



Health
Industry
Adv



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COVID-19 Report

Highlights

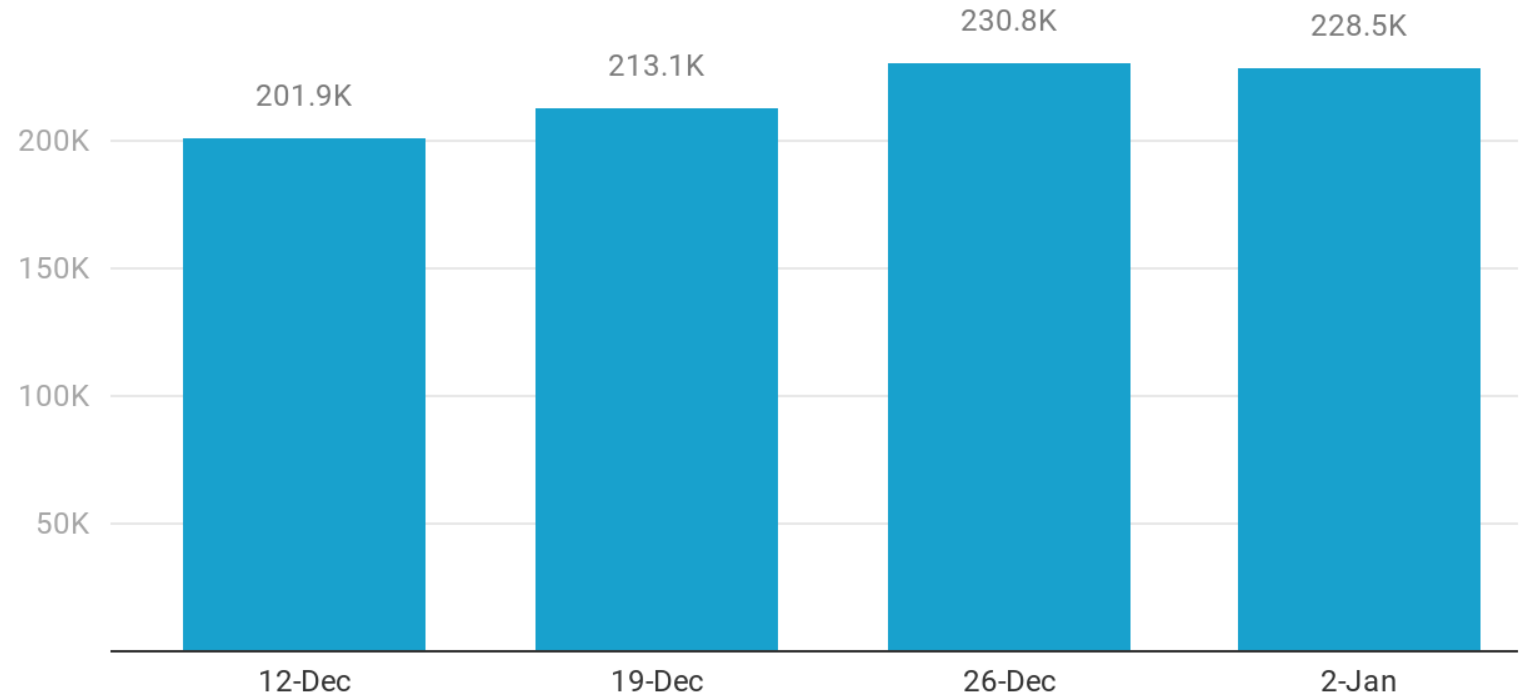
- The **Covid-19 Research Hub forecasts** covid-19 deaths, cases, and hospitalizations in the U.S. over the next four weeks
 - **Ensemble forecasts tend to be more accurate than individual models**
 - **Cases are projected to peak at an average of 230.8k per day during Christmas week**
 - **Expectations for hospitalizations over the next four weeks are mixed:**
 - An ensemble forecast was not produced from the nine available individual forecasts
 - Four of these models projected increased hospitalizations in the upcoming four weeks; one projected a likely decline; and four projected stable or uncertain change
 - Deaths are projected to increase each week, to an average of 2.6k during New Year's week (from ~2.3k at this point)
 - **Total deaths are projected to exceed 300k before December 19 and reach 346.4k by January 2**
- The **Institute for Health Metrics and Evaluation (IHME)** produces one of the oft-cited individual projection models
 - **As an individual model, it may not be as accurate as the ensemble model**
 - However, IHME's model now forecasts to April 1, while the ensemble model only goes out four weeks at a time
 - IHME considers estimated infections, rather than detected cases
 - Also, IHME makes several distinct forecasts, to show the potential impact of key variables:
 - Current projection
 - Assuming rapid vaccination
 - Relaxed restrictions
- Like the ensemble forecast, **IHME's current projection model estimates the new infections will peak on Christmas Day**
 - If restrictions are relaxed, IHME's model delays this peak until January 19 - with nearly 2x as many infections per day
- **Covid-19 hospitalizations are projected to increase another 50%, not peaking until January 19**
- **The current projection has daily deaths peaking on January 13, at just less than 3,000**
 - If restrictions are eased, IHME projects this peak will not occur until February 6, at 5,900 per day
- **IHME currently projects 500k deaths by March 1 and 540k by April 1**
 - If restrictions are eased, these increase to 666k by March 1 and 770k by April 1
- **Hospitalizations with Covid-19 in the U.S. continue to rise, with the largest day-over-day increase in a week**
 - **Now, one-third of all inpatient beds in the U.S are occupied by Covid-19 patients**
 - **This Covid-19 hospital occupancy has more than doubled since November 1, when the run-up in census began**
 - Partially mitigating the severity of this issue, the rate of hospitalizations-to-new cases declined for the seventh consecutive day; it is modestly above its historically low rate
 - **Now nine weeks into the 2020-21 flu season, flu visits remain consistently lower than the comparable periods for each of the previous five seasons; these are significantly lower than rates for each of the past three (relatively severe) seasons**

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 will peak in the U.S. during Christmas week

Average Daily Detected Cases

Covid-19 Forecast Hub, Composite Forecast As of December 8



For the week ending on the date shown

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

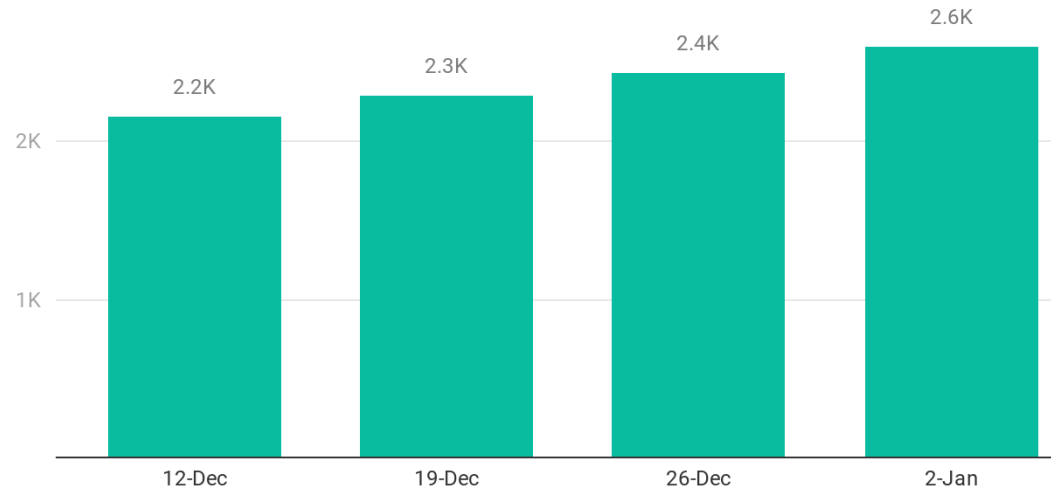
The composite forecast suggests that daily deaths will continue to rise each of the next four weeks

This composite forecast estimates total deaths will exceed 300k during the week of December 13-19 and near 350k in early January

Daily Deaths

Average Daily Deaths

Covid-19 Forecast Hub, Composite Forecast As of December 8



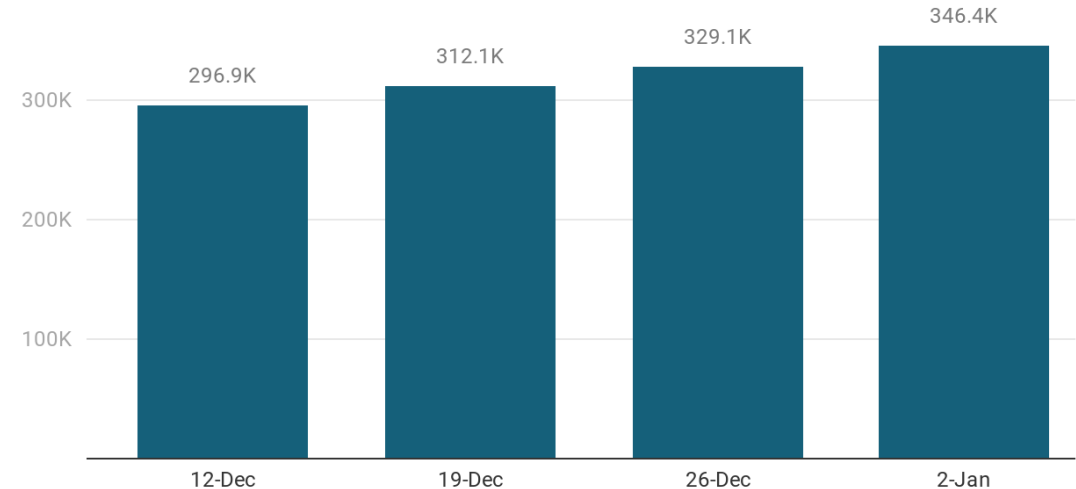
For the week ending on the date shown

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

Total Deaths

Estimated Total Deaths

Covid-19 Forecast Hub, Composite Forecast As of December 8



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 3

IHME current projections suggest that new daily cases could peak on Christmas Day

Rapid vaccination efforts are not expected to impact daily infection estimates until the 2nd week of February

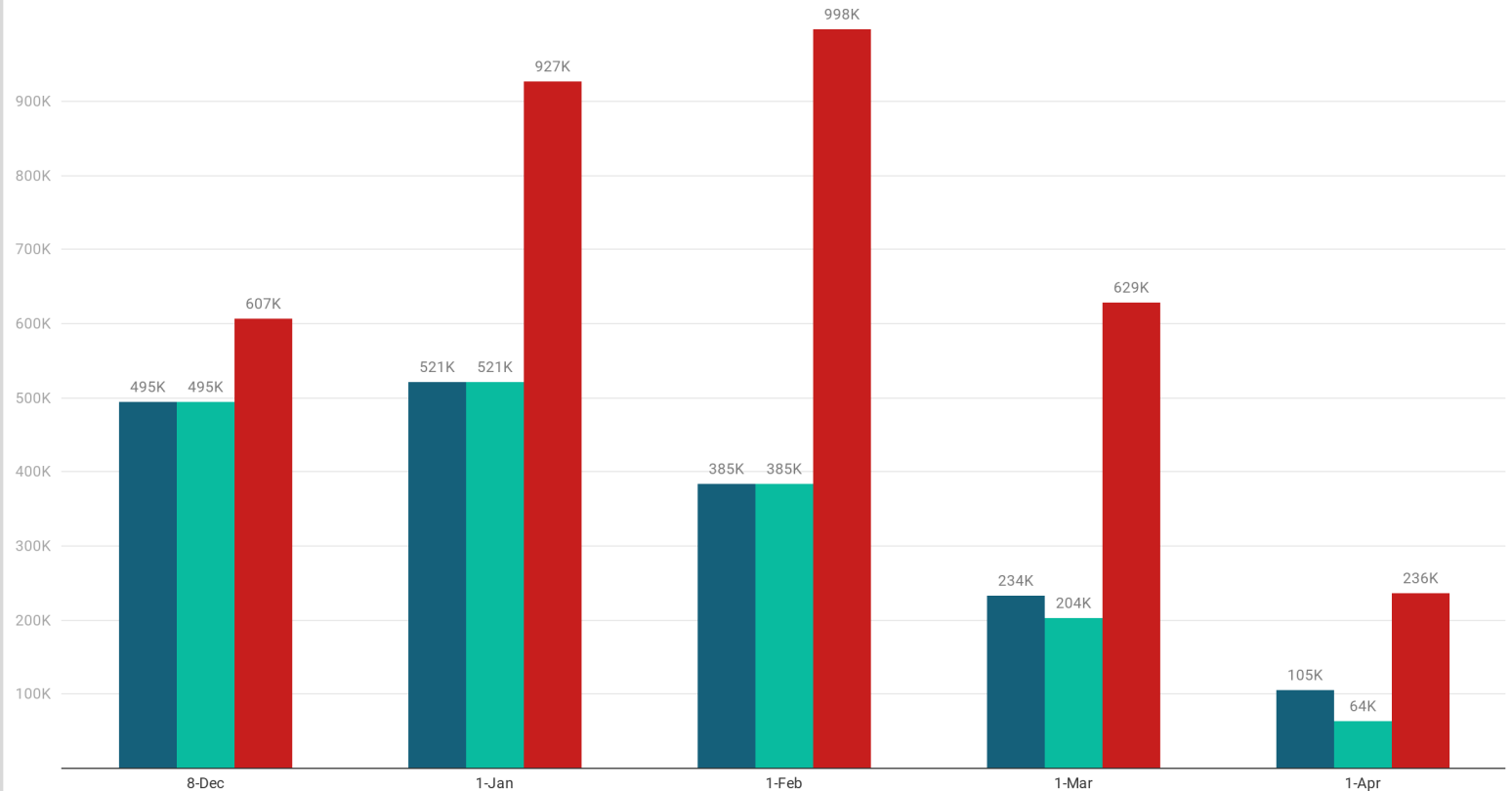
If restrictions are eased, IHME suggests that new infections could accelerate - not peaking until January 19

Estimated Daily Infections

Institute for Health Metrics and Evaluation (IHME) Projections

Note: these represent estimated actual daily infections, not detected cases

Current Projection Rapid Vaccination Eased Restrictions



As of December 3

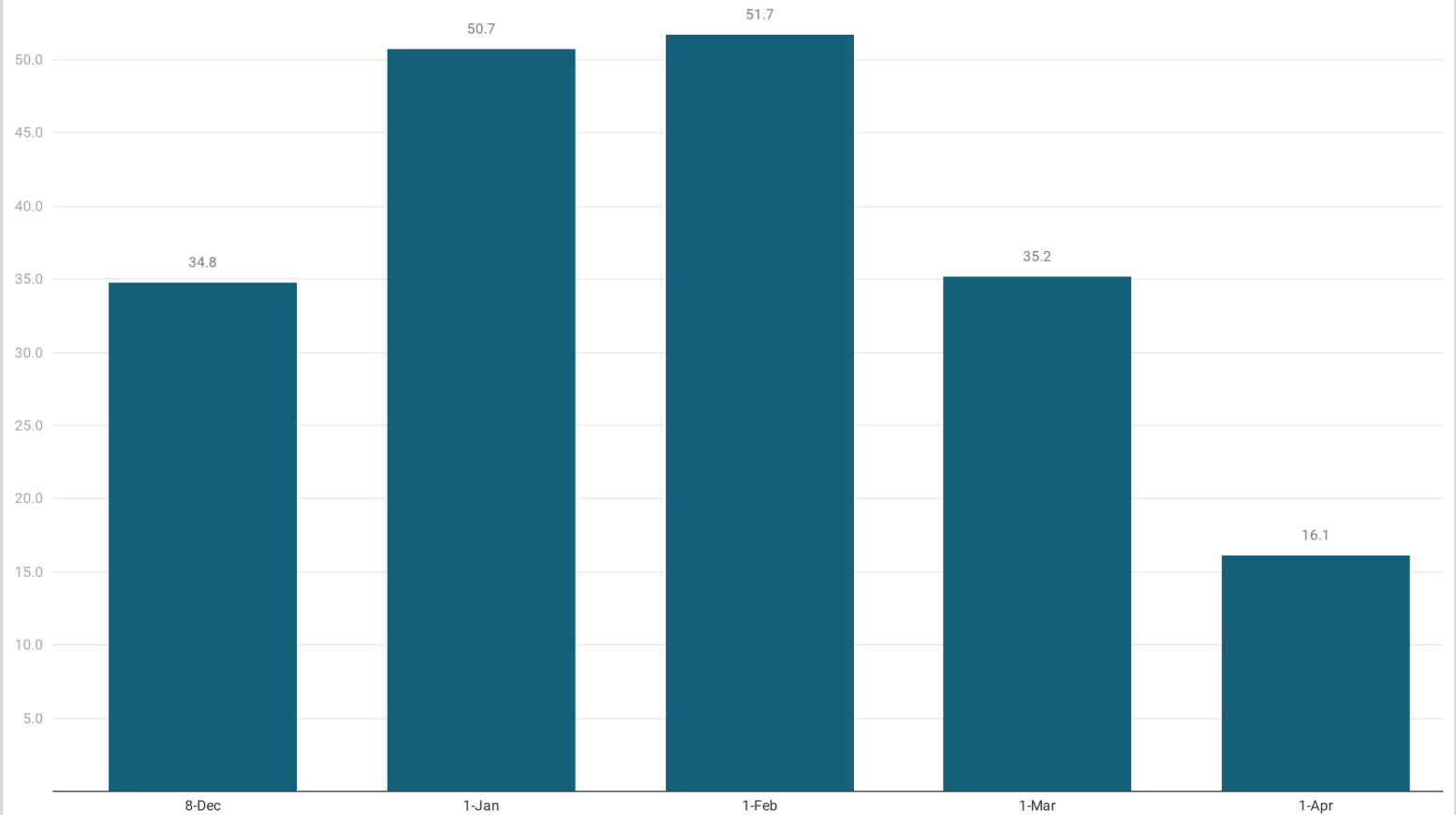
Chart: Health Industry Advisor LLC • Source: IHME • Created with Datawrapper

IHME projects the strain on hospital beds will intensify for the rest of the December, before peaking on January 17

This peak is projected to be nearly 60% higher than the current level

Projected Hospital Beds Occupied / 100,000 population

Institute for Health Metrics and Evaluation (IHME) Projections



As of December 3

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

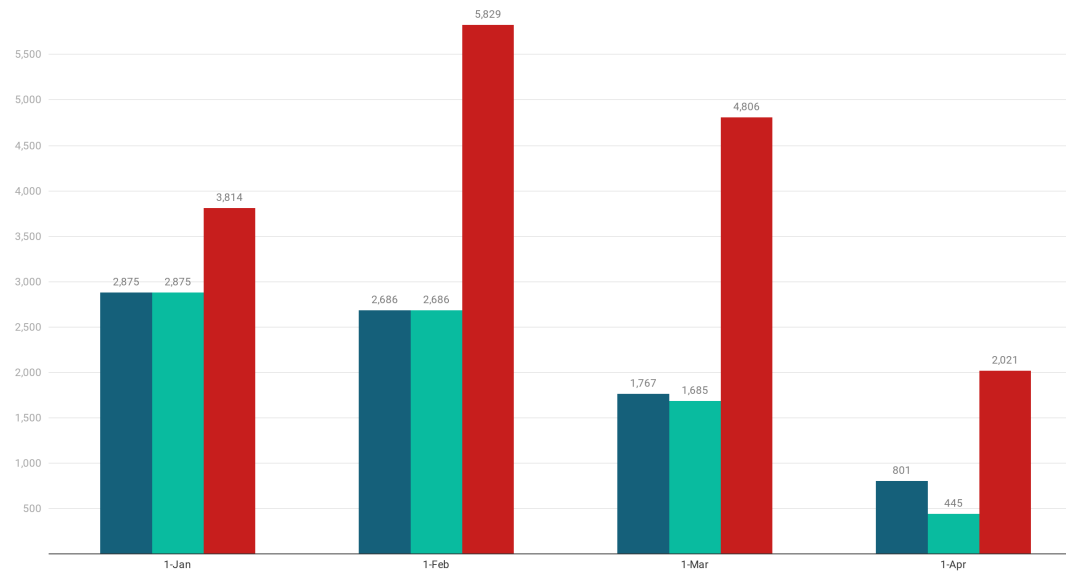
IHME currently projects that daily deaths will peak at just under 3,000 on January 13. According to IHME's projections, rapid vaccinations will not materially impact daily deaths until the 3rd week of February
 If restrictions are eased, IHME estimates that deaths will not peak until February 6 – at nearly 5,900 per day
 IHME currently projects 500k total deaths by March 1 (666k with eased restrictions) and ~540k by April 1 (770k with relaxed restrictions)

Daily Deaths

Estimated Daily Deaths

Institute for Health Metrics & Evaluation

■ Current Projection ■ Rapid Vaccination ■ Eased Restrictions



As of December 3

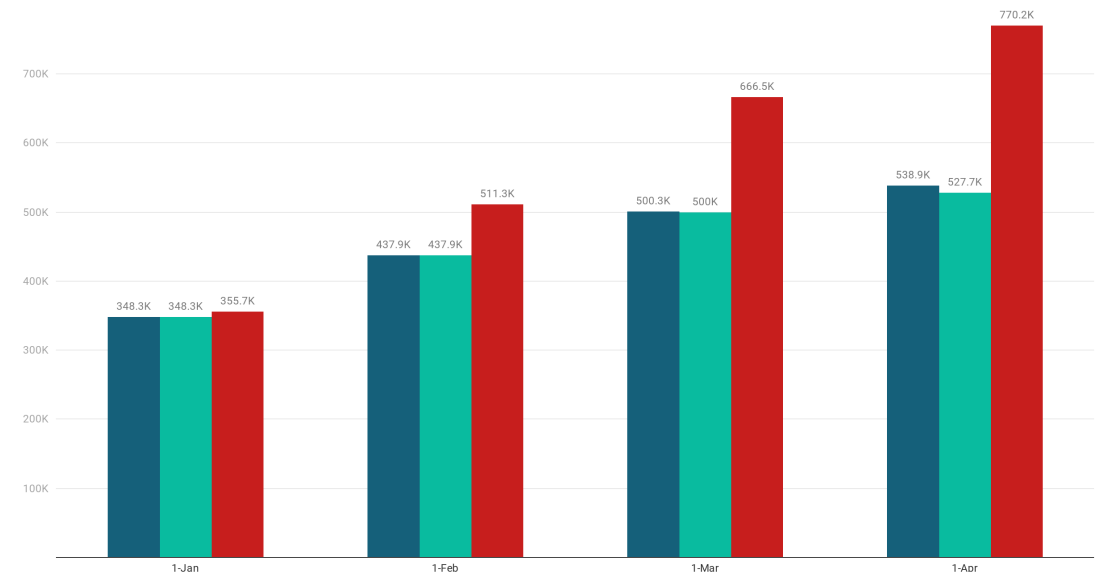
Chart: Health Industry Advisor LLC • Source: IHME • Created with Datawrapper

Total Deaths

Estimated Total Deaths

Institute for Health Metrics & Evaluation

■ Current Projection ■ Rapid Vaccination ■ Eased Restrictions



As of December 3

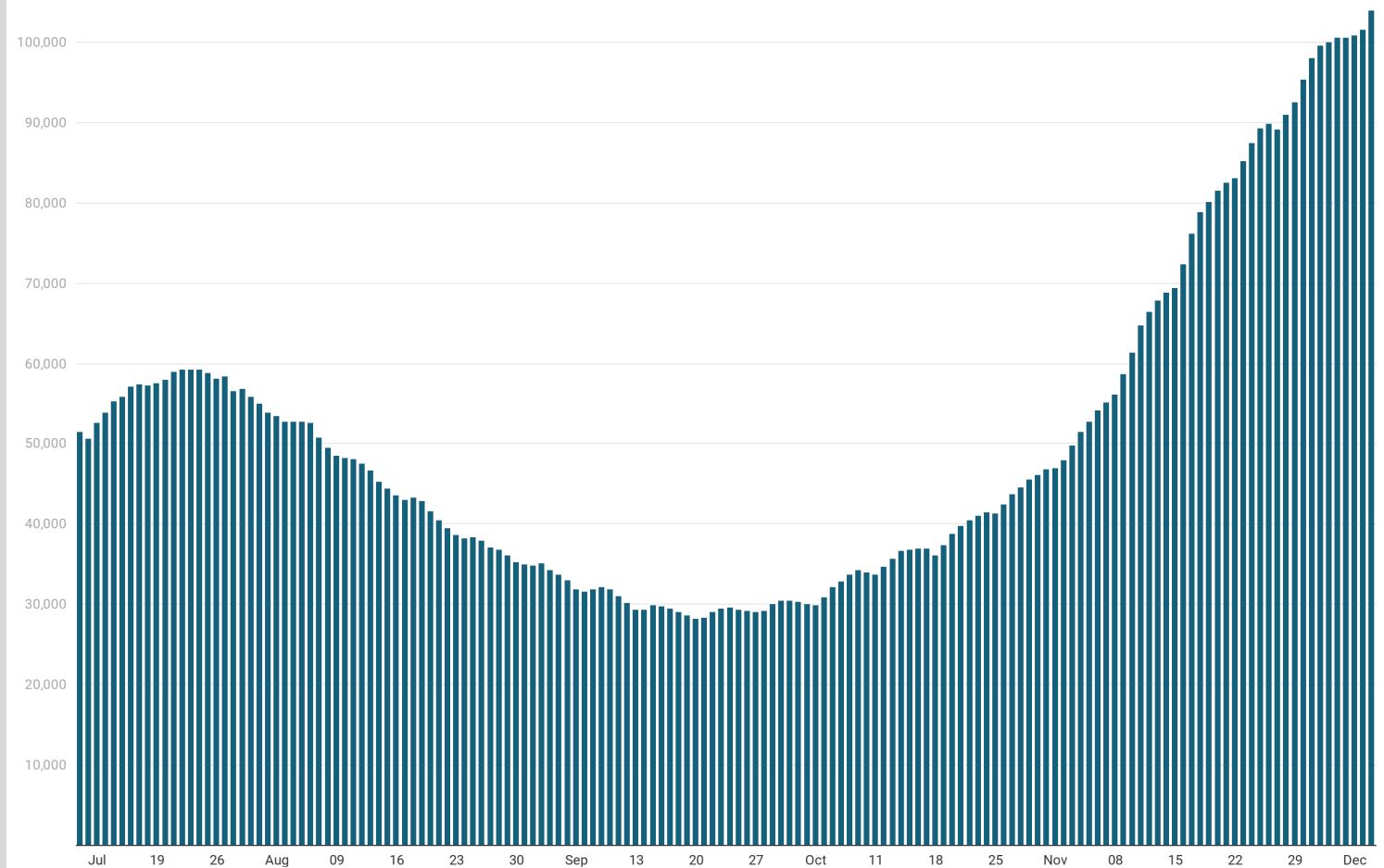
Chart: Health Industry Advisor LLC • Source: IHME • Created with Datawrapper

There were more than 100,000 Covid-19 patients in U.S. hospitals for the sixth consecutive day

Unlike the previous six days, there was a large increase in Covid-19 census yesterday

Hospital Census: COVID-19 Patients

As of December 7



Florida data first available on July 10

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

Covid-19 census increased slightly to 33.3% of all inpatient beds – more than doubling since November 1

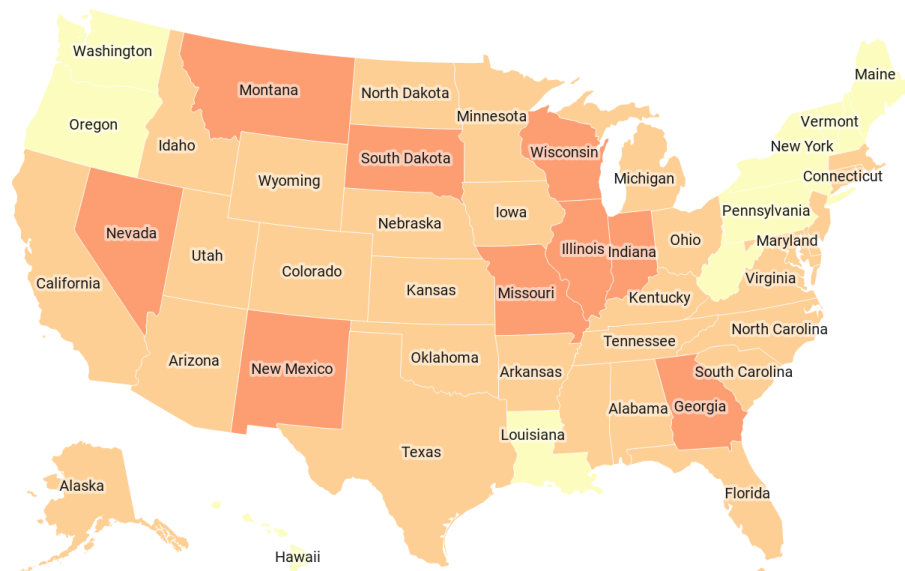
Arizona, Connecticut, Nevada and New Mexico each report Covid-19 census >60% of inpatient beds

As of November 1

Covid-19 Patients As % of All Inpatient Beds

As of November 1

< 10% 10%–20% 20%–30% 30%–40% 40%–50% 50%–60% 60%–70% ≥ 70%



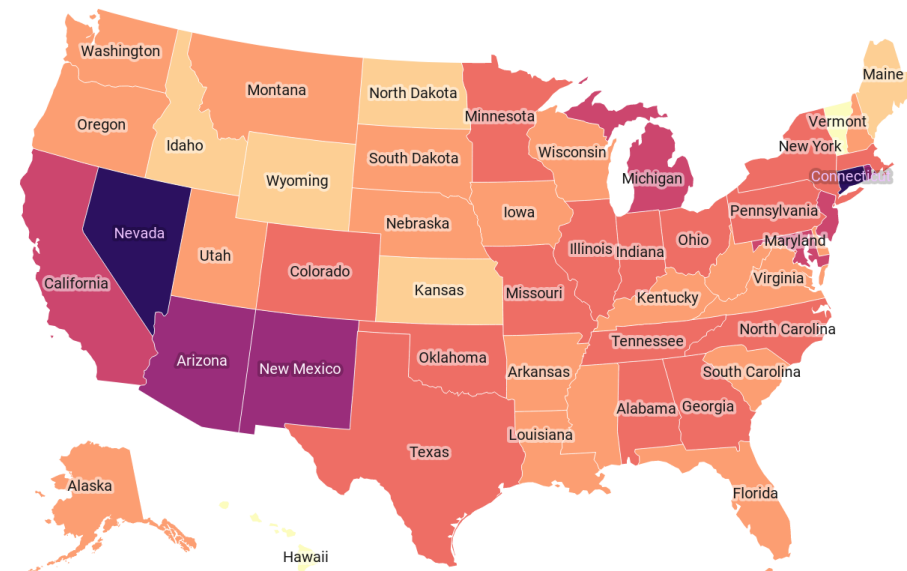
Map: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking Project • Created with Datawrapper

As of December 8

Covid-19 Patients As % of All Inpatient Beds

As of December 8

< 10% 10%–20% 20%–30% 30%–40% 40%–50% 50%–60% 60%–70% ≥ 70%



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

The average Covid-19 census per 100 new-cases declined for the seventh consecutive day

Covid-19 Hospital Census / 100 Daily New Detected Cases

7-Day Moving Average, As of December 8

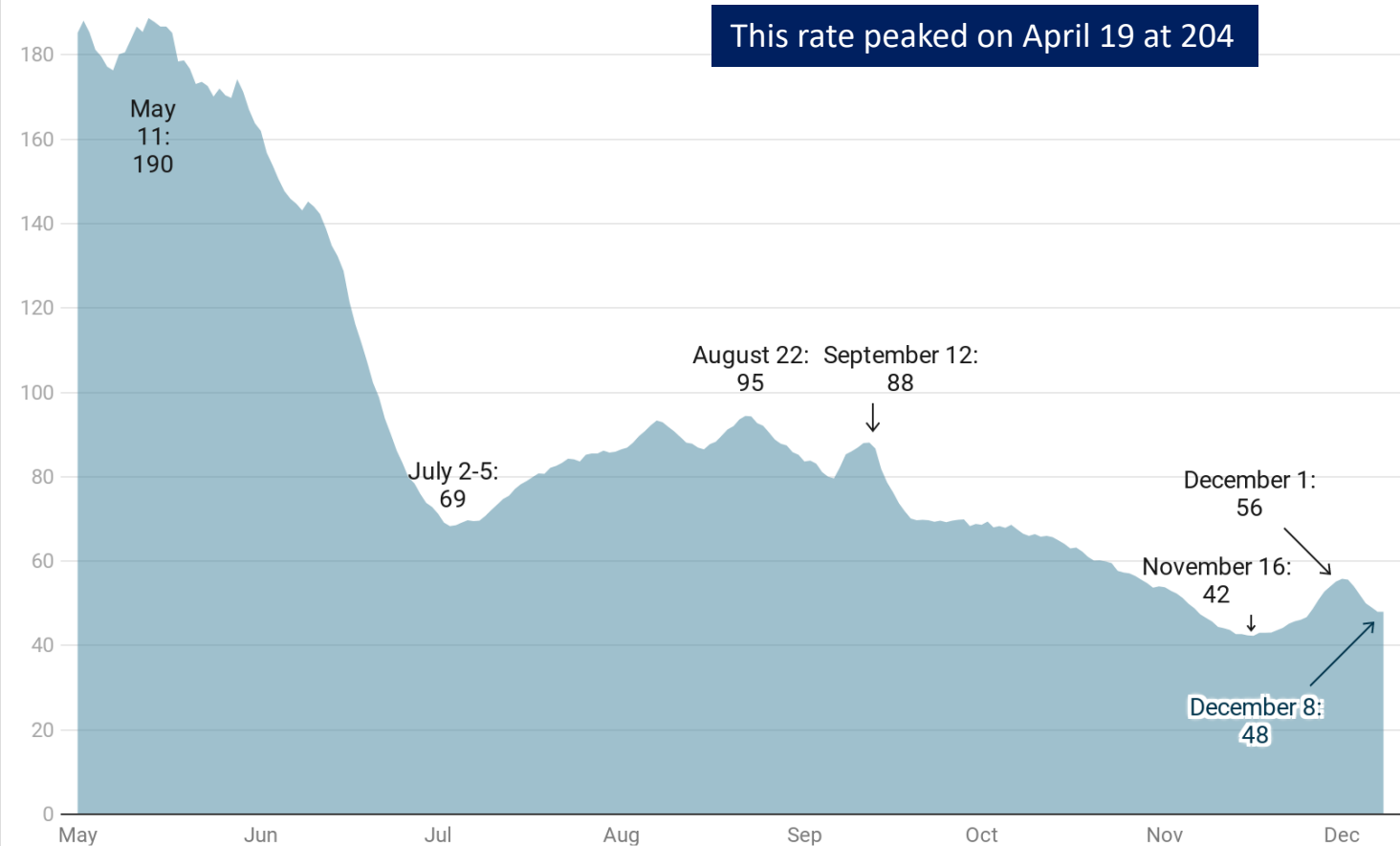


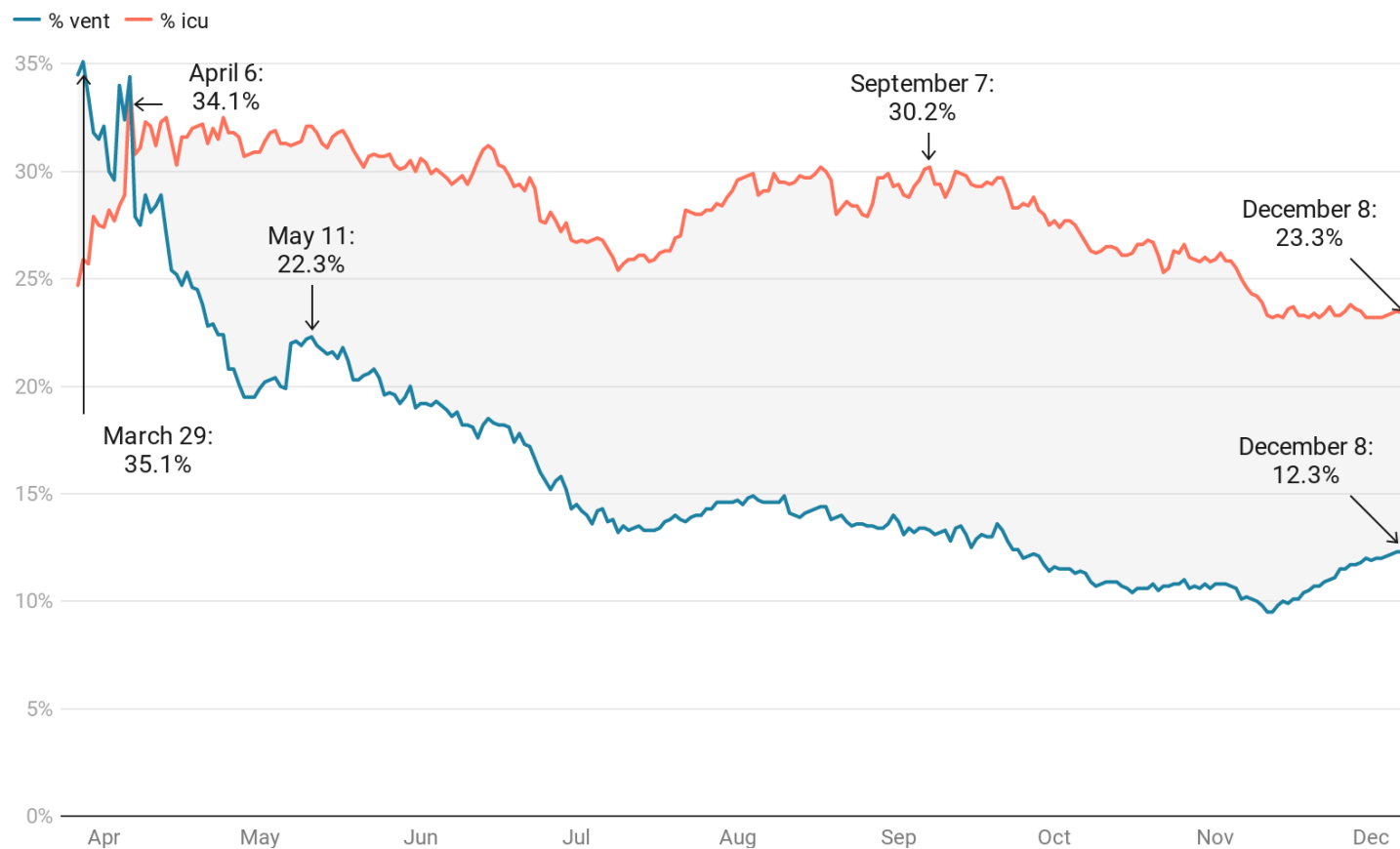
Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking project & worldometers.info • Created with Datawrapper

The likelihood of a hospitalized Covid-19 patient would require ICU care has been lower throughout November and into December than at any time during the pandemic

The likelihood of a hospitalized Covid-19 patients would be on a ventilator trended up for several weeks before stabilizing the past few days

Severity of Hospitalized Patients

% of patients on ventilators and in the ICU, As of December 8



Health Industry Advisor LLC analysis

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

Now nine weeks into the 2020-21 flu season, flu visits have consistently been lower than each of the past five years - and, sharply lower than the past three flu seasons

% of Visits For Influenza-Like Illnesses, National Summary

By Week & Flu Season

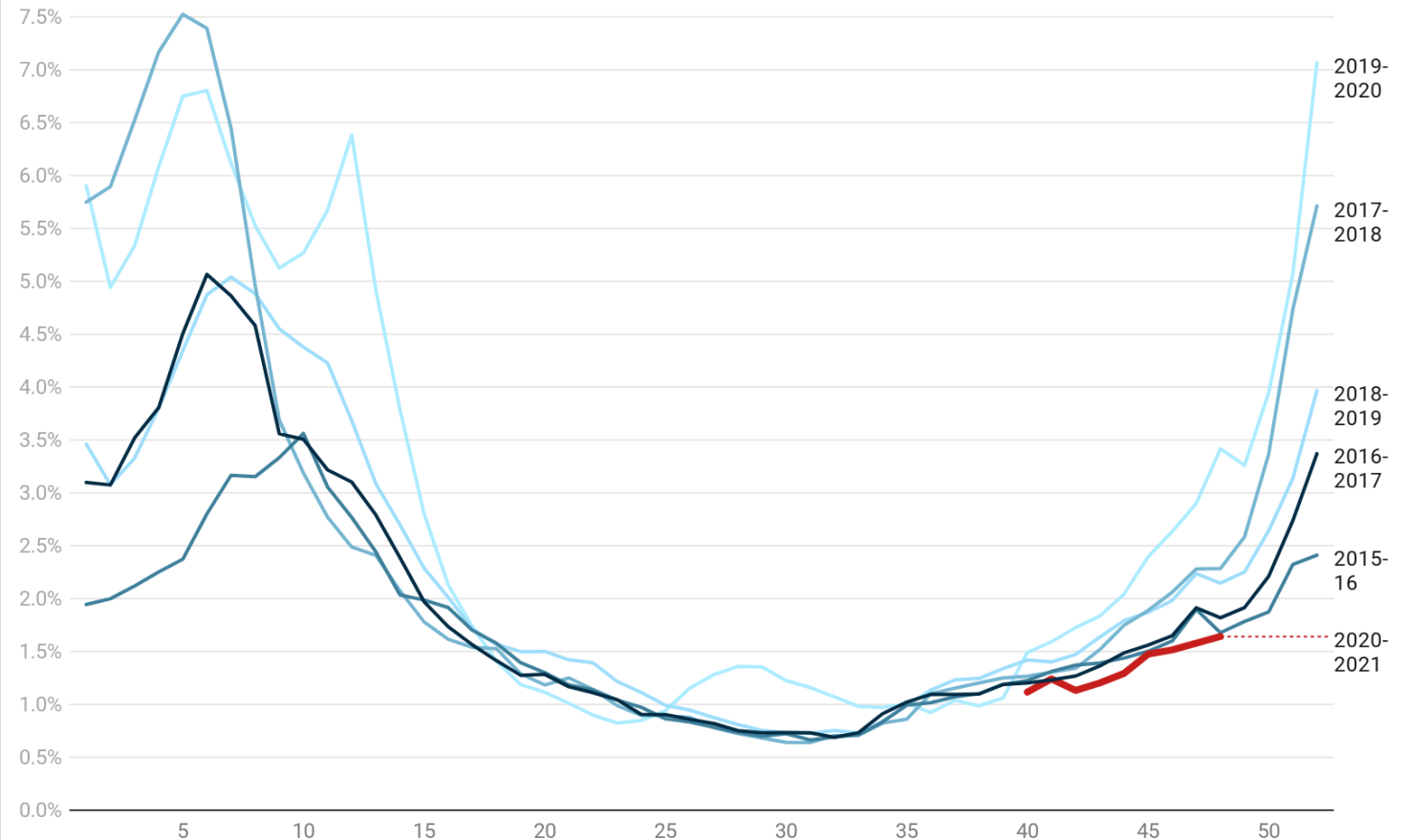


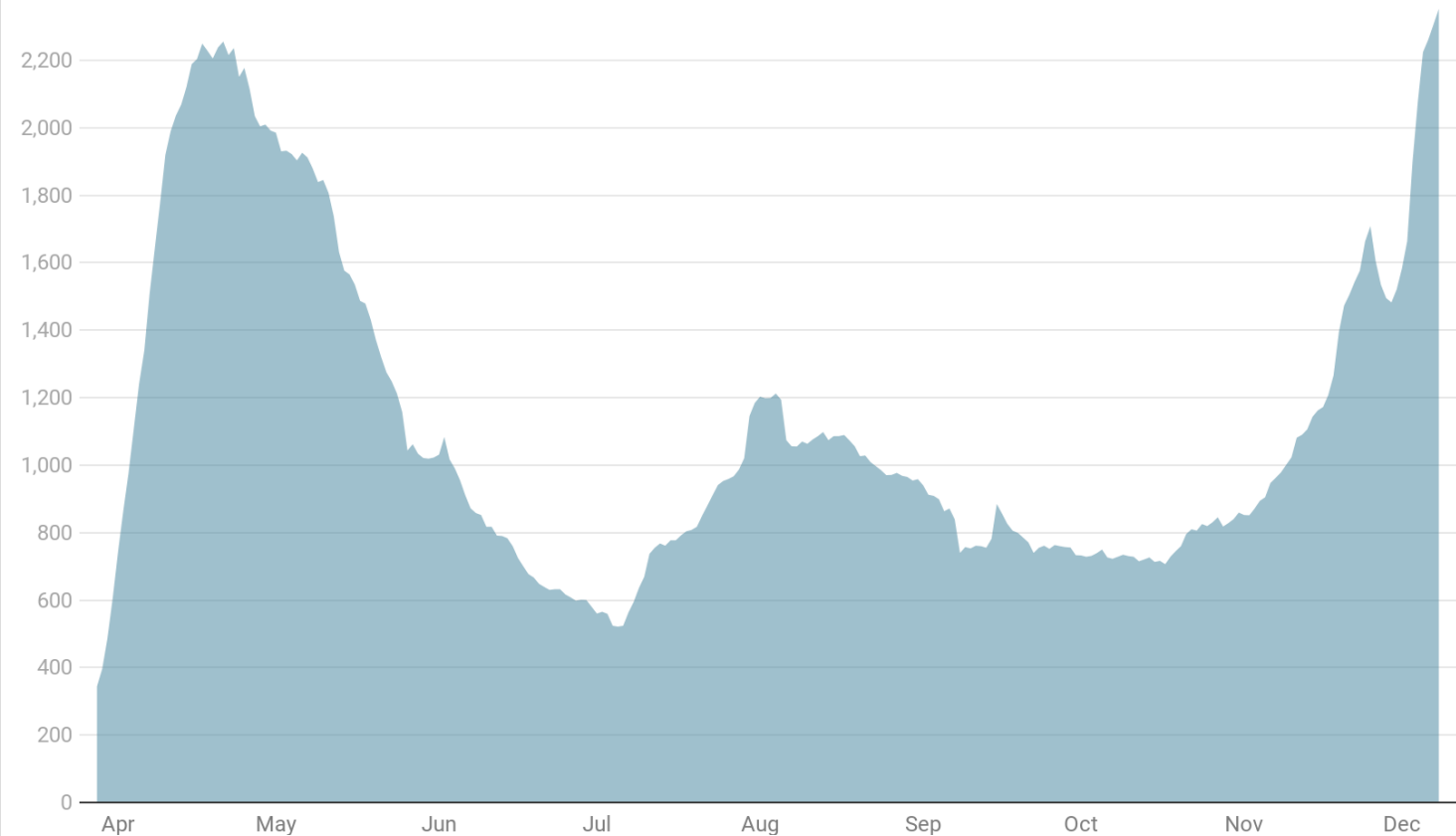
Chart: Health Industry Advisor LLC • Source: Centers for Disease Control & Prevention • Created with Datawrapper

After a relative respite in the 7-day average deaths since Thanksgiving Day, these have now increased ten consecutive days

This rate now exceeds the rate marked in April . . . And will likely continue rising for at least the next few weeks

Deaths Reported With Coronavirus in the U.S.

Trailing 7-Day Moving Average, As of December 8



Health Industry Advisor LLC analysis

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

Deaths with coronavirus, relative to new detected cases (lagged 2 weeks) have trended down all Fall

This could be an artifact of improved case detection (detecting more low symptomatic cases)

7-day Average Deaths / 7-Day Average New Cases (2-Week Lag)

As of December 8

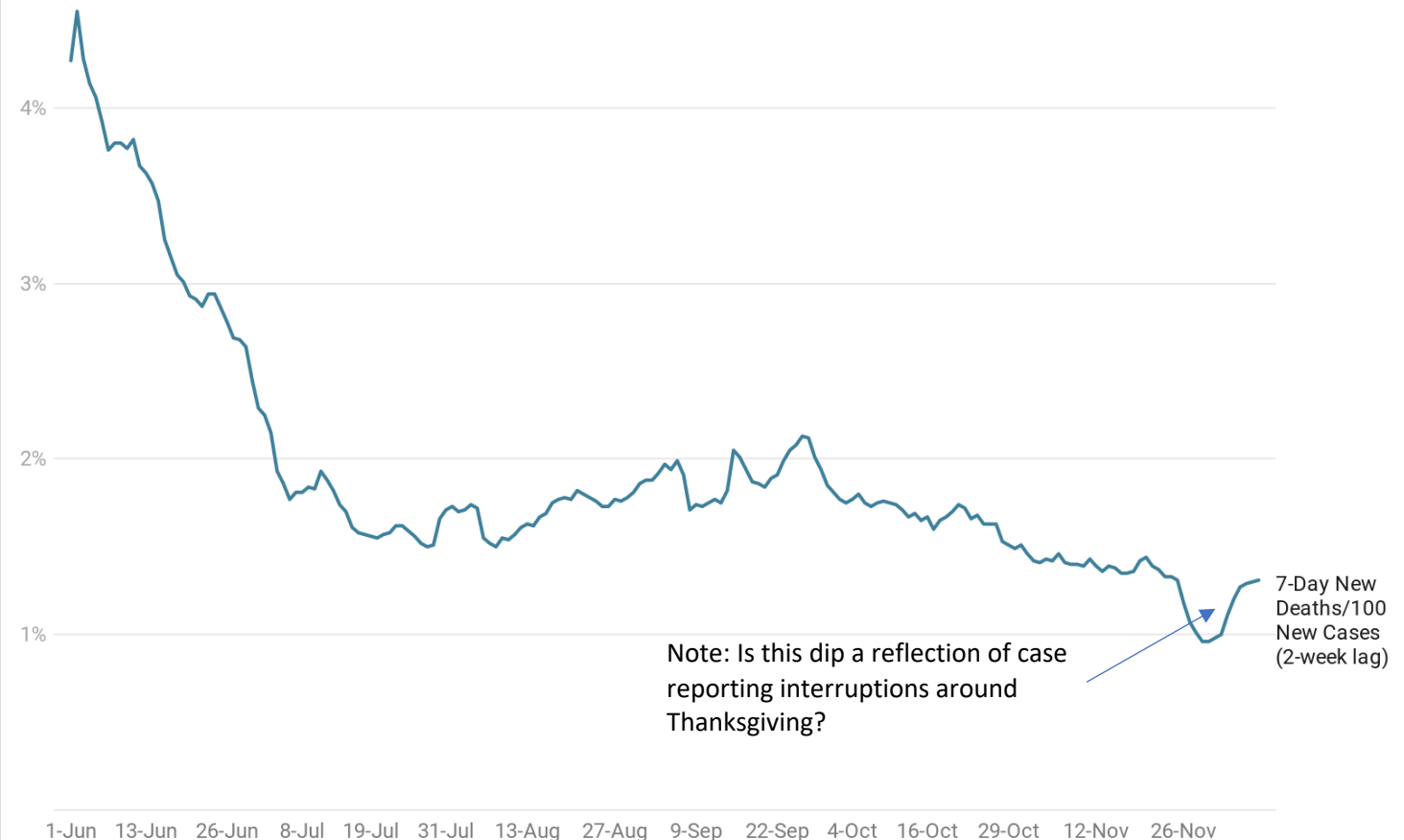


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

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, National, Regional, and State Level Outpatient Illness and Viral Surveillance <https://gis.cdc.gov/grasp/fluview/fluportaldashboard.html>
- Centers for Disease Control, COVID-19 Laboratory-Confirmed Hospitalizations https://gis.cdc.gov/grasp/COVIDNet/COVID19_5.html
- Centers for Disease Control, COVID Data Tracker <https://www.cdc.gov/covid-data-tracker/index.html#mobility>
- 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>