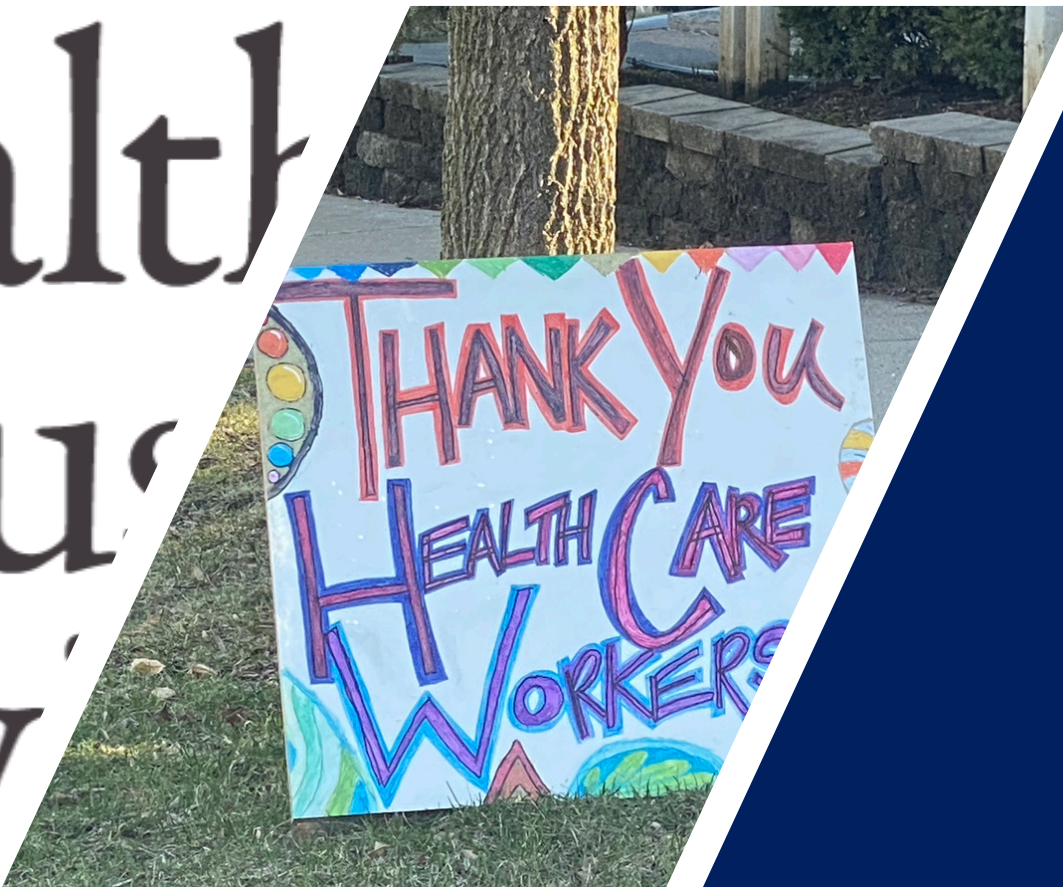




Health
Industry
Adv



Issue # 214
Tuesday, November 17, 2020

COVID-19 Report

Highlights

- Increasing numbers of newly-detected cases are straining health care resources:
 - These newly-detected cases continue an upward climb: **new daily cases per capita in the U.S. have increased every day for the past six-plus weeks**
 - With these rising cases, Covid-19 hospital census is similarly increasing: **on a same-day, prior-week basis, Covid-19 census has increased daily since September 23**
 - Several states are experiencing high rates of occupancy from Covid-19 patients: **In Nevada, more than 1/2 of available inpatient beds are in use for Covid-19 patients; In Connecticut and Wisconsin, its more than 40%; and in Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Rhode Island and South Dakota, its more than 30%**
- Slowing the rate of increase in new cases (and then reaching the point of declining new cases) thus becomes critical to easing this pressure
 - **Many European countries, which have been experiencing significantly higher infection rates than the U.S., have begun to find these rates declining:**
 - Of the countries with more than 100,000 people, **Europe (and Eurasia) account for twenty-nine of the thirty-two countries with the highest 7-day average infection rates per capita in the world (the U.S. ranks 18th)**
 - **Five of the eight European countries with the highest rates have nonetheless seen these rates decline over the past week**
 - Notable improvements have been seen in Belgium - which had the highest rate in the world on November 2, and where this rate has declined by more than 50% since; in Czechia, France, the Netherlands and Switzerland
- Recent underlying trends in new cases in the U.S show hints that improvement may be on the horizon:
 - **Prior to the recent surge in new cases experienced last week, the U.S. experienced an increase in the week-over-week change in new cases; this "tell" signaled the jump in new cases a few days in advance**
 - **Preceding that signal, there was a discernible increase in the rate by which new cases were increasing week-over-week; Again, this signal (lets call it the primary signal) preceded the signal noted above (lets call that the secondary signal) by several days**
 - (A physics major should fully grasp the underlying dynamics here; the rest of us can view the graph in our report to visualize what happened)
 - **Now, these signals have reserved direction: the primary signal began trending downward on November 6; the secondary signal followed suit, beginning to decline on November 11**
 - If (and that's a big if, with the holidays approaching), these signals continue, new case growth will begin to ease and, hopefully start to decline
- Two positive trends that are helping ease some of the pressure from the surge in cases:
 - The rate of Covid-19 patients are in the hospital continued to decline - **yesterday marked the sixteenth consecutive day (and twenty-fifth in the past twenty-six) that the likelihood that a newly-detected case would be in the hospital declined**
 - **The % of ER visits due to Covid-19 had now declined five consecutive days**, following a six-week period during which it increased most days
 - **ER visits due to the flu remain at levels below comparable periods from the past eight years**

Worldwide, we are experiencing ~587k new cases each day

The United States is averaging ~158k new cases each day

* - 7-day moving average basis

Newly Detected Daily Cases - U.S. & Worldwide

7-Day Moving Average, As of November 16

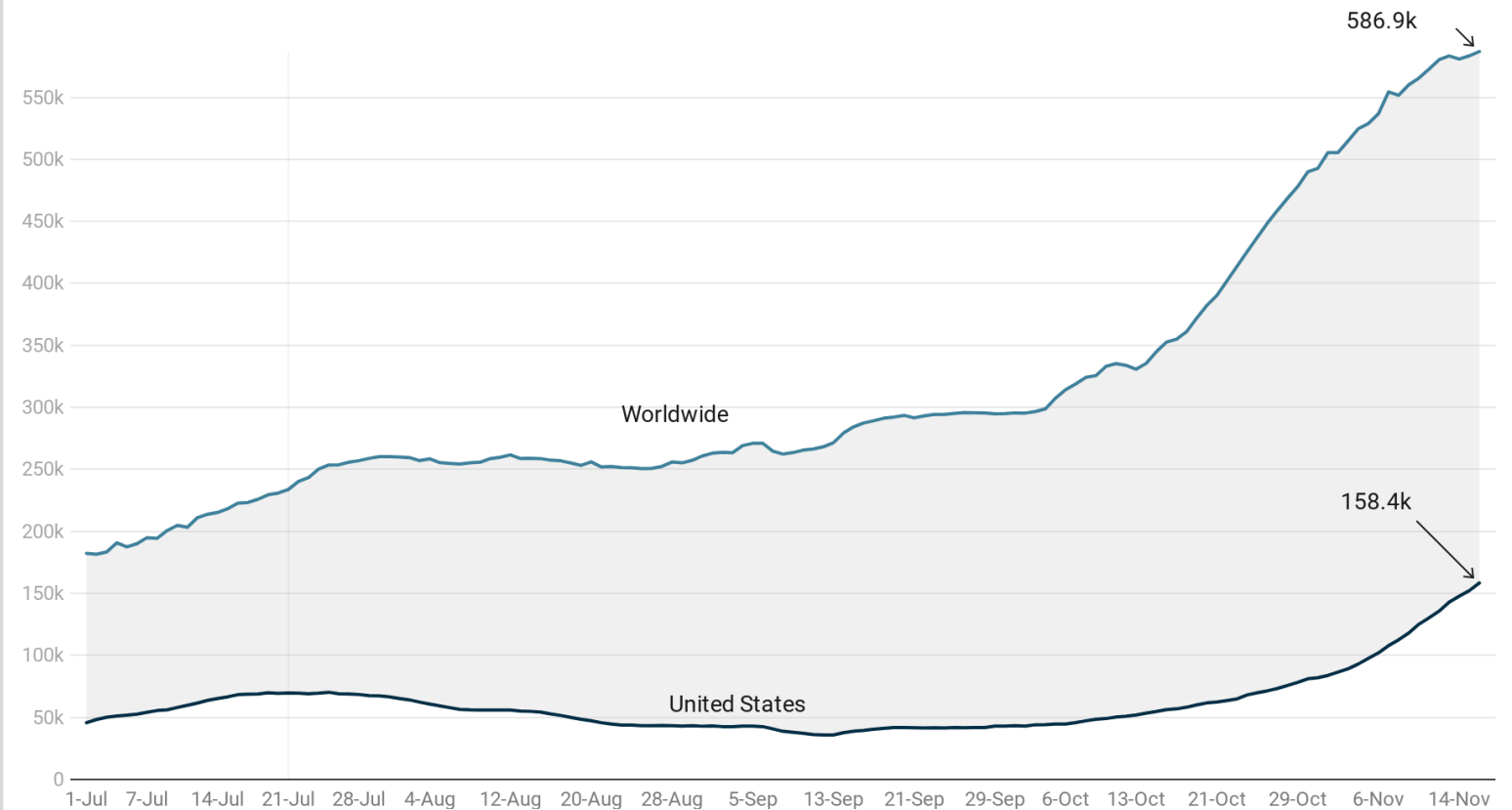


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Worldwide, the rate of growth slowed over the past three weeks

The U.S. was moving in the opposite direction, with the rate of change in new cases *increasing* throughout November (accelerating growth)

The good news – the week-over-week rate of increase has now declined on six consecutive days

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

7-Day Moving Average

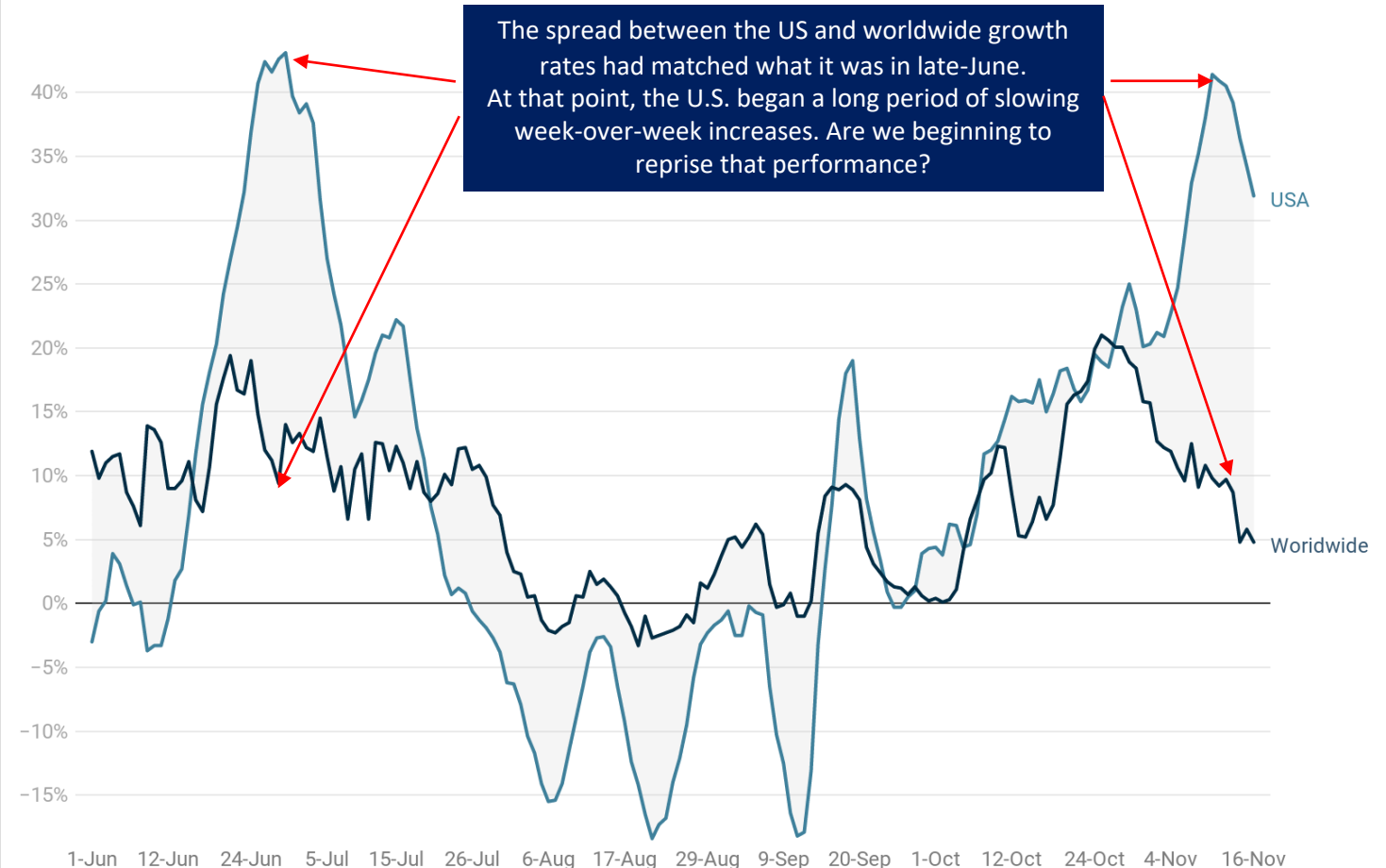


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

One for the physics majors:

The steep rise in new cases over the past week or so ("1C"), was preceded by an increasing rate of week-over-week change in cases ("1B"); this, in turn, was preceded by an increasing *rate of increase* in this variable ("1A")

This trend had now begun to reverse: the *rate of increase* in week-over-week change in new cases ("2A") began declining on November 6; subsequently, the week-over-week change ("2B") began tapering on November 11

If these trends continue, new cases may soon begin to decline ("2C?")

New Case Trends in the United States

Including "first" and "second derivative"

Is an easing in new cases in the near-term future?
The underlying trends provide a hint (however, there is a long-way to go yet)

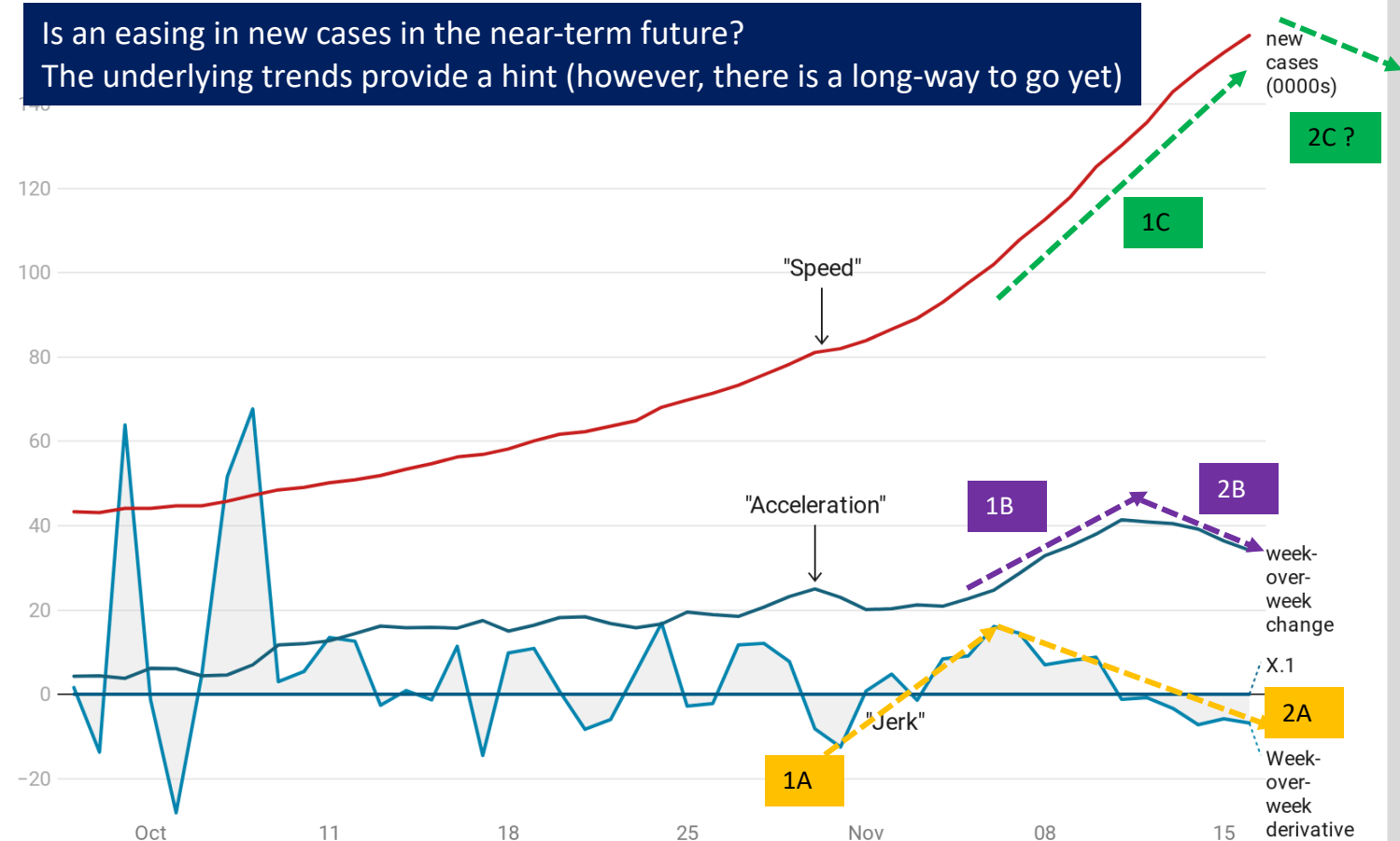


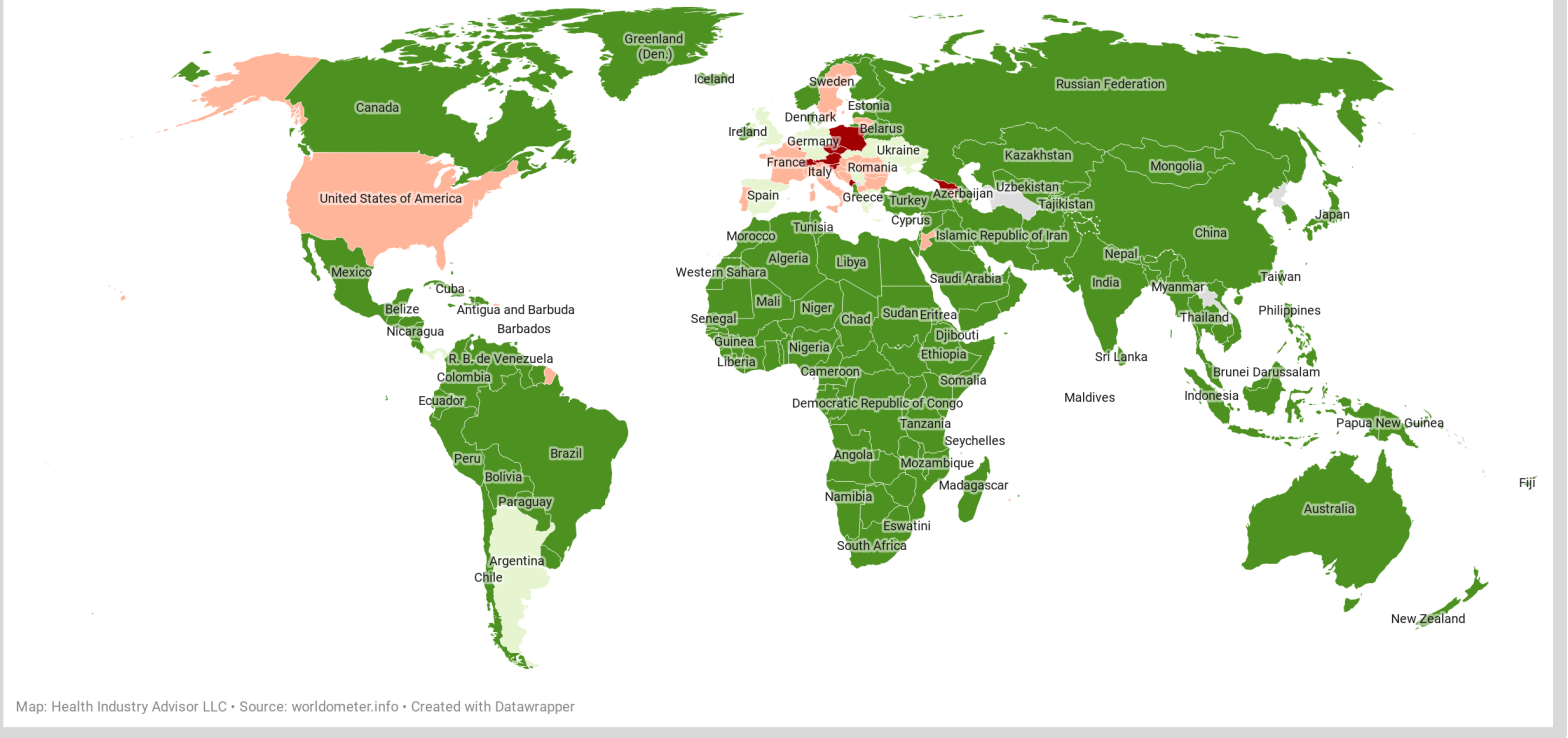
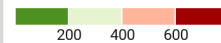
Chart: Health Industry Advisor LLC • Source: worlometers.info • Created with Datawrapper

European countries continue to experience the highest infection rates per capita, along with the U.S.

* - 7-day moving average basis

New Infections / Million

7-Day Moving Average, As of November 12



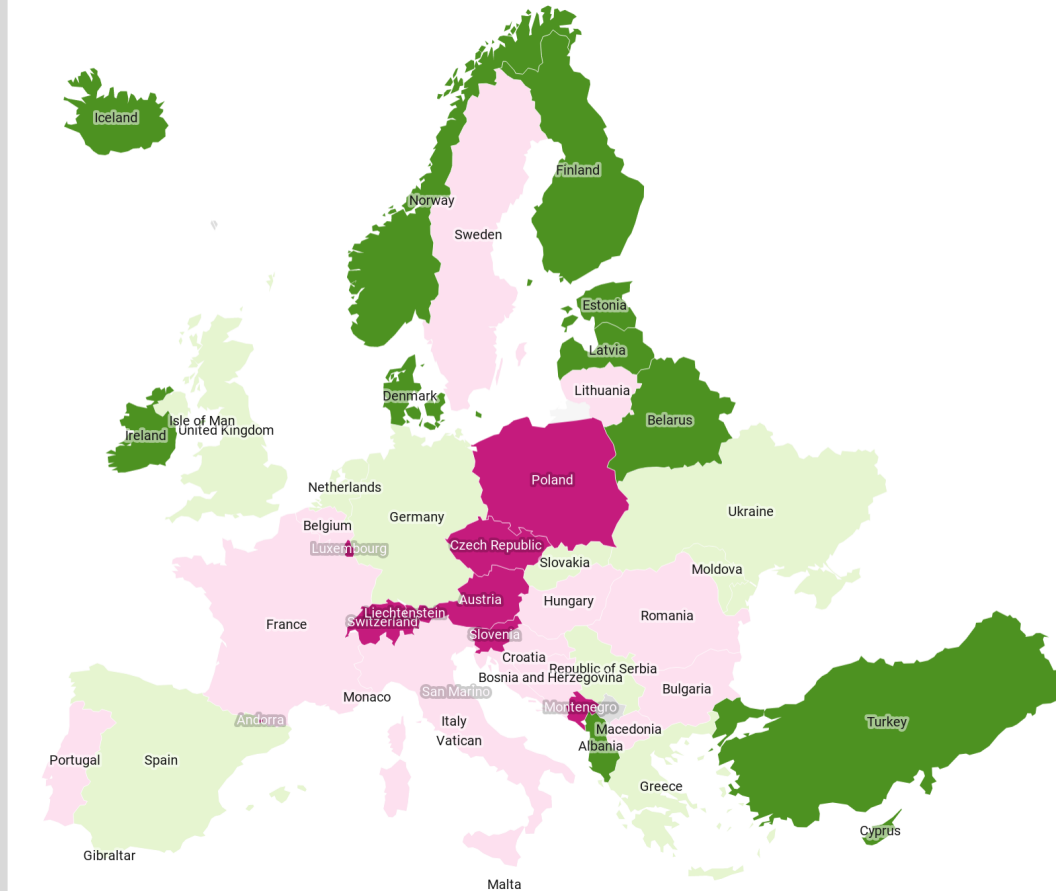
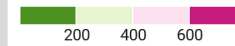
Note: Change in scale from prior reports, in order to better distinguish relative infection rates

High rates of new infections in Austria, Czechia, Liechtenstein, Luxembourg, Montenegro, Poland, Slovenia and Switzerland

* - 7-day moving average basis

New Daily Infections / Million - Europe

7-Day Moving Average, As of November 16



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

Note: Change in scale from prior reports, in order to better distinguish relative infection rates

Among countries with > 100,00 population, thirty-eight countries currently have new daily infection rates/1M* > 200

In order, Montenegro, Luxembourg, Georgia, Austria, and French Polynesia have the highest rates (each >700)

Of the nine countries with the highest rates, six experienced declines in this rate since last week

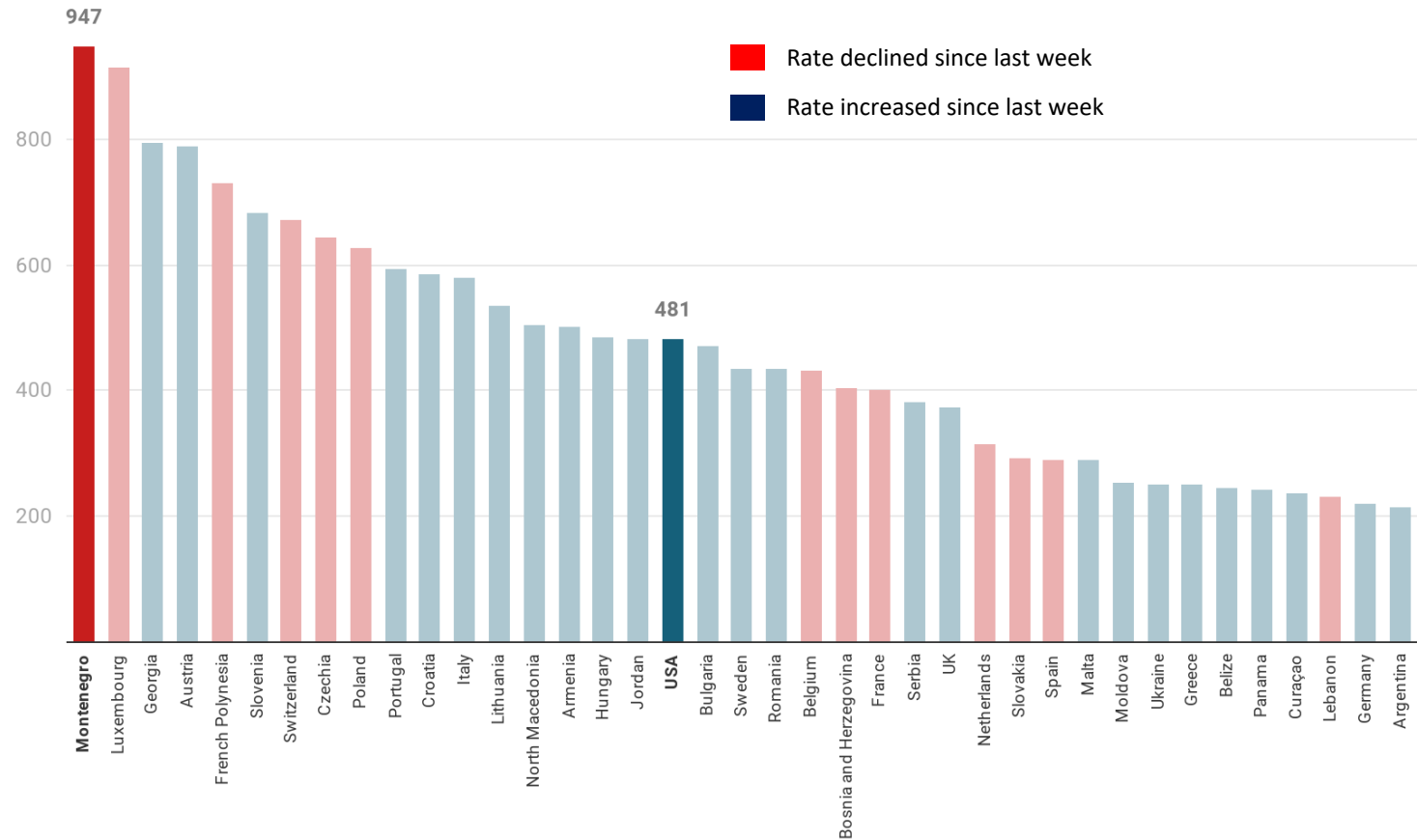
Europe (and Eurasia) is home to the twenty-nine of the thirty-two countries with the highest rates

The United States ranked eighteenth in infections per capita last week among these countries

* - 7-day moving average basis

New Daily Cases / Million

7-Day Moving Average, As of November 16



Countries > 100,000

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

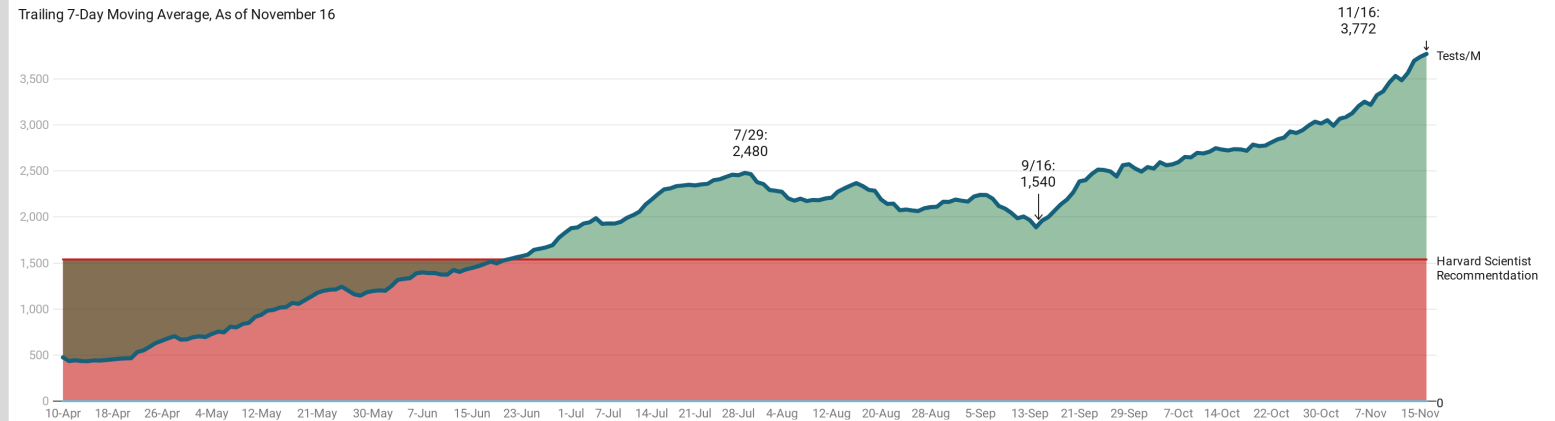
The 7-day average testing volume has increased by 50% since its late-July peak – setting new highs twenty-one of the past twenty-six days

The 7-day test-positive rate, however, has been trending upward since the beginning of October - increasing on twenty-one consecutive days

This rate is now above the target established by the CDC for Phase 3 re-openings

Daily Tests Per 1 Million - United States

Trailing 7-Day Moving Average, As of November 16

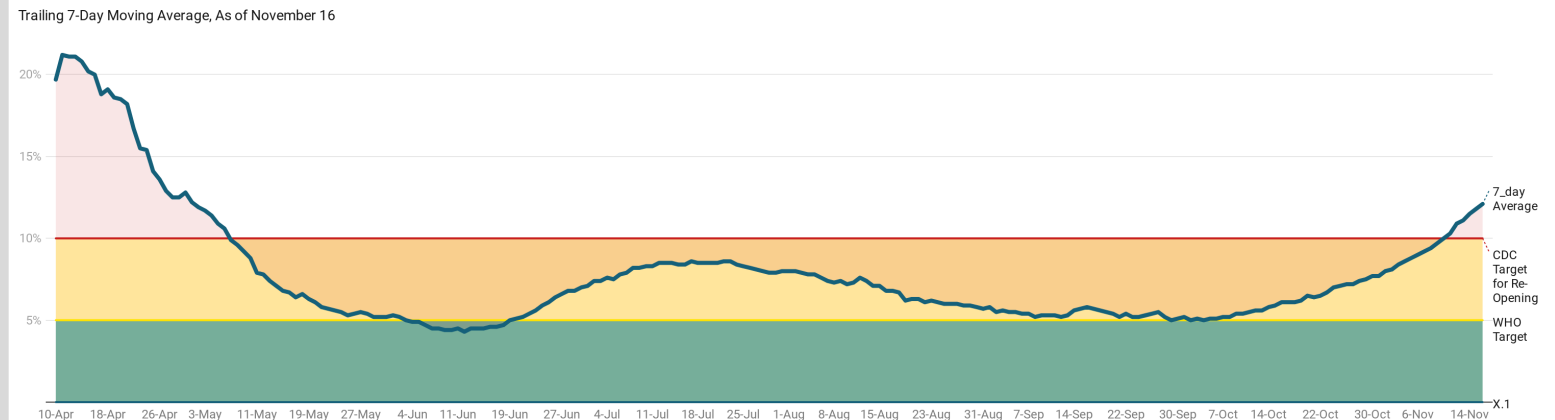


Health Industry Advisor LLC analysis

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

Test-Positive Rate - United States

Trailing 7-Day Moving Average, As of November 16



Health Industry Advisor LLC analysis

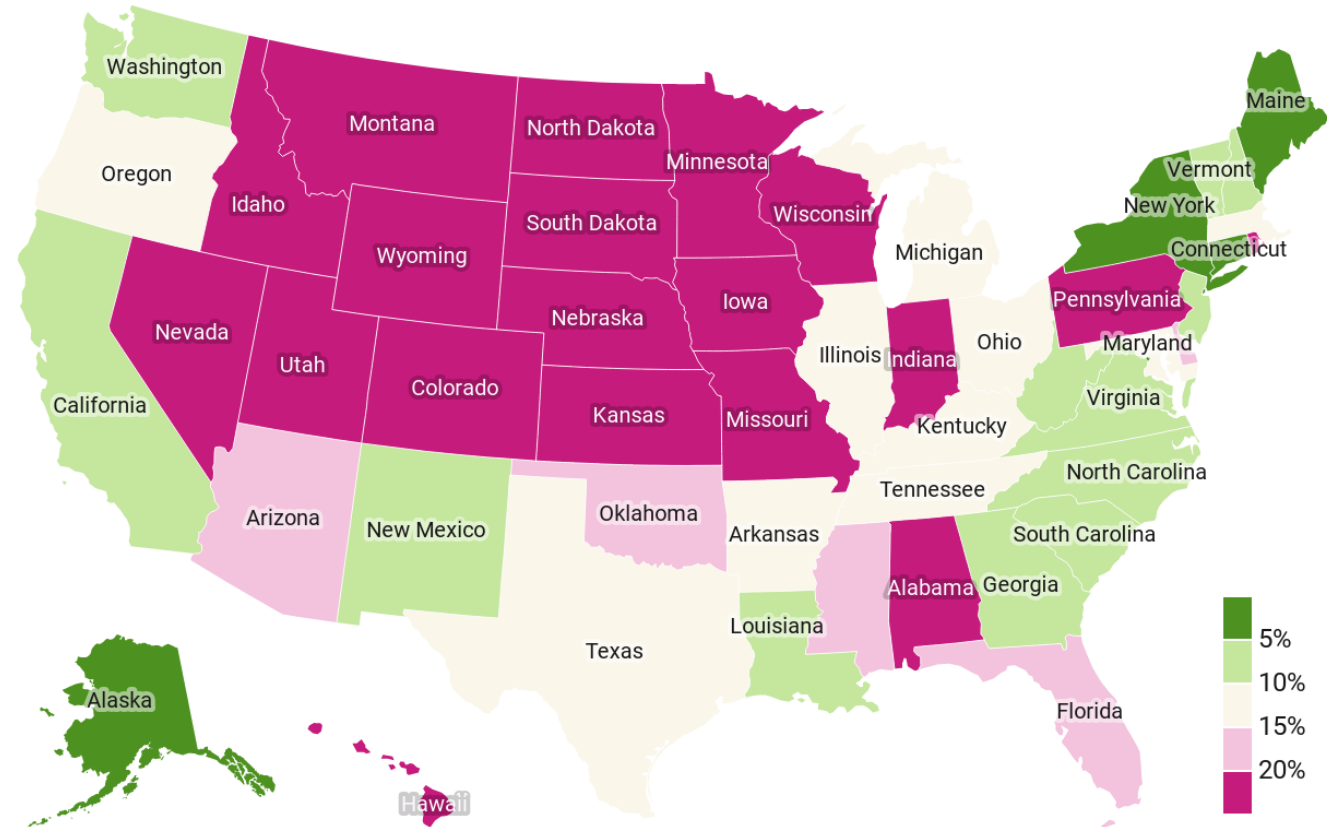
Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking Project • Created with Datawrapper

Seventeen states have 7-day test-positive rates >20%

Only 13 states have rates lower than the CDC target for Phase 3 re-openings

Test-Positive Rate

7-Day Moving Average, As of November 11



Health Industry Advisor LLC analysis

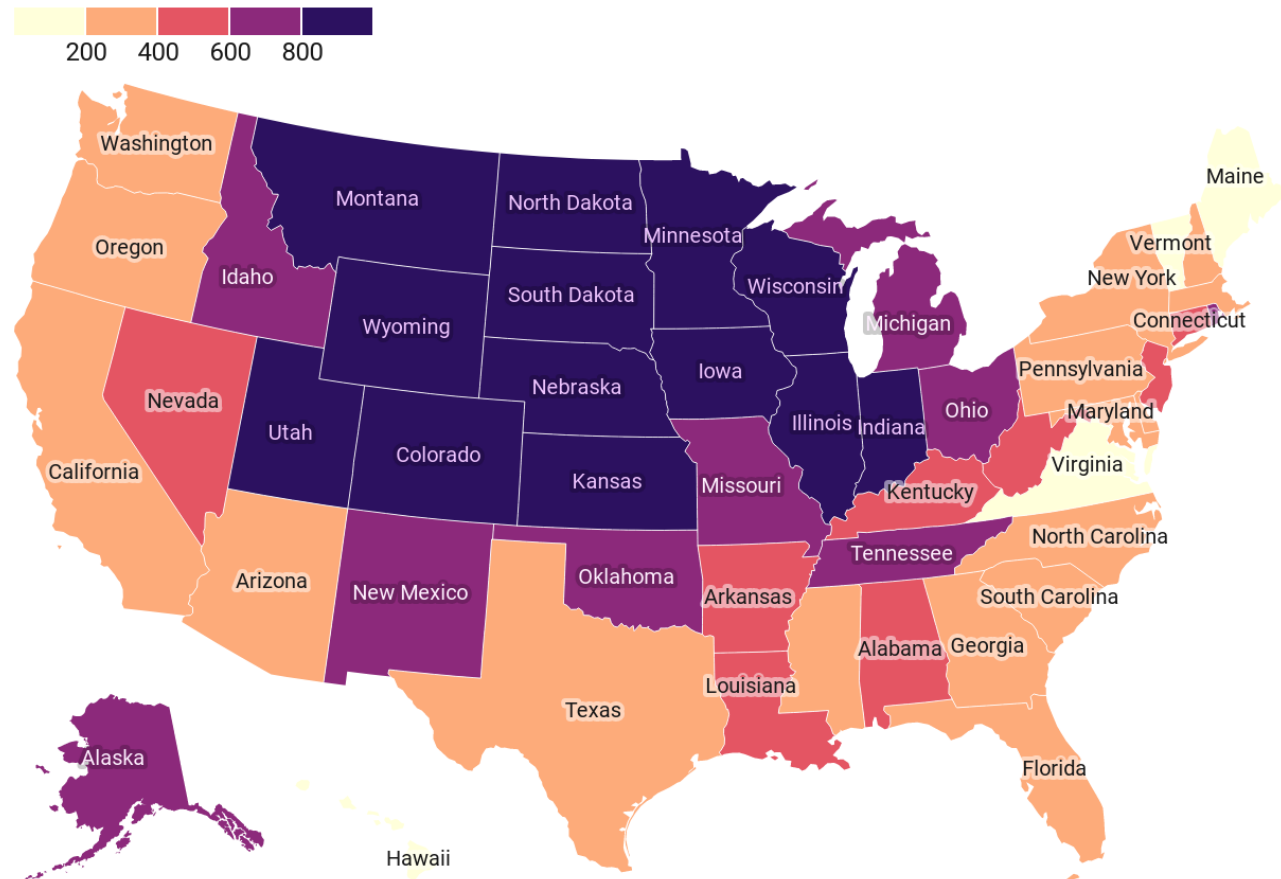
Map: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking Project • Created with Datawrapper

Newly detected cases per capita are high across the country

The highest rates are found in the Upper Midwest, the Plains and the Mountain States

New Cases / Million

7-Day Moving Average, As of November 16



Map: Health Industry Advisor LLC • Created with Datawrapper

In Nevada, more than ½ of all inpatient beds are occupied by Covid-19 patients

In Connecticut and Wisconsin, its more than 40%

In Illinois, Indiana, Iowa, Michigan, Minnesota, Missouri, Rhode Island and South Dakota, its more than 30%

For the U.S. overall, its 23%

Covid-19 Patients / Total Inpatient Beds

7-Day Moving Average, As of November 16

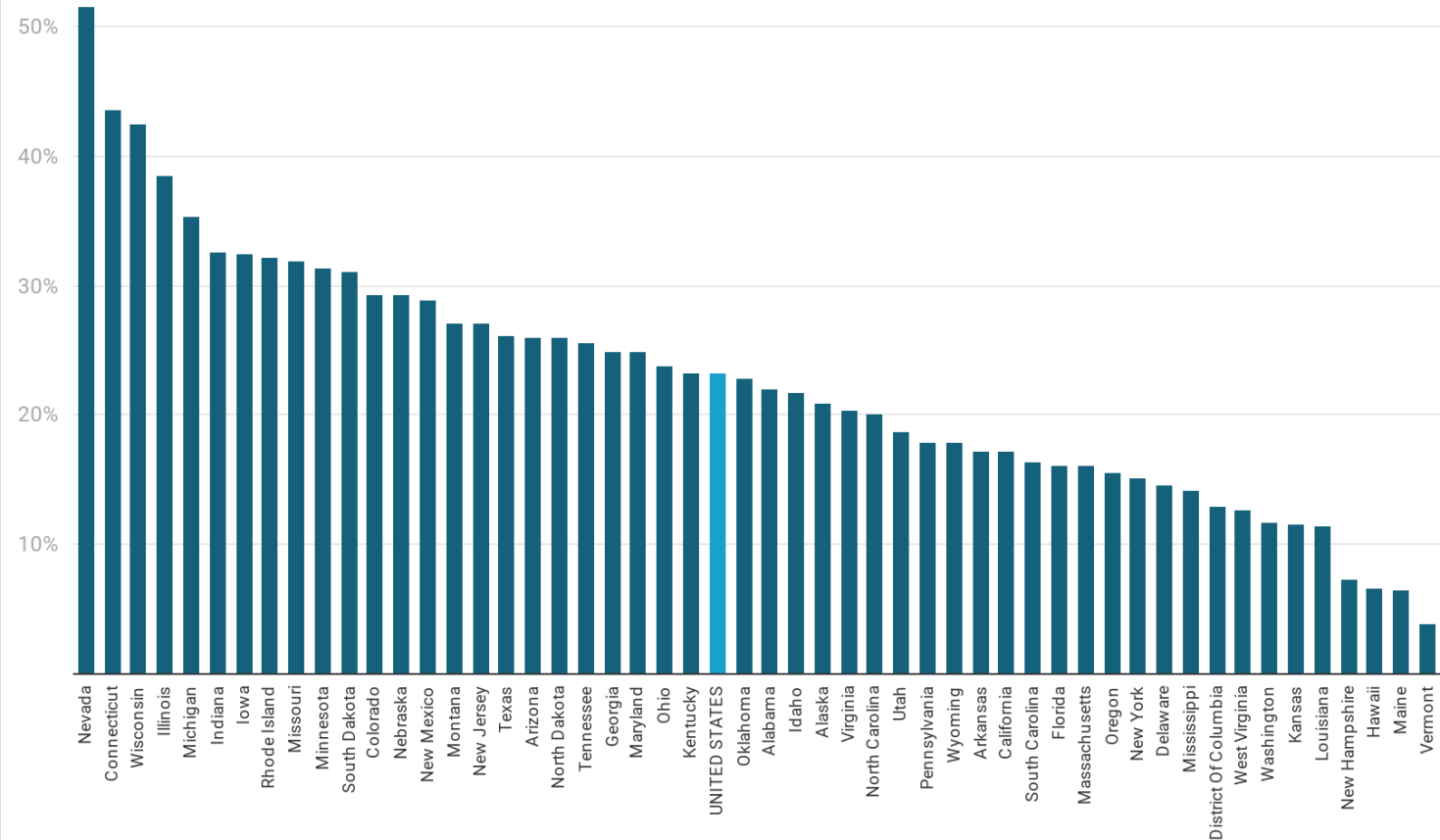


Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking project & worldometers.info • Created with Datawrapper

The highest average census per new case is currently experienced in Georgia, the District of Columbia, Louisiana and Mississippi

The lowest rates are found in Kansas, Rhode Island, Connecticut and Vermont

Contrast these rates to those experienced in selected hard-hit states during earlier surges:

- Arizona: 305 (4/20)
- California: 416 (4/17)
- Connecticut: 293 (4/29)
- Massachusetts: 475 (6/21)
- Michigan: 422 (4/21)
- New York: 330 (5/22)

Covid-19 Census / 100 New Cases

7-Day Moving Average, As of November 16

U.S. Peak (4/19)

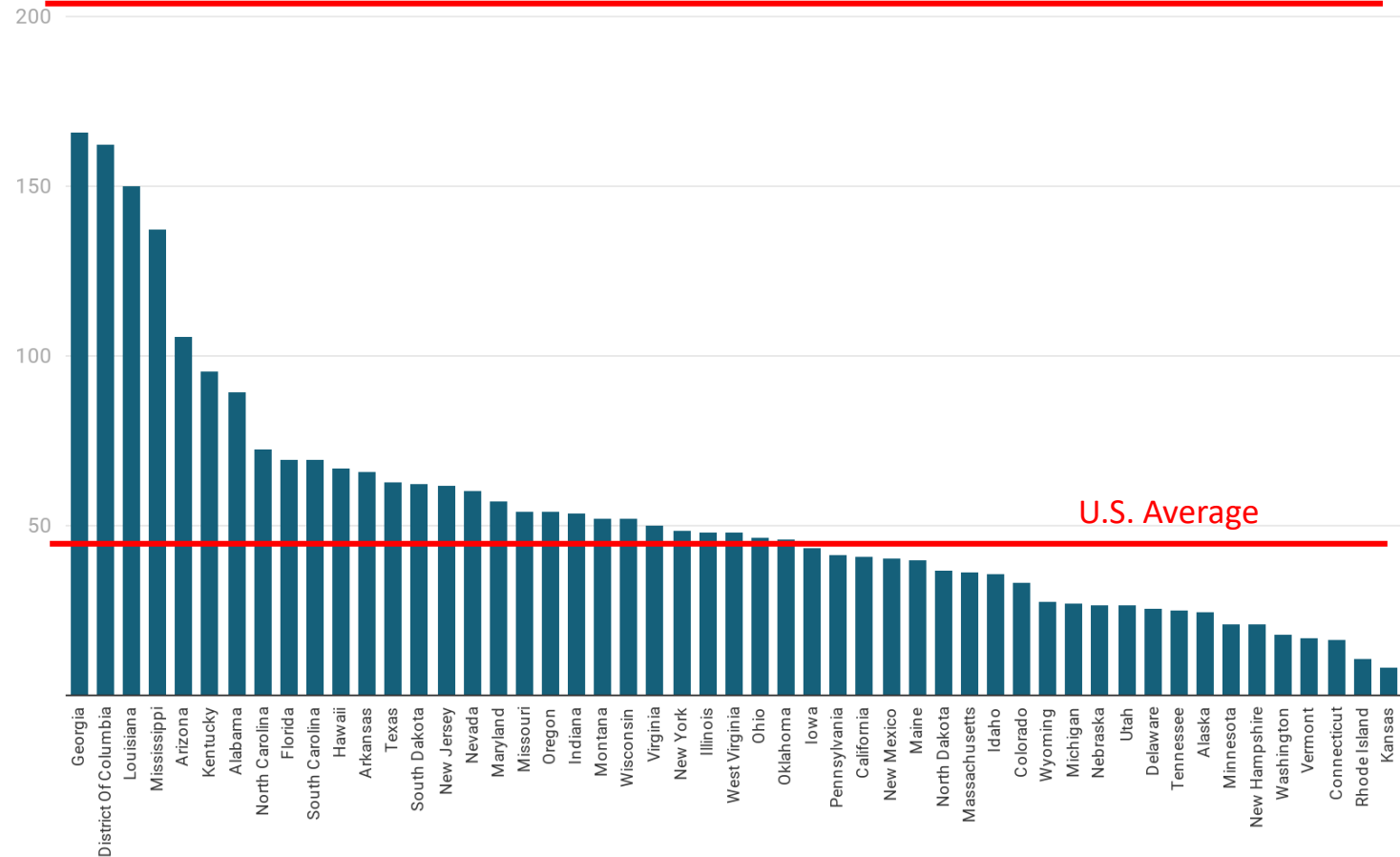


Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid tracking Project & worldometers.info • Created with Datawrapper

Covid-19 Hospitalizations, while increasing, have not kept pace with the increase in newly-detected cases:

The average Covid-19 census per 100 new cases has declined on sixteen consecutive days and twenty-five of the past twenty-six days

This rate has been reduced by 1/2 since mid-September and by ¾ since mid-May

Covid-19 Hospital Census / 100 Daily New Detected Cases

7-Day Moving Average, As of November 16

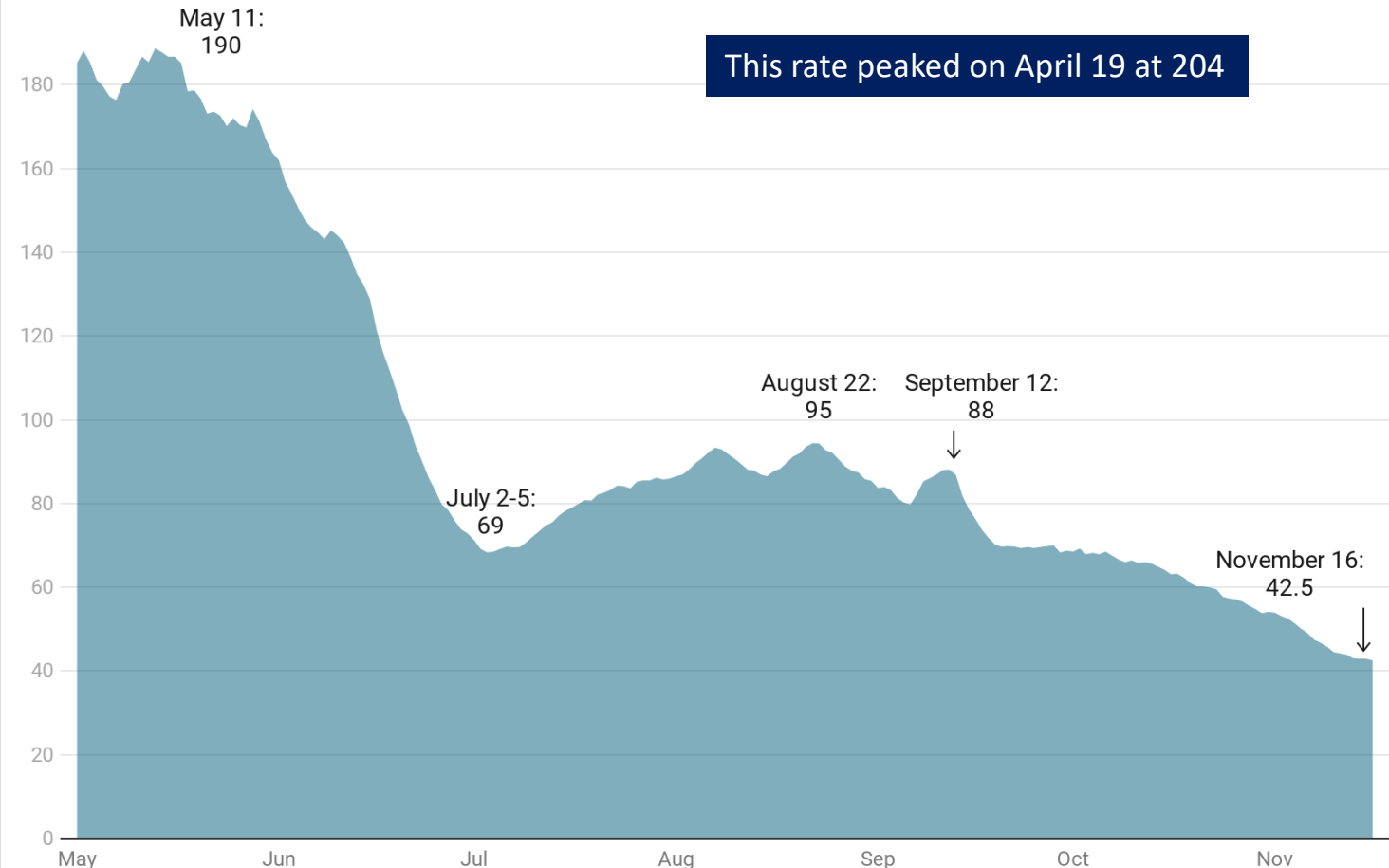


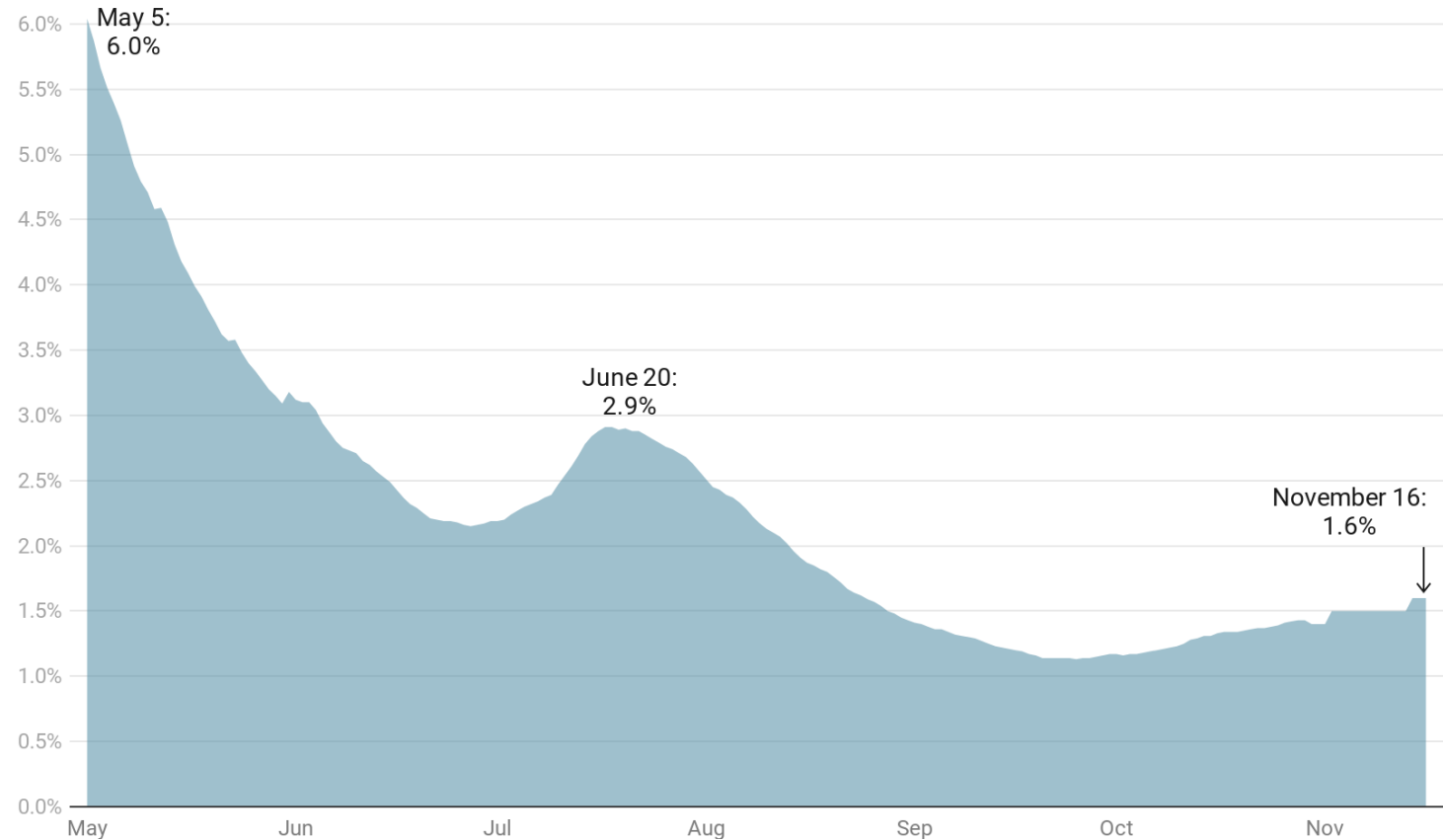
Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking project & worldometers.info • Created with Datawrapper

Despite the recent surge in new and active cases, the likelihood of an active Covid-19 person would be in the hospital remains low

This likelihood is $\frac{1}{2}$ what it was during the July surge and $\frac{1}{4}$ of what it was in May

% of Active Covid-19 Cases in Hospital

As of November 16



Using 7-day average covid-19 census

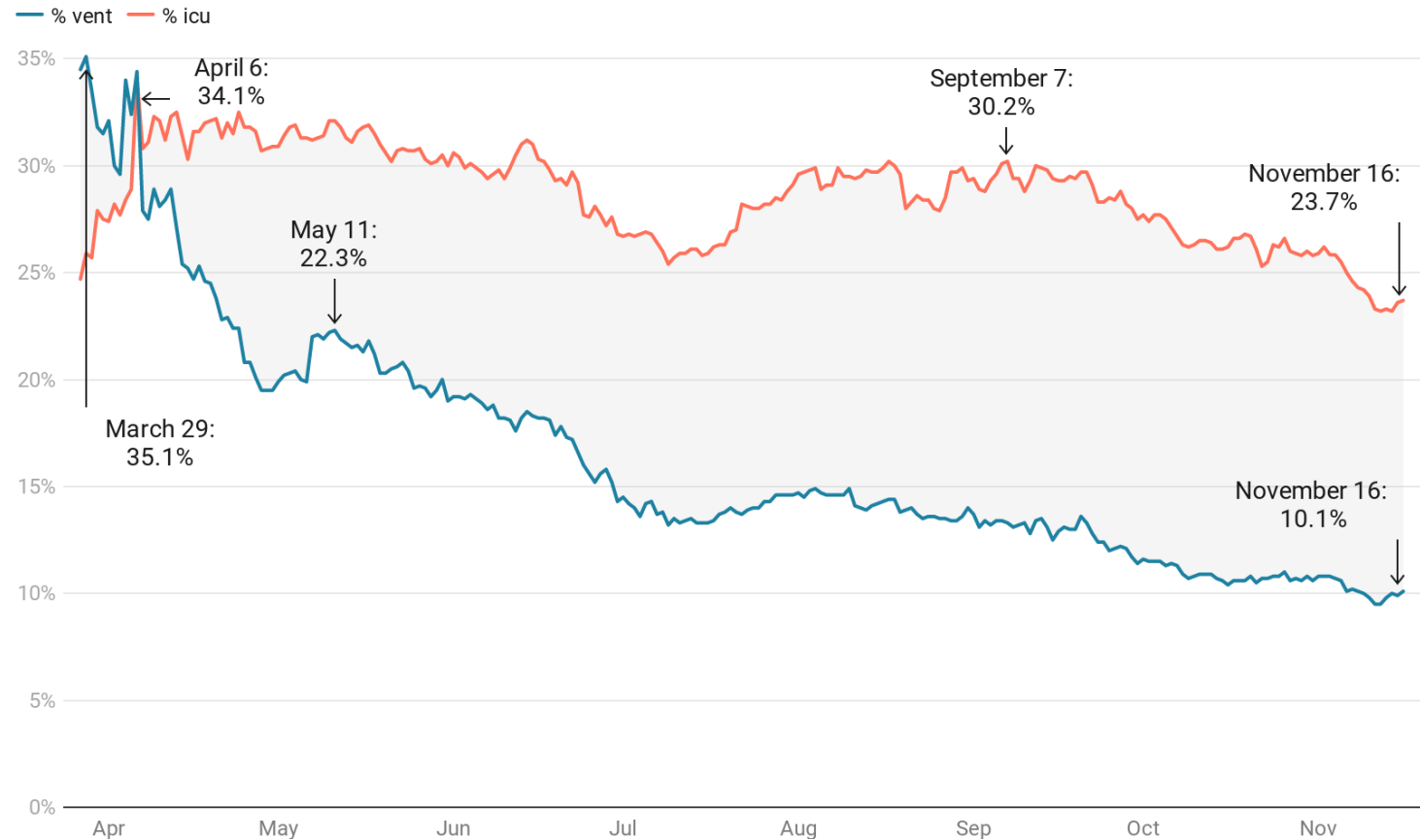
Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking project & worldometers.info • Created with Datawrapper

The likelihood of a hospitalized Covid-19 patient would require ICU care has declined 21% since early-September and 32% since early-April

The likelihood of a hospitalized Covid-19 patients would be on a ventilator has reduced by nearly 60% since mid-May and by >70% since March

Severity of Hospitalized Patients

% of patients on ventilators and in the ICU, As of November 16



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) has declined for five consecutive days, after increasing the preceding six weeks

This rate remains than it was in in March/April, and the rate of influenza visits remains low

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

As of November 13

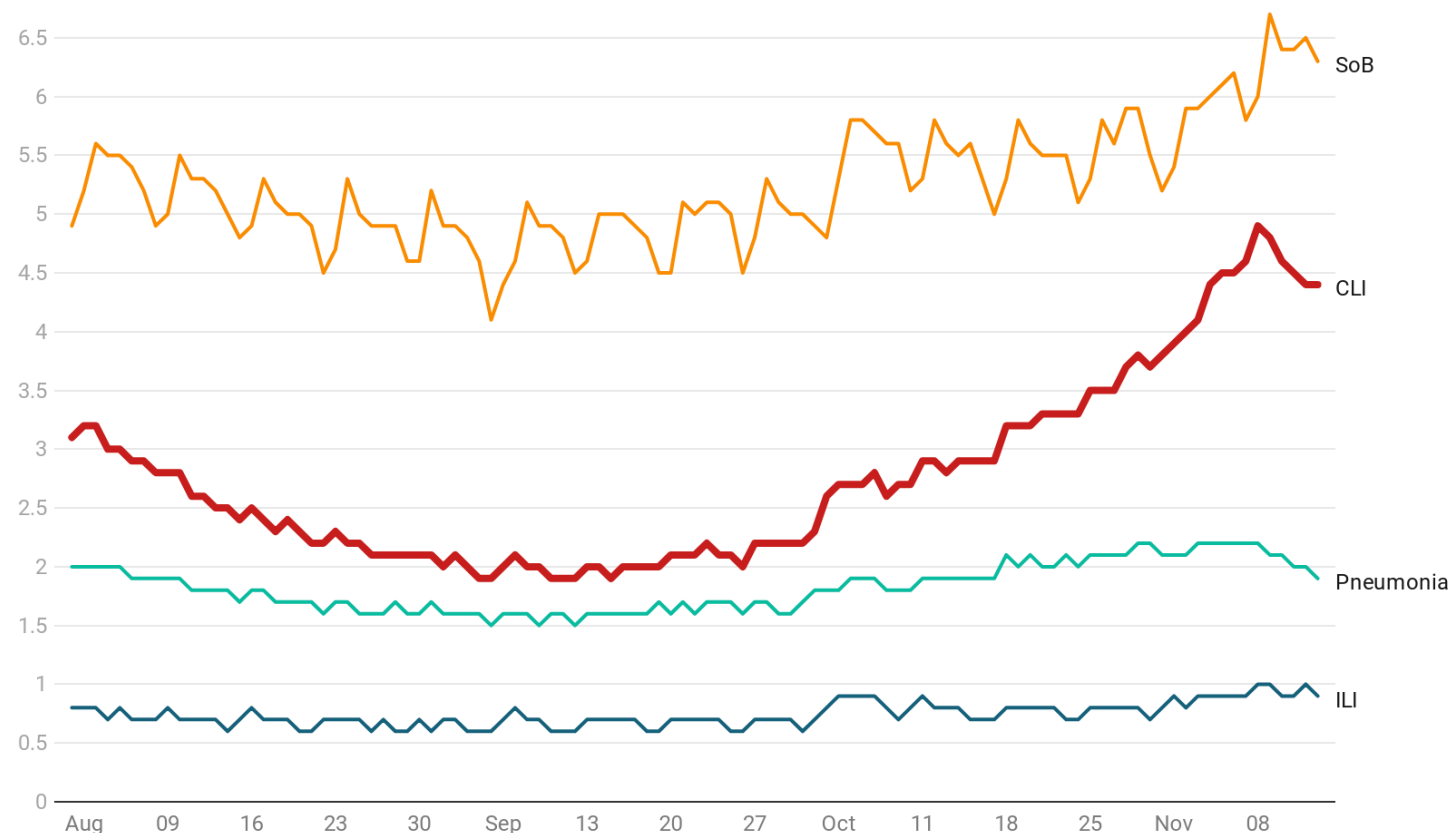


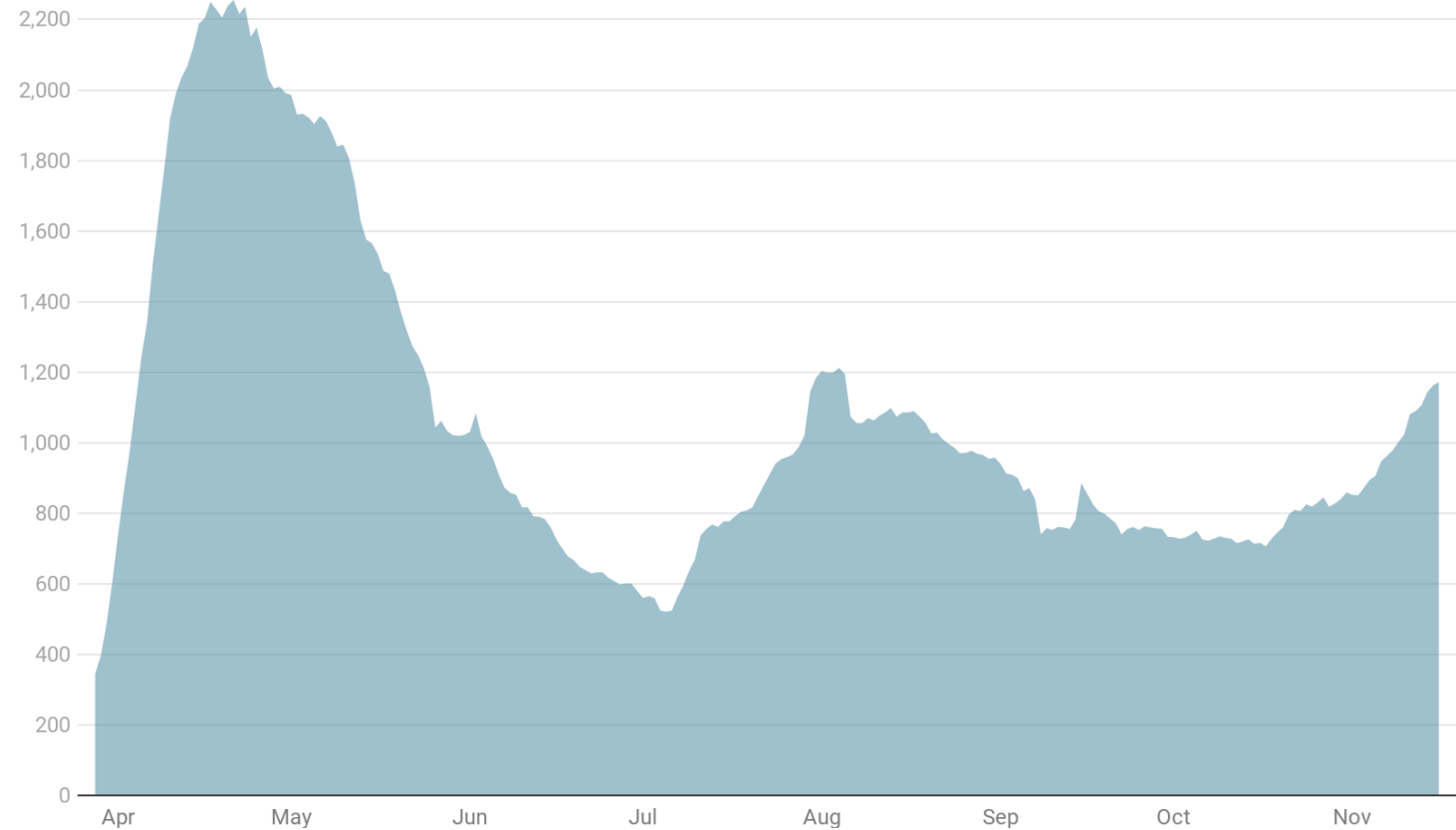
Chart: Health Industry Advisor LLC • Source: CDC • Created with Datawrapper

The recent uptick in newly-detected cases is resulting in increased deaths:

The 7-day average deaths per day has increased fourteen consecutive days

Deaths Reported With Coronavirus in the U.S.

Trailing 7-Day Moving Average, As of November 16



Health Industry Advisor LLC analysis

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

Deaths with coronavirus,
relative to new cases
(lagged 4 weeks) have
moved within a narrow
range for the past month

This rate declined rapidly in
July and August

7-day Average Deaths / 7-Day Average New Cases (4-Week Lag)

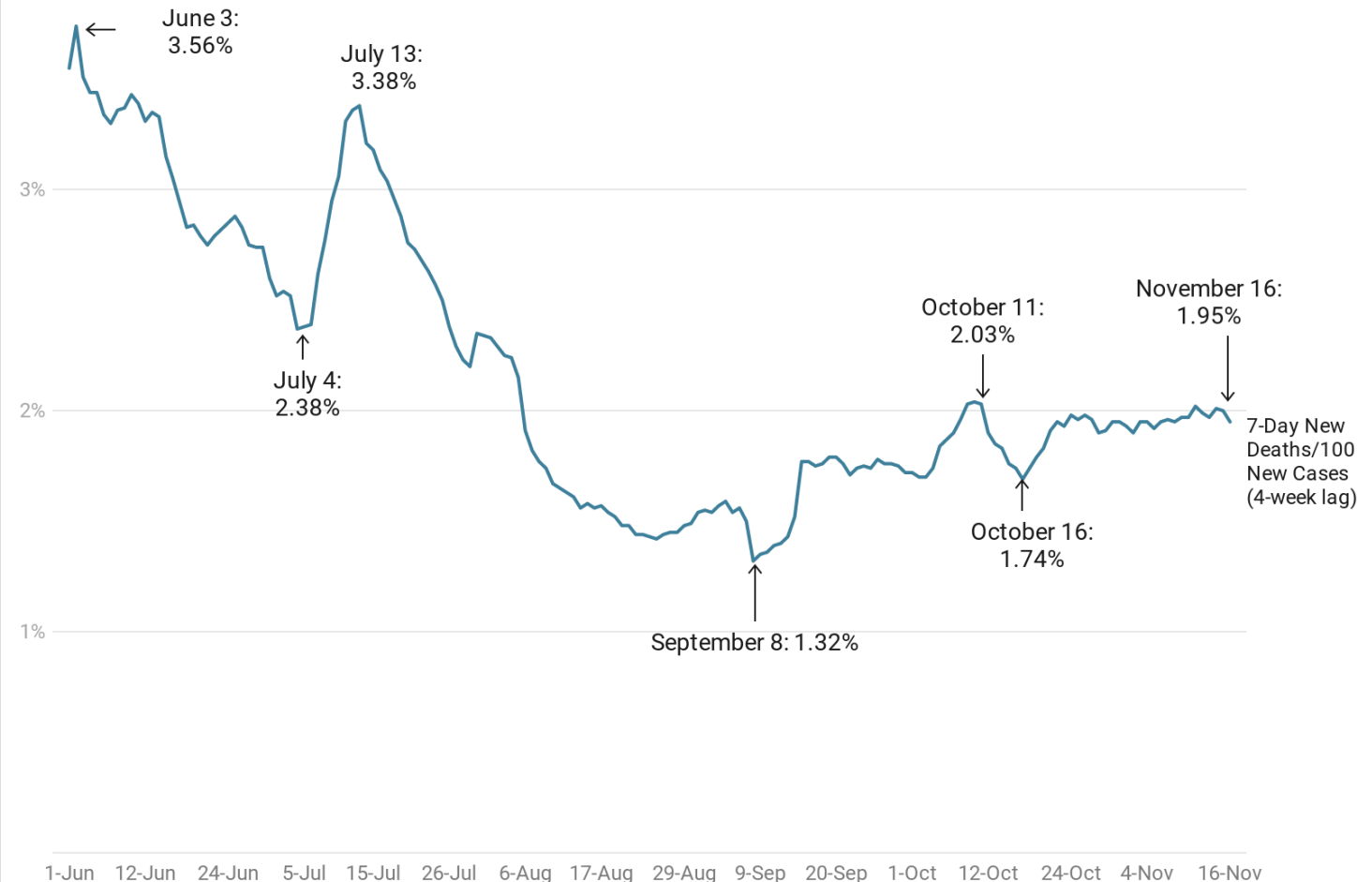


Chart: Health Industry Advisor LLC • Source: worlometers.info • Created with Datawrapper

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>