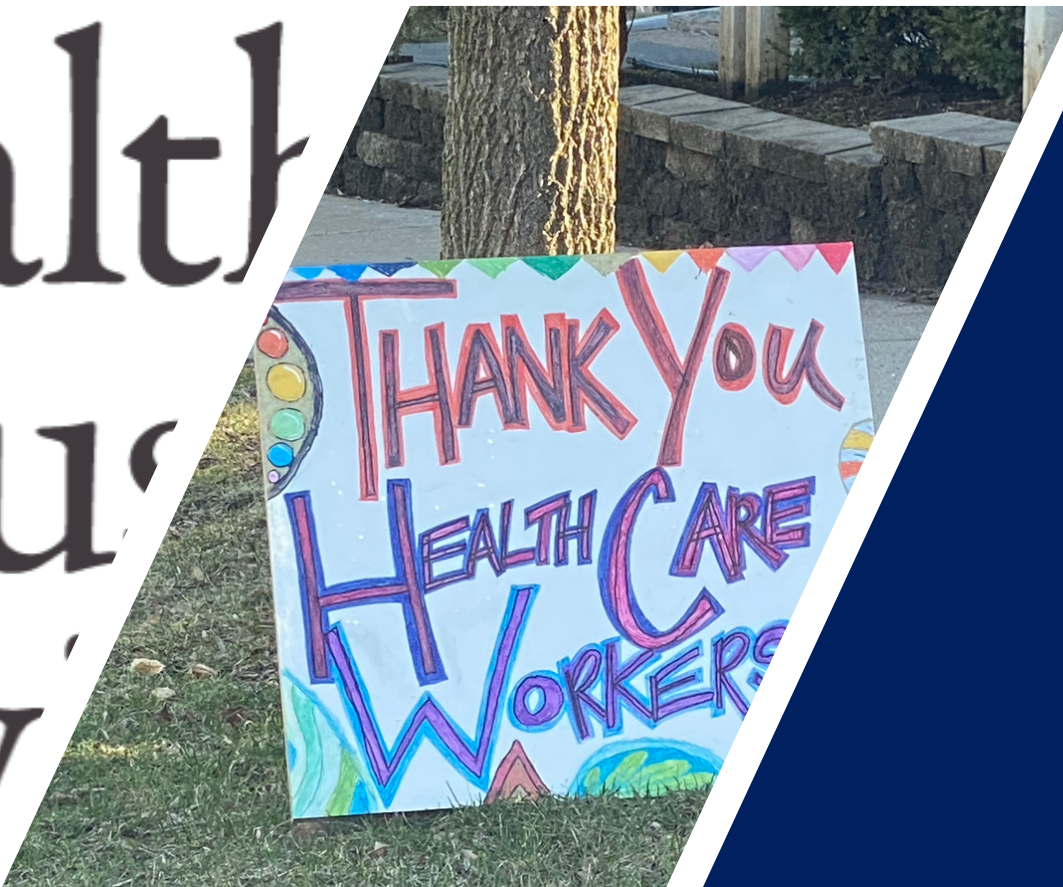




Health
Industry
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Issue # 234

Friday, December 11, 2020

COVID-19 Report

Highlights

- Yesterday provided somewhat of a needed (although perhaps, only brief) respite in the virus spread in the U.S. Consider:
 - The 7-day average new infection rate per capita declined, albeit only slightly, from Wednesday's level. This rate had risen every day since Thanksgiving weekend; if we ignore the impact of reporting interruptions around the Thanksgiving holiday, this rate had been rising daily since October 2
 - The 7-day average daily deaths remained essentially the same as Wednesday. Ignoring the reporting-interruptions during the Thanksgiving holiday period, this rate had been increasing daily since November 2
 - Covid-19 hospital occupancy remained steady day-over-day, at 34%
- Gu estimates that we are getting somewhat better at capturing actual infections, however, we continue to underestimate these by a significant multiple
 - **On November 25** (Gu's latest estimation point, as he backdates infections by two weeks, based on current death rates), **undetected cases outnumbered detected cases by 3.14:1**. This ratio was 4.28:1 as recently as July 1; it was 6.62:1 on May 1 and 10.9:1 on April 1
 - On November 25, he estimates there were 641k new infections. This estimate has been increasing generally increasing since mid-October and is more than 2x what it was at peak in April and July
 - **Gu now estimates that 17% of the U.S population has been infected by the coronavirus - more than twice as many as in early August**
- From our analysis of metro areas:
 - **Concentration of the highest rates of new infections per capita over the past 7 days are in northern Arizona, Southern California, Indiana, Minnesota and Ohio**
 - **Concentration of the lowest rates are found in Hawaii, Maine, eastern Texas and Vermont**
 - **Among Large Central Metro areas, the highest infection rates are in Providence, RI; Riverside, CA; and three Ohio counties: Cuyahoga, Hamilton and Franklin**
 - Among the thirty-three "campus towns" we include in a sample, St. Joseph, IN (home to Notre Dame) had the highest rate over the past week, followed by Riley, KS (Kansas State University) and Lubbock, TX (Texas Tech). This was the first time in nine weeks that Lubbock did not top this list
 - Albemarle, VA (University of Virginia), which had been at the low end of this list for weeks, had the largest week-over-week increase in infection rates (contributing to UVA canceling its basketball game with Michigan State this past week?)
- One other milestone - for the first time, the 7-day average tests per million surpassed 5,000 yesterday. This rate has doubled since the end of September

Not all infections are detected by testing and reported in case counts (we use the term “detected cases”, as opposed to estimated infections)

Youyang Gu’s model aims to estimate infections, using testing experience and deaths with the coronavirus and then, backdating to estimate infections

In Gu’s estimate we are missing 3.14 infections for every case detected at this point

Infection Prevalence Rate

Estimated Actual Infections / Detected Cases

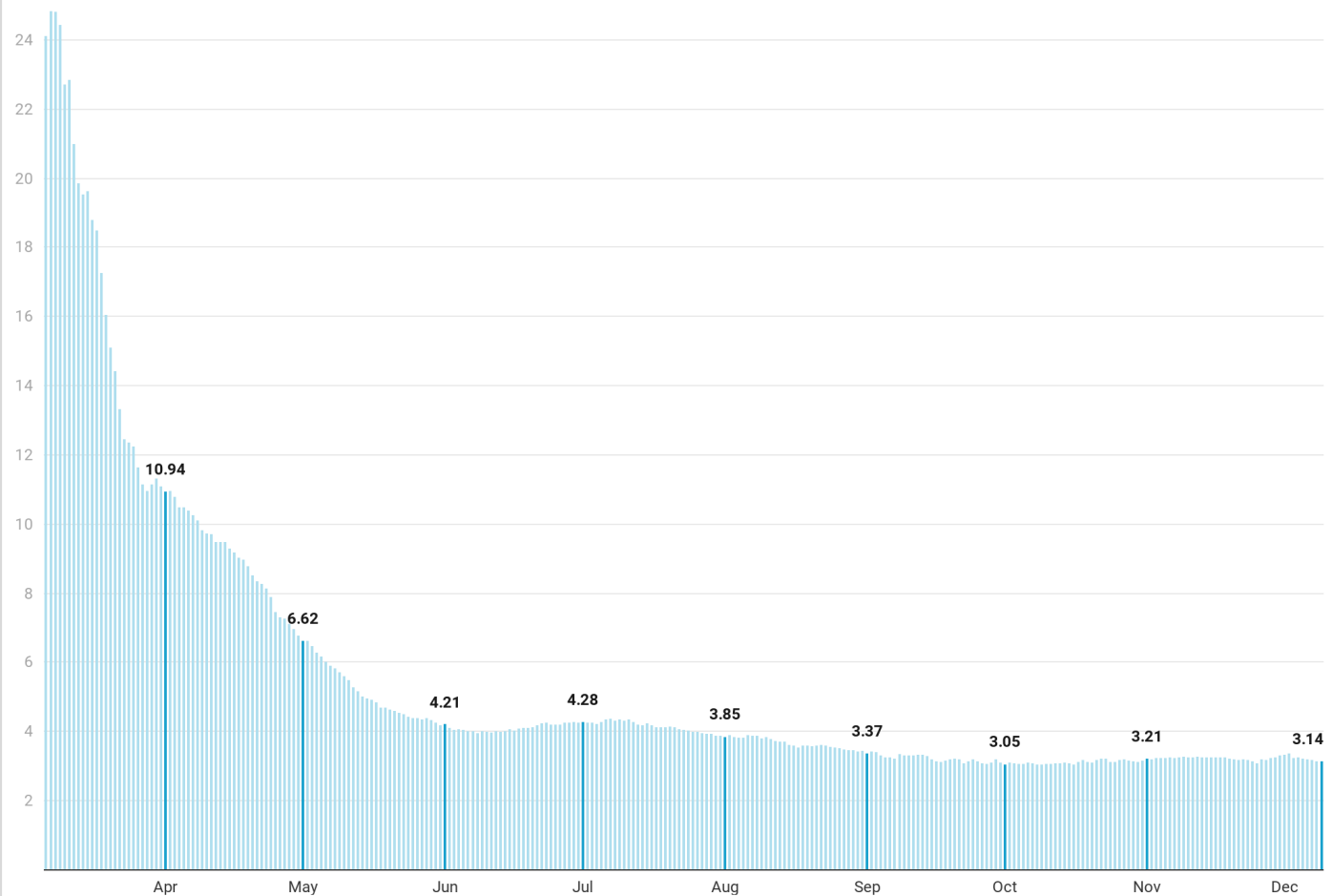


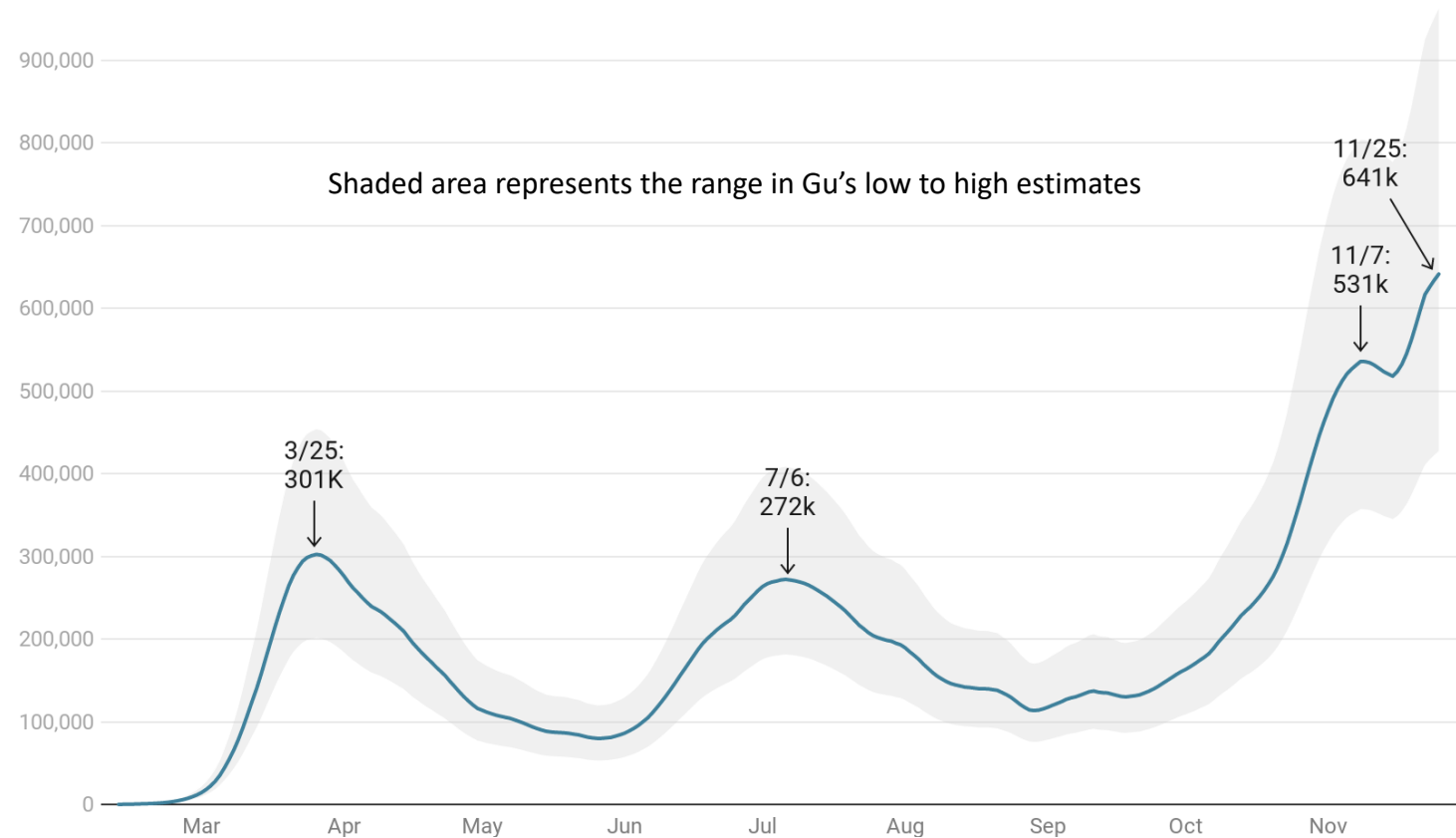
Chart: Health Industry Advisor LLC • Source: Youyang Gu • Created with Datawrapper

In Gu's model, he estimates that there were 641k new infections in the U.S. on Thanksgiving eve

This estimate of daily infections has generally been increasing since mid-September . . . And is more than 2x what it was at peaks in March/April and June/July

Estimated New Daily U.S. Infections (Youyang Gu Model)

Through November 25



Using Youyang Gu's COVID-19 Projection Model

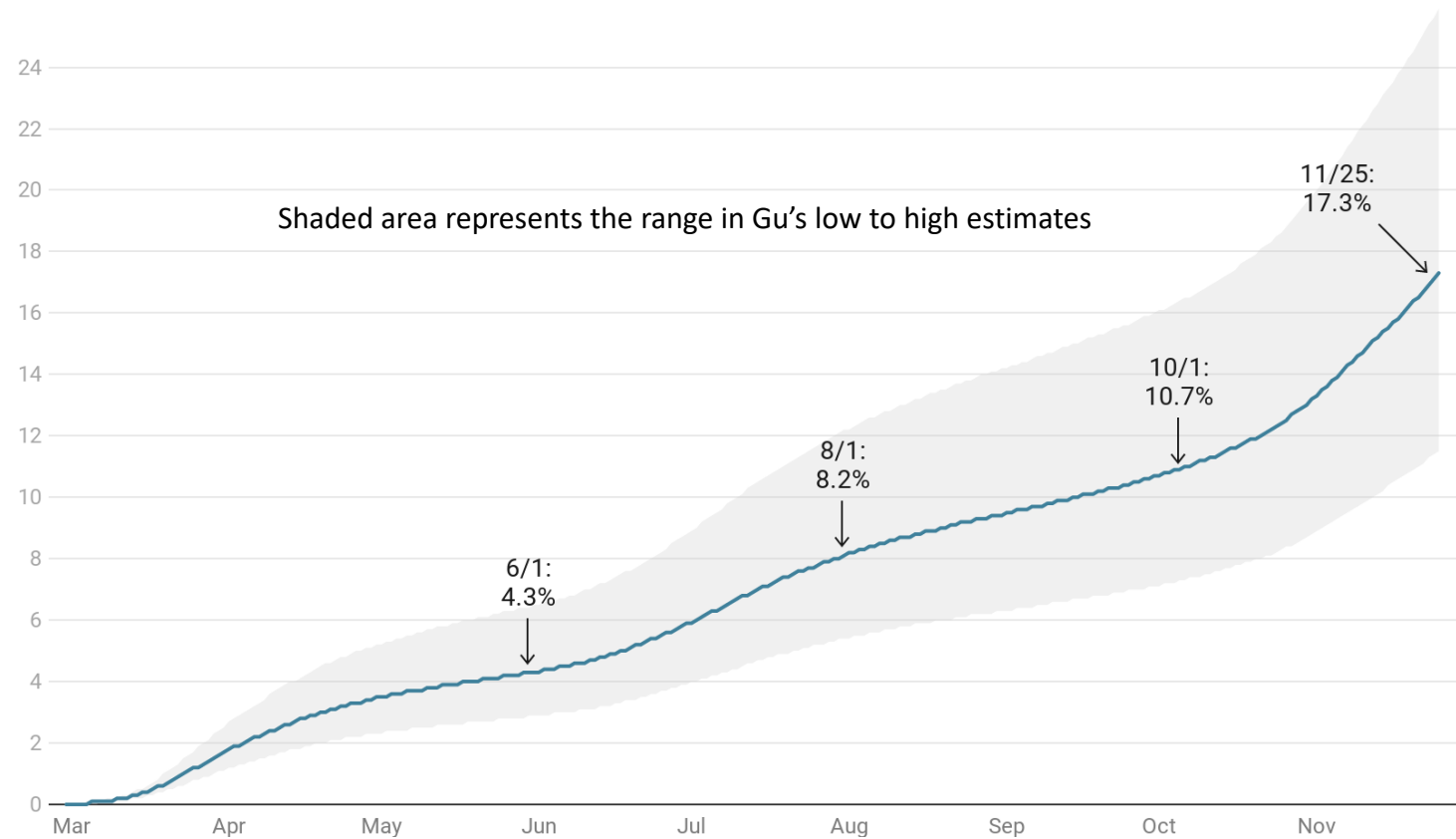
Chart: Health Industry Advisor LLC • Source: Youyang Gu • Created with Datawrapper

In Gu's estimation,
17% of the U.S.
population was
infected as of
Thanksgiving eve.

This has more
than doubled
since August 1

Estimated Infection Prevalence

Through November 25



Using Youyang Gu's COVID-19 Projection Model

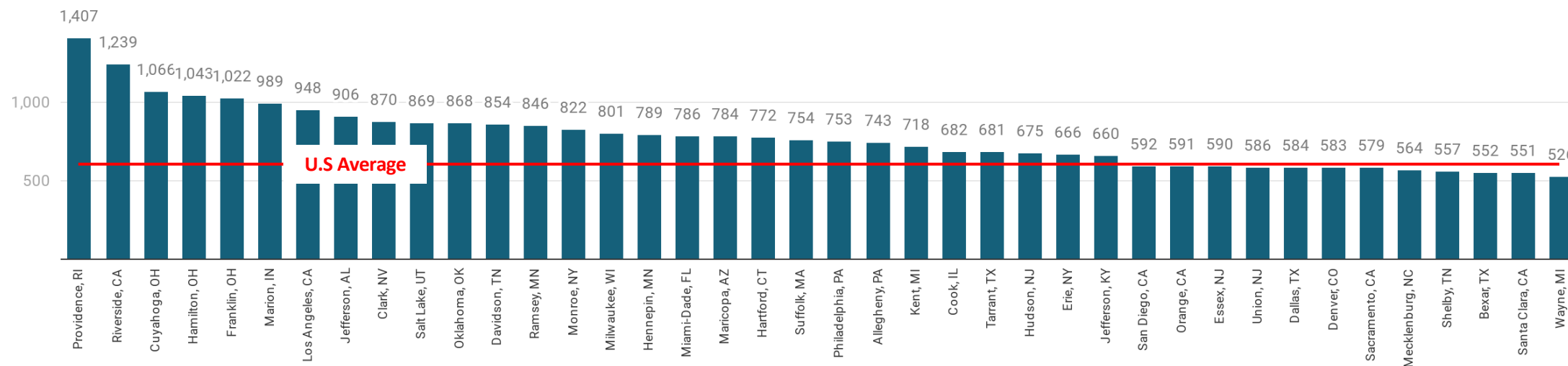
Chart: Health Industry Advisor LLC • Source: Youyang Gu • Created with Datawrapper

New Infection Rates – Large Central Metro Areas

Providence, Rhode Island experienced the highest new infection rate per capita among Large Central Metro Areas over the past week, followed by Riverside, California and three Ohio counties – Cuyahoga, Hamilton and Franklin. Twenty-eight of the sixty-four Large Central Metro Areas exceeded the national average infection rate.

New Daily Infections / Million Population - Forty Highest, Large Central Metro Areas

7-Day Moving Average, As of December 10



Health Industry Advisor LLC analysis

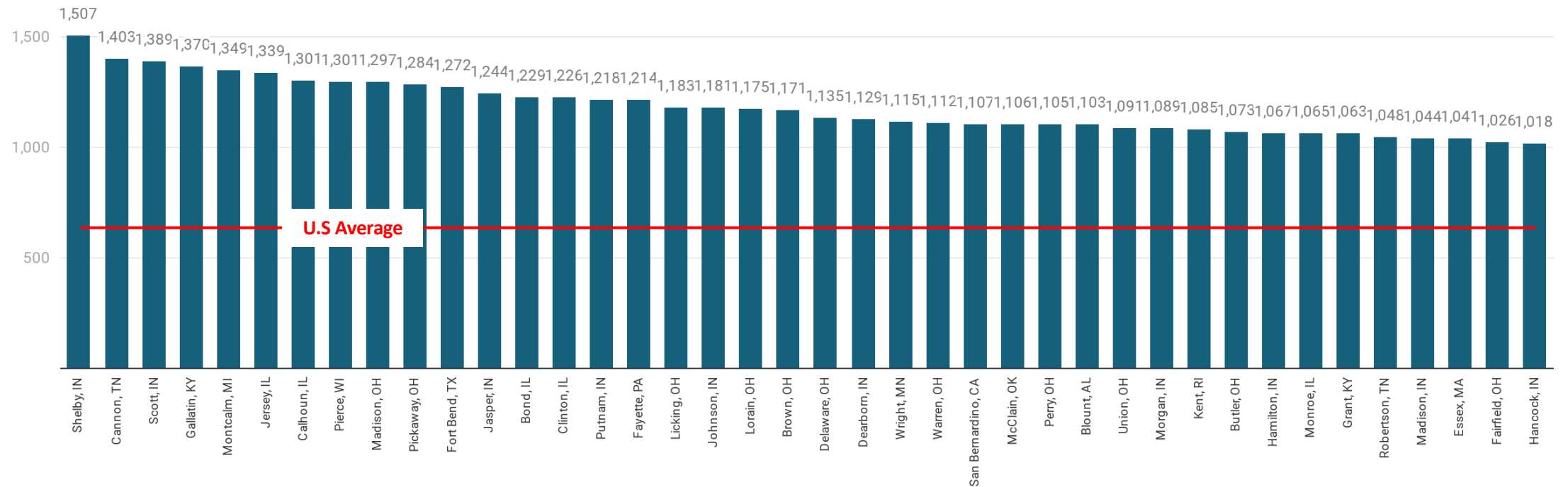
Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

New Infection Rates – Large Fringe Metro Areas

Shelby, Indiana experienced the highest new infection rate per capita among Large Fringe Metro Areas over the past week, followed by Cannon, Tennessee, Scott, Indiana and Gallatin, Kentucky
170 of the 367 Large Fringe Metro Areas exceeded the national average infection rate

New Daily Infections / Million Population - Forty Highest, Large Fringe Metro Areas

7-Day Moving Average, As of December 10



Health Industry Advisor LLC analysis

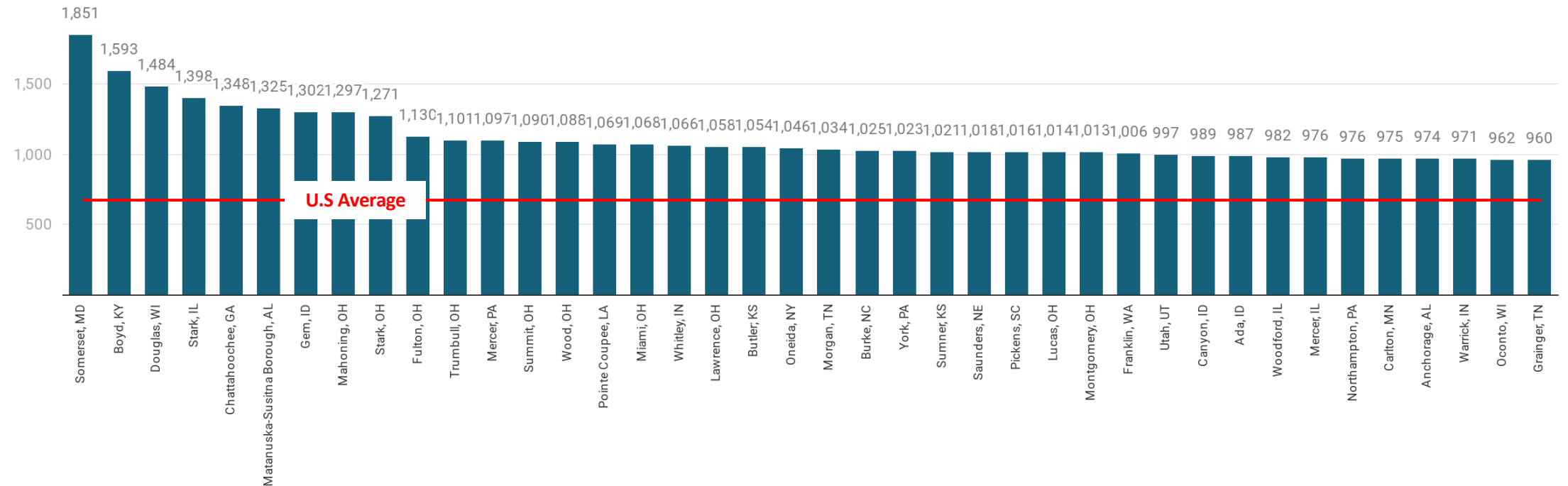
Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

New Infection Rates – Medium Metro Areas

Somerset, Maryland experienced the highest new infection rate per capita among Medium Metro Areas over the past week, followed by Boyd, Kentucky, Douglas, Wisconsin and Stark, Illinois
177 of the 368 Medium Metro Areas exceeded the national average infection rate

New Daily Infections / Million Population - Forty Highest, Medium Metro Areas

7-Day Moving Average, As of December 10



Health Industry Advisor LLC analysis

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

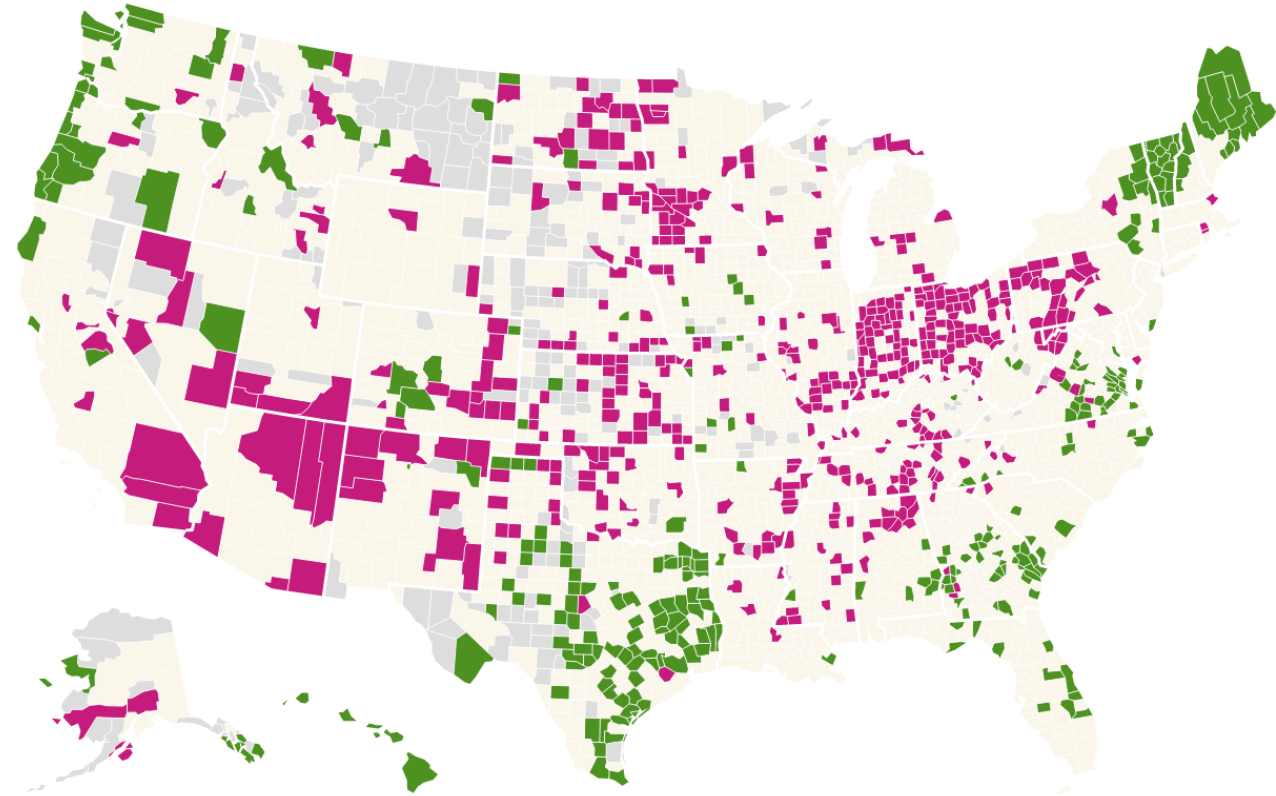
Relative “hot-spots” are concentrated in northern Arizona, southern California, Indiana, Minnesota and Ohio

Relative “cool-spots” are concentrated in Hawaii, Maine, eastern Texas and Vermont

Hot & Cold Spots

Metro Areas With High or Low New Infections / Million

< 300 300–1000 ≥ 1000



7-Day Moving Average / Million, as of December 10

Map: Health Industry Advisor LLC • Source: worldometers.infor • Created with Datawrapper

Metro Areas Home to Major Universities:

Of the 33 major areas in our sample, 12 are experiencing infection rates* higher than the national average (one fewer than last week)

St. Joseph, IN (home to Notre Dame) had the highest infection rate last week, followed by Riley, KS (Kansas State University) and Lubbock, Texas, (Texas Tech University) were next

Orange, NC (University of North Carolina) and Durham, NC (Duke) experienced the lowest rates

* 7-day average

Metro Areas With Major Universities: New Daily Infections / 1M Population

7-Day Average, As of December 10

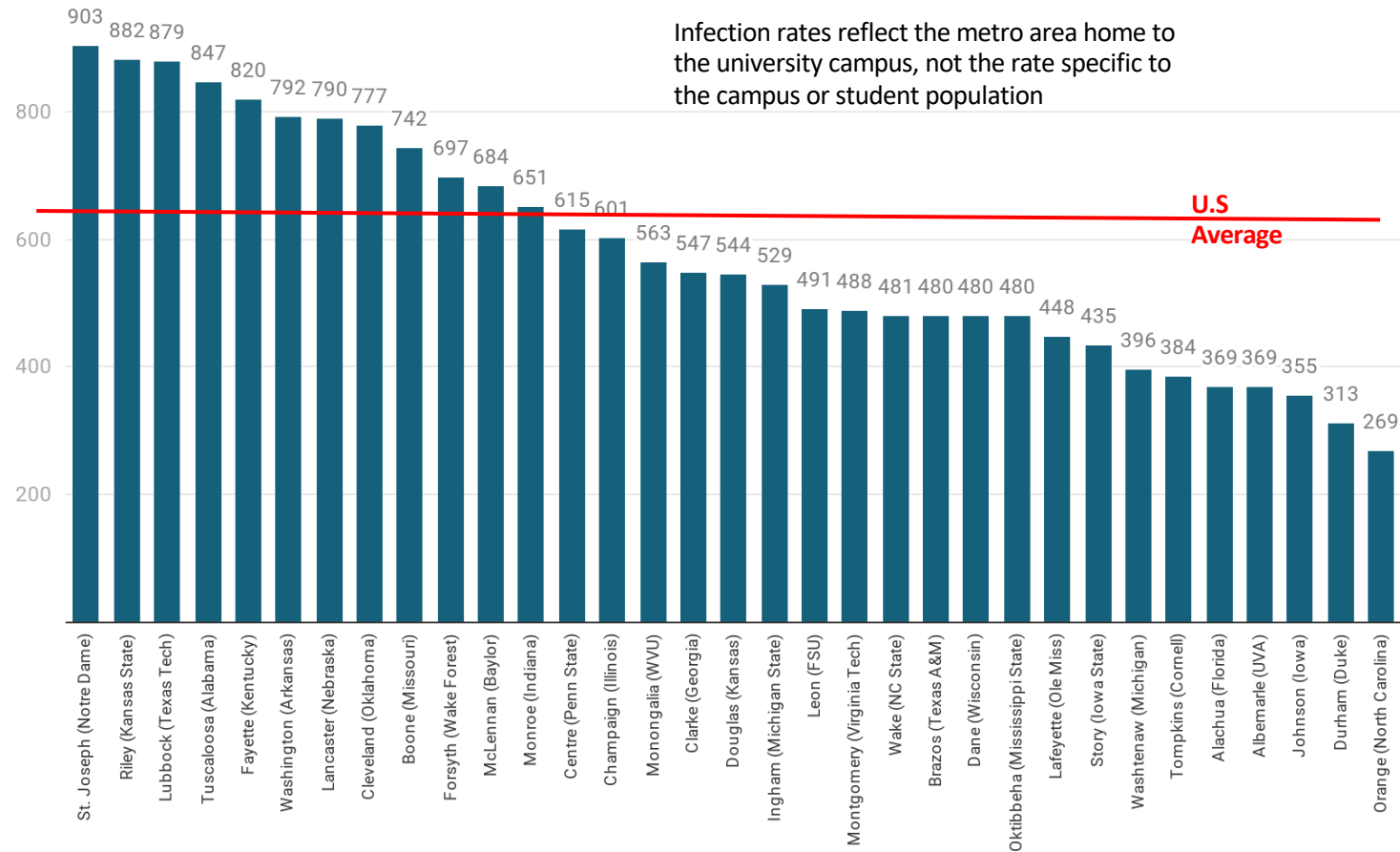


Chart: Health Industry Advisor LLC • Created with Datawrapper

Metro Areas Home to Major Universities:

Albemarle, Virginia –home to the University of Virginia experienced the largest increase in its new infection rate relative to last week, followed by Tuscaloosa, AL (University of Alabama)

Lubbock, TX, home to Texas Tech University experienced the most significant decline in this rate. Lubbock had experienced the highest rate among these thirty-three areas for eight consecutive weeks

* 7-day average

Metro Areas With Major Universities: Week-Over-Week Change In New Daily Infections / 1M Population

7-Day Average, December 10 v. December 3

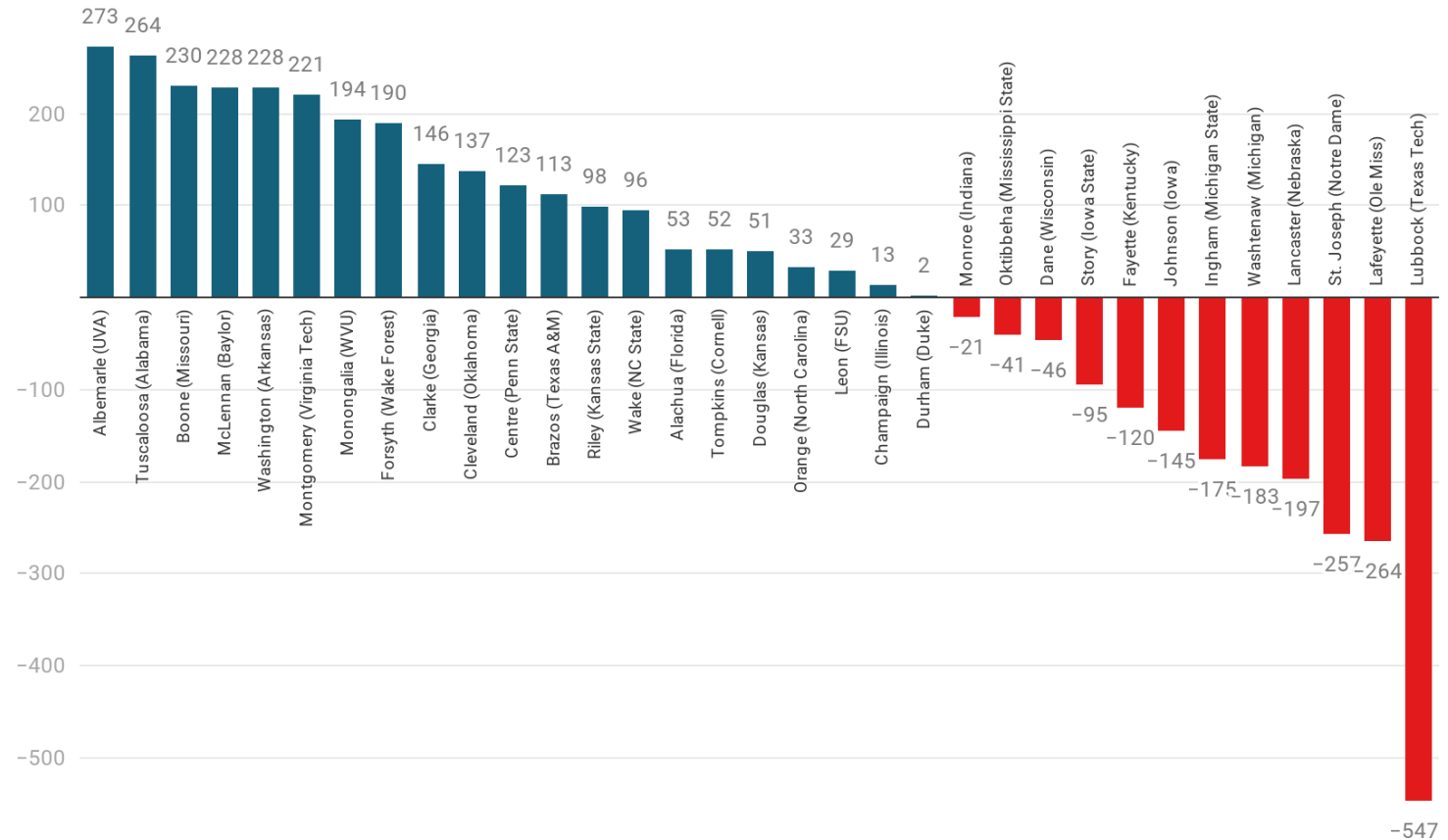


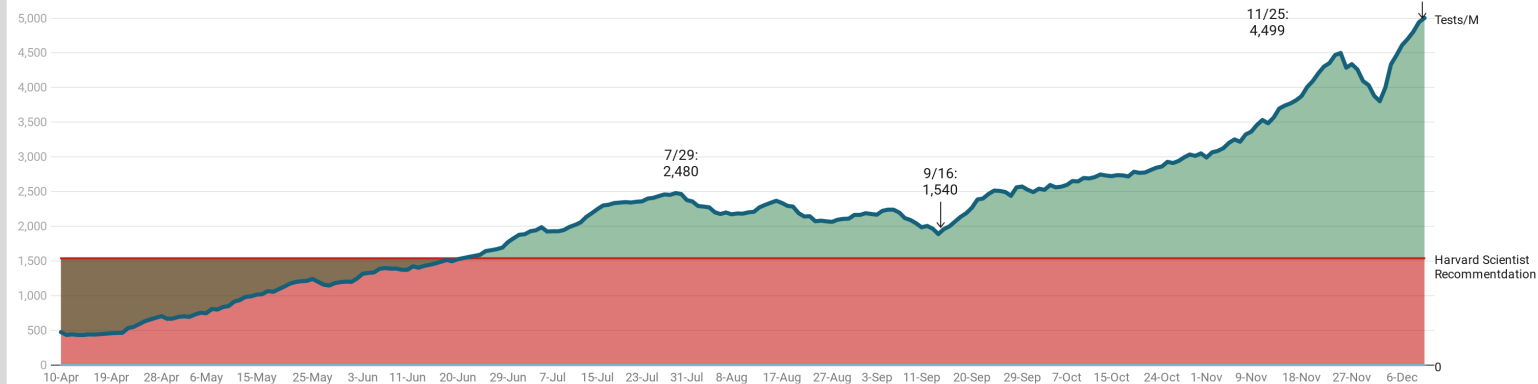
Chart: Health Industry Advisor LLC • Created with Datawrapper

Testing volumes continue to establish new highs nearly every day – yesterday, the 7-day rate surpassed 5,000 daily tests per million for the first time

Coincident with this return to relatively-high testing levels, the test-positive rate seems to have stabilized in the past several days

Daily Tests Per 1 Million - United States

Trailing 7-Day Moving Average, As of December 10



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 10

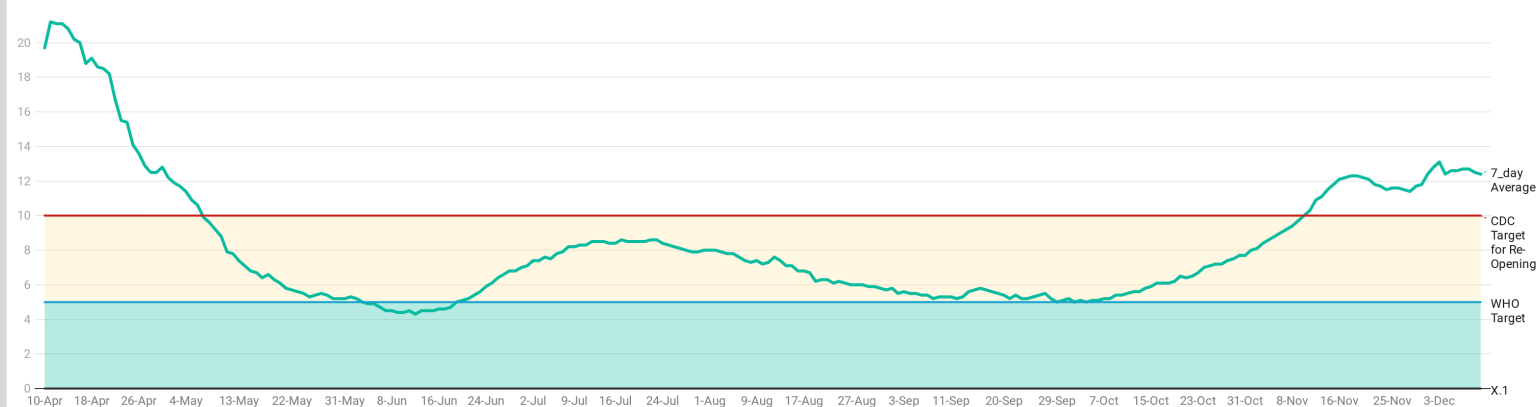


Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking Project • Created with Datawrapper

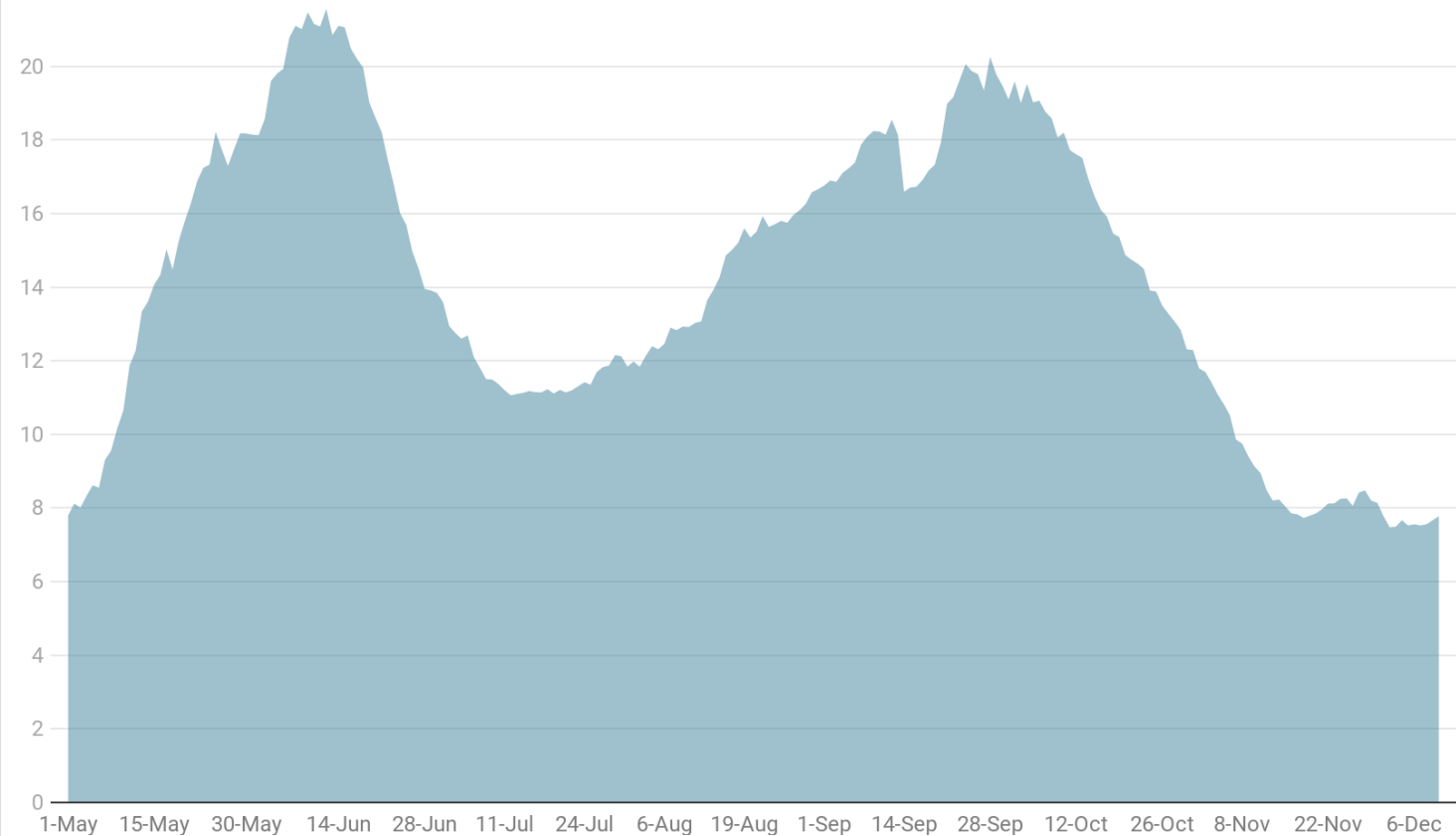
A measure of the effectiveness of testing is the ratio of tests performed to newly-detected cases

This rate had been in a free-fall since mid-September, indicating that the increasing test volumes were insufficient to keep up with rising new infections

Since Thanksgiving, this rate has stabilized and perhaps, even improved slightly

Tests / New Case Detected (7-Day Average)

How many tests does it take to detect a new case?



Prefer this ratio to be higher rather than lower

Chart: Health Industry Advisor LLC • Created with Datawrapper

Covid-19 census remained steady yesterday, at 34% of all inpatient beds

Nevada, Connecticut, Rhode Island, Arizona and new Mexico continue to be of greatest concern, with Covid-19 patients occupying more than ½ of all inpatient beds in these states

Covid-19 Patients / Total Inpatient Beds

7-Day Moving Average, As of December 8

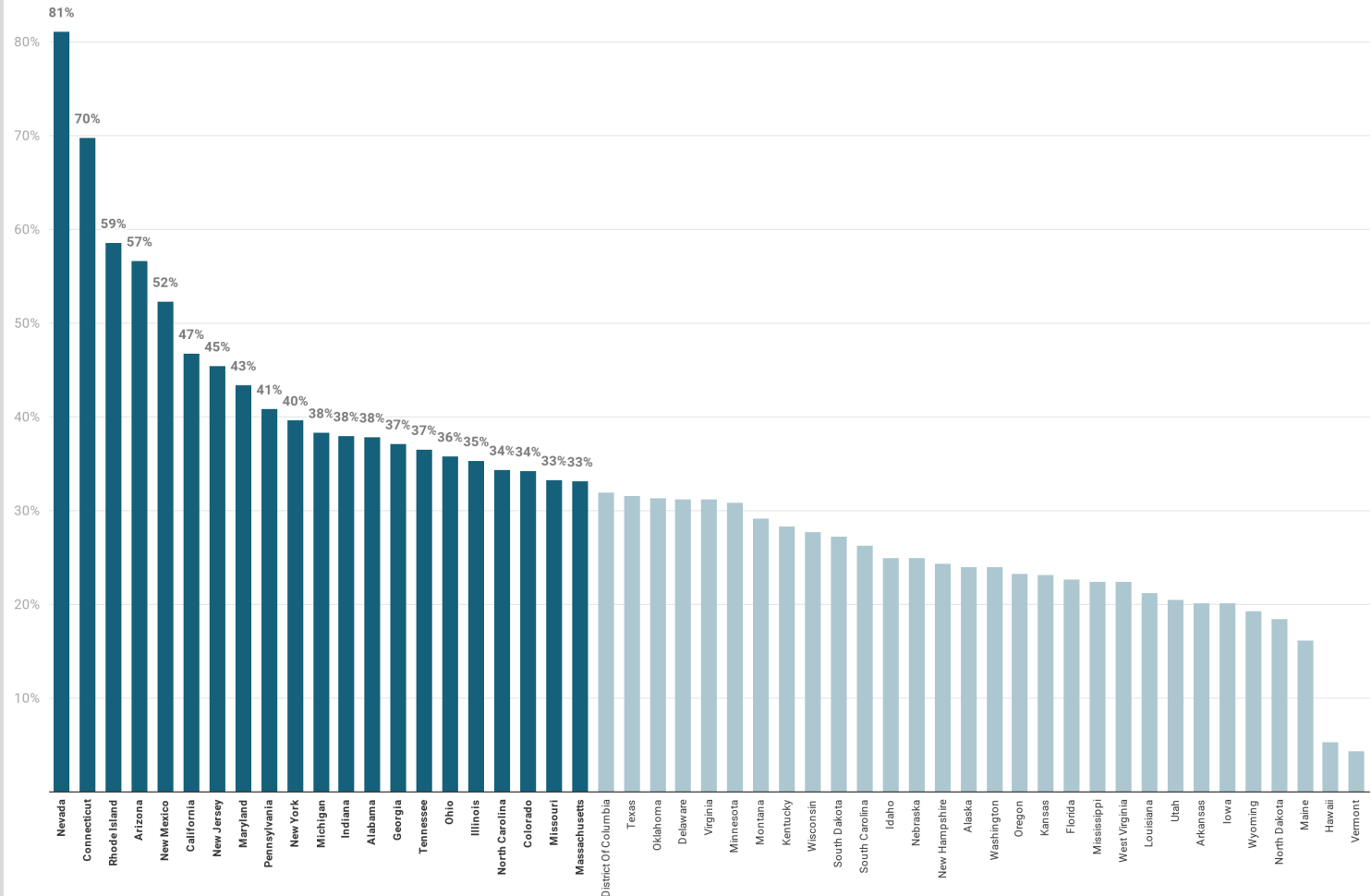


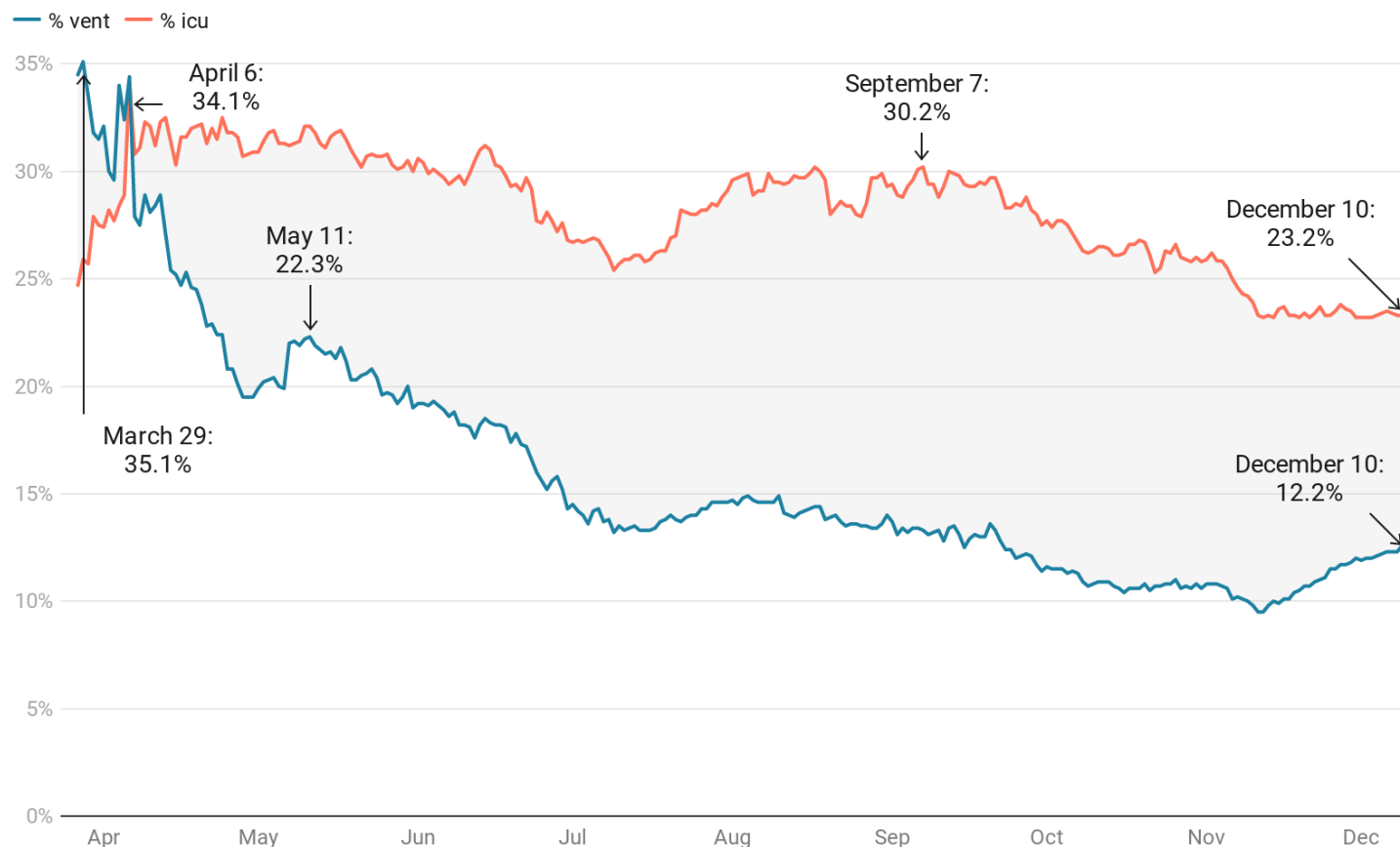
Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking project & worldometers.info • Created with Datawrapper

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 10



Health Industry Advisor LLC analysis

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

The % of ER visits for COVID-19-like illnesses (CLI) seems to have waned since Thanksgiving (as have visits for Pneumonia; visits for shortness-of-beath have increased)

The rate of influenza visits remains low given where we are in the flu season

% of ER Visits For Covid-19-Like Illnesses (CLI); Influenza-Like Illnesses (ILI); Shortness-of-Breath (SoB) and Pneumonia

As of December 7

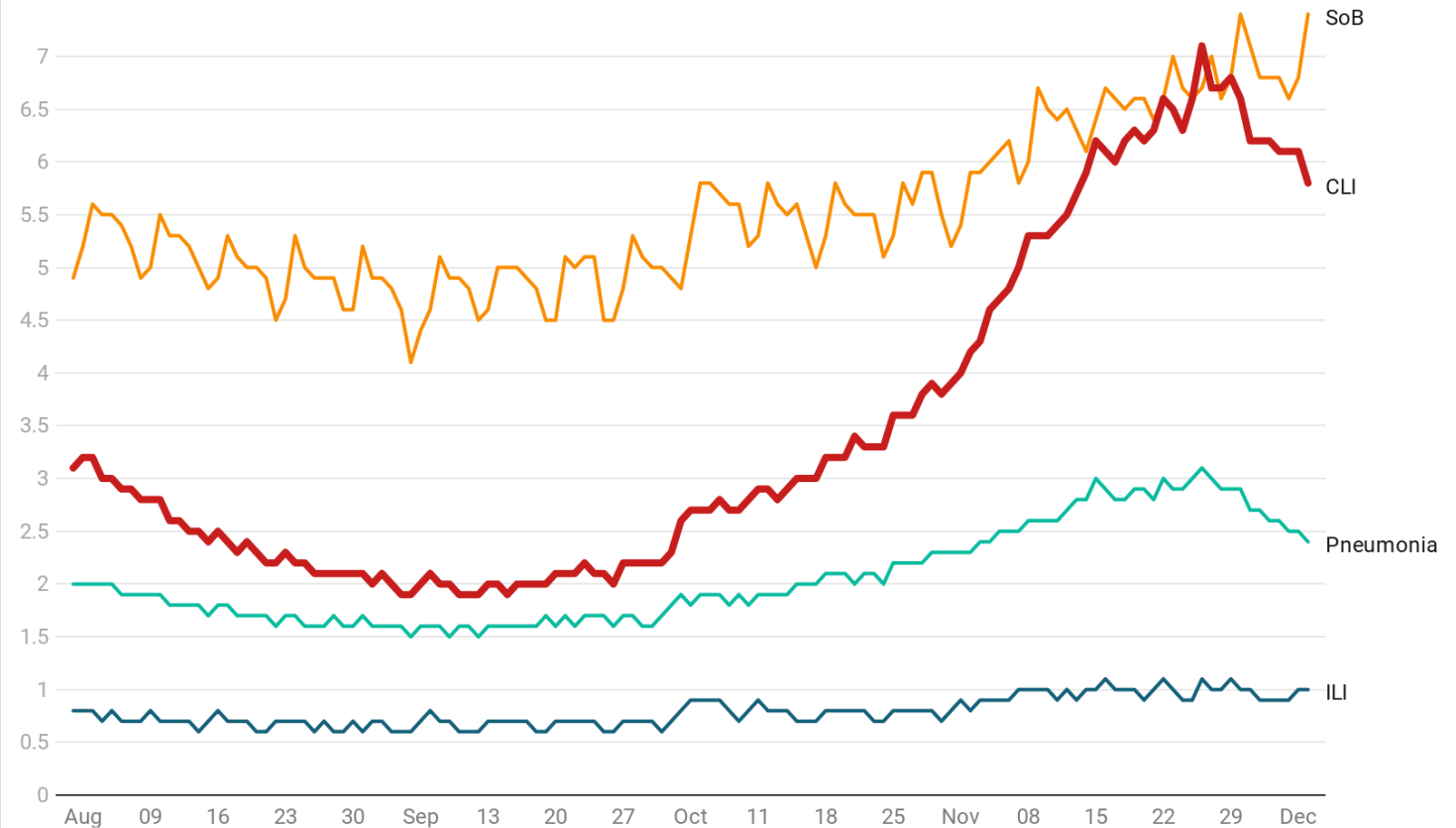
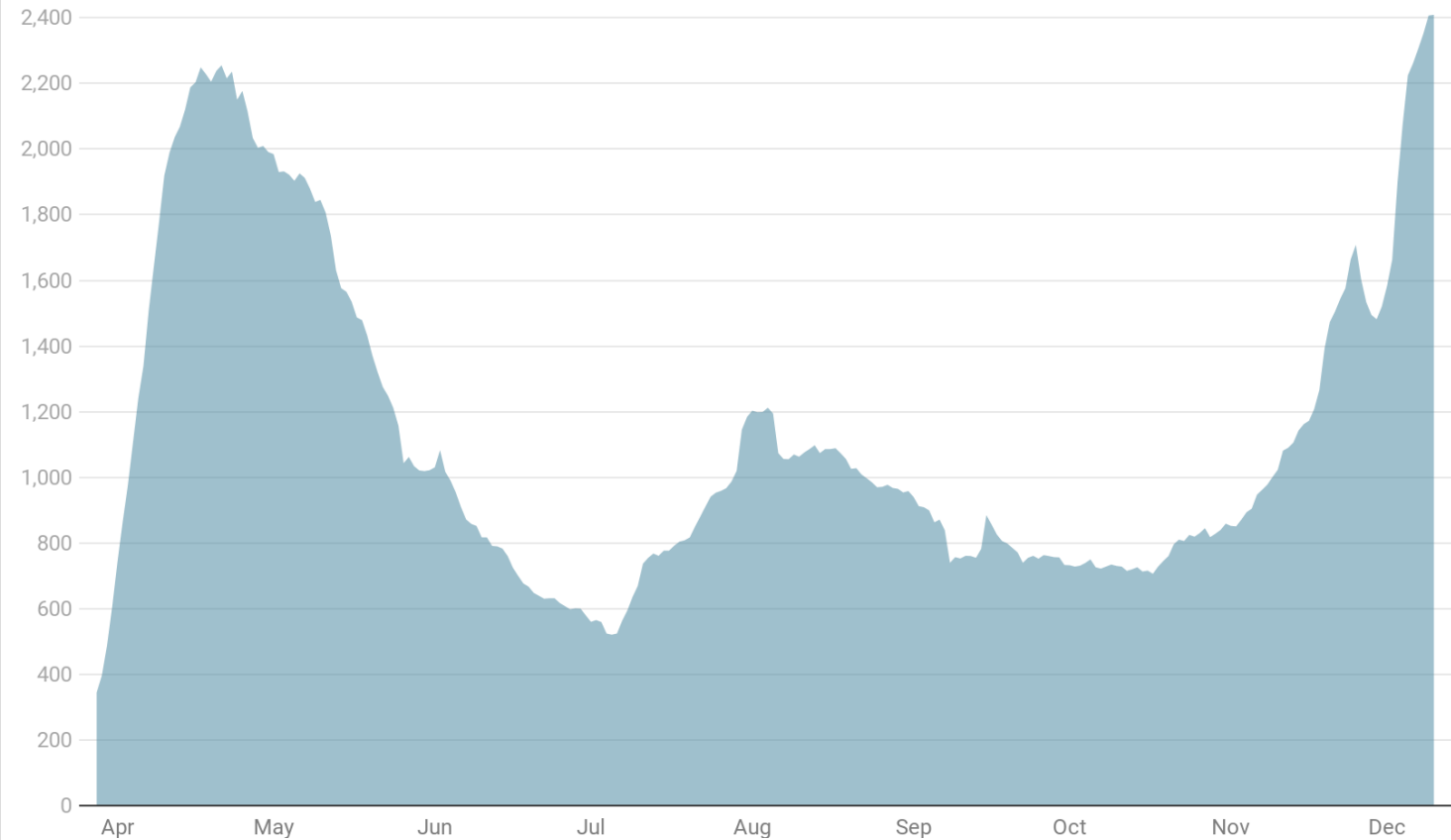


Chart: Health Industry Advisor LLC • Source: CDC • Created with Datawrapper

After increasing each day since Thanksgiving weekend, the 7-day average deaths held steady yesterday

Deaths Reported With Coronavirus in the U.S.

Trailing 7-Day Moving Average, As of December 10



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, 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>