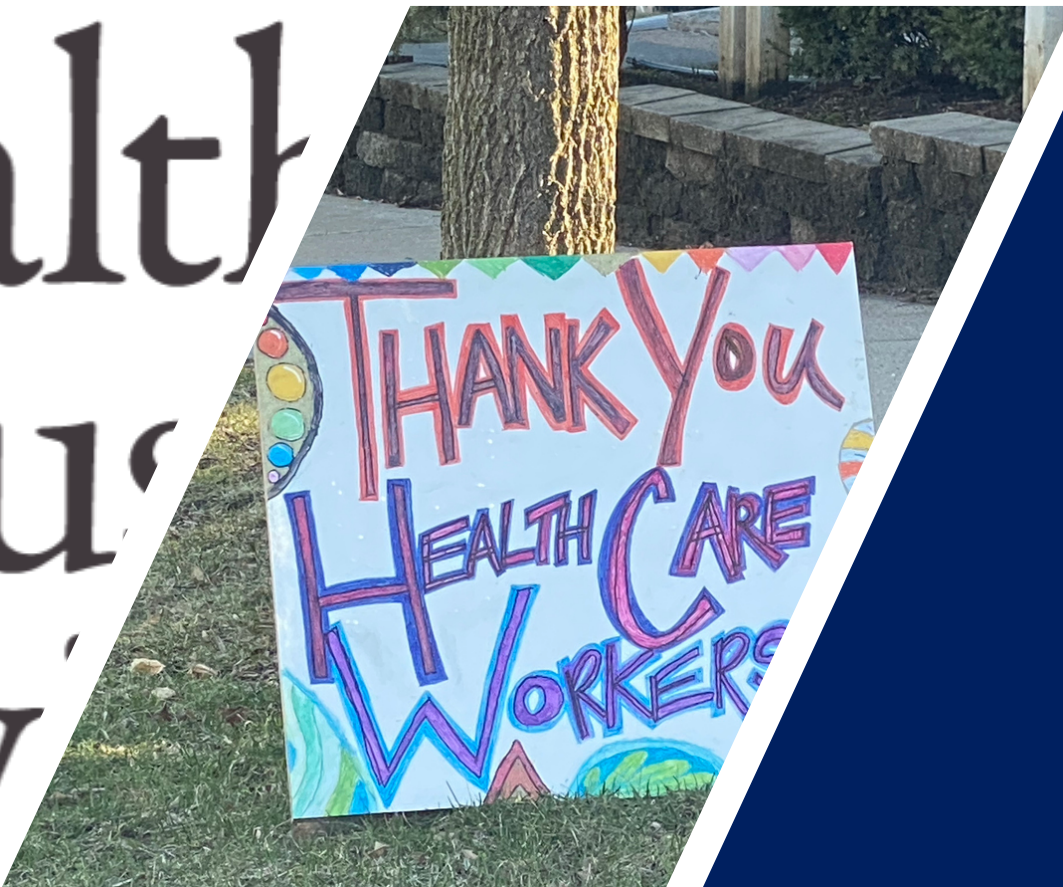




Health
Industry
Adv



Issue # 209
Wednesday, November 11, 2020

COVID-19 Report

Highlights

The Ugly

- **New cases are being detected in the U.S. at a nearly-unprecedented rate:** On a week-over-week basis, new cases are up 40.2%, a rate only surpassed from June 25-29. Contrast this with the experience worldwide, where the week-over-week increase in new cases has declined through most of November (cases are still increasing, but at an ever-decreasing rate)
- Based on the recent run-up in new cases in the U.S., the composite forecast of more than a dozen independent models has been revised upward each of the past three weeks. **The composite forecast now projects more than 1M new cases per week in three weeks time**

The Bad

- Average daily deaths with the coronavirus in the U.S. (on a 7-day moving average basis) have been trending up since mid-October, and have averaged more than 1,000 each of the past two days
- **The composite forecast calls for deaths to continue increasing each of the next four weeks, reaching 1,200 per day at the end of this forecast period**
- **Covid-19 hospitalizations yesterday surpassed its previous high, set on July 23**
- Thirty-six states have experienced their highest 7-day new infections per capita in the past four days - thirty of these were set yesterday alone. Among these were Connecticut, where the previous high was set way back on April 22 and Delaware, where it was set on April 28

The Good

- From the data, cases being detected today are milder than during the prior peaks in Covid-19 hospitalizations and cases (Note: I am not necessarily suggesting that actual infections are milder; rather, that the infections being detected are, on average, milder)

- Using Connecticut as an example first: As noted above, **Connecticut yesterday surpassed its previous high in new cases per capita, set on April 22. The argument that, despite comparable case counts, these aren't "apples-to-apples":**
 - **To detect the equivalent number of new cases, Connecticut completed 12.75x the number of tests as it did in April**
 - The test-positive rate now is 11% versus 39% in April
 - **There are 3x fewer Covid-19 inpatients in Connecticut hospitals today**
 - The rate of Covid-19 census: new case today is 20% lower
 - **Only 25% of available inpatient beds are occupied by Covid-19 patients; in April, Covid-19 patients exceeded the total bed capacity of the state by 12%**
- Now, let's consider the U.S., contrasting **the previous peak in Covid-19 hospitalizations (July 23) to yesterday, when this peak was surpassed for the first time:**
 - The current rate of new cases per capita is 2.8x higher than it was in July yet, this higher infection rate is resulting in equivalent inpatient days
 - **Thus, the hospitalization rate per new Covid-19 case is nearly 50% lower today than it was in July**
 - **The likelihood that a Covid-19 patient would be in the ICU is 15% lower; the likelihood that a Covid-19 patient would be on a ventilator is 30% lower**
 - **These hospitalized patients are spread more across the country:** In July, fifteen (mostly, larger) states accounted for 81% of these patients. Yesterday, twenty-three states accounted for the same 81%. Further, in July at least three states - Arizona, Florida and Nevada - devoted ~50% of their total, statewide bed capacity to Covid-19 patients; seven devoted more than 1/3. Yesterday, only two - Illinois and Wisconsin - devoted ~33% of their capacity to these patients

Worldwide, we are experiencing ~565k new cases each day

The United States is averaging ~124k new cases each day

* - 7-day moving average basis

Newly Detected Daily Cases - U.S. & Worldwide

7-Day Moving Average, As of November 10

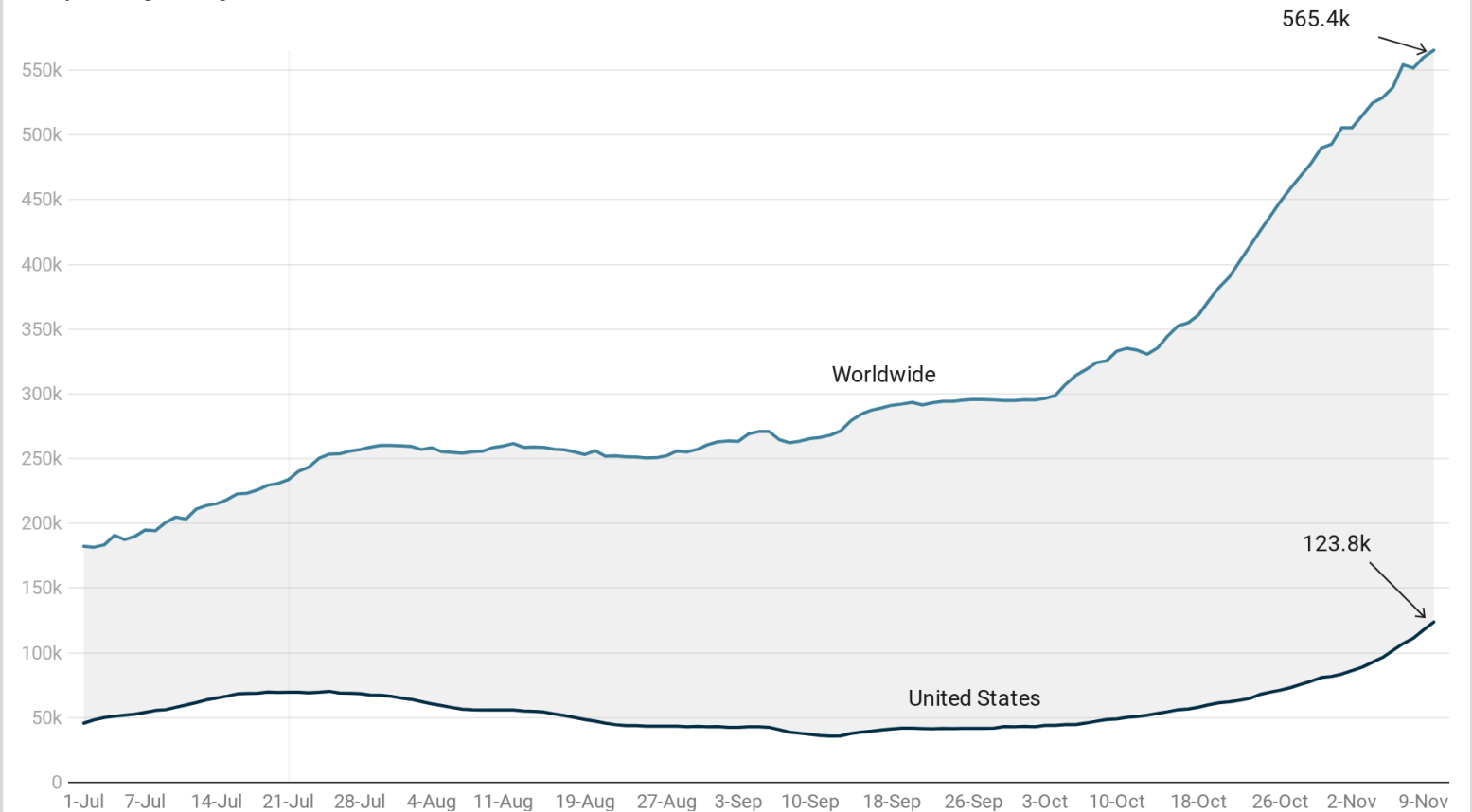


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

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

The U.S. is moving in the opposite direction, with the rate of change in new cases *increasing* throughout November (accelerating growth) – and approaching the week-over-week rate of increase experienced in late-June/early-July

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

7-Day Moving Average

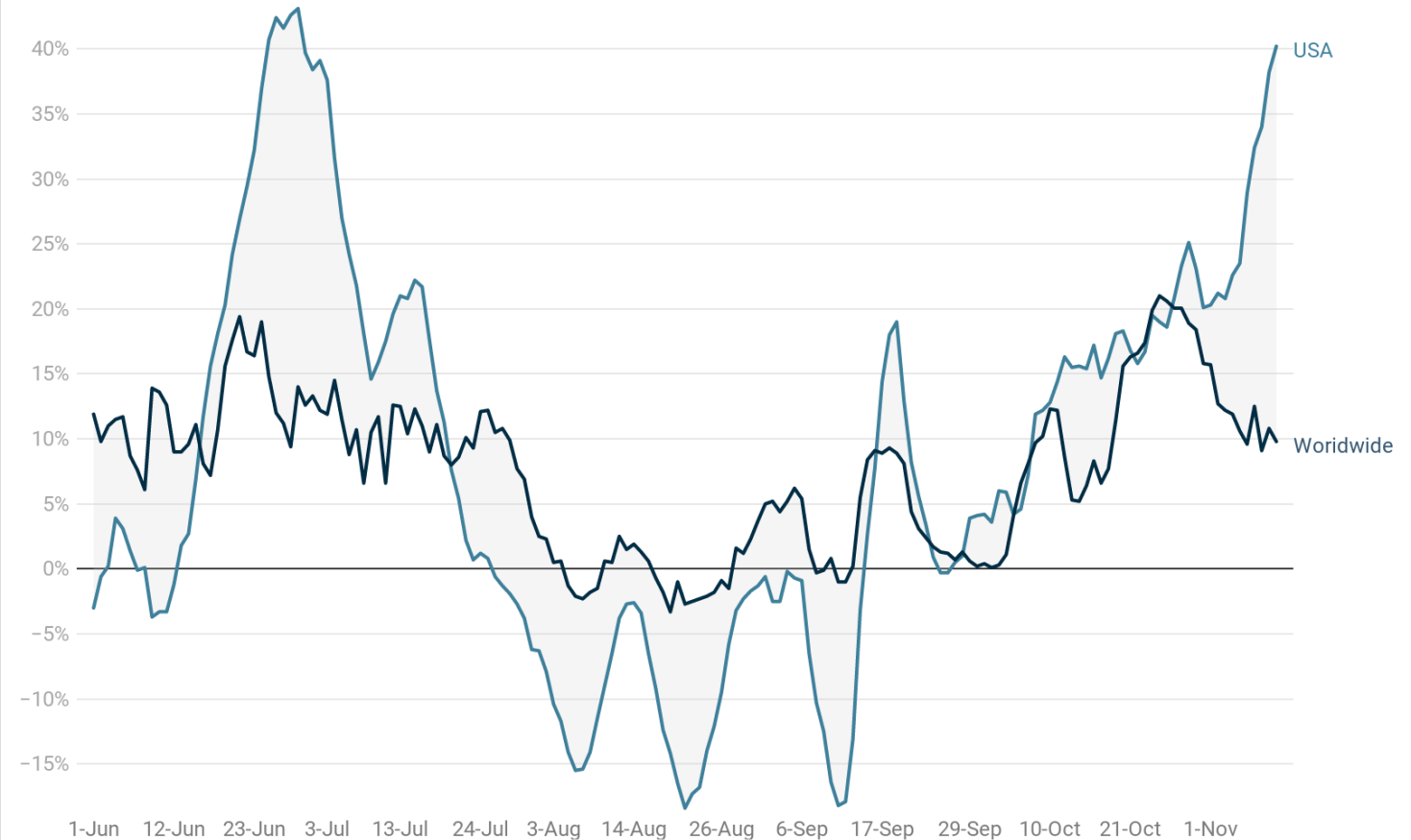


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

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

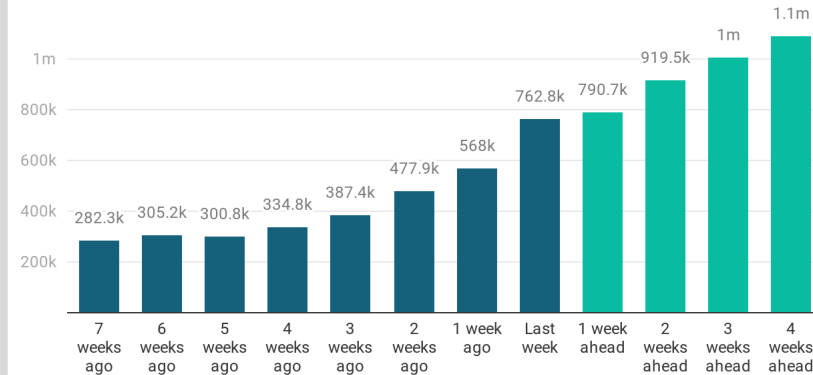
The latest composite projection now show continued increases through the 4-week projection window

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 November 10

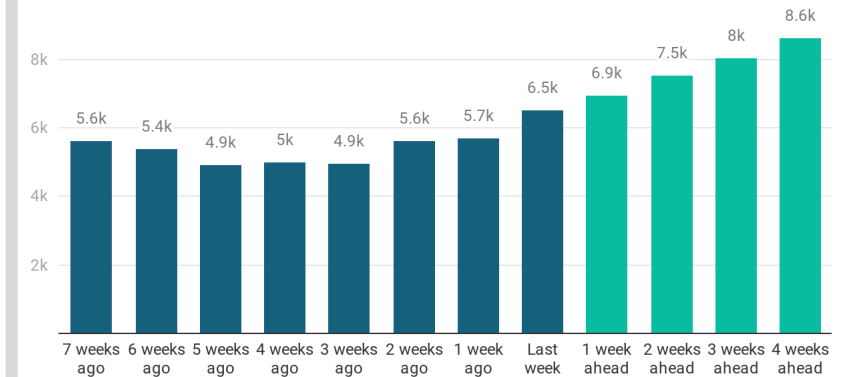


Composite of > a dozen independent models

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

Newly Reported Deaths U.S. - Actual & Forecast

As of November



Composite of > a dozen independent models

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

Connecticut reached a new high in 7-day new cases/M, surpassing the previous high set back on April 22

Comparing these two dates, Connecticut today:

- is conducting 12.75x the tests, to detect the equivalent # of cases
- has a test-positive rate of 11% v. 39%
- has 3x fewer Covid-19 inpatients
- has 20% of the Covid-19 patients per new case
- is using 25% of its inpatient bed capacity for Covid-19 patients v. 112% in April

Then v. Now: Connecticut

April 22 (Prior Peak Infections) v. November 10 (New Peak Infections)

	7-Day New Infections/M	7-Day New Cases/Day	7-Day Tests/M	7-Day Test-Positive%	Daily Covid-19 Census	% Beds Occupied	Covid-19 Census/100 New Cases
22-Apr	309	1,102	736	39.0%	1,942	112%	176
10-Nov	326	1,163	9,387	11.0%	429	25%	37

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

The United States yesterday surpassed the previous highwater mark of Covid-19 inpatients, set on July 23

Comparing these dates, the U.S. today:

- has a 7-day new infection rate /M 2.8x what it was in July
- is conducting nearly 50% more tests, with a slightly higher test-positive rate
- is seeing a Covid-19 hospitalization rate per case nearly 50% lower
- is seeing a 4.2 percentage point reduction in the % of patients in the ICU, and a similar reduction in ventilator patients

Then v. Now: United States

July 23 (Prior Peak Hospitalizations) v. November 10 (New High in Hospitalizations)

	7-Day New Infections/M	7-Day New Daily Cases	7-Day Tests/M	7-Day Test-Positive %	% Occupied Beds	Covid-19 Census/100 New Cases	% ICU	% Ventilators
23-Jul	134	69,093	2,361	9.0%	19%	84	28.1%	13.9%
10-Nov	377	123,819	3,461	10.0%	20%	45	23.9%	9.8%

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

On the date of the previous highwater mark for Covid-19 inpatients, (July 23), fifteen states accounted for 81% of all such patients

- these tended to be larger states
- several states were devoting a high percentage of their bed capacity to Covid-19 patients

Contrasting this with today's situation:

- Covid-19 patients are distributed more across the country - now, twenty-three states account for 81% of these patients
- the percentages of bed capacity devoted to Covid-19 is generally lower among these states

July 23

State	Covid-19 Occupancy %
Alabama	27%
Arizona	49%
California	33%
Florida	47%
Georgia	38%
Illinois	10%
Louisiana	22%
Mississippi	21%
Nevada	51%
North Carolina	17%
Ohio	11%
South Carolina	37%
Tennessee	19%
Texas	38%
Virginia	19%



3 highest occupancy rates during each period



States appearing on both lists

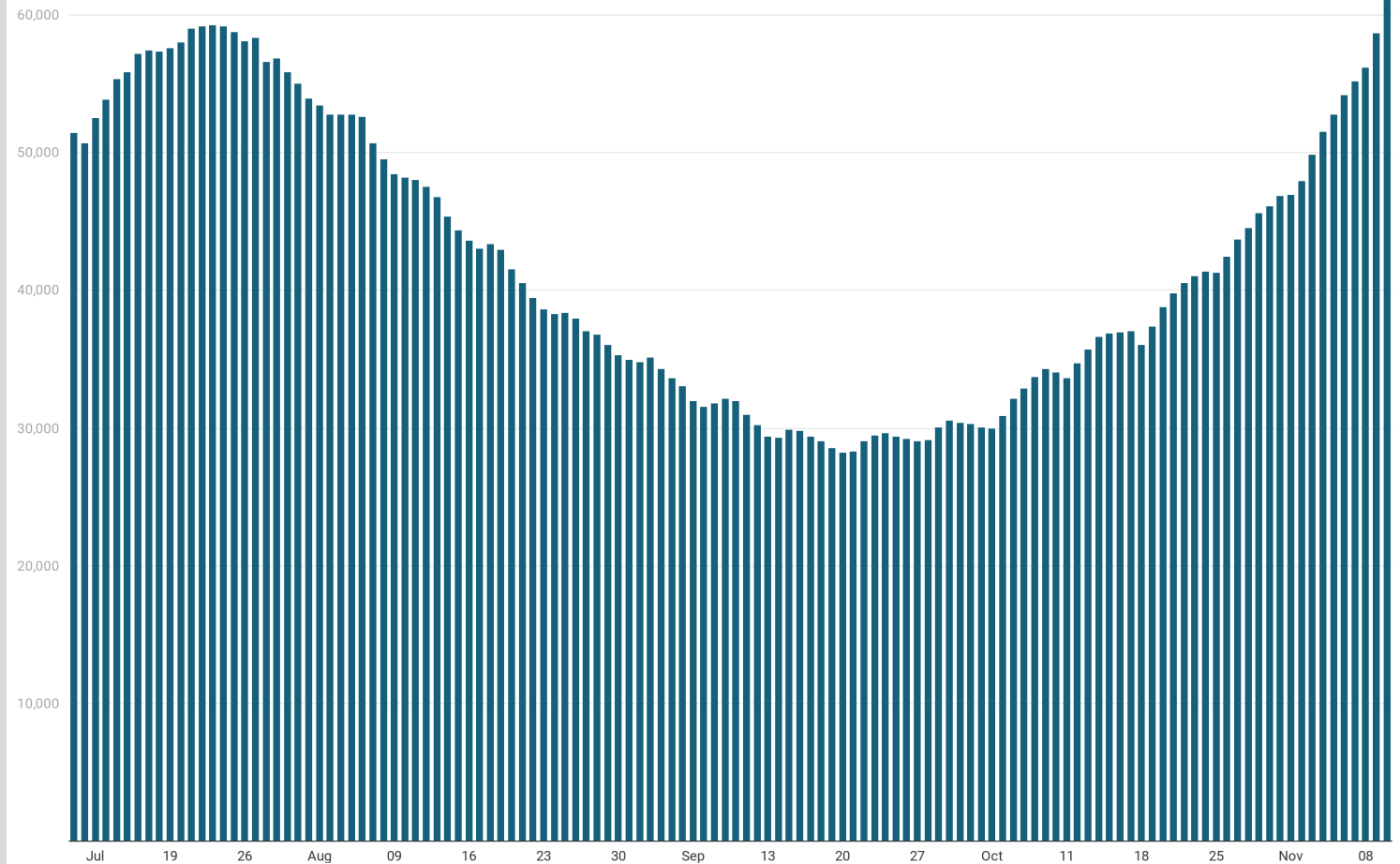
November 10

State	Covid-19 Occupancy %
Alabama	21%
Arizona	21%
California	14%
Colorado	24%
Florida	15%
Georgia	23%
Illinois	33%
Indiana	28%
Iowa	26%
Kentucky	19%
Michigan	29%
Minnesota	25%
Montana	26%
New Jersey	21%
New York	12%
North Carolina	17%
Ohio	19%
Oklahoma	20%
Pennsylvania	13%
Tennessee	23%
Texas	22%
Virginia	18%
Wisconsin	39%

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 10



Florida data first available on July 10

Chart: Health Industry Advisor LLC • Source: the Atlantic's Covid Tracking Project • 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 twenty-nine of the past thirty-two 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 10

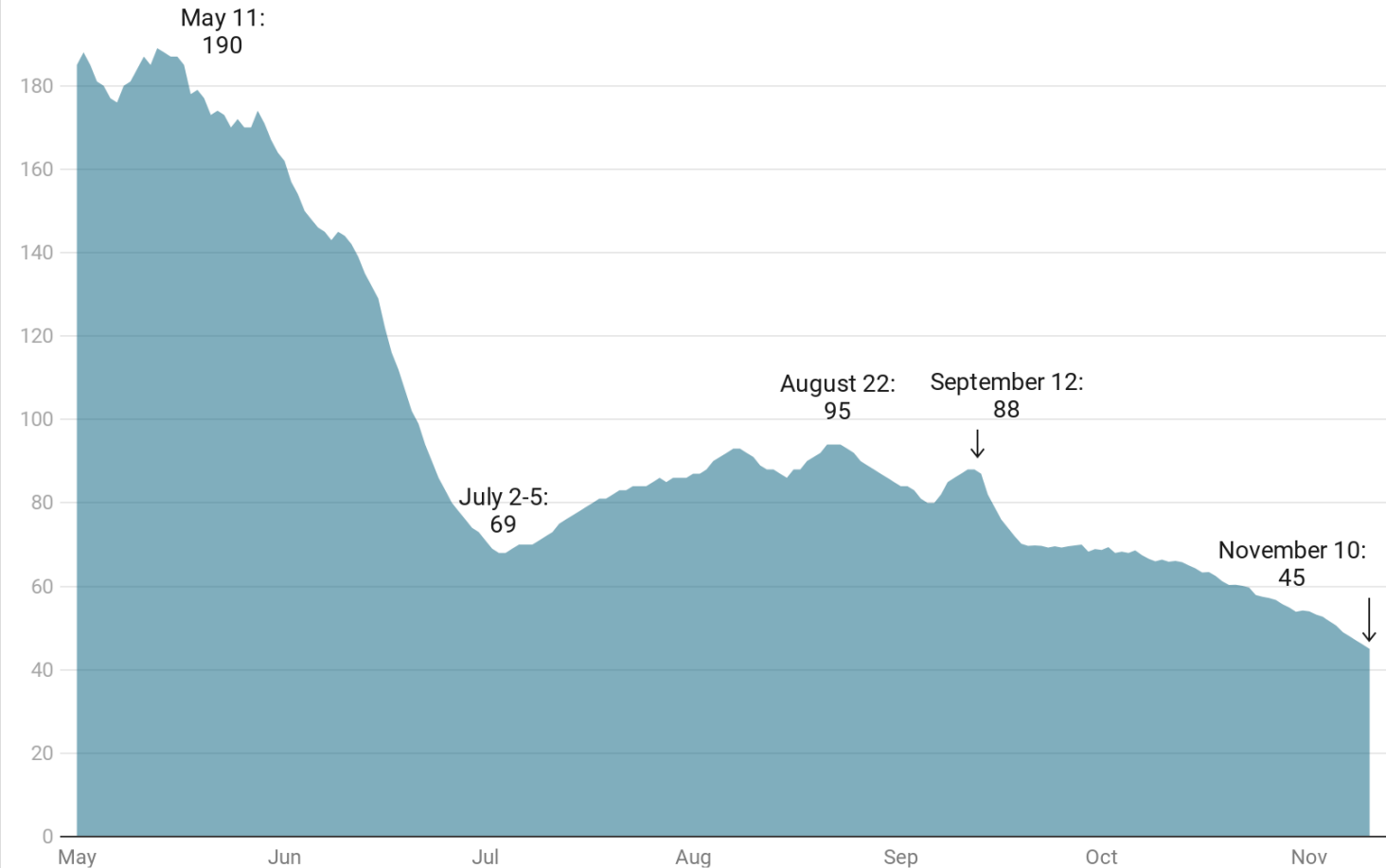


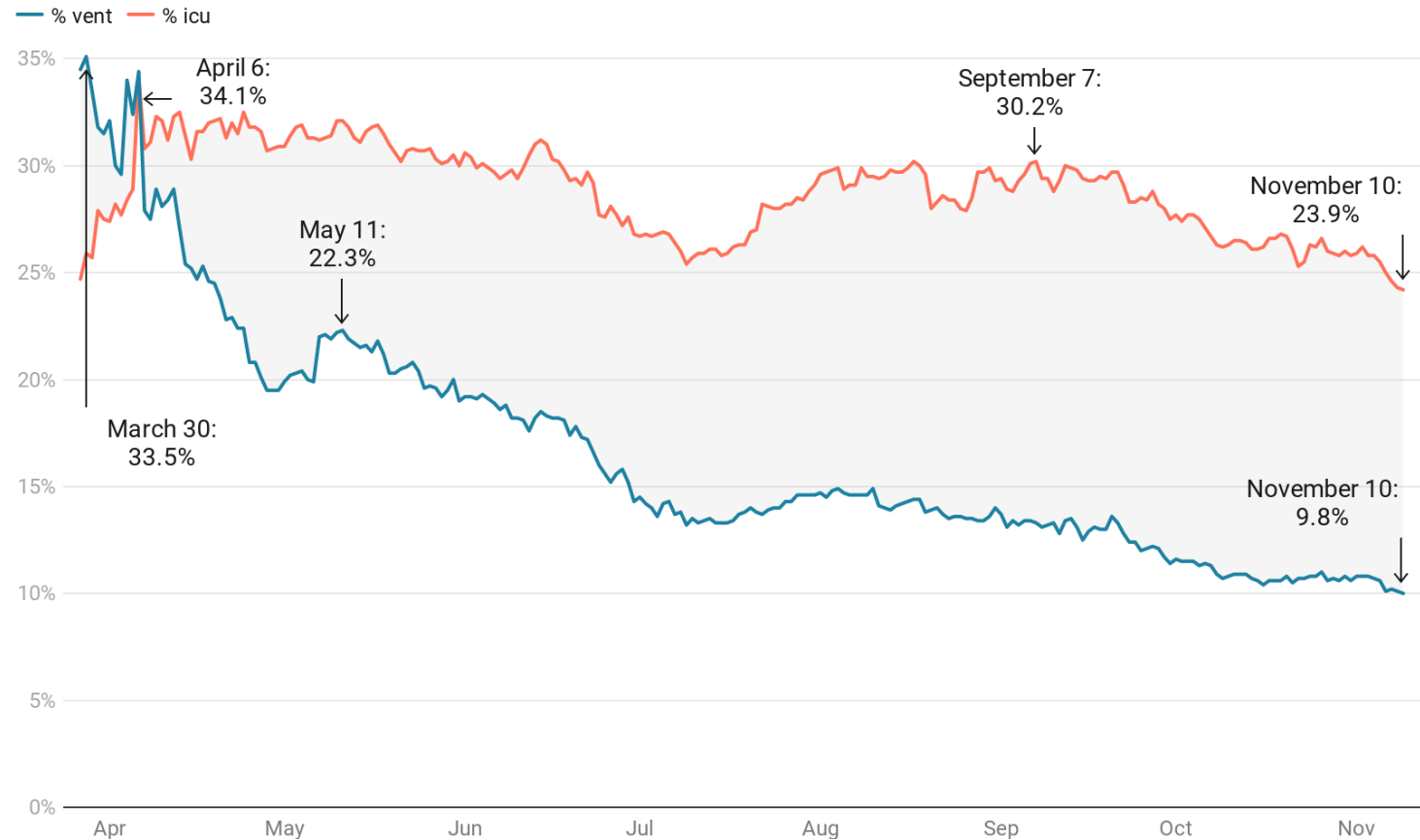
Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking project & worldometers.info • Created with Datawrapper

The likelihood of a hospitalized Covid-19 patient would require ICU care has declined 20% since early-September and nearly 30% since early-April

The likelihood of a hospitalized Covid-19 patients would be on a ventilator has reduced by >1/2 since mid-May and by >2/3 since March

Severity of Hospitalized Patients

% of patients on ventilators and in the ICU, As of November 9



Health Industry Advisor LLC analysis

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

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

The 7-day average deaths per day has been increasing since mid-October

Deaths Reported With Coronavirus in the U.S.

Trailing 7-Day Moving Average, As of November 10



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

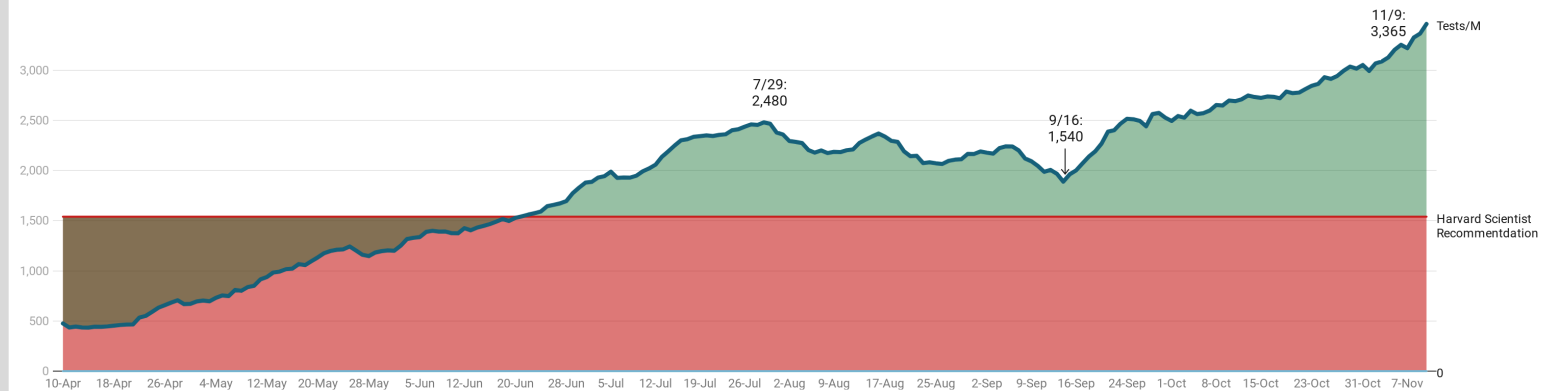
The 7-day average testing volume has increased by 70% since mid-September

The 7-day test-positive rate, however, has been trending upward since the beginning of October - increasing on thirty-three of the past thirty-six days

This rate is now at 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 10

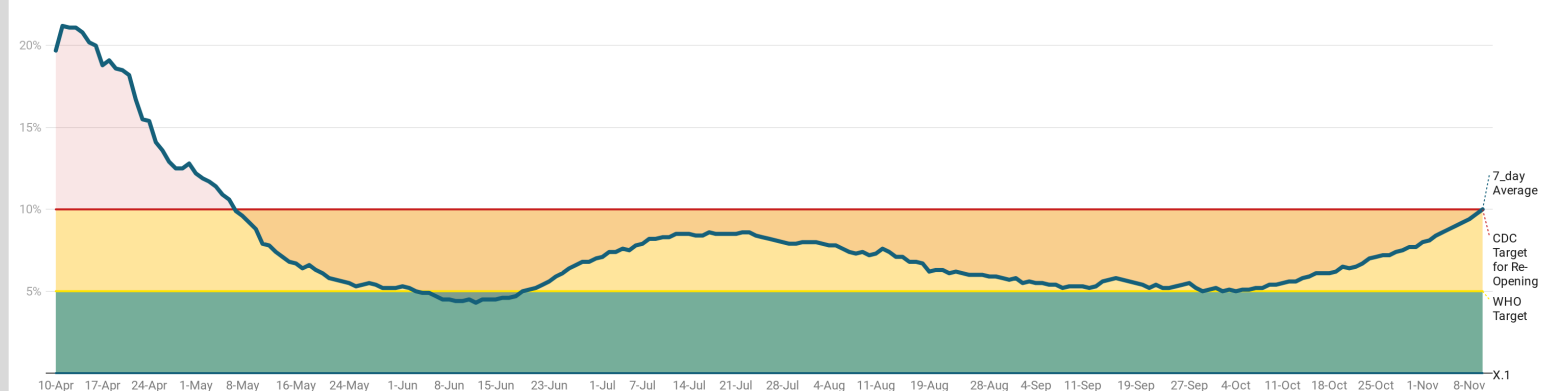


Health Industry Advisor LLC analysis

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

Test-Positive Rate - United States

Trailing 7-Day Moving Average, As of November 10



Health Industry Advisor LLC analysis

Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking Project • 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>