



Health
Industry
Adv



Issue # 216
Thursday, November 19, 2020

COVID-19 Report

Highlights

- **While new cases (7-day moving average) continued to increase in the U.S., the *rate of increase* has declined eight consecutive days;** this decline was signaled by a decline in its *derivative* that began back on November 6 (in other words, the rate at which the rate was increasing began to slow at that time)
- This pattern parallels what occurred in June/July:
 - The week-over week change in new cases peaked at 43% on June 29; this was signaled as early as June 17, when the rate of change began to decline
 - New cases (on a 7-day moving average basis) slowed from June 29 onward but, did not begin to decline for another three weeks
 - These patterns suggest that certain "momentum" underlies the new case trends: as new cases are rising, we observe extended periods of ever-increasing rates of increase; At some point, however - whether due to changes in behavior, state-imposed mandates, etc. - momentum shifts, leading to extended periods of easing, and ultimately, declining new cases
- **If these underlying trends continue now, we could see further easing of the increase in new cases and, ultimately, reduced new cases in the United States in perhaps 3 weeks time:**
 - The week-over-week change in new cases peaked on November 10 (at 41% - comparable to the June 29 peak in this measure); this was signaled by a decline in the rate of change in this measure six days earlier
 - If these trends continue and they follow the same pattern as they did in June and July, we should see a continued easing in new cases, with new cases beginning to decline by early-to mid-December
- **With these increasing new cases for the next several weeks, it raises the level of concern about healthcare resources and anticipated deaths with the coronavirus**
 - **As of yesterday, 25% of all inpatient beds in the U.S. were occupied by Covid-19 patients.** In Nevada, its now 55%; In Connecticut, Illinois, New Mexico and Wisconsin, its over 40%
- These high occupancy rates stretch healthcare personnel and supplies and crowd out elective surgeries and treatment for other non-Covid-19 healthcare issues
- **Covid-19 hospital occupancy will likely continue increasing, until shortly after new cases finally decline - that is, for at least another three weeks**
- Deaths with the coronavirus have followed the pattern of increased new cases - **the 7-day moving average deaths with coronavirus has increased fifteen consecutive days**
- **Tragically, these deaths are likely to continue increasing for several weeks after the new cases decline - that is, for at least another 6-8 weeks**
- **With the anticipation of one of more vaccines, the point of reaching herd immunity becomes relevant. One factor influencing how quickly we reach herd immunity is the prevalence of the virus infection among the population**
 - Actual infections are believed to be significantly higher than detected cases
 - Oliver Wyman is one site that produces estimates of actual infections (and, thus infection prevalence); **Wyman estimates that undetected cases outnumber detected cases in the U.S. by 2.5:1** ("best" estimate; at the high-end, it estimates it at 5.2:1)
 - **Based on these estimates, 12% of the U.S. population has been infected by the virus (low estimate: 6.9%; high estimate: 21.9%)**
 - Among the states, New Jersey is estimated to have the highest infection prevalence, at 26.7% of the population (low estimate: 15.1%; high estimate: 47.1%); Hawaii is estimated to have the lowest infection prevalence, at 1.9% (low estimate: 1.4%; high estimate: 2.8%)
 - Connecticut, Massachusetts, New York and North Dakota are states that have relatively high estimated infection prevalence; Alaska, Maine, Oregon, South Carolina, West Virginia and Washington have relatively low infection prevalence
 - **States with low infection prevalence would need to have a higher portion of the population vaccinated, in order to reach herd immunity levels**

Momentum Charts – New Cases in the U.S.:

The pattern we are experiencing now parallels what we experienced in June/July. Note that the week-over-week change in new cases peaked above 40% in both periods, before declining precipitously

If we continue this pattern, the June/July experience suggests that actual new cases could finally begin to decline in about two-three weeks (subject to the effect of holiday gatherings, state lockdowns, etc.)

New cases in the U.S. have followed definitive patterns throughout the pandemic – rising cases beget further rises (perhaps, reflective of the high transmissibility of the virus). This is evidenced by ever-increasing week-over-week changes in new cases. Yet, once this measure begins to decline, it tends to continue to decline for a period

Week-Over-Week Change in New Cases

7-Day Moving Average, Current Period v. June/July

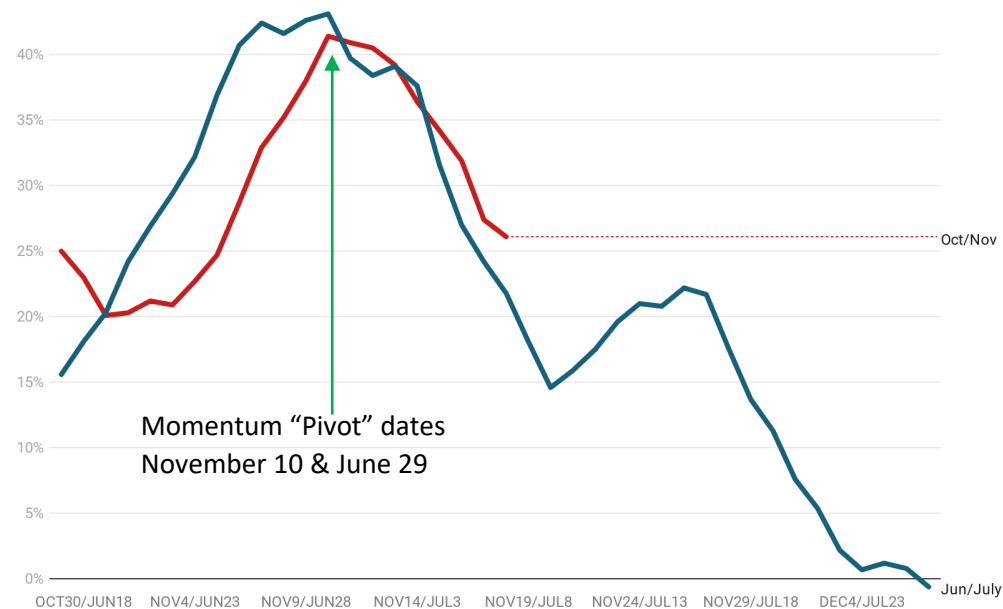


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Seeds of this change in momentum can be seen early, by observing the *rate of change* in week-over-week change in new cases: This rate-of-change-measure turns downward several days ahead of the turn observed in the week-over-week change measure

Change in Rate of Week-Over-Week Change in New Cases

7-Day Moving Average, Current Period v. June/July

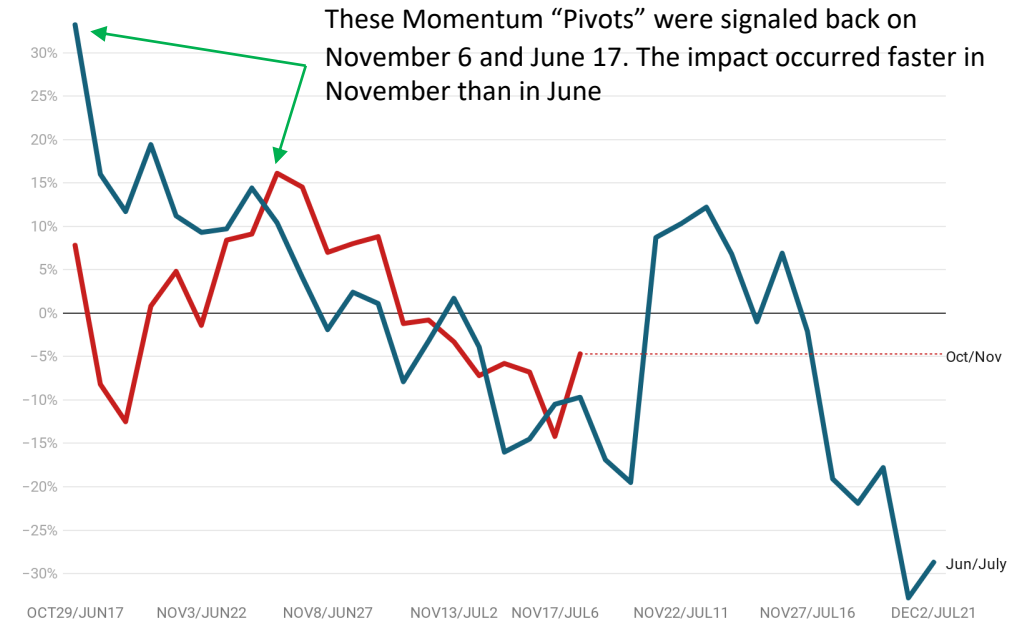


Chart: Health Industry Advisor LLC • Source: worlometer.info • Created with Datawrapper

Estimated Infection Prevalence

Detected cases undercount the number of true infections. One source of actual infection estimates, Oliver Wyman, suggests that undetected cases in the U.S. outnumber detected cases by 2.5:1 (best guess; the high-end estimate is 5.2:1) Best estimates of infection prevalence range from a low of 1.9% of Hawaii's population to a high of 26.7% of New Jersey's (Oliver Wyman places the high-end estimate for New Jersey at 47.1% of its population)

Estimated Infection Prevalence

Oliver Wyman Estimates, As of November 15

● Best Estimate ● High Estimate ● Low Estimate



Estimated Infection Prevalence

Oliver Wyman Estimates, As of November 15

● Best Estimate ● High Estimate ● Low Estimate

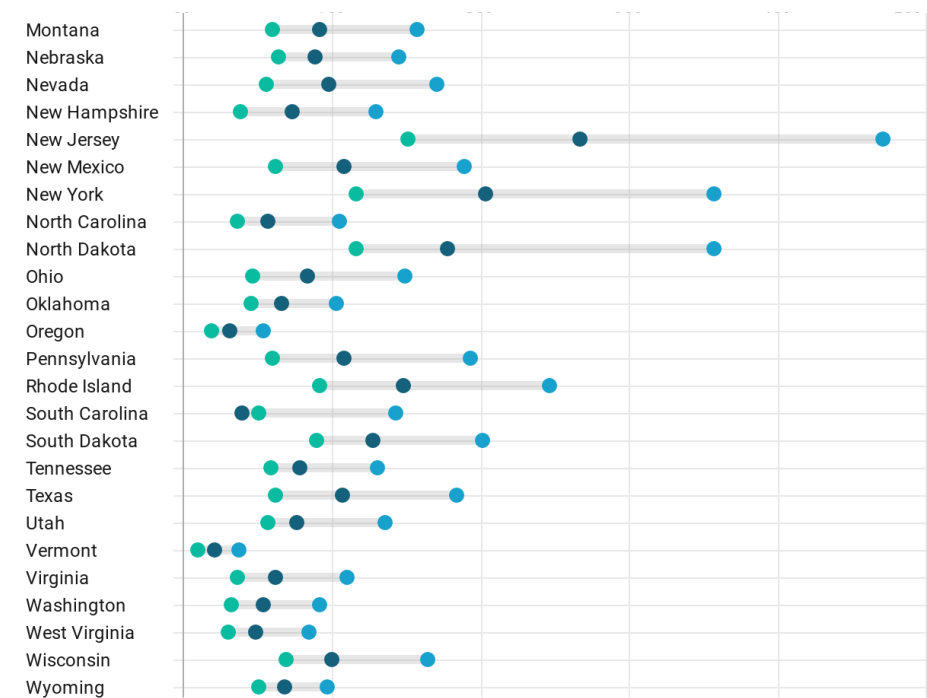


Chart: Health Industry Advisor LLC • Source: Oliver Wyman • Created with Datawrapper

Worldwide, we are experiencing ~590k new cases each day

The United States is averaging ~165k new cases each day

* - 7-day moving average basis

Newly Detected Daily Cases - U.S. & Worldwide

7-Day Moving Average, As of November 18

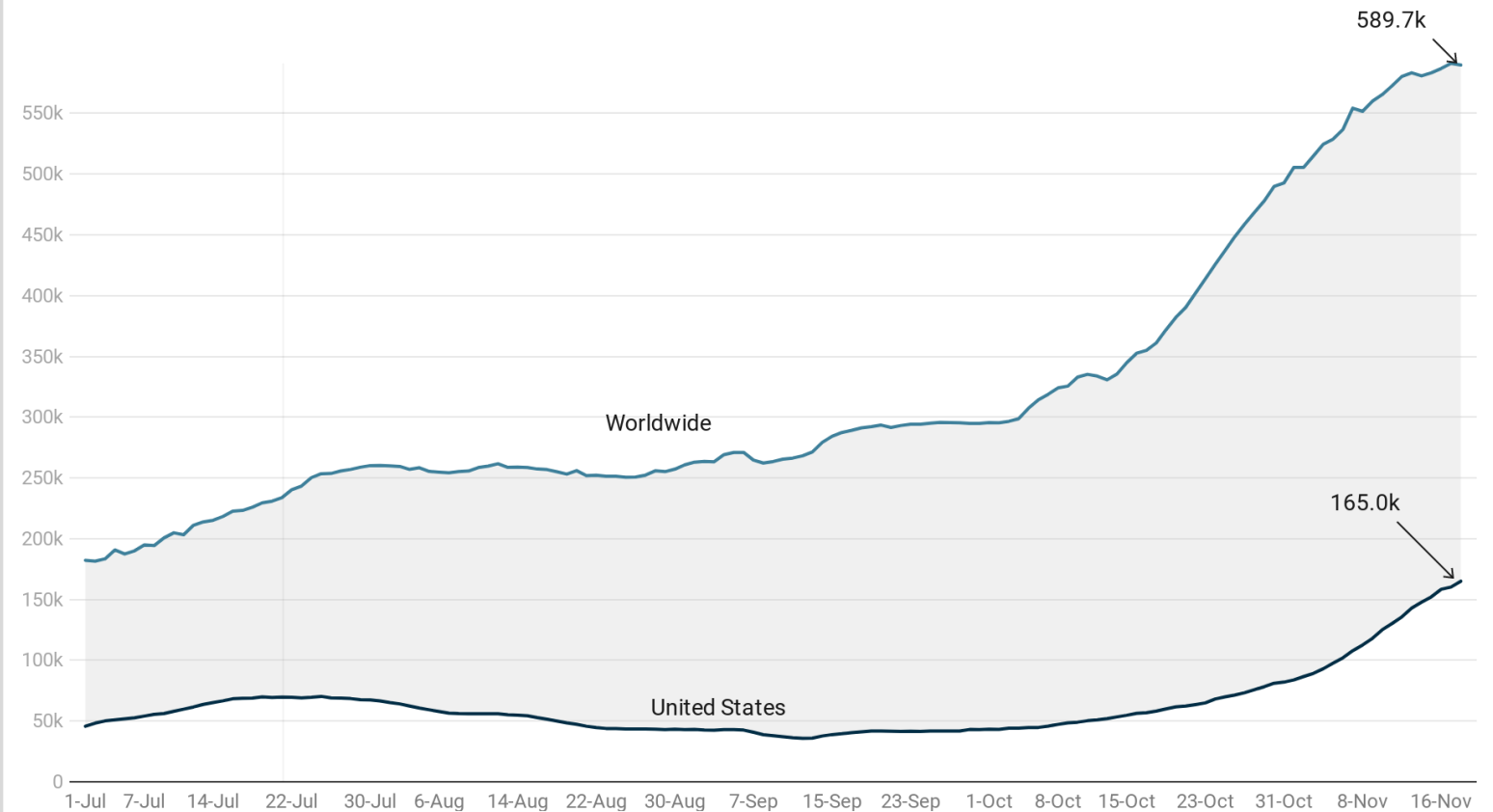


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

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 eight consecutive days

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

7-Day Moving Average

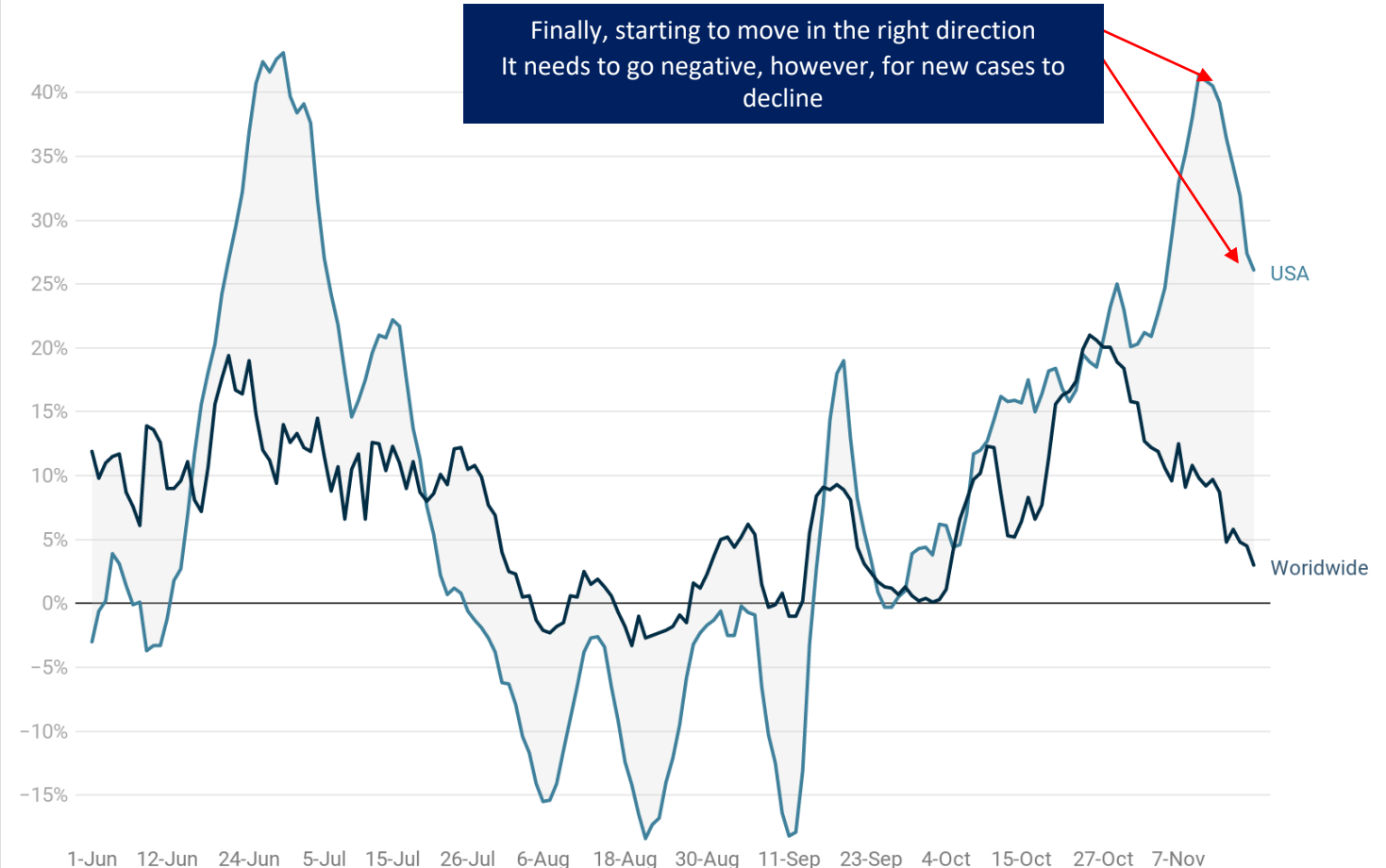


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

State-By-State Scorecard

Designed to reflect five critical measures of a state's current experience with Covid-19

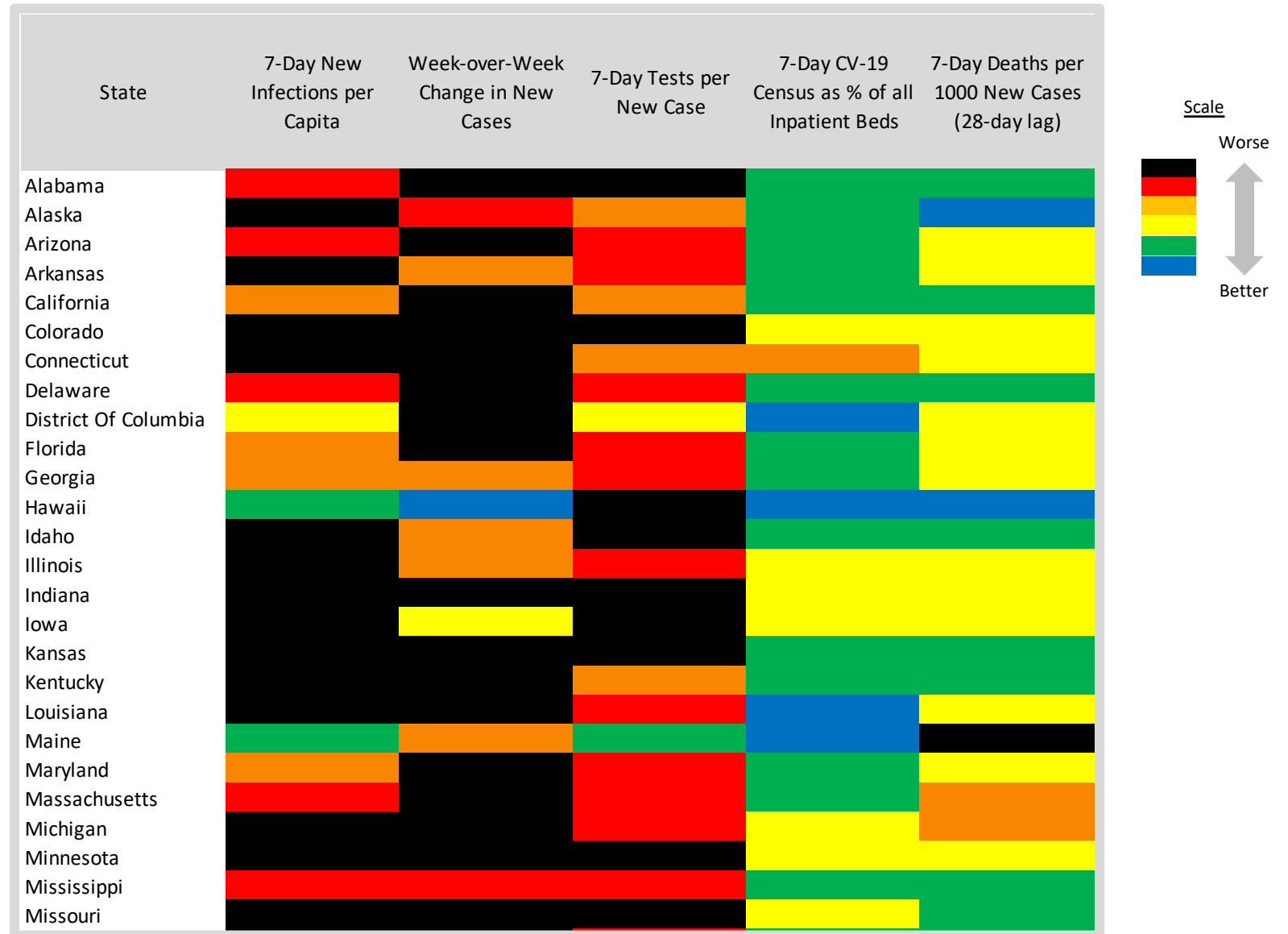
At this point, we have elected not to provide an overall score – in our view, different audiences would assign different priorities to each of the five measures

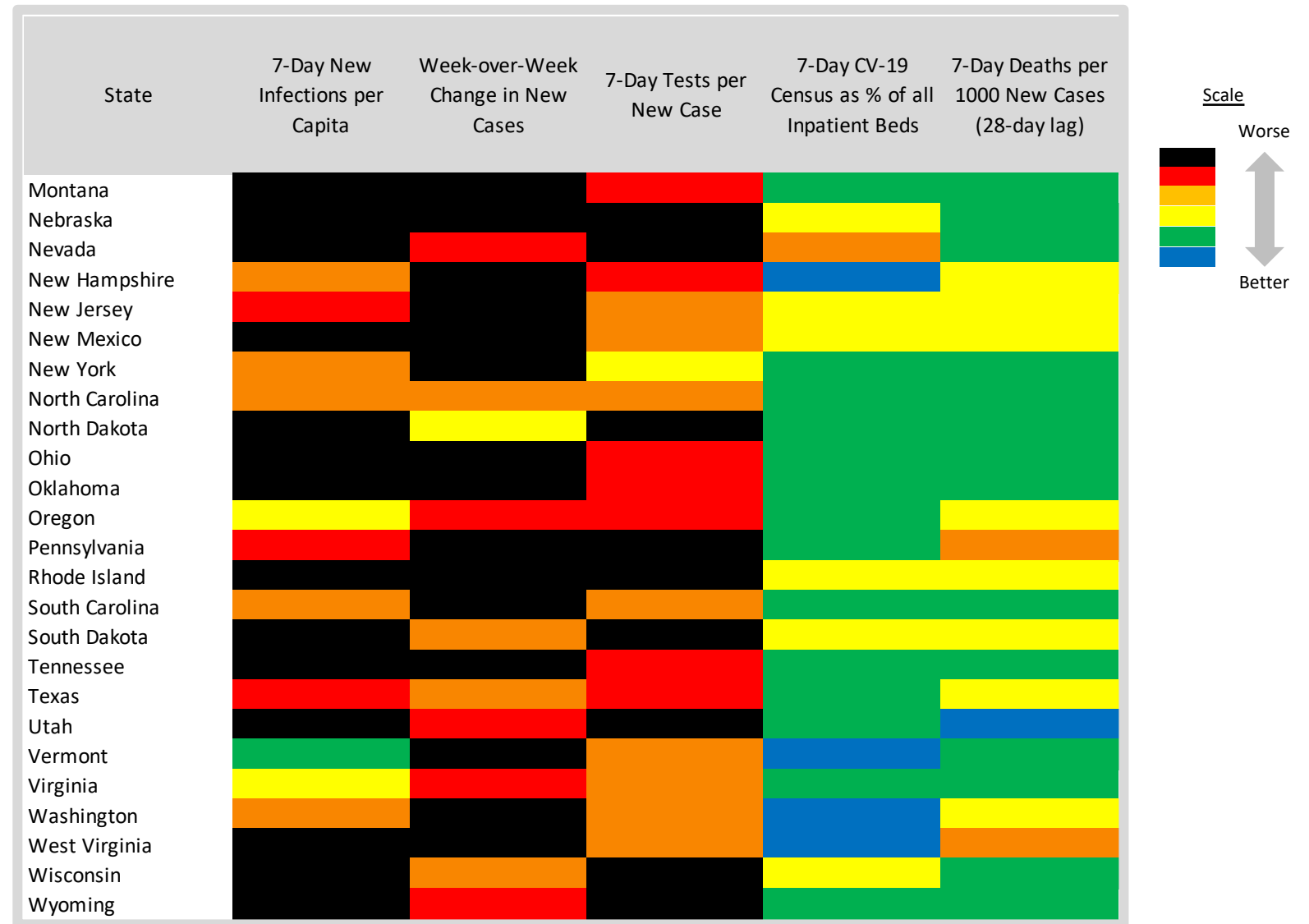
For example, health systems might weigh the Covid-19 census as a % of available beds; A community might weigh the deaths per case highest



Metric		Black	Red	Orange	Yellow	Green	Blue
7-Day Average New Daily Reported Infections per Capita	Greater than	450	350	250	150	50	0
Week-over-Week Change in Newly Reported Cases	Greater than	30%	20%	10%	0%	-10%	N/A
7-Day Average Viral Tests per 7-Day Average Newly Reported Cases	Less than	5	10	25	50	75	N/A
Covid-19 Inpatient Census as % of All Inpatient Beds	Greater than	75%	60%	45%	30%	15%	0%
7-Day Deaths per 1000 New Cases (28-day lag)	Greater than	50	40	30	20	10	0

Note: this week, we convert from Covid-19 census v. peak Covid-19 census to Covid-19 census as a % of available inpatient beds. In our view, this provides a better indication of the strain that Covid-19 is placing on inpatient resources.





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 declined again yesterday, for the seventeenth time in the last eighteen days (and twenty-six of the past twenty-eight days)

This rate has been reduced by 1/2 since mid-September and by 3/4 since mid-May

Covid-19 Hospital Census / 100 Daily New Detected Cases

7-Day Moving Average, As of November 18

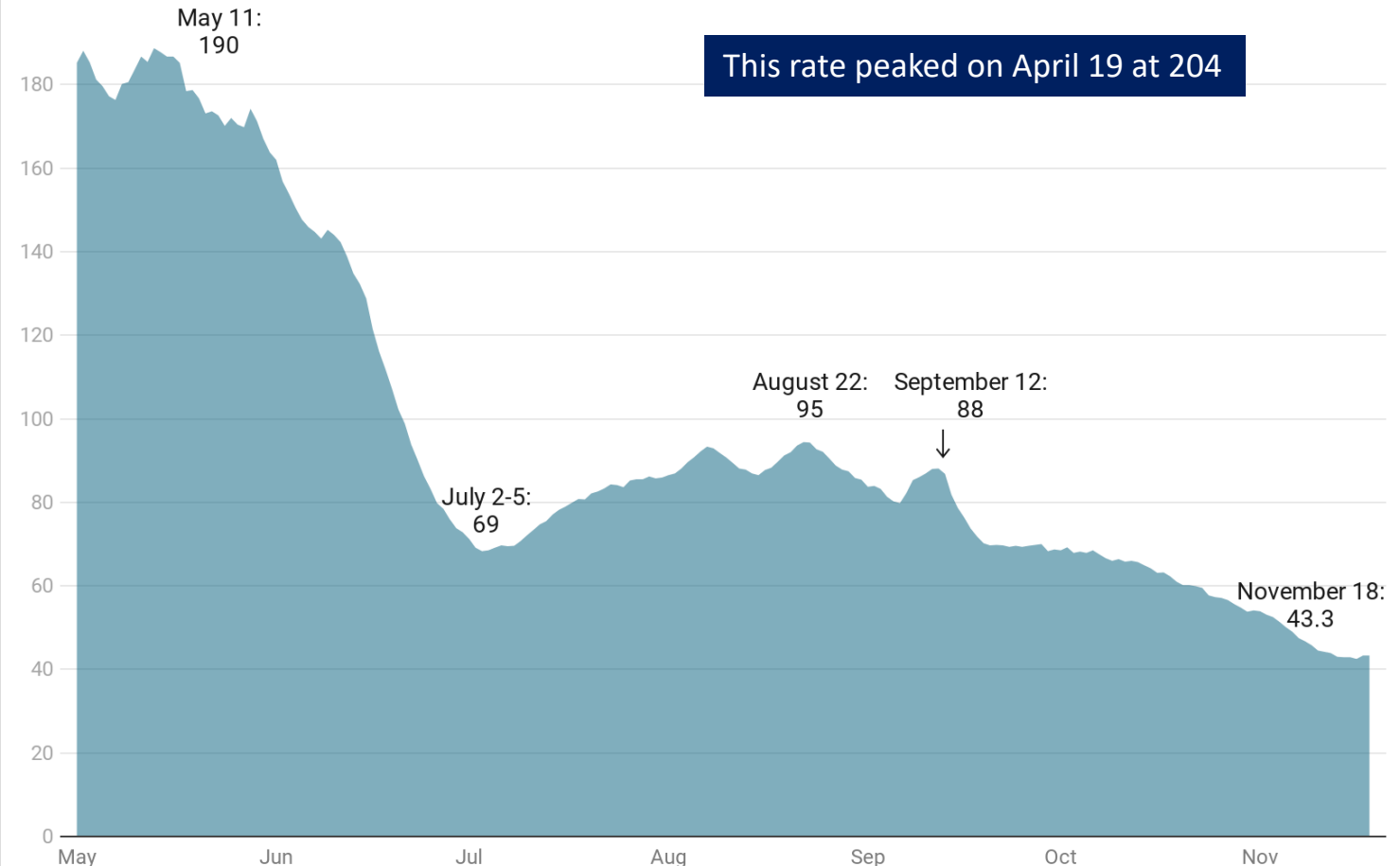


Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking project & worldometers.info • Created with Datawrapper

In Nevada, 55% of all inpatient beds are occupied by Covid-19 patients

In Connecticut, Illinois, New Mexico and Wisconsin, its more than 40%

In Colorado, Indiana, Iowa, Michigan, Minnesota, Missouri, Nebraska, New Jersey, Rhode Island and South Dakota, its more than 30%

For the U.S. overall, its 25%

Covid-19 Patients / Total Inpatient Beds

7-Day Moving Average, As of November 18

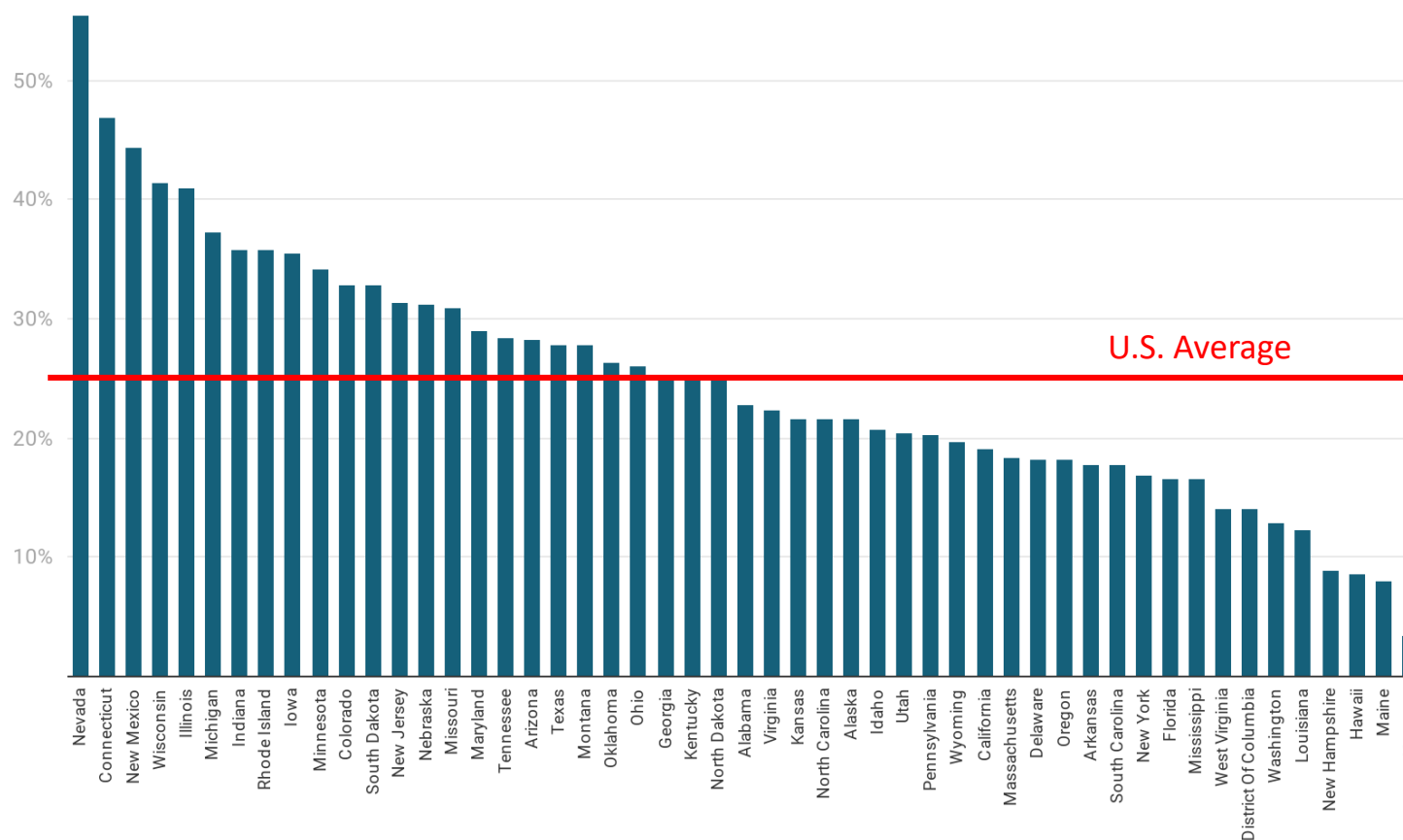


Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking project & worldometers.info • Created with Datawrapper

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

The lowest rates are found in Utah, New Hampshire, Alaska, Minnesota 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 18

U.S. Peak (4/19)

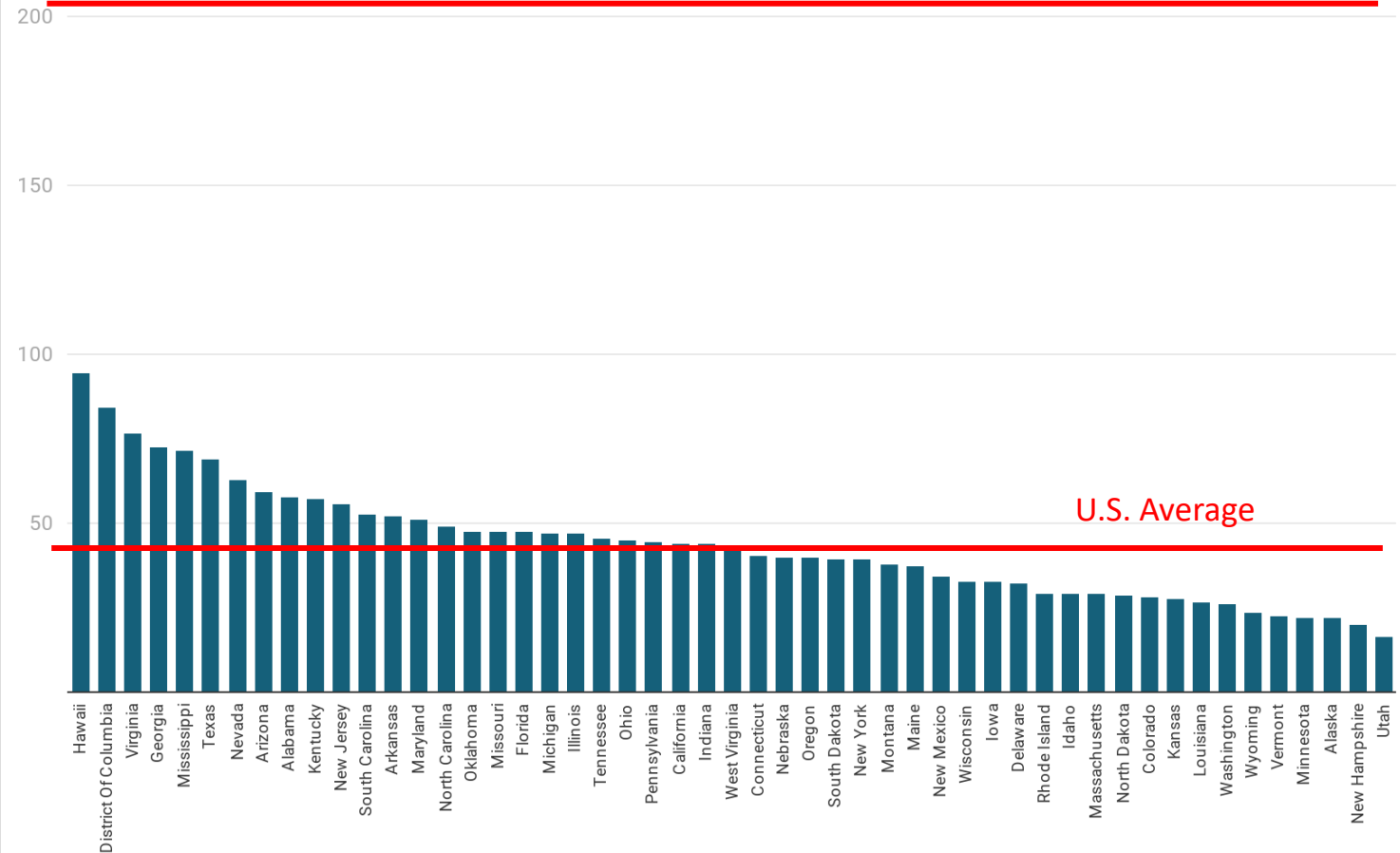


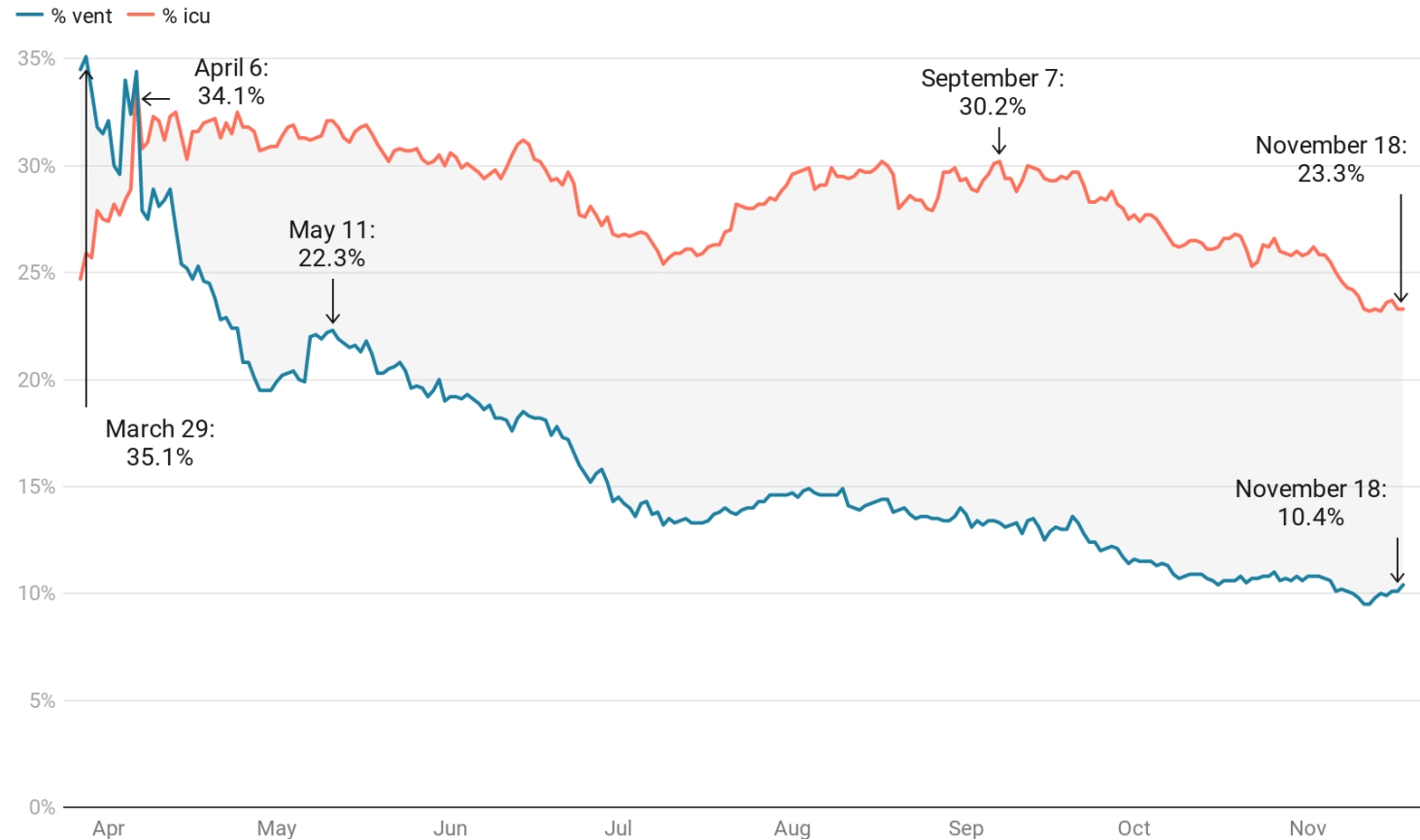
Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid tracking Project & worldometers.info • Created with Datawrapper

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 18



Health Industry Advisor LLC analysis

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

On average, less than 1-in-4 Covid-19 inpatients are in the ICU

Rates are highest in Arkansas Utah and Maine, where more than 1-in-3 are in the ICU

% of Covid-19 Inpatients in the ICU

November 18

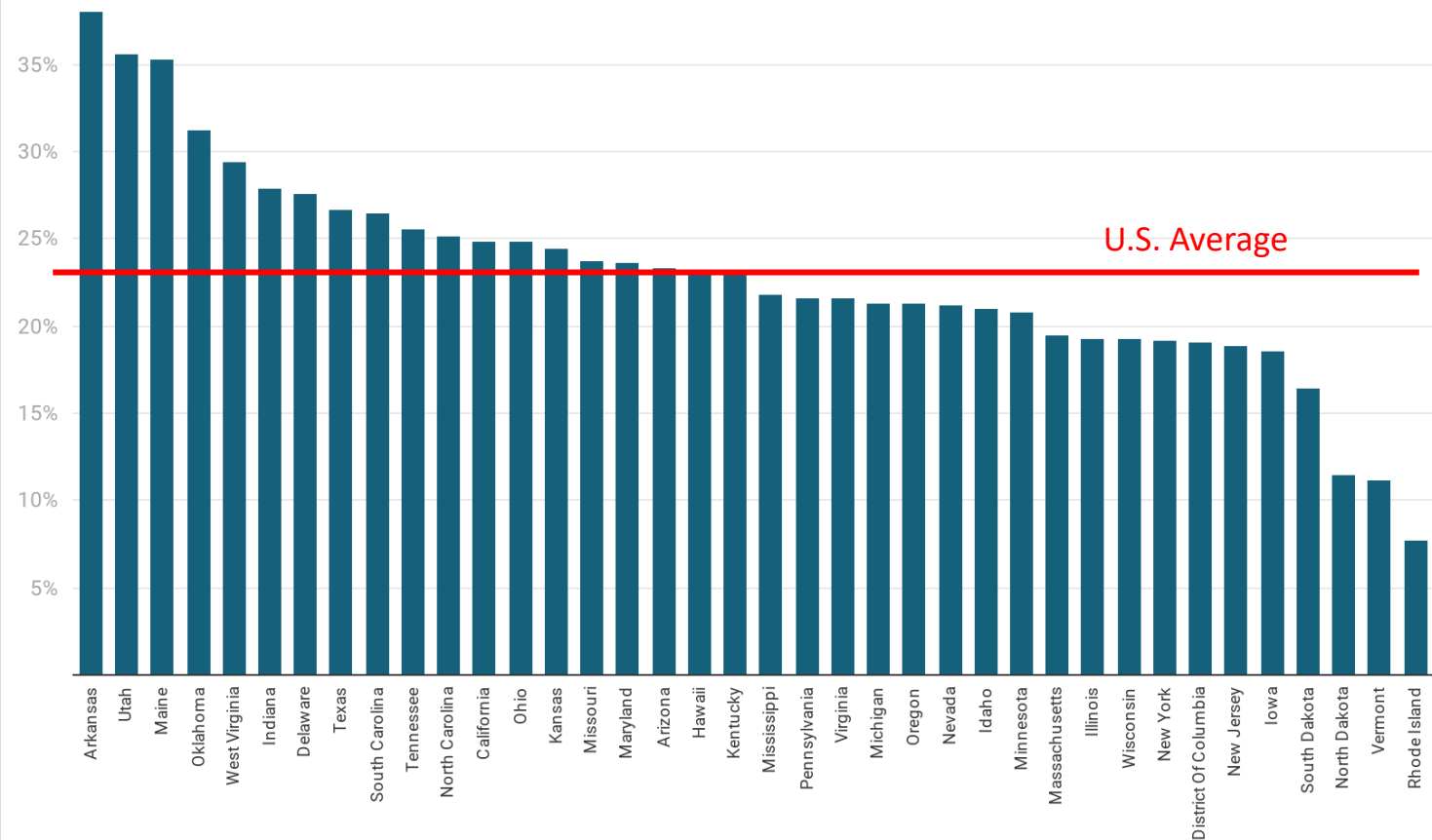


Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking project • Created with Datawrapper

The % of ER visits for COVID-19-like illnesses (CLI) has generally been increasing since late-October – with a slight easing in the past week

This rate remains than it was in in March/April,

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 15

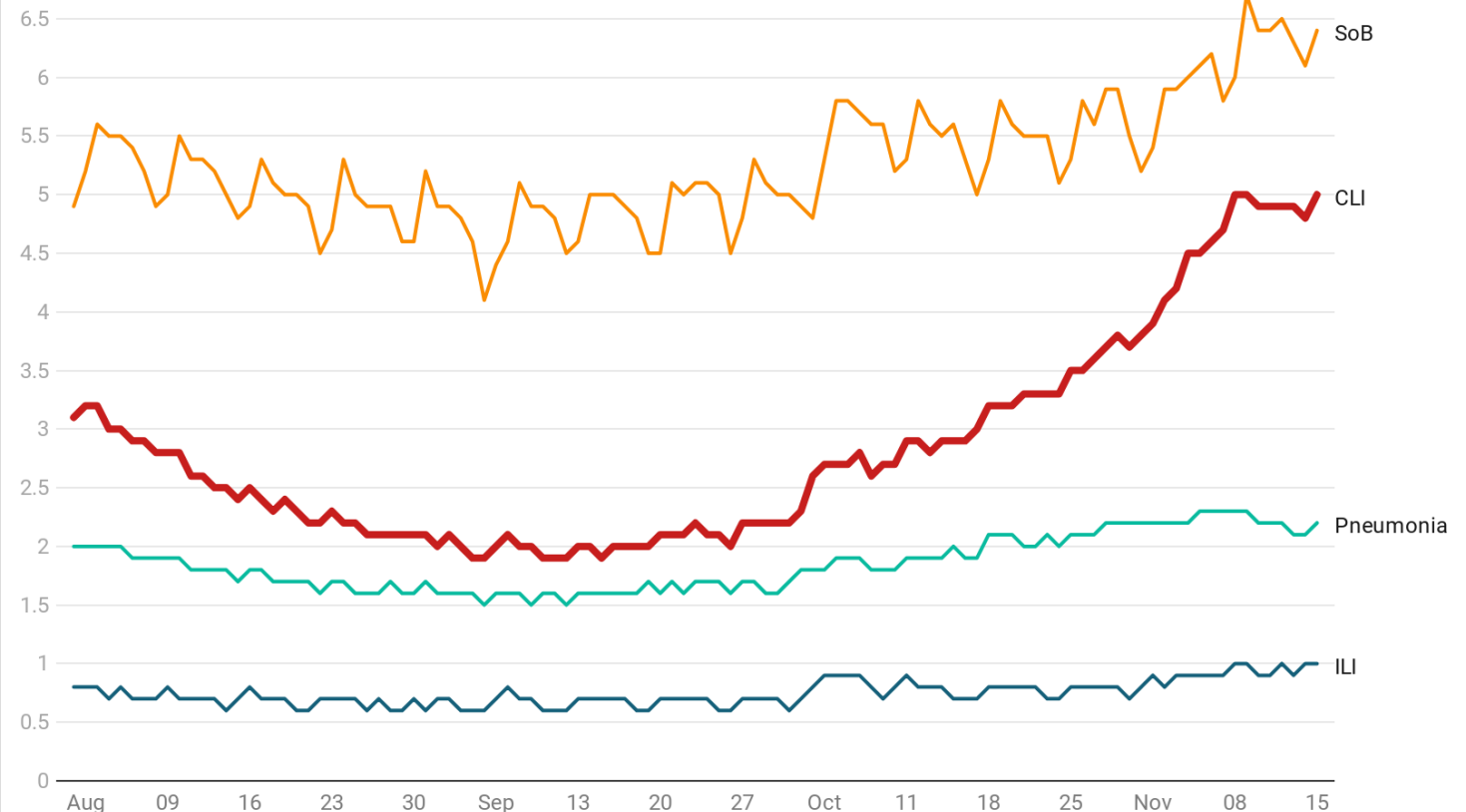


Chart: Health Industry Advisor LLC • Source: CDC • Created with Datawrapper

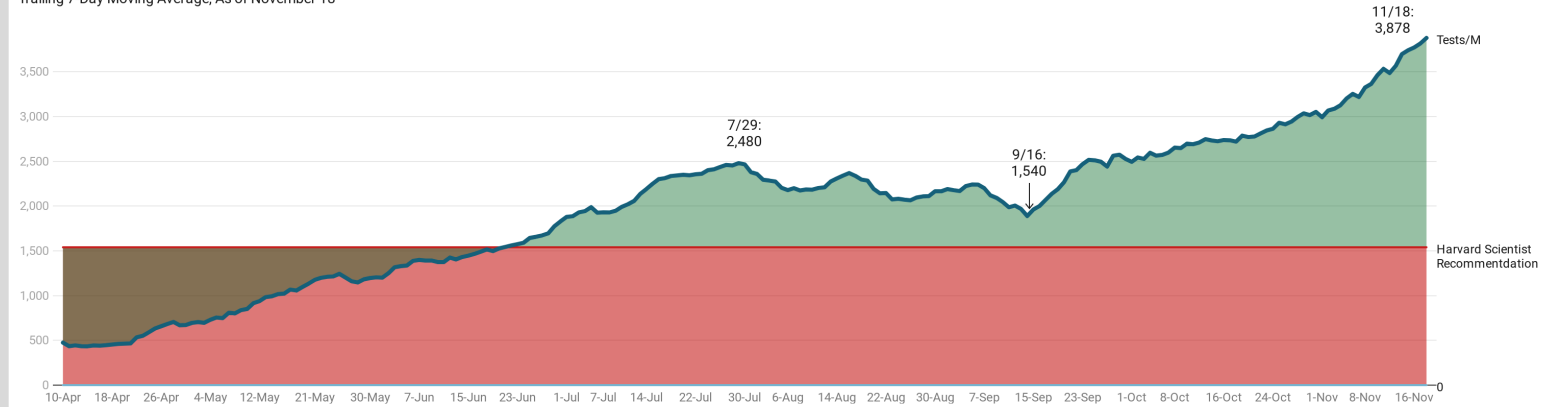
The 7-day average testing volume has increased by 50% since its late-July peak – setting new highs twenty-three of the past twenty-eight days

The 7-day test-positive rate, however, has been trending upward since the beginning of October - increasing on twenty-three 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 18

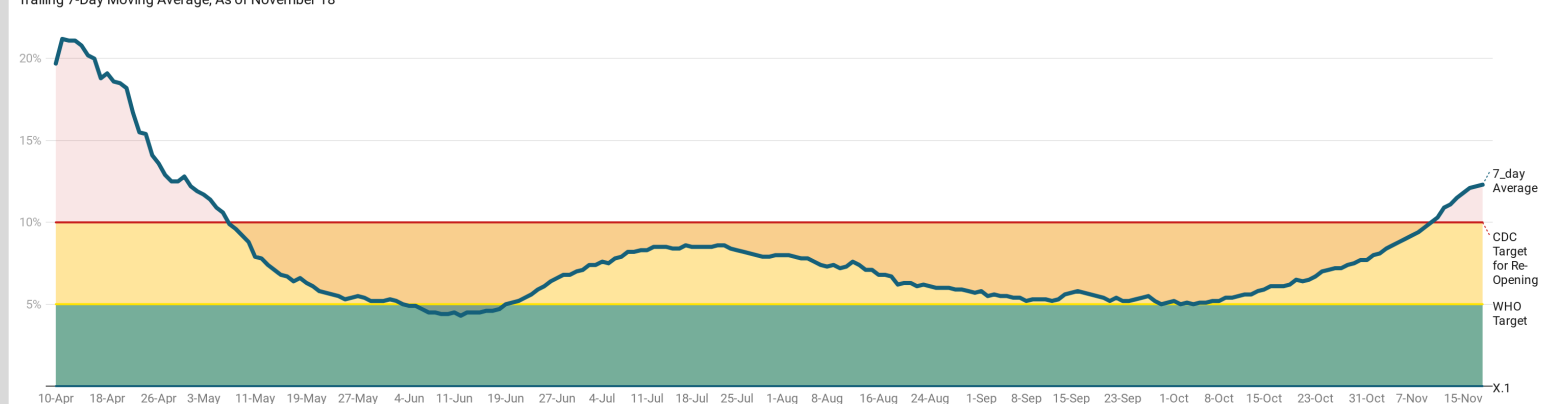


Health Industry Advisor LLC analysis

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 18



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%

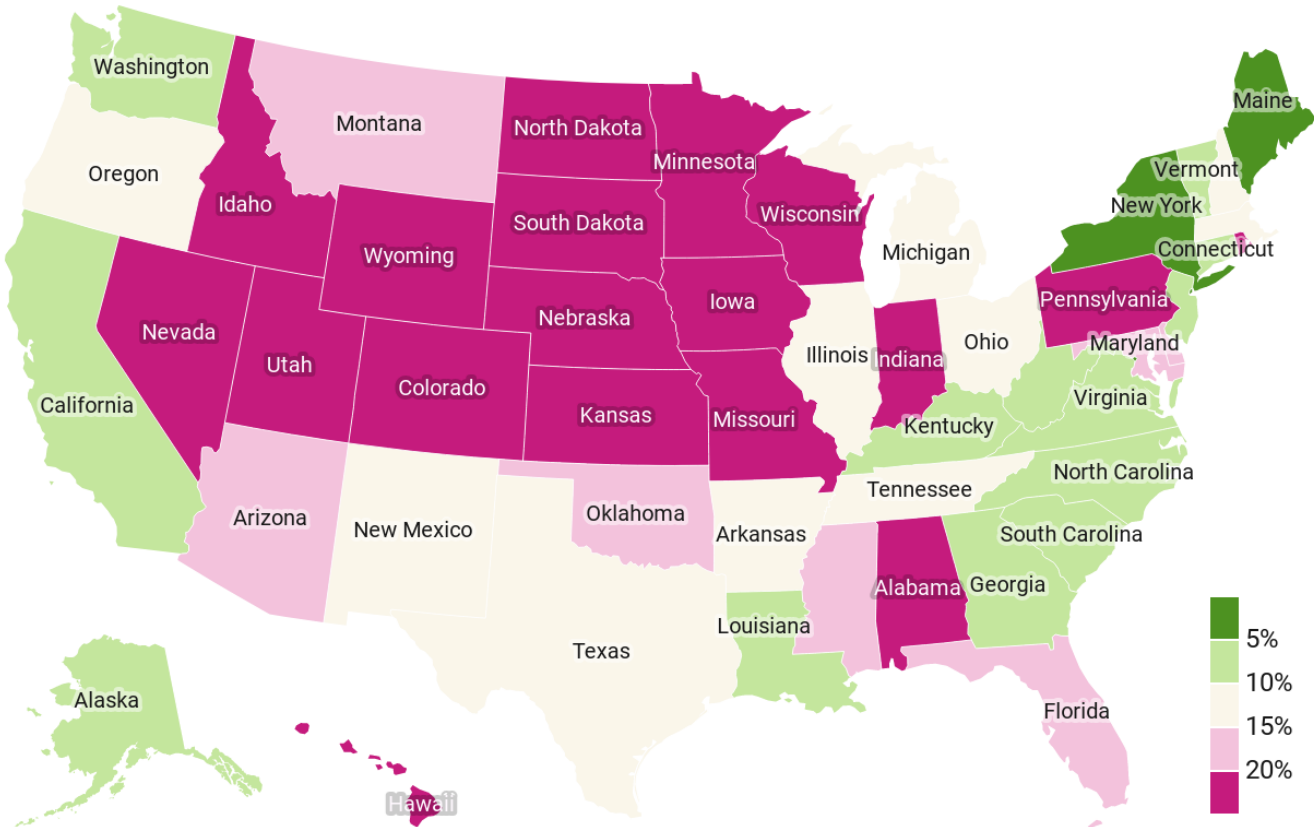
Only 15 states have rates lower than the CDC target for Phase 3 re-openings

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

Only 15 states have rates lower than the CDC target for Phase 3 re-openings

Test-Positive Rate

7-Day Moving Average, As of November 18



Health Industry Advisor LLC analysis

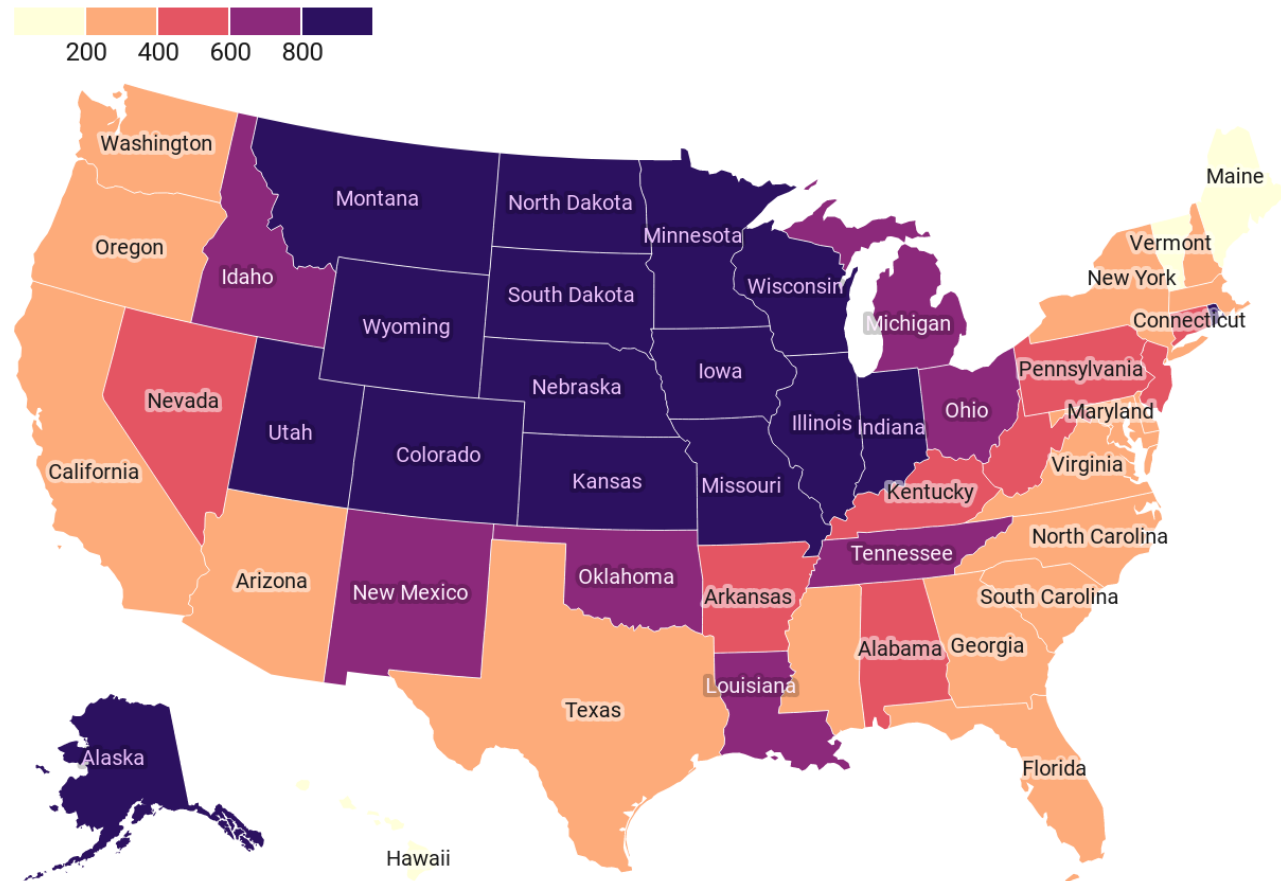
Map: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking Project • Created with Datawrapper

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 18



Map: Health Industry Advisor LLC • Created with Datawrapper

State-By-State Comparisons

As of November 18

State ▲	Cases per 1M Population	Deaths per 1 Million Population	Tests per 1M Population Past 7 days	Test-Positive % (7-Day Moving Average)	New Daily Cases Per 1M Population (7-Day M.A.)	Tests / New Case	Covid-19 Census % of All Beds	Week-Over-Week Change in New Cases	7-Day Deaths /1000 New Cases , 28-Day Lag
Alabama	45.6k	683	1,855	23.3%	433	4	23%	40%	19
Alaska	33.4k	137	9,953	6.1%	823	12	22%	26%	3
Arizona	38.9k	874	2,189	16.1%	352	6	28%	35%	22
Arkansas	45.6k	754	3,961	13.6%	541	7	18%	18%	23
California	27k	467	4,326	5.3%	258	17	19%	60%	15
Colorado	30.7k	460	3,609	26.3%	851	4	33%	45%	26
Connecticut	27.2k	1,342	8,874	5.5%	492	18	47%	51%	23
Delaware	30.6k	762	2,354	15.0%	354	7	18%	43%	20
District Of Columbia	27.6k	942	6,951	3.2%	220	32	14%	67%	22
Florida	42.1k	826	1,583	19.3%	314	5	17%	33%	21
Georgia	40.9k	854	2,543	8.6%	267	10	25%	16%	26
Hawaii	11.8k	158	66	100.0%	53	1	9%	-31%	2
Idaho	48.2k	453	1,913	40.4%	742	3	21%	11%	14
Illinois	47.9k	905	7,832	11.9%	935	8	41%	11%	23
Indiana	39.8k	755	2,881	32.3%	930	3	36%	40%	25
Iowa	62k	655	2,066	50.2%	1,302	2	36%	3%	23
Kansas	44.7k	455	2,188	43.4%	966	2	22%	40%	20
Kentucky	32.4k	383	6,067	9.2%	557	11	25%	31%	14

State-By-State Comparisons

As of November 18

State ▲	Cases per 1M Population	Deaths per 1 Million Population	Tests per 1M Population Past 7 days	Test-Positive % (7-Day Moving Average)	New Daily Cases Per 1M Population (7-Day M.A.)	Tests / New Case	Covid-19 Census % of All Beds	Week-Over-Week Change in New Cases	7-Day Deaths /1000 New Cases , 28-Day Lag
Louisiana	45.2k	1,330	4,945	9.5%	622	8	12%	312%	29
Maine	7.1k	126	7,524	1.9%	140	54	8%	16%	57
Maryland	28.4k	720	2,091	15.1%	317	7	29%	50%	24
Massachusetts	28.2k	1,498	3,055	12.3%	377	8	18%	38%	36
Michigan	30.3k	858	6,297	11.6%	732	9	37%	37%	33
Minnesota	42.9k	544	4,116	29.2%	1,203	3	34%	46%	24
Mississippi	46.2k	1,210	1,974	19.5%	384	5	17%	21%	20
Missouri	43.5k	593	1,735	43.9%	828	2	31%	56%	11
Montana	47.3k	525	5,838	19.5%	1,138	5	28%	42%	20
Nebraska	53.7k	422	2,919	40.7%	1,187	2	31%	40%	15
Nevada	40.7k	632	1,691	33.1%	559	3	55%	30%	15
New Hampshire	11.6k	371	2,423	12.3%	273	9	9%	77%	21
New Jersey	33.3k	1,889	6,134	6.8%	424	14	31%	42%	24
New Mexico	33.6k	615	8,712	10.1%	778	11	44%	37%	30
New York	31.5k	1,753	8,244	2.9%	251	33	17%	50%	19
North Carolina	30.6k	467	3,690	7.5%	277	13	22%	19%	14

State-By-State Comparisons

As of November 18

State	Cases per 1M Population	Deaths per 1 Million Population	Tests per 1M Population Past 7 days	Test-Positive % (7-Day Moving Average)	New Daily Cases Per 1M Population (7-Day M.A.)	Tests / New Case	Covid-19 Census % of All Beds	Week-Over-Week Change in New Cases	7-Day Deaths /1000 New Cases , 28-Day Lag
North Dakota	88.2k	1,030	2,869	64.4%	1,848	2	25%	8%	19
Ohio	27.3k	498	4,413	14.3%	629	7	26%	46%	12
Oklahoma	40.8k	397	4,361	15.8%	689	6	26%	40%	12
Oregon	14.1k	187	1,643	14.2%	234	7	18%	27%	20
Pennsylvania	22.5k	747	1,771	24.2%	439	4	20%	64%	32
Rhode Island	43.3k	1,212	2,938	28.2%	827	4	36%	44%	21
South Carolina	38.7k	812	3,817	7.6%	290	13	18%	34%	16
South Dakota	77.6k	762	2,883	55.9%	1,611	2	33%	18%	22
Tennessee	47.6k	592	4,745	14.0%	665	7	28%	36%	19
Texas	39k	708	2,538	12.2%	370	7	28%	16%	25
Utah	50.5k	231	3,339	29.8%	994	3	20%	24%	7
Vermont	5.1k	96	1,474	9.7%	143	10	3%	178%	12
Virginia	24.5k	452	2,423	8.5%	206	12	22%	21%	17
Washington	18.5k	342	3,164	8.4%	292	11	13%	47%	25
West Virginia	20.3k	342	6,816	7.1%	486	14	14%	63%	31
Wisconsin	57k	480	3,346	36.2%	1,127	3	41%	13%	14
Wyoming	43.7k	268	1,567	92.9%	1,457	1	20%	28%	17

Table: Health Industry Advisor LLC • Created with Datawrapper

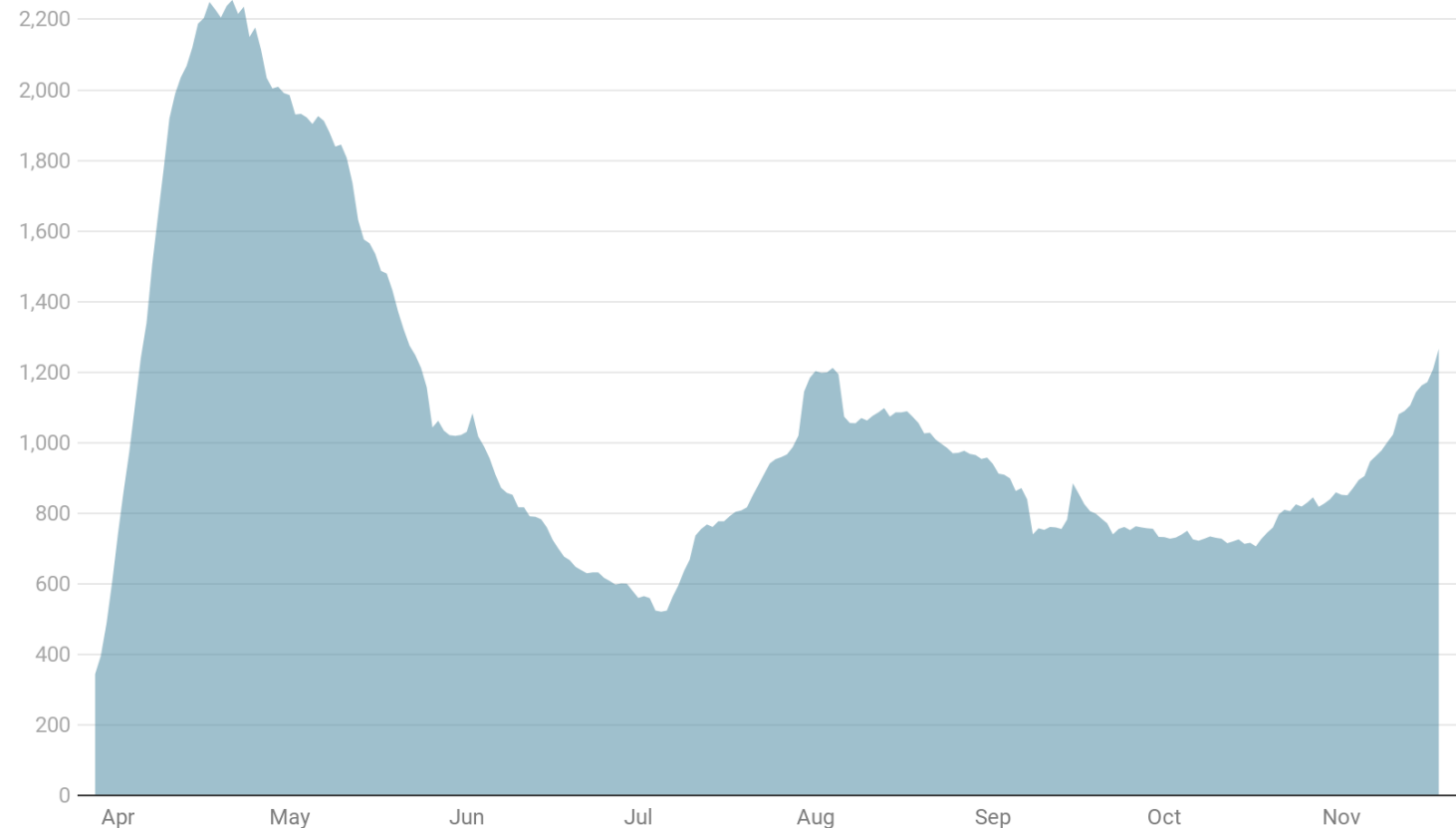
The recent uptick in newly-detected cases is resulting in increased deaths:

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

This rate is now higher than where it peaked in early-August

Deaths Reported With Coronavirus in the U.S.

Trailing 7-Day Moving Average, As of November 18



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>