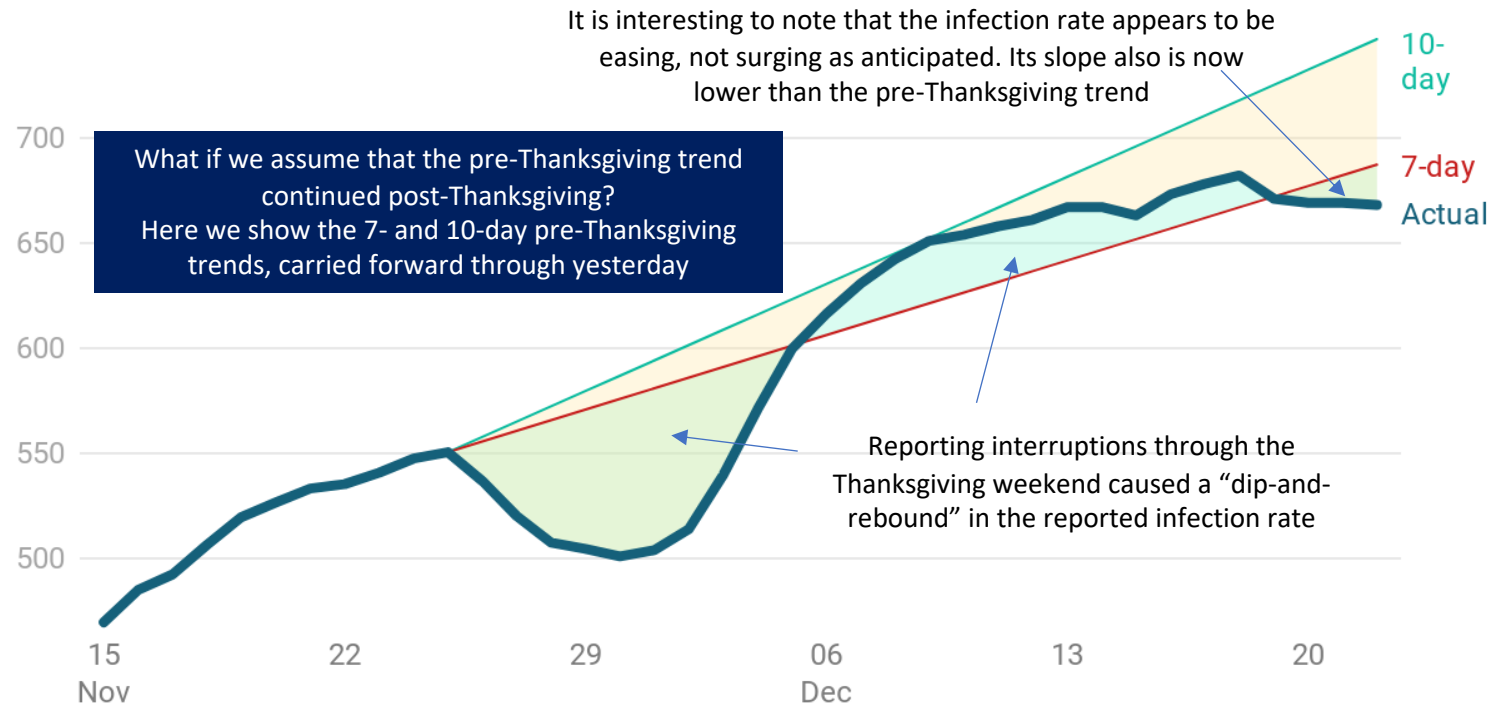
Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

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

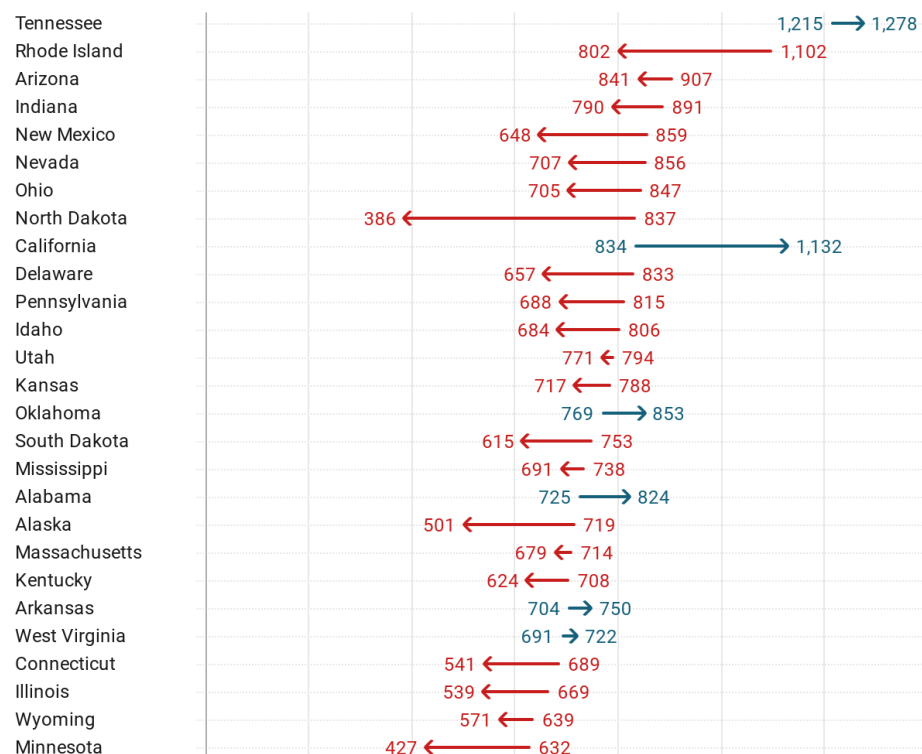
Chart: Health Industry Advisor LLC • Created with Datawrapper

Newly-detected case per million rates declined in thirty-four states over the past week

These increased sharply, however, in California and increased in Tennessee; these two states now have the highest rates in the country. Thirteen of the fifteen states with the highest rates last week experienced declines this week

New Daily Cases / Million

7-Day Moving Average, As of December 15 & December 22



New Daily Cases / Million

7-Day Moving Average, As of December 15 & December 22

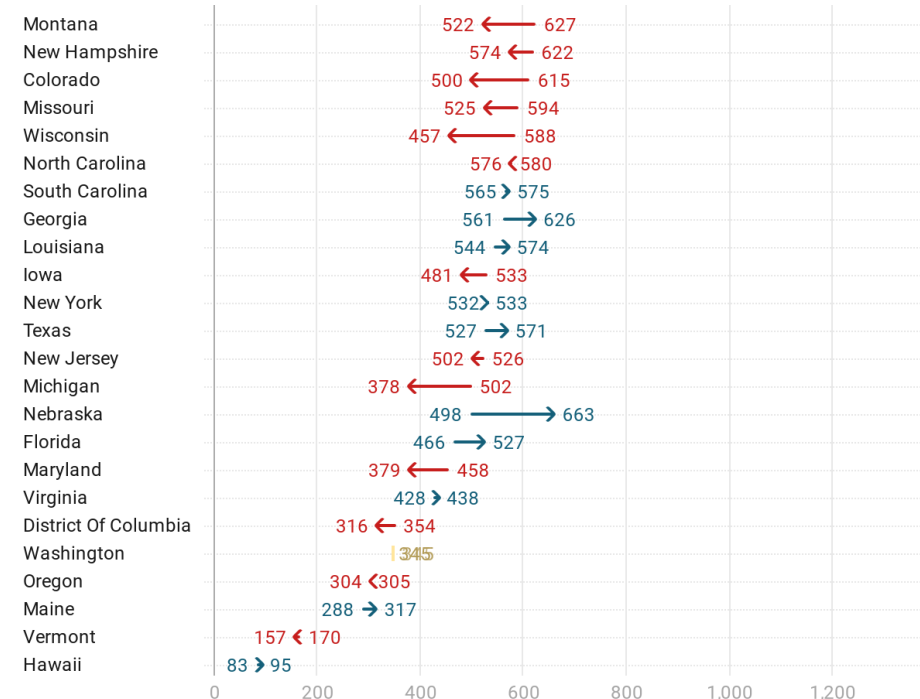


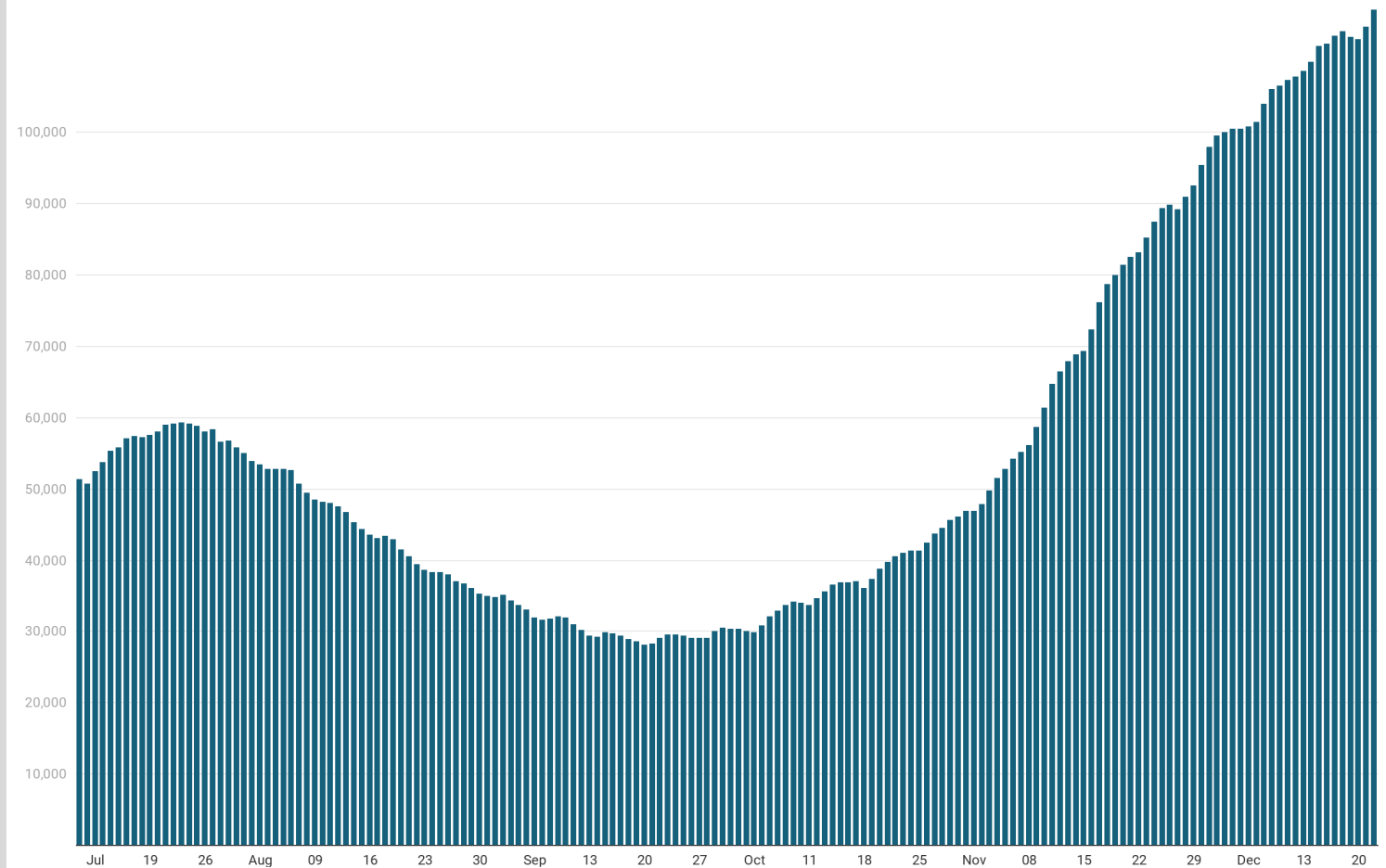
Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

The number of Covid-19 patients in the hospital increased again yesterday

There are now more than 117,000 Covid-19 patients in the hospital

Hospital Census: COVID-19 Patients

As of December 22



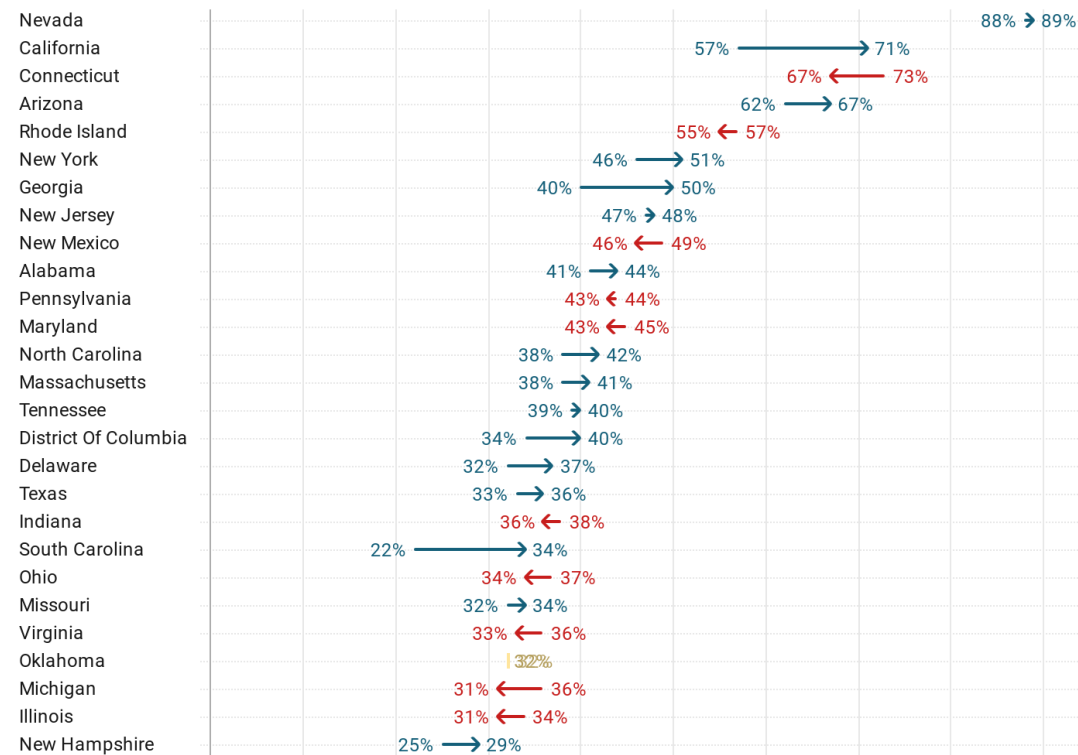
Florida data first available on July 10

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

Overall, Covid-19 patients occupied 37.6% of inpatient beds yesterday, up from 36% a week ago
 Nevada, California and Arizona have the highest rates, each with more than 2/3 of beds in use for Covid-19 patients; Hawaii, Vermont and North Dakota are each using less than 10% of beds for these patients
 Covid-19 occupancy increased in twenty-four states during the past week

Covid-19 Patients / Total Inpatient Beds

7-Day Moving Average, As of December 15 & 22



Covid-19 Patients / Total Inpatient Beds

7-Day Moving Average, As of December 15 & 22

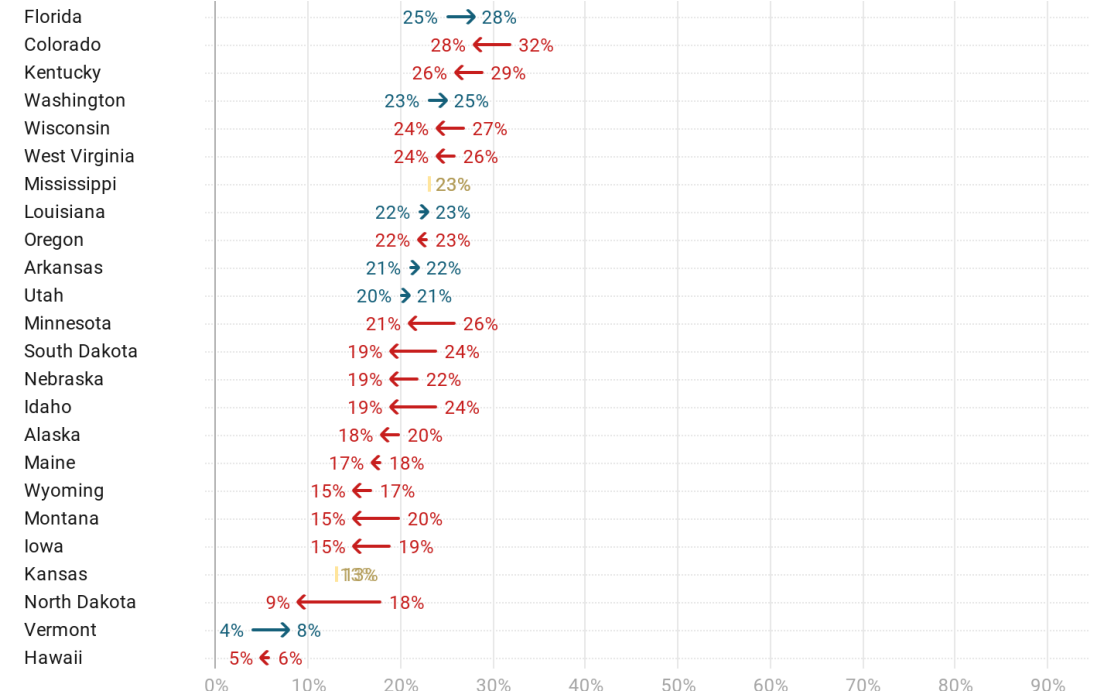


Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking project & worldometers.info • Created with Datawrapper

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 22

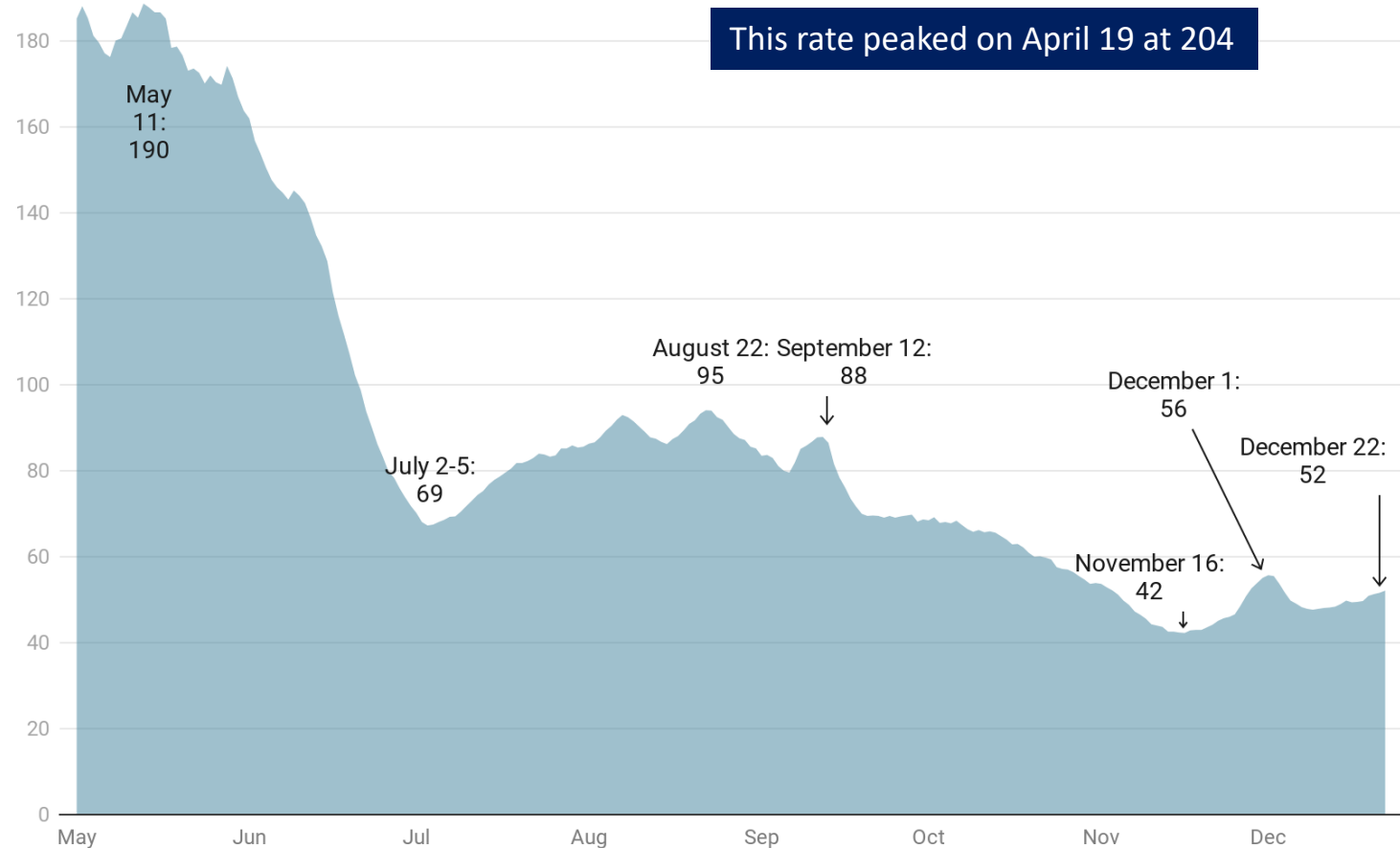


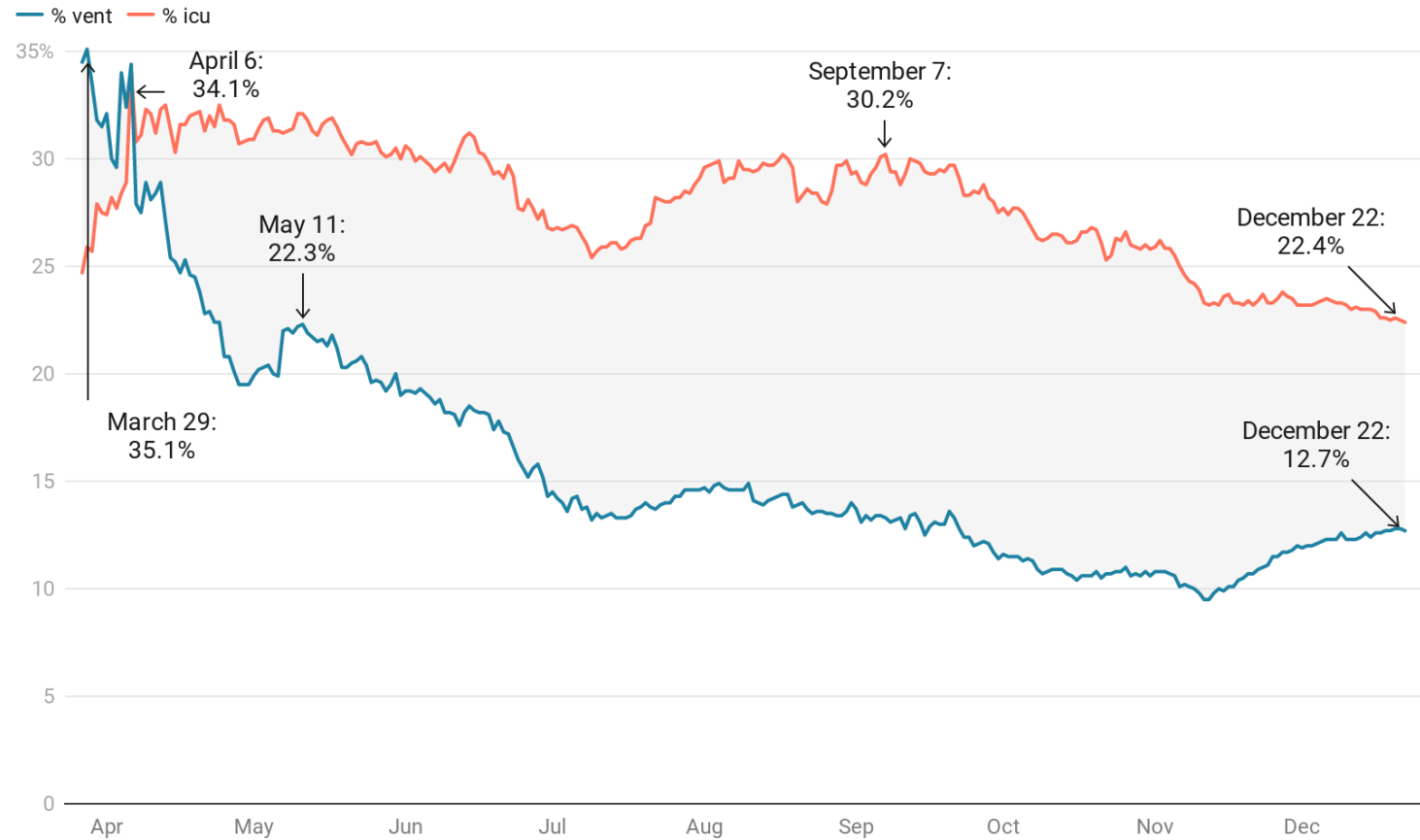
Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking project & worldometers.info • Created with Datawrapper

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 22



Health Industry Advisor LLC analysis

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

Tragically, there were 3,376 deaths with coronavirus reported yesterday

The current 7-day rate is 2,781 deaths per day in the U.S.

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

Deaths Reported With Coronavirus in the U.S.

Trailing 7-Day Moving Average, As of December 22



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>