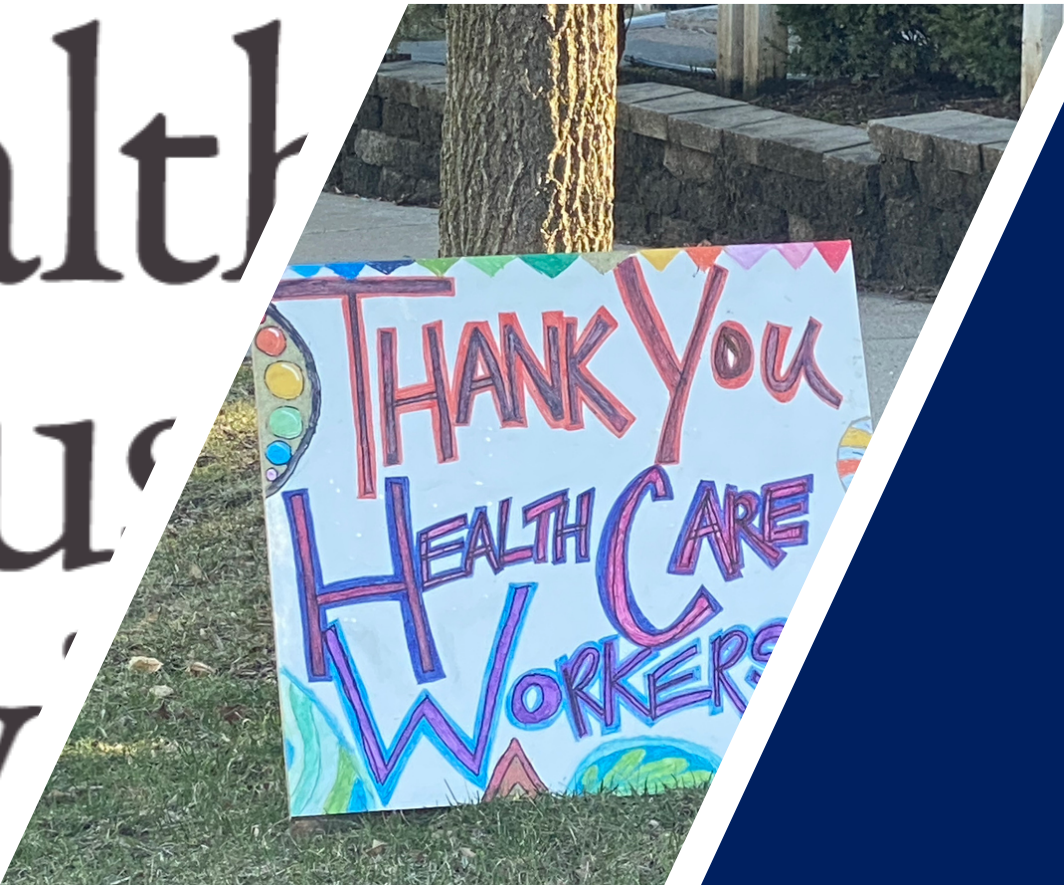




Health
Industry
Adv



Issue # 203

Wednesday, November 4, 2020

COVID-19 Report

Highlights

- Georgia modified its definition of probable cases and retroactively increased year-to-date case totals by nearly 30,000. Our source has adjusted the daily case totals accordingly
- The United States continues to experience high rates of new Covid-19 cases:
 - **For the second consecutive week, new cases exceeded the composite forecast of more than a dozen independent models**
 - Accordingly, these models have again upped their forecasts for the upcoming four weeks
 - There were more new cases detected yesterday than on any other Tuesday since the pandemic began
 - **The rate of new case growth is slowing, however, even though new cases continue to increase. Consider this analogy: for six weeks or more, the U.S had the (new case) accelerator pressed to the floor; in the past week, we have eased back on the gas pedal *somewhat*. We have yet to take our foot off the gas, let alone applied the brakes**
- As confirmed by CDC studies, true Covid-19 infections are substantially higher than detected via testing. Oliver Wyman is one source of estimated true infections: this source pegs the true infection rate in the U.S. at 10.3% of the population, with a range of 5.9-18.1%. By comparison, the detected rate is 2.9%
- There have been three distinct surges in new cases in the U.S.: in March/April, the initial surge was concentrated in the Northeast; In June/July, Arizona, Florida, Georgia and Texas were among the hardest-hit states; and, currently, the Dakotas, Montana and Wisconsin are among those hardest-hit
- **Contrasting the experience of states hard-hit during these three surges indicates notable differences in experience: these suggests that detected infection rates are far higher now than in earlier surges; rates of hospitalization and mortality, however, seem to have declined with each surge**
- The peak infection rates per capita for New York and New Jersey in March/April were comparable to those for Arizona and Texas in June/July; the peak infection rates (to-date, as they are still rising) in North Dakota and Wisconsin are more than 2x what was experienced in the earlier surges
- Hospitalization rates per case were sharply lower (~50%) for the states hard-hit in the second surge than the first and are even lower (another 50% or more) in the current surge
- Case fatality rates for states in the second surge were 1/2 those of states in the initial surge; trends suggest a further decline for states in the current surge
- **Deaths with the coronavirus have been increasing throughout October and November, as should be anticipated following the surge in new cases. The case fatality rate, however, has been stable throughout this period**
- Covid-19 inpatient census also has been increasing with the growth in new cases:
 - **On a same-day, prior-week basis, Covid-19 census has increased every day since September 23**
 - **Nevertheless, the rate of hospitalizations per new case continues to decline: this rate as of yesterday was 40% lower than it was on September 12**
- Testing per capita continued to increase - a pattern that began in mid-September. During this time, testing per capita has increased by 60%. Unfortunately, the test-positive% has been increasing since the beginning of October

Oliver Wyman provides estimates of actual infection rates

The latest estimates is that 10.3% of the U.S. population has been infected by the SARS-CoV-2 virus (range of 5.9-18.1%)

By comparison, the currently reported detected cases represent 2.9% of the U.S. population

U.S. Infection Rates - Detected v. Estimated Actual

Based on Oliver Wyman's Estimates, As of November 3

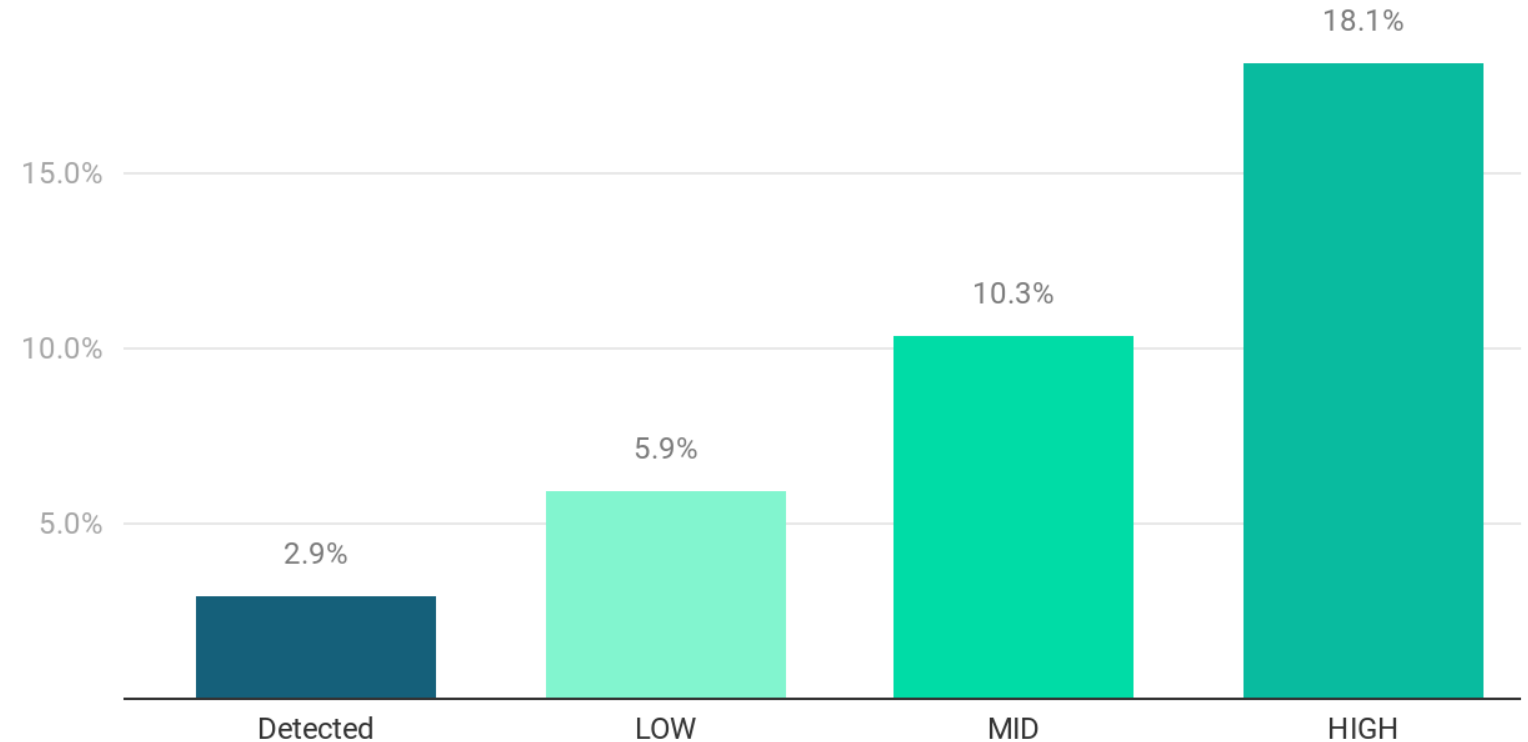


Chart: Health Industry Advisor LLC • Source: Oliver Wyman & Worldometers.info • Created with Datawrapper

For the second straight week, cases last week were substantially greater than the composite projection

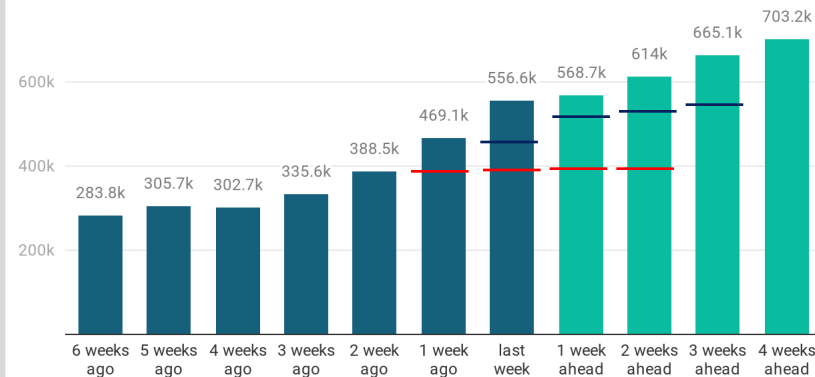
The latest composite projection now show continued increases through the 4-week projection window

Deaths, however, were closer to projected levels, although they are now projected to increase over the forecast period

* Composite of > a dozen projections, compiled each Tuesday by Covid-19 Forecast Hub and reported to the CDC

Newly Detected Cases, U.S. - Actual & Forecast

As of October 27



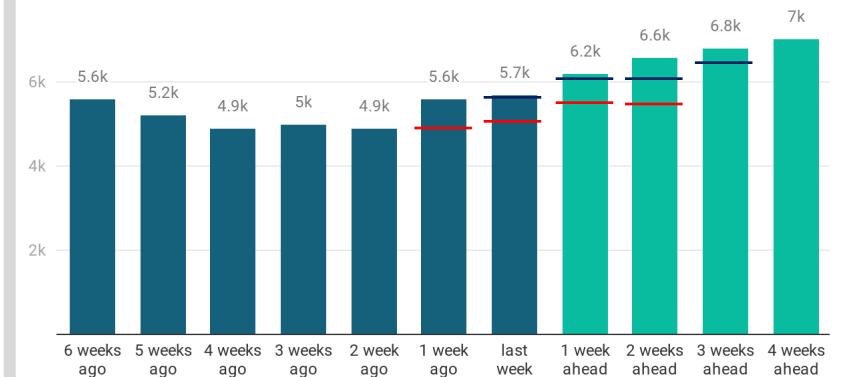
Composite of > a dozen independent models

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

— Composite projection, as of October 20
— Composite projection, as of October 27

Newly Reported Deaths U.S. - Actual & Forecast

As of October 27



Composite of > a dozen independent models

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

Comparing states that were hardest hit in March/April (New York and New Jersey), in June/July (Arizona and Texas) and those currently hard-hit (North Dakota and Wisconsin):

Peak infection rates are significantly higher in states currently hard-hit

Hospitalization rates were sharply lower among states hard-hit in the June/July surge and even lower among states currently being hard-hit

Death rates were sharply lower among states hard-hit in June/July; rates could be as low or lower in states currently being hard-hit, assuming that rates are lowest for cases at peak (pattern set by other states)

Comparison of Hospitalizations & Death Rates

Two States From Each of 3 Surges in the U.S., All data are 7-day moving averages

	New York	New Jersey	Arizona	Texas	North Dakota	Wisconsin
Peak New Daily Infections / M	505.8	399.4	507.9	360.1	1510.4	779.2
Date of Peak	10-Apr	22-Apr	7-Jul	19-Jul	3-Nov	3-Nov
Covid-19 Census / 100 New Cases	176.6	214.4	83.8	101	25.6	33.6
Deaths / New Cases - 4 weeks later	3.7%	4.6%	1.7%	1.9%	2.7%	1.5%

Infection rates in North Dakota and Wisconsin may not have peaked

Table: Health Industry Advisor LLC • Created with Datawrapper

Note: Deaths / New Case for North Dakota and Wisconsin are bases on cases 4 weeks ago. Should these states follow the pattern established by other states, these rates should drop >1 percentage point for new cases at peak

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

The 7-day average deaths per day has generally been higher from mid-October to now than from early-September through early October

Deaths Reported With Coronavirus in the U.S.

Trailing 7-Day Moving Average, As of November 3



Health Industry Advisor LLC analysis

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

There were as many or more newly-reported deaths on Tuesday than on any other Tuesday since August 23

Newly-Reported Deaths

Through November 3

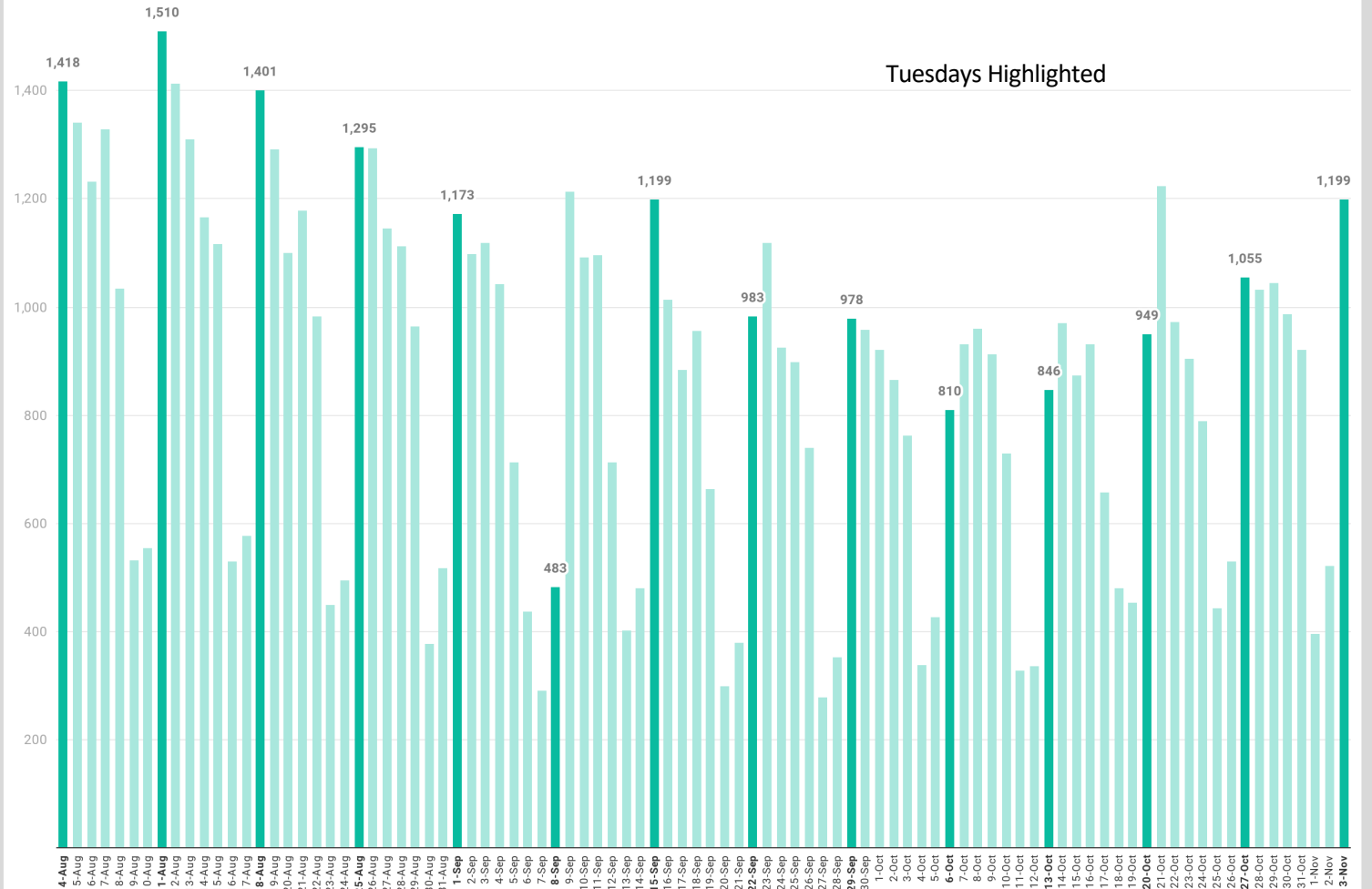


Chart: Health Industry Advisor LLC • Source: eorlometers.info • Created with Datawrapper

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)

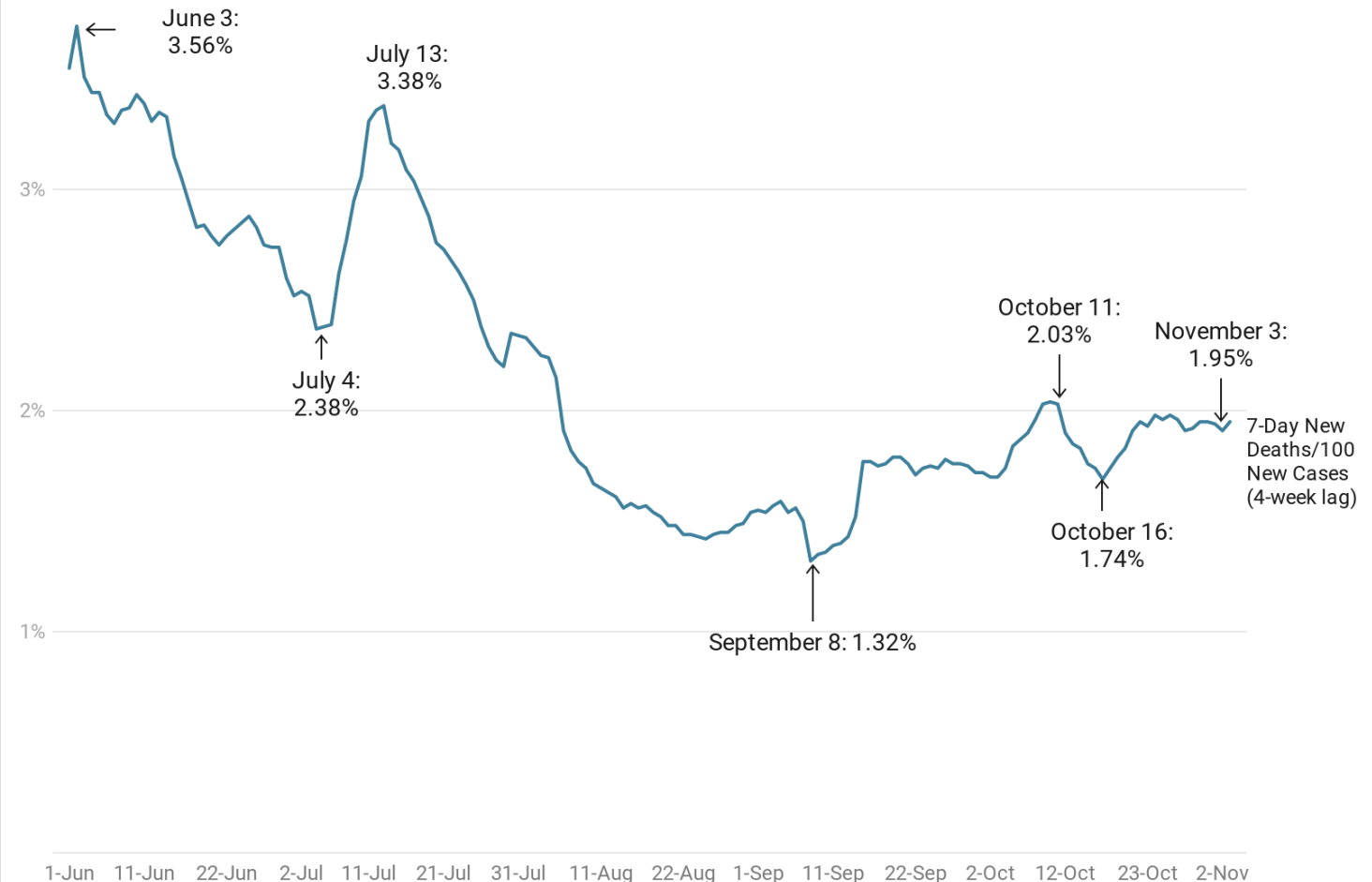
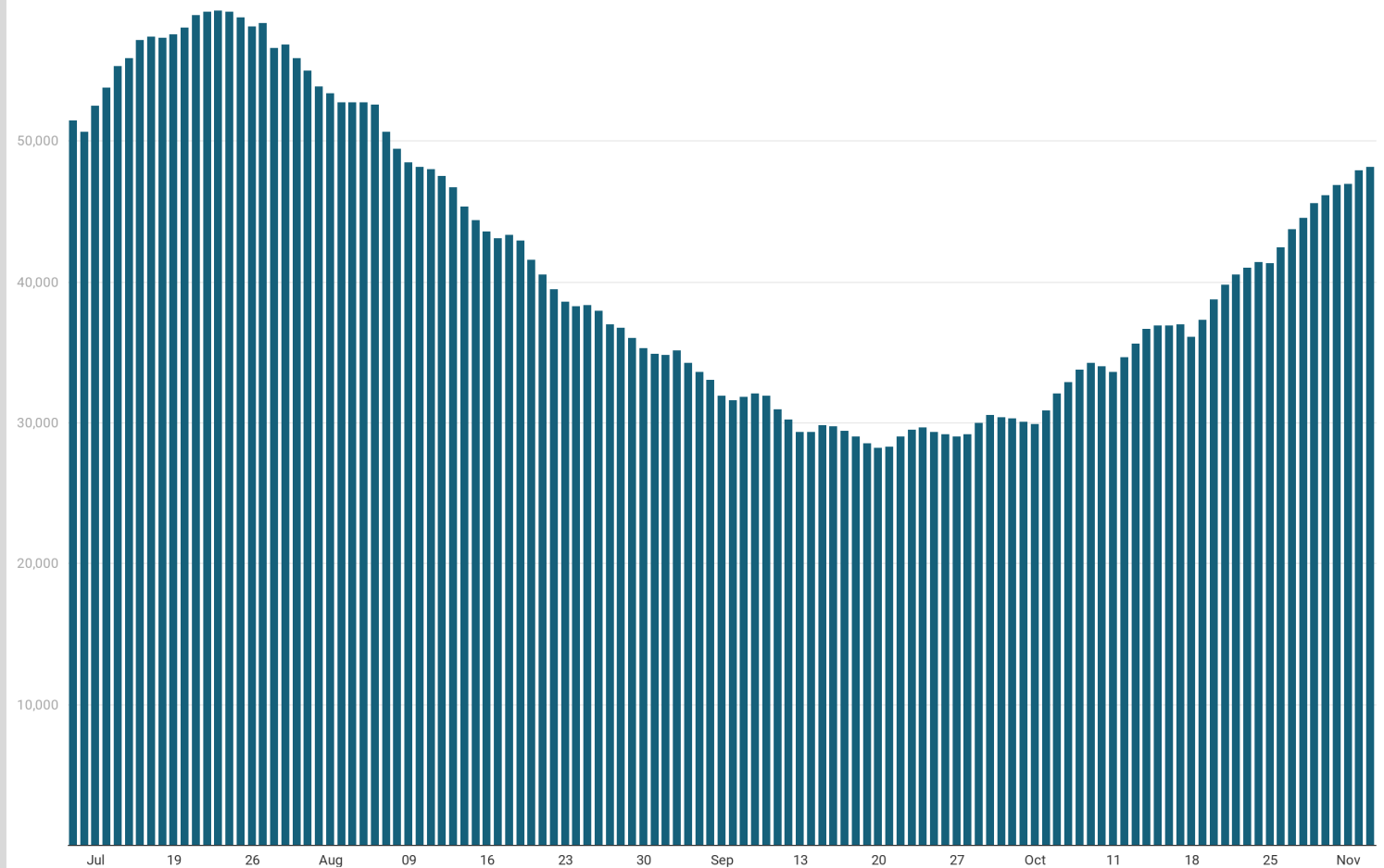


Chart: Health Industry Advisor LLC • Source: worlometers.info • Created with Datawrapper

On a same-day, prior-week basis, inpatient Covid-19 census increased every day since September 23

Hospital Census: COVID-19 Patients

As of November 3



Florida data first available on July 10

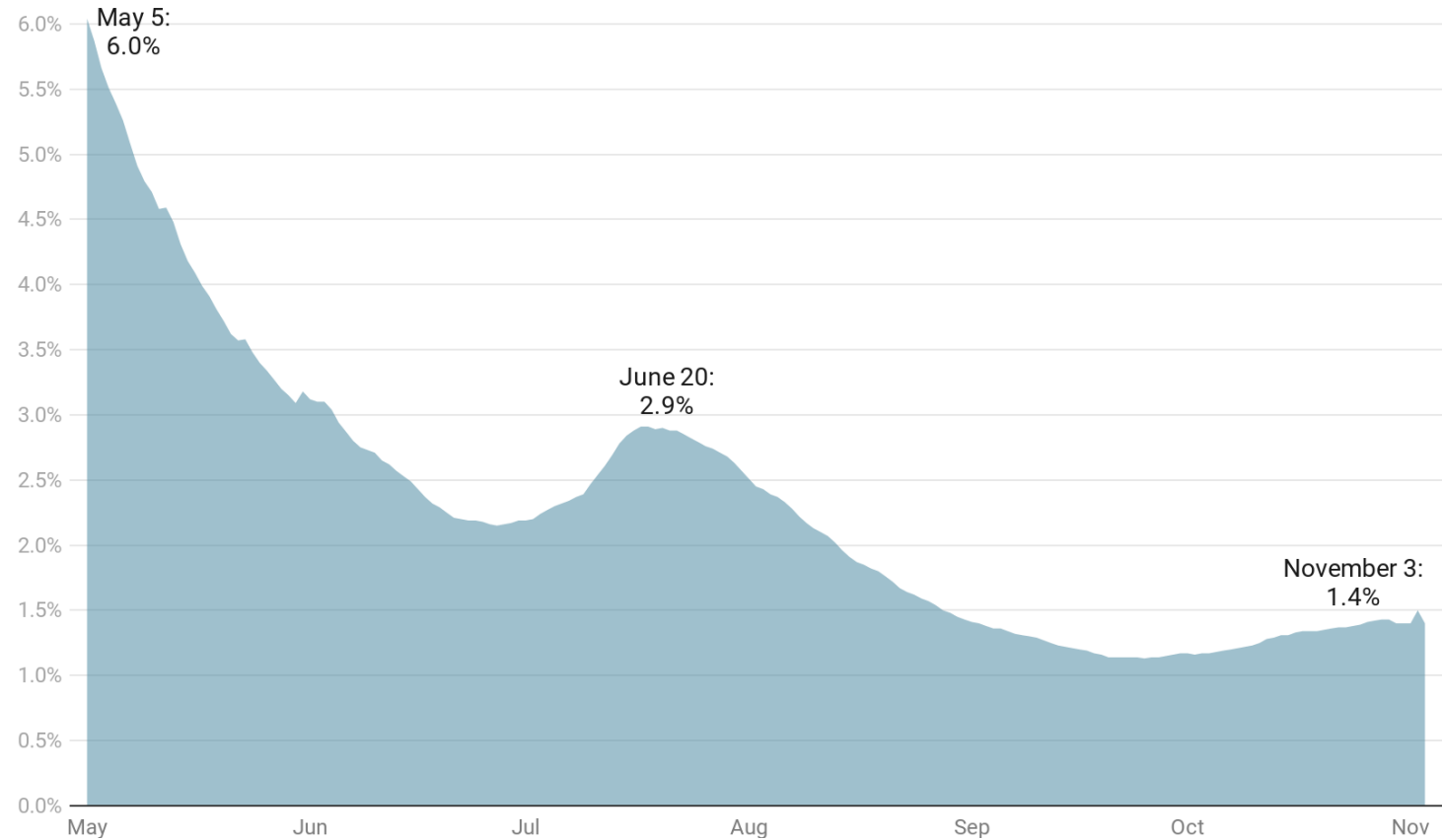
Chart: Health Industry Advisor LLC • Source: he Atlantic's Covid Tracking Project • Created with Datawrapper

The likelihood that a person with an active Covid-19 infection would be hospitalized has stabilized over the past two weeks

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 3



Using 7-day average covid-19 census

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

Indeed, the average Covid-19 census for the past week per 100 new cases is lower than it has been since at least April

Covid-19 Hospital Census / 100 Daily New Detected Cases

7-Day Moving Average, As of November 3

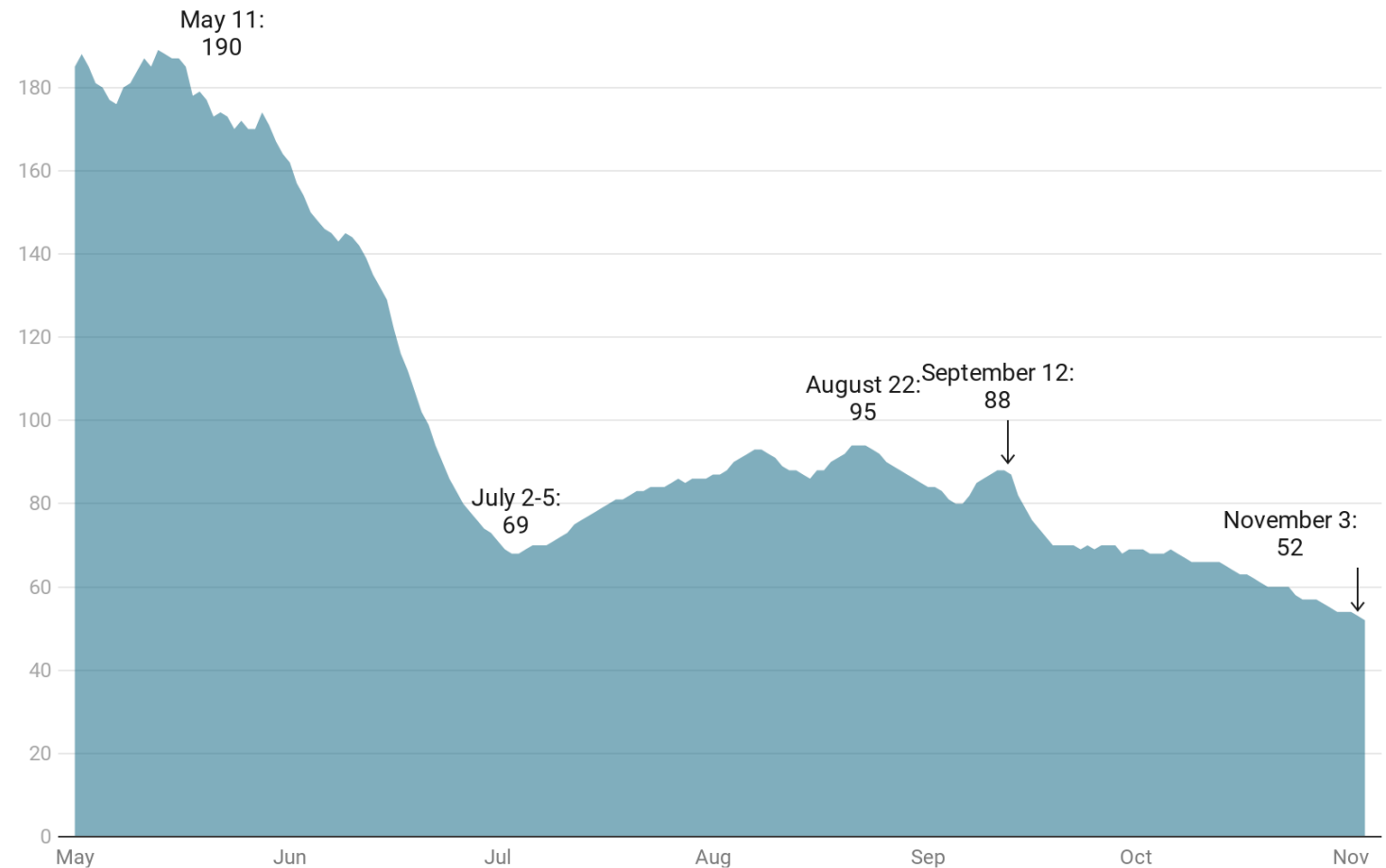


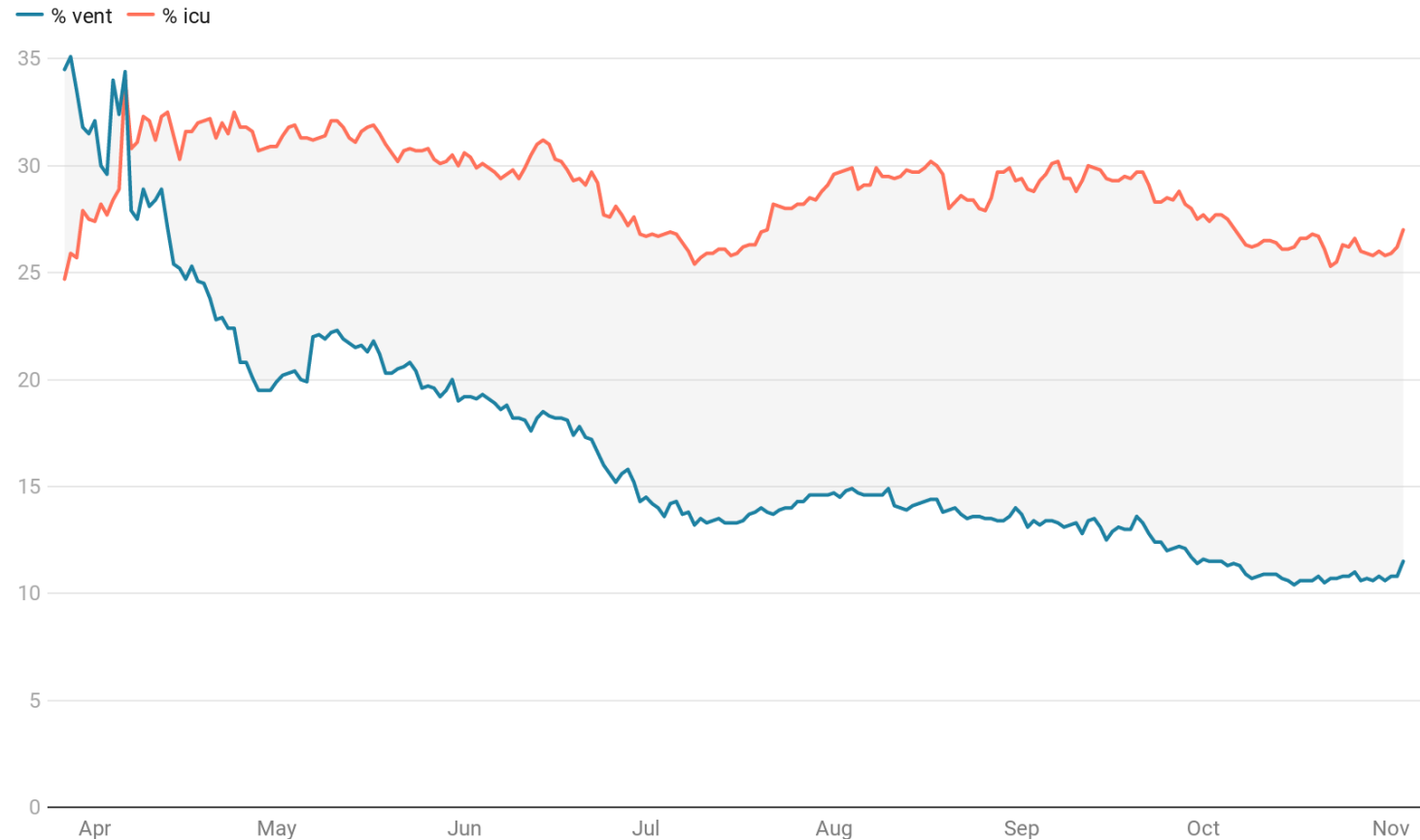
Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking project & worldometers.info • Created with Datawrapper

During the recent rise in Covid-19 inpatient census, the % of those inpatients requiring intensive care has declined

The % of Covid-19 inpatients requiring ventilator care has steadily declined since April

Severity of Hospitalized Patients

% of patients on ventilators and in the ICU, As of November 3



Health Industry Advisor LLC analysis

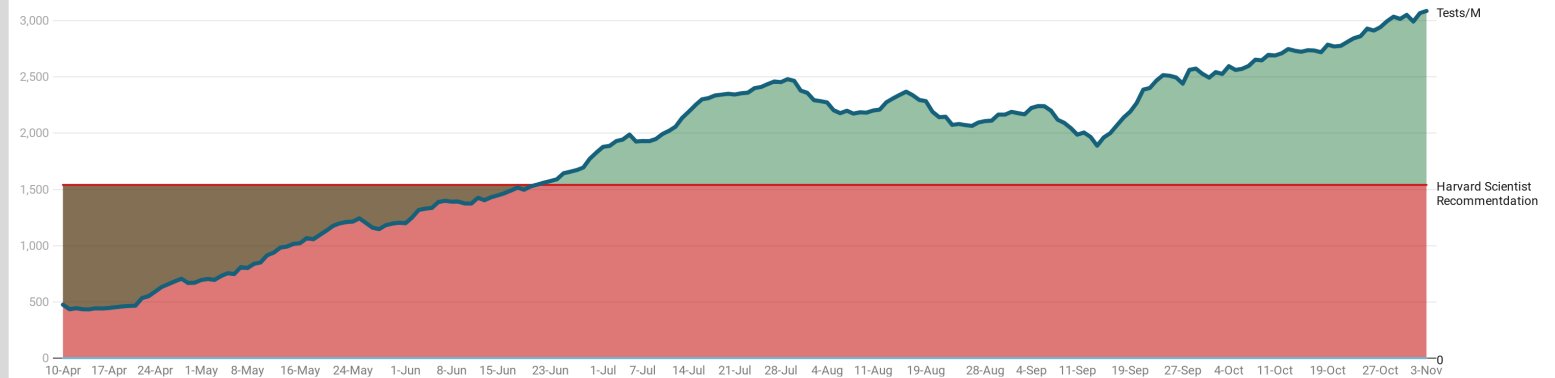
Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking Project • Created with Datawrapper

The 7-day average testing volume set another new high on Tuesday; this rate has increased by nearly 60% since mid-September

The 7-day test-positive rate, however, has been trending upward since the beginning of October

Daily Tests Per 1 Million - United States

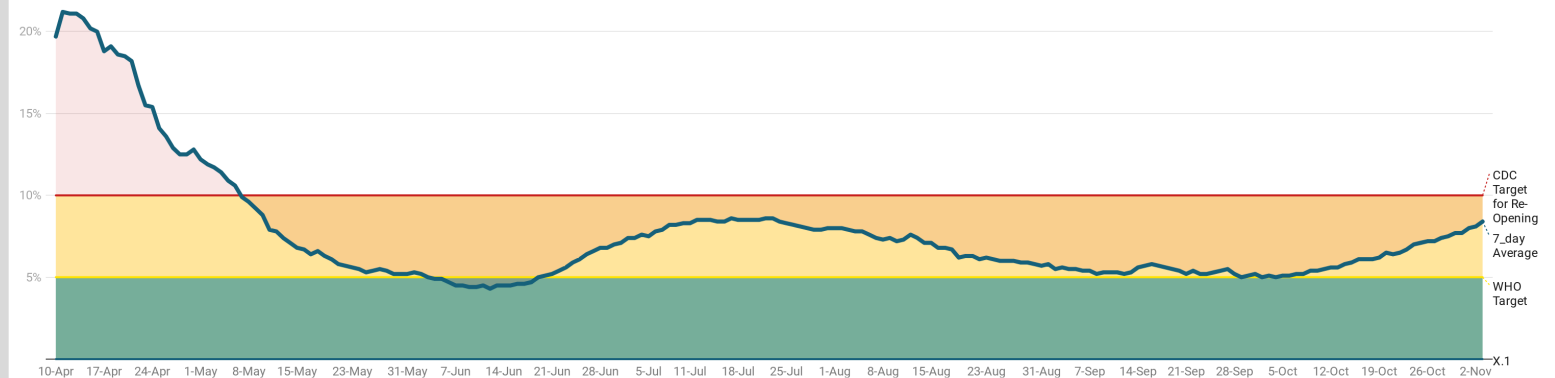
Trailing 7-Day Moving Average, As of November 3



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 3



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

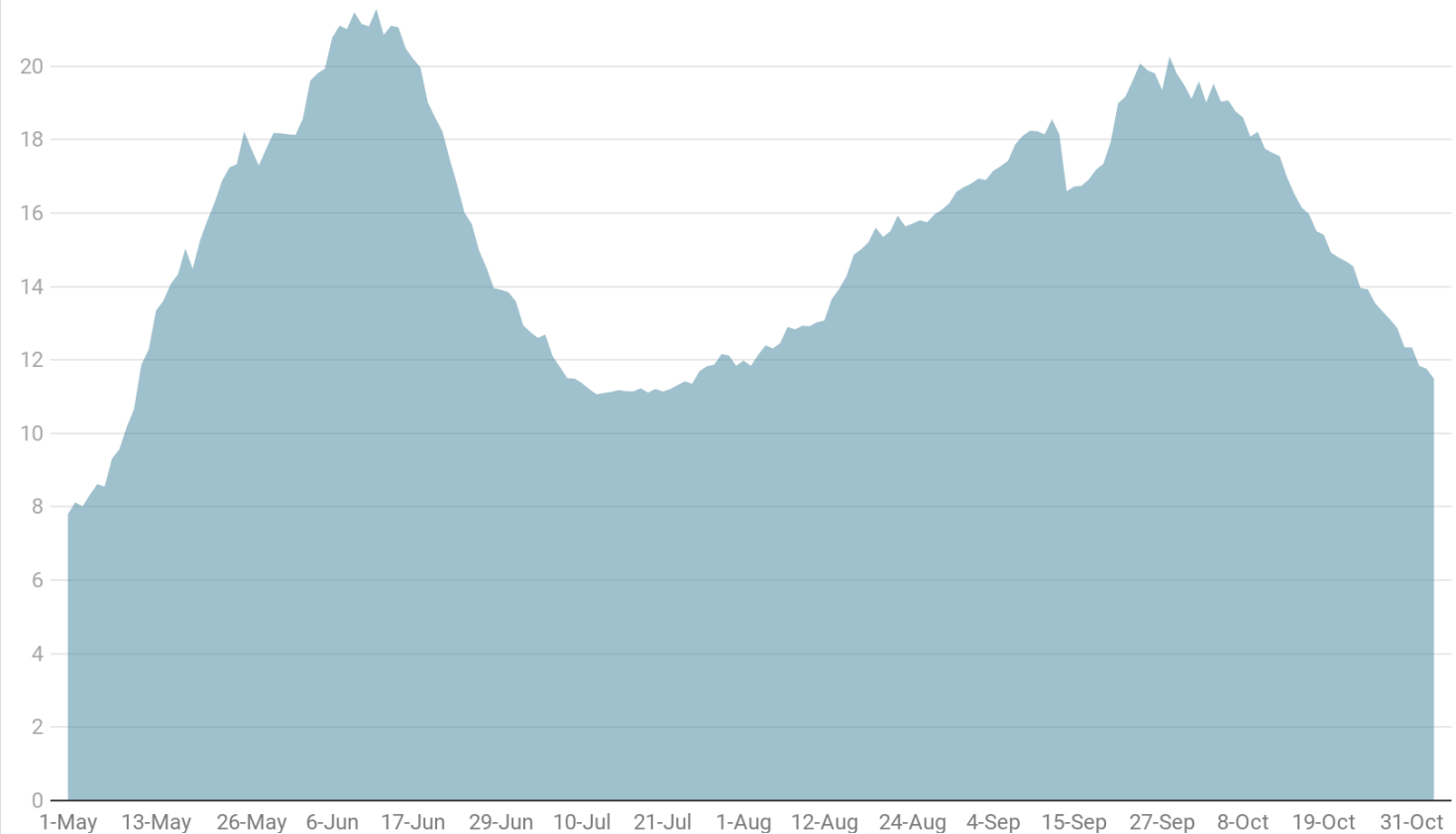
A measure of the effectiveness of testing is the ratio of tests performed to newly-detected cases

New cases are being detected every 11.5 tests performed; On September 28, it took > 20 tests to detect a new case

This rate is now lower than it has been at any time since August 2

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

Newly-detected cases in the U.S. follows a similar pattern as newly-detected cases worldwide - although the peaks and valleys are more pronounced in the U.S.

Worldwide, the rate of growth slowed over the nine days – will the U.S. follow?

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

7-Day Moving Average

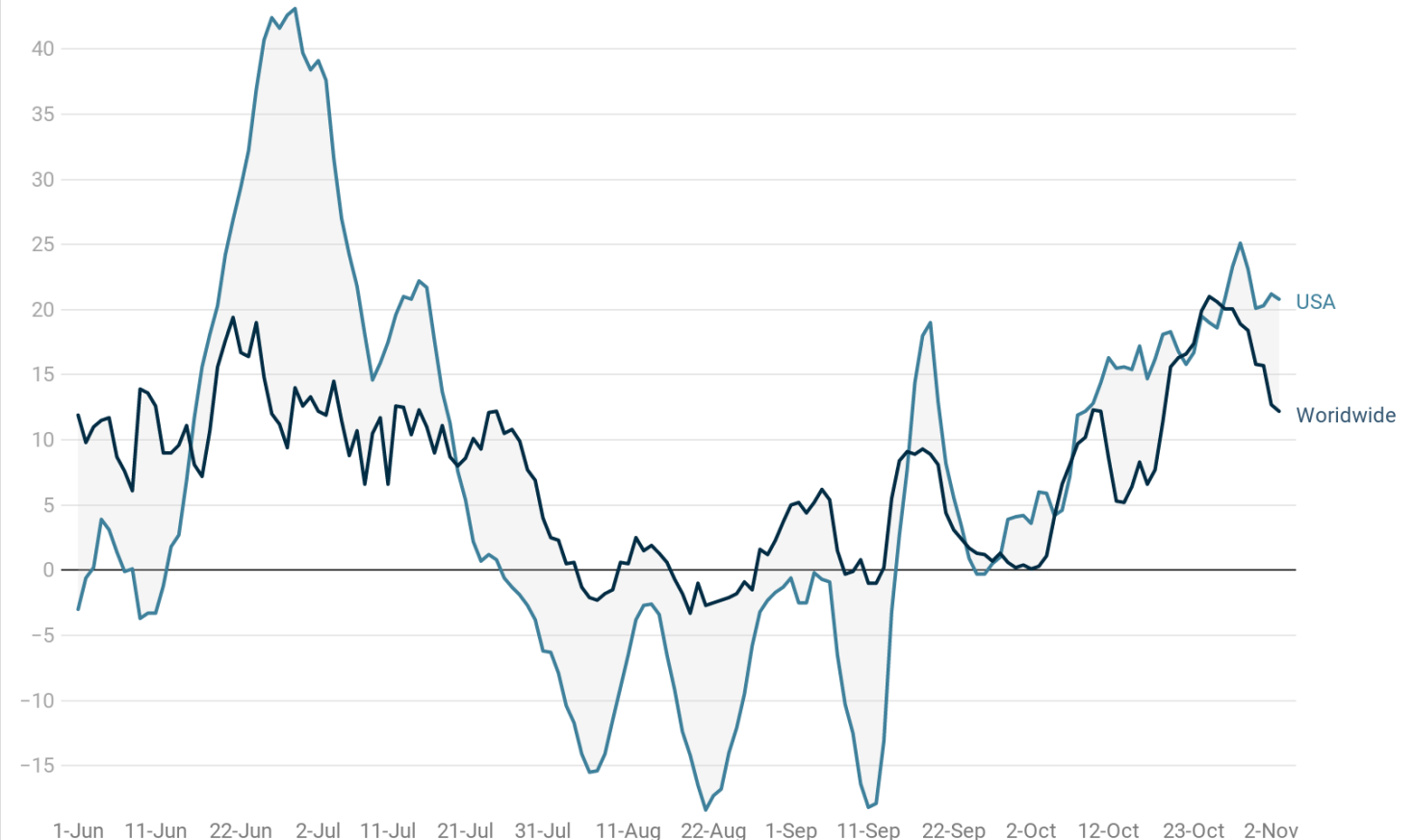


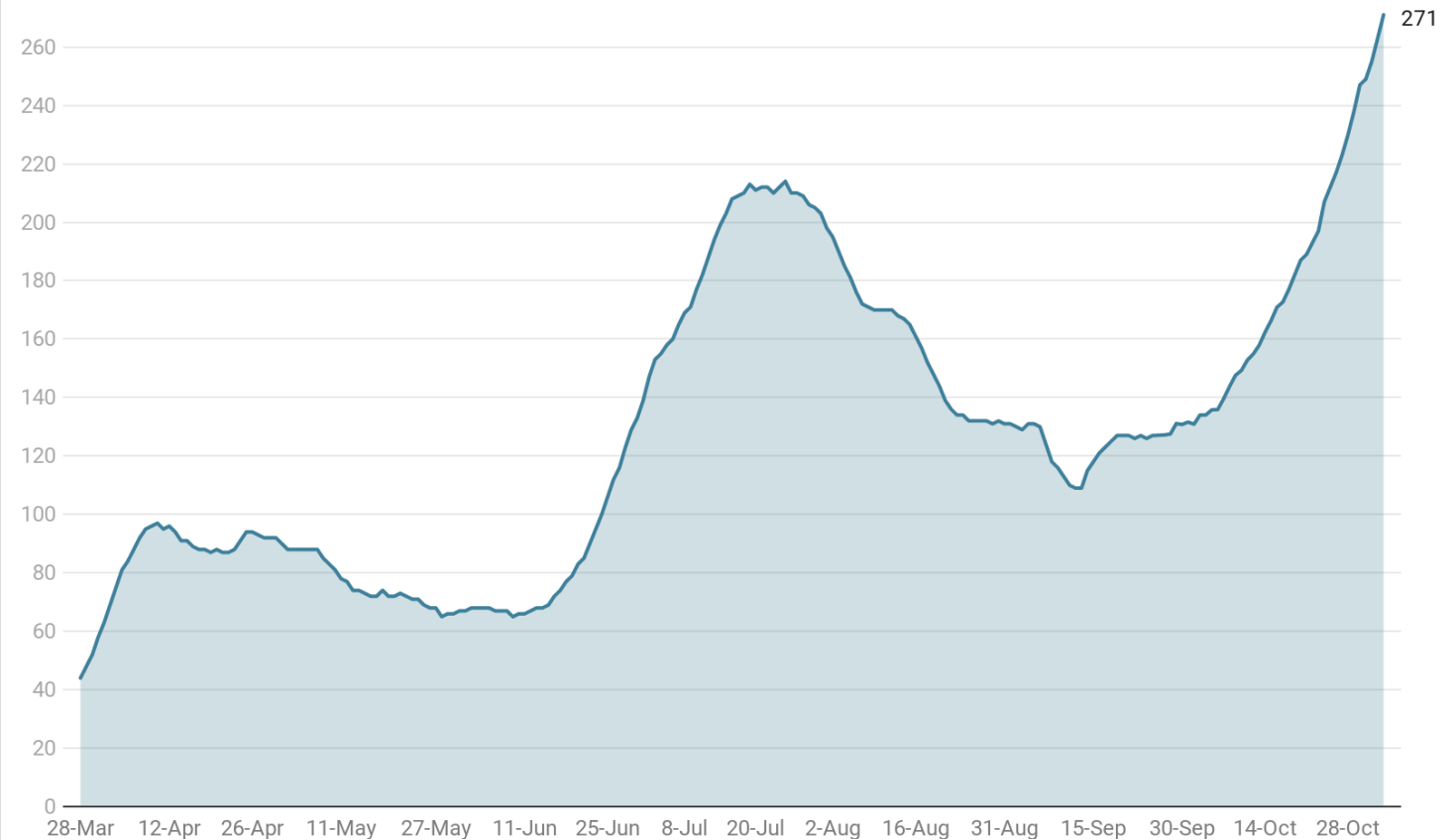
Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

The rate of new infections per capita* in the U.S. has risen every day since October 2

* - 7-day moving average basis

Newly Detected Infections Per 1 Million Population - United States

7-Day Moving Average, Through November 3



Health Industry Advisor LLC analysis

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

There were fewer newly reported cases on Tuesday than on any other Tuesday since the pandemic began

Newly-Detected Cases

Through November 3

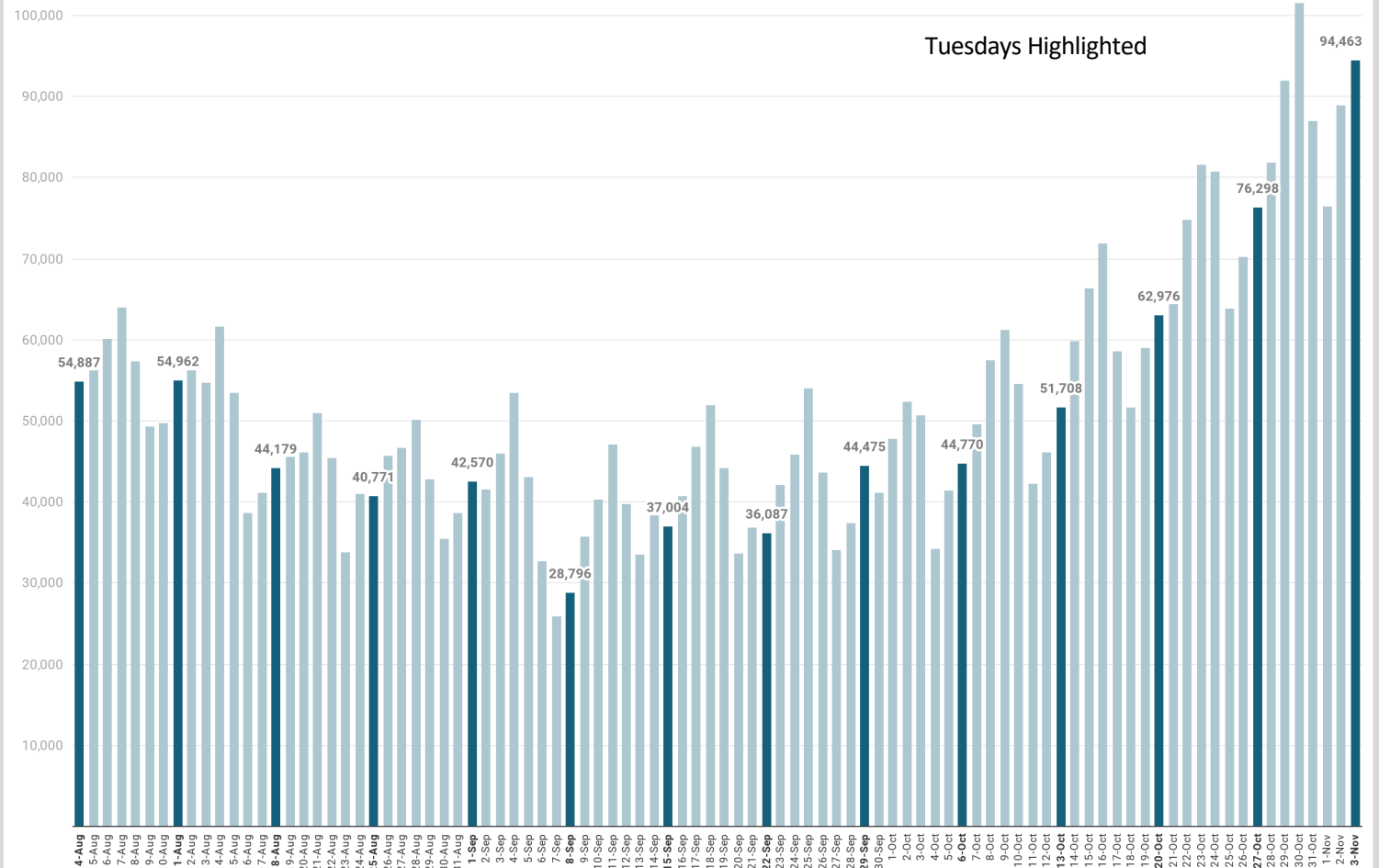


Chart: Health Industry Advisor LLC • Source: eoridometers.info • Created with Datawrapper

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>