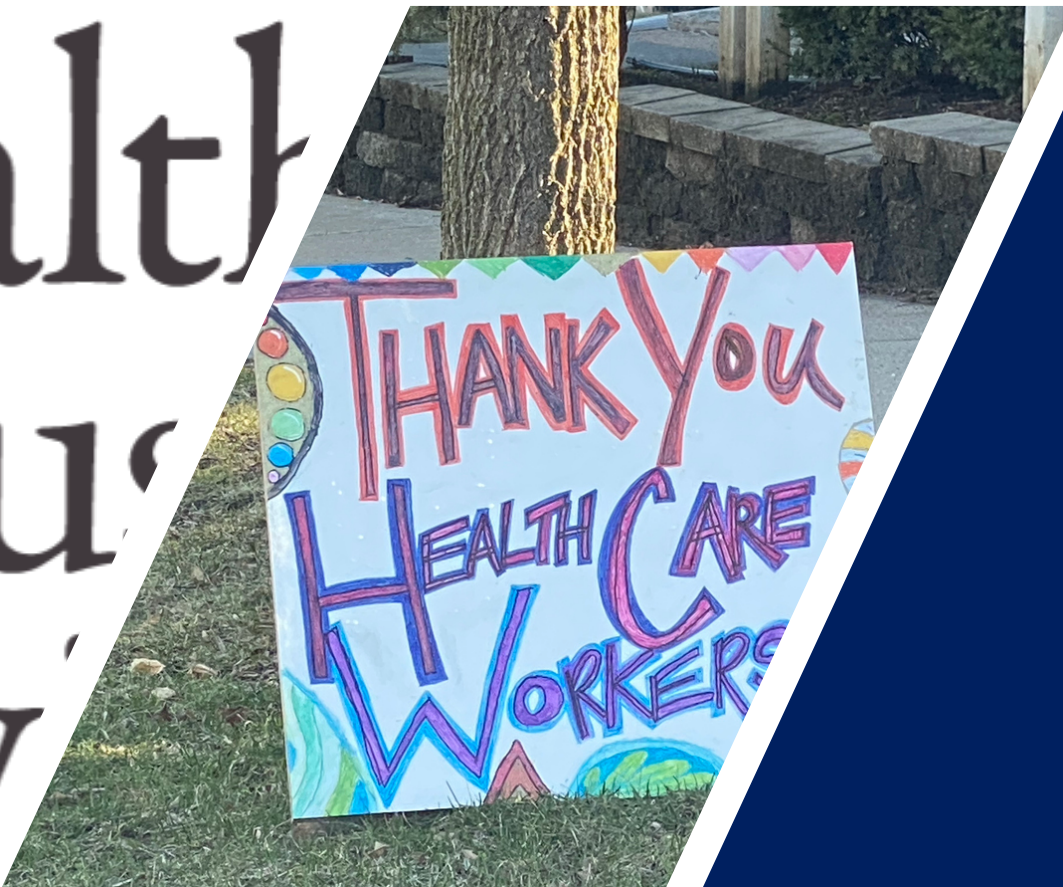




Health
Industry
Adv



Issue # 198
Thursday, October 29, 2020
COVID-19
Report

Highlights

- In general, we are of the opinion that most of the media are **overly-fixated on case counts - they are important - however, they can be misleading in understanding the trajectory of this virus spread:**
 - First, reported or, detected cases as we refer to them, are likely significantly undercounting true new infections
 - This undercounting varies, likely in relation to test-positive % - the higher the test-positive %, the greater the likely undercounting - and in inverse relation to test volume
 - **Test volume per capita was 5x higher at the time of the second peak in new daily cases (July 25) compared to the first peak (April 10), and has increased another 20% since**
 - **The test-positive % fell by 58% from the first peak in new cases to the second, and 11% since**
- Key metrics of hospitalizations and deaths per case (see below) have trended down over time - likely due to either:
 - **improved identification and reporting of less severe cases**
 - **improved treatment of infected persons**
 - **mutation of the virus, resulting in greater infectiousness but, lower severity** (reportedly, a common circumstance with most viruses)
 - **some combination of these three factors**
- Thus it is instructive to compare current hospitalization and death experience with that from the first and second peaks in new daily cases in the U.S. (April 10 and July 25, respectively):
 - **Covid-19 census per new cases for the preceding week fell sharply from the first peak in new cases to the second (43% decline) and again from the second peak to yesterday (35% decline)**
 - **Deaths per million followed a similar pattern from the first peak to the second (57% decline), with a smaller decline from the second peak to yesterday (13% decline)**
- **Deaths per new case (with a 4-week lag) took an even sharper drop from the first to the second peak (74%)** (for an apples-to-apples comparison, we would need to contrast deaths in 4 weeks time relative to current new cases)
- As new cases continue to rise across the country and worldwide, we are observing similar case increases for most states
 - **Forty-three states are at or near the peak new daily cases per capita they have experienced during the pandemic**
 - The five states with the highest current rates - Montana, North Dakota, South Dakota, Wisconsin and Wyoming - are experiencing higher rates than any other state has ever experienced (i.e., higher than Florida, New Jersey and New York ever experienced)
 - Nevertheless, the current media "chatter" about a second or third wave of infections in the U.S generally doesn't hold true at the state level: **Only four states - Idaho, Louisiana, Rhode Island and Tennessee - have experienced two distinct periods of high new daily infection rates (>300 new cases/million, with an intervening period of > 200)**
 - Sixteen states have yet to exceed 300 new daily cases per million - although Colorado and Michigan are approaching this threshold
- A few weeks ago, we introduced a new state-by-state scorecard intended to assess each state's position relative to the rate of new infections; weekly increase in new cases; testing effectiveness; Covid-19 census; and, case fatality rates
 - **Only Hawaii, Louisiana, Maine, New York and Vermont are doing OK-to-well across most of the key measures we use to assess current status of the virus spread**
 - **Arkansas, Idaho, Indiana, Iowa, Mississippi, Montana, North Dakota, South Dakota, Tennessee, Utah, Wisconsin, and Wyoming are doing poorly on most or all measures**

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 v. peak highest; 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
7-Day Covid-19 Inpatient Census v. Peak Covid-19 Inpatient Census	Greater than	95%	85%	75%	50%	25%	0%
7-Day Deaths per 1000 New Cases (28-day lag)	Greater than	50	40	30	20	10	0

Scorecard (1 of 2)

Louisiana is doing OK to well across all categories

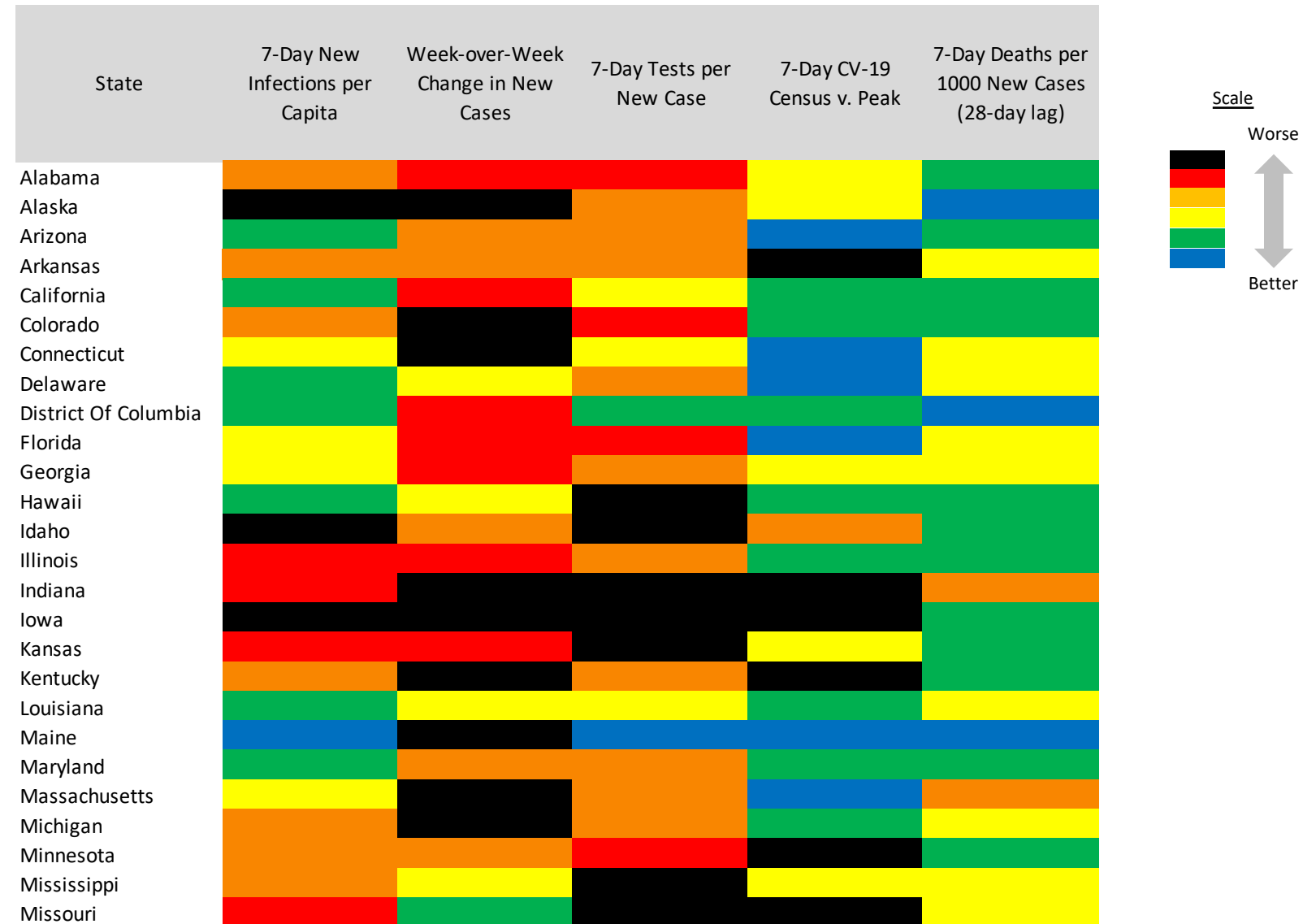
Maine is doing well, save for its week-over-week increase in cases

Hawaii is doing OK to well, save for its testing efficiency (it only reported positive tests this week)

Indiana is doing poorly across all categories

Arkansas, Idaho and Iowa are doing poorly, save for deaths per case

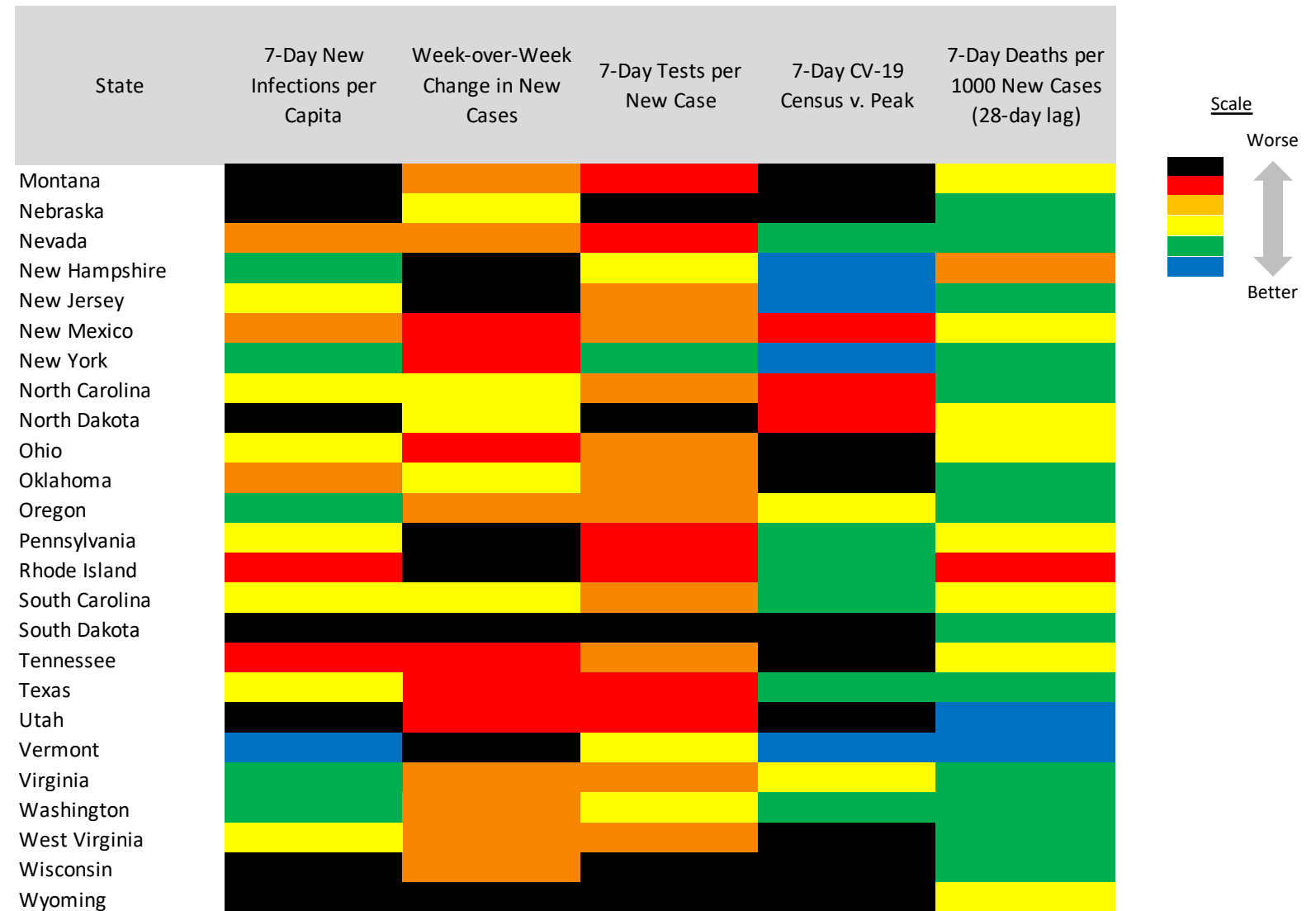
Mississippi is doing poorly, save for week-over-week case increases



Scorecard (page 2 of 2)

Vermont and New York are doing well on most measures, although cases grew on a week-over-week basis

Montana, South Dakota, Tennessee, Utah, Wisconsin and Wyoming are struggling on most measures except for the case fatality rate



North Dakota, South Dakota, Montana, Wisconsin and Wyoming (in order) experienced the highest new infection rate over the past seven days. Rates in each of these states exceed peak rates experienced by any other state

Only seventeen states are experiencing rates significantly below peak rates experienced during the pandemic

New Daily Detected Cases Per Million - By State

October 22-28, Difference From State's Highest Rate To-Date

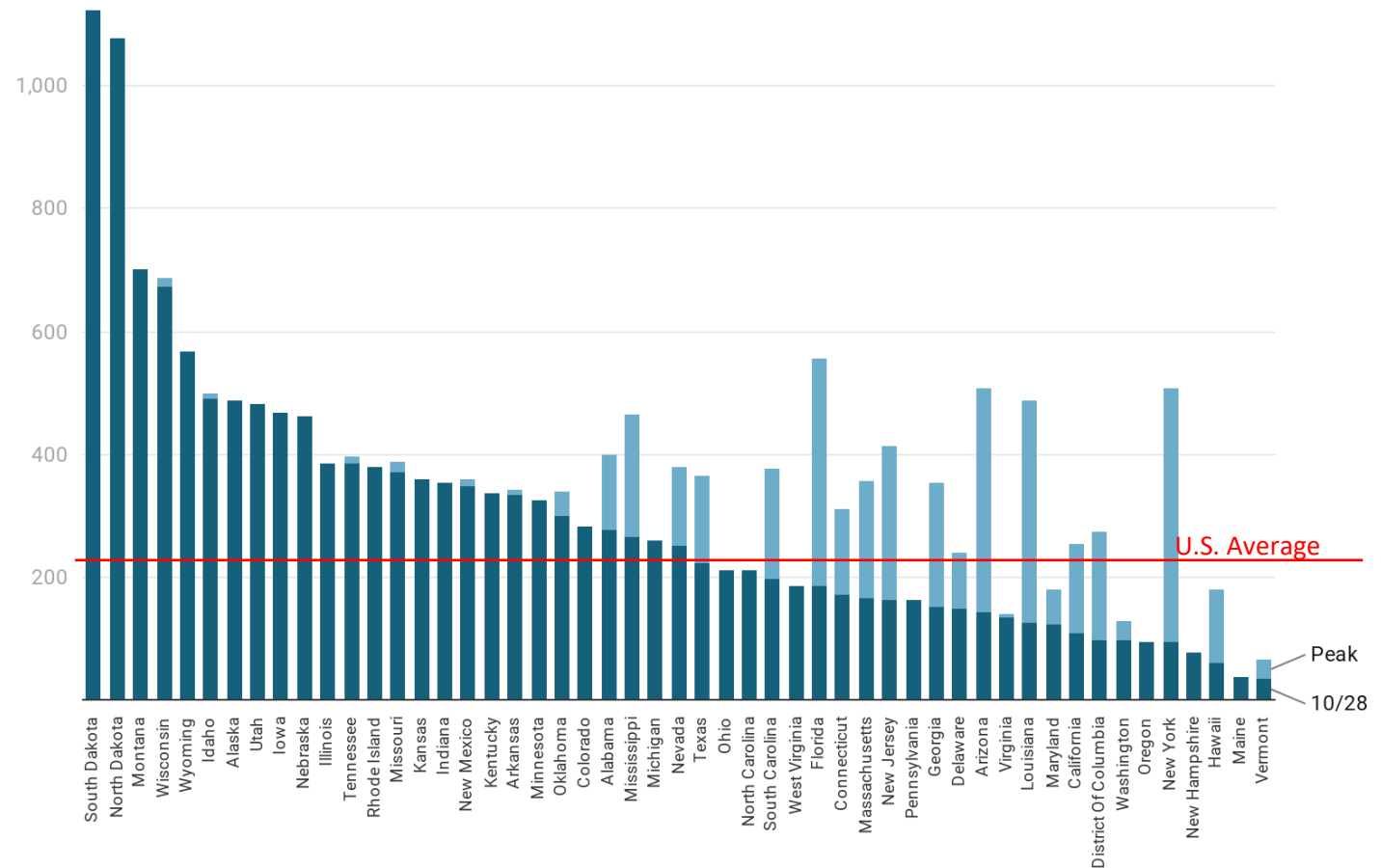


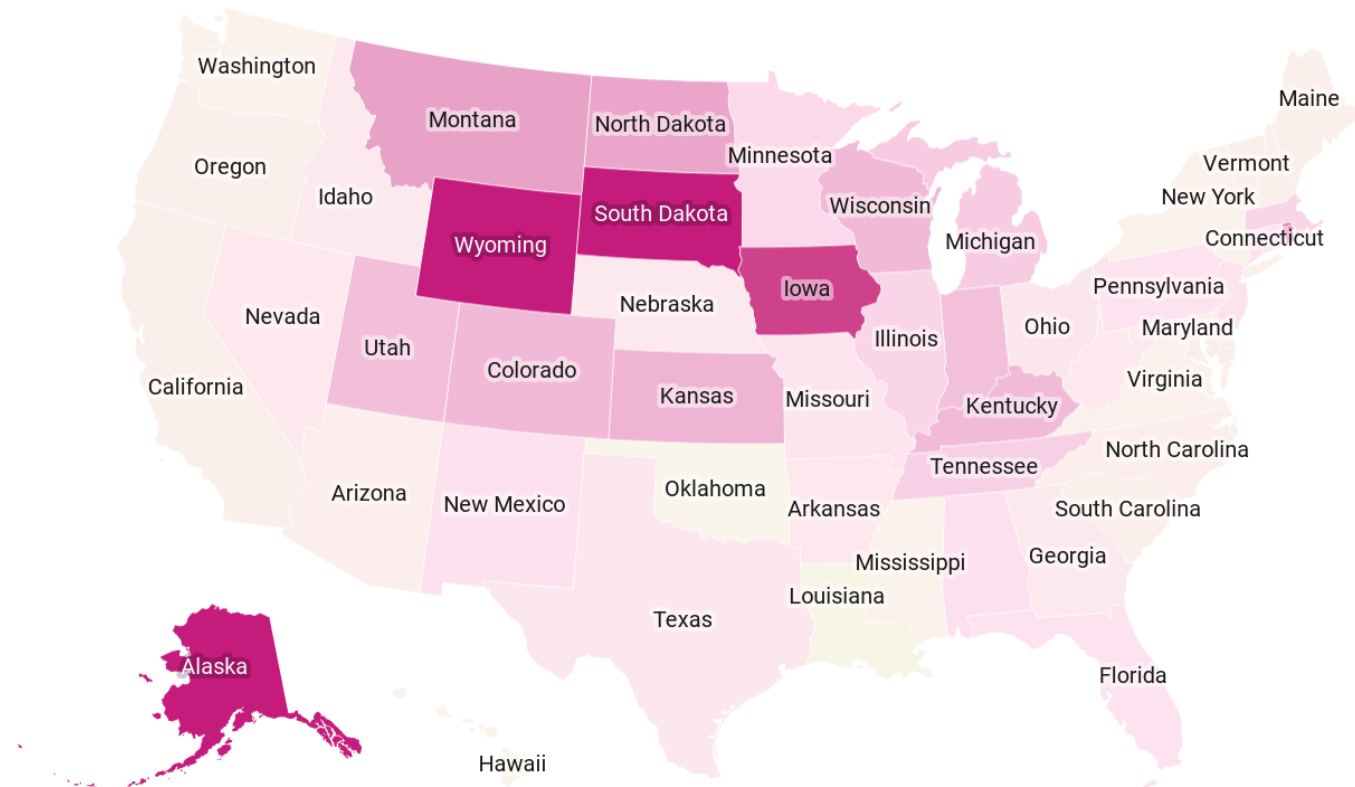
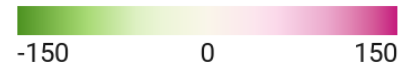
Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Iowa, South Dakota and Wyoming experienced the largest increases (%) in newly-detected cases over the past week

Most states have experienced increases in this rate relative to last week

Week-Over-Week Change in Newly Detected Cases / Million

October 22-28 v. October 15-21

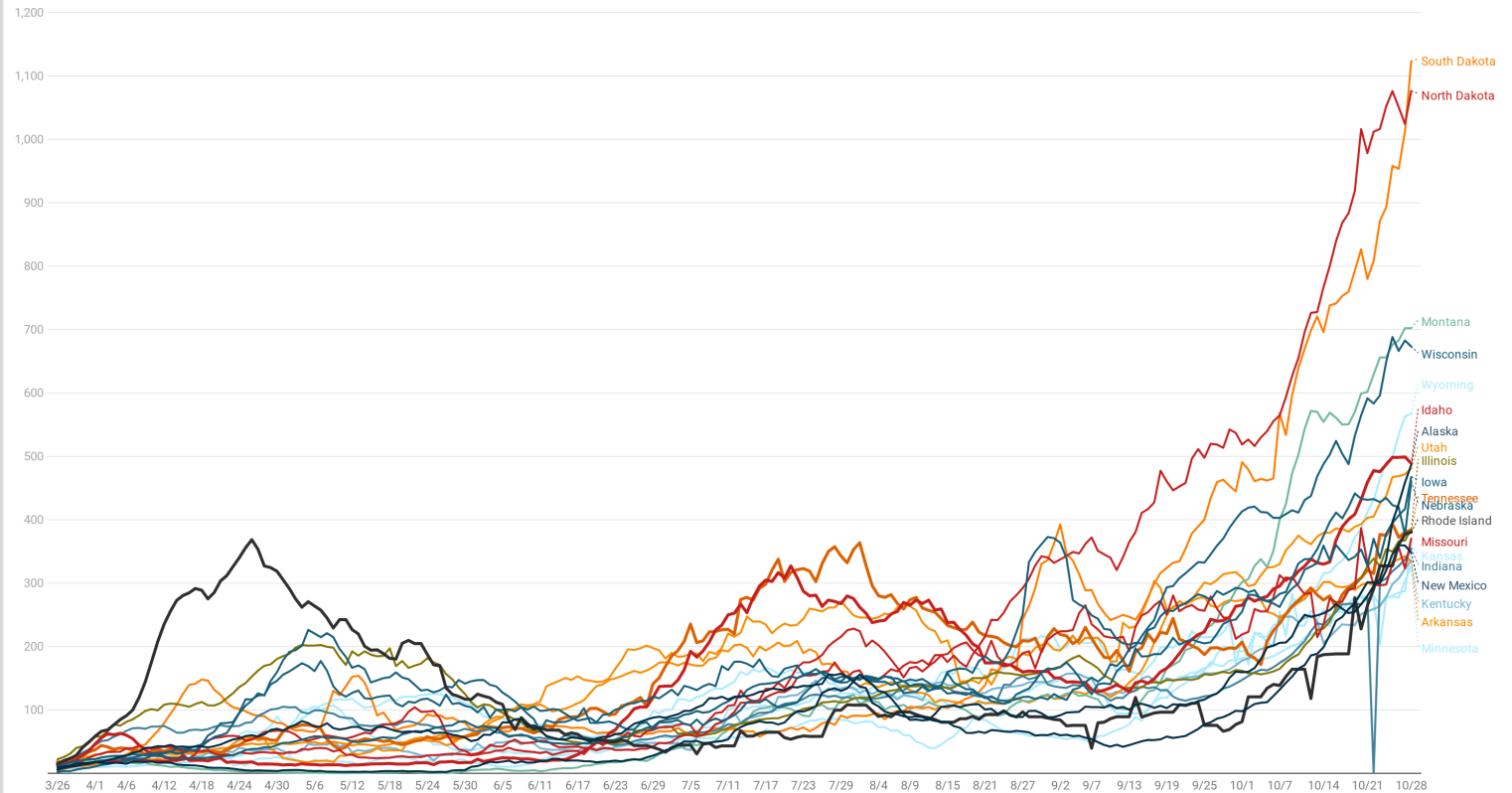


Map: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Twenty states might be considered as “on-fire”, if we define the threshold at >300 new daily cases / million over the past seven days

States Currently Most "On-Fire"

New Daily Infections / Million, 7-day Moving Average, As of October 28

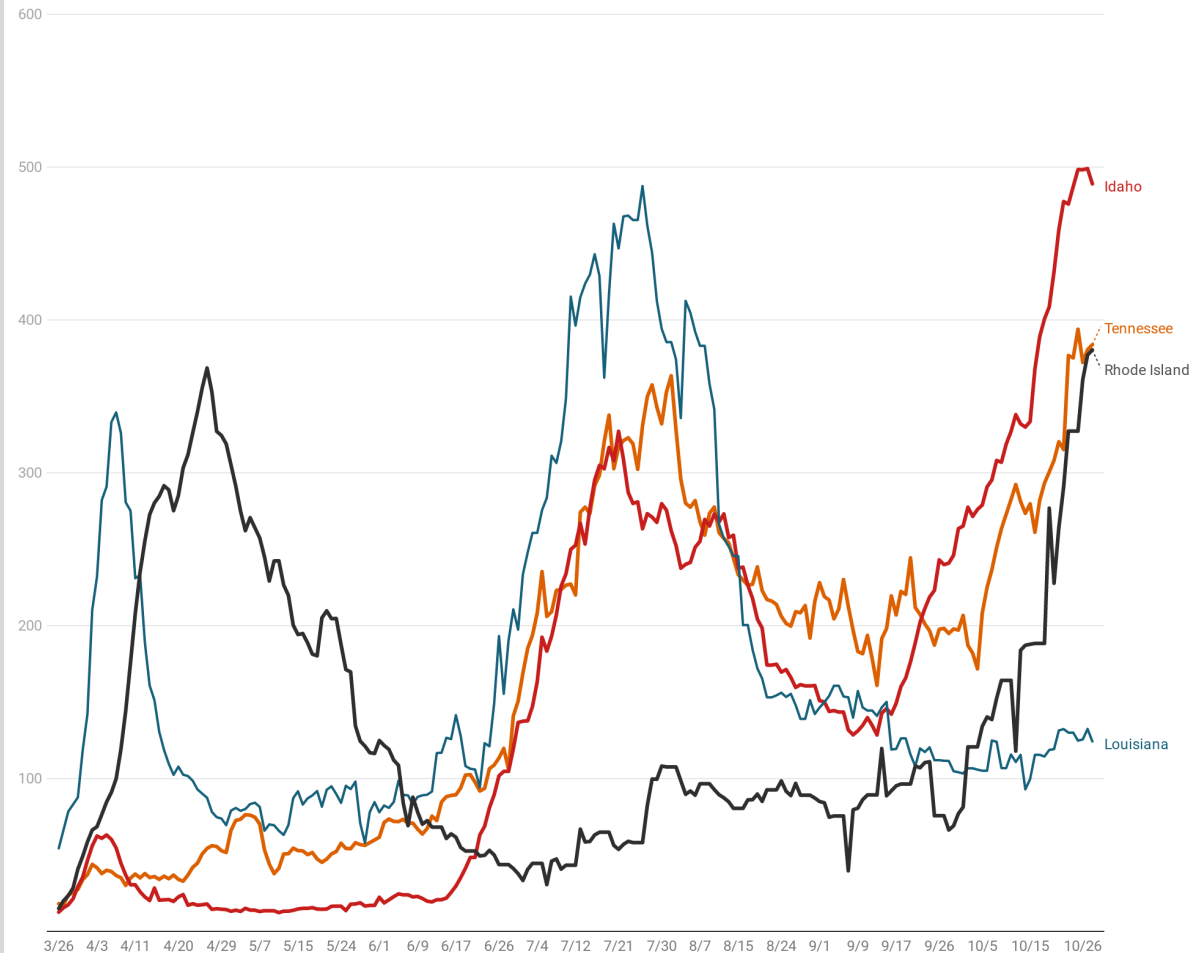


New Daily Infections/M > 300
Chart: Health Industry Advisor LLC - Created with Datawrapper

Despite the media chatter of a second or third infection wave in the United States, only four states - Idaho, Louisiana, Rhode Island and Tennessee - have experienced two distinct periods during which rates exceeded 300 new daily cases / million (with an intervening rate < 200)

Second Wave States?

New Daily Infections / Million, 7-day Moving Average, As of October 28

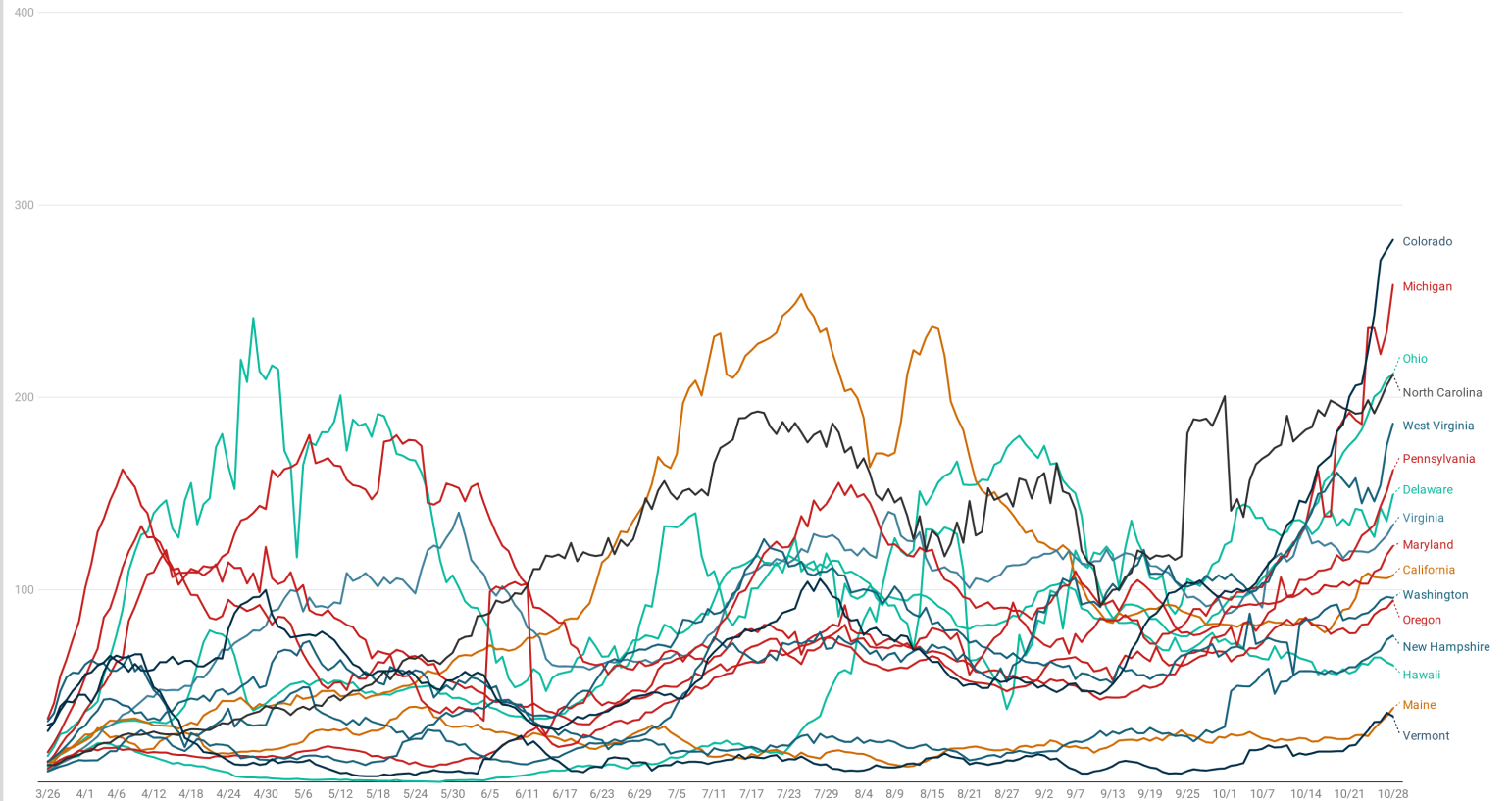


New Daily Infections/M > 300 A 2nd Time, After dropping < 200
Chart: Health Industry Advisor LLC • Created with Datawrapper

Sixteen states have yet to exceed the threshold of > 300 new daily cases / million – although Colorado and Michigan may be trending toward this level

States Yet To Exceed 300 New Daily Cases / Million

7-day Moving Average, As of October 28

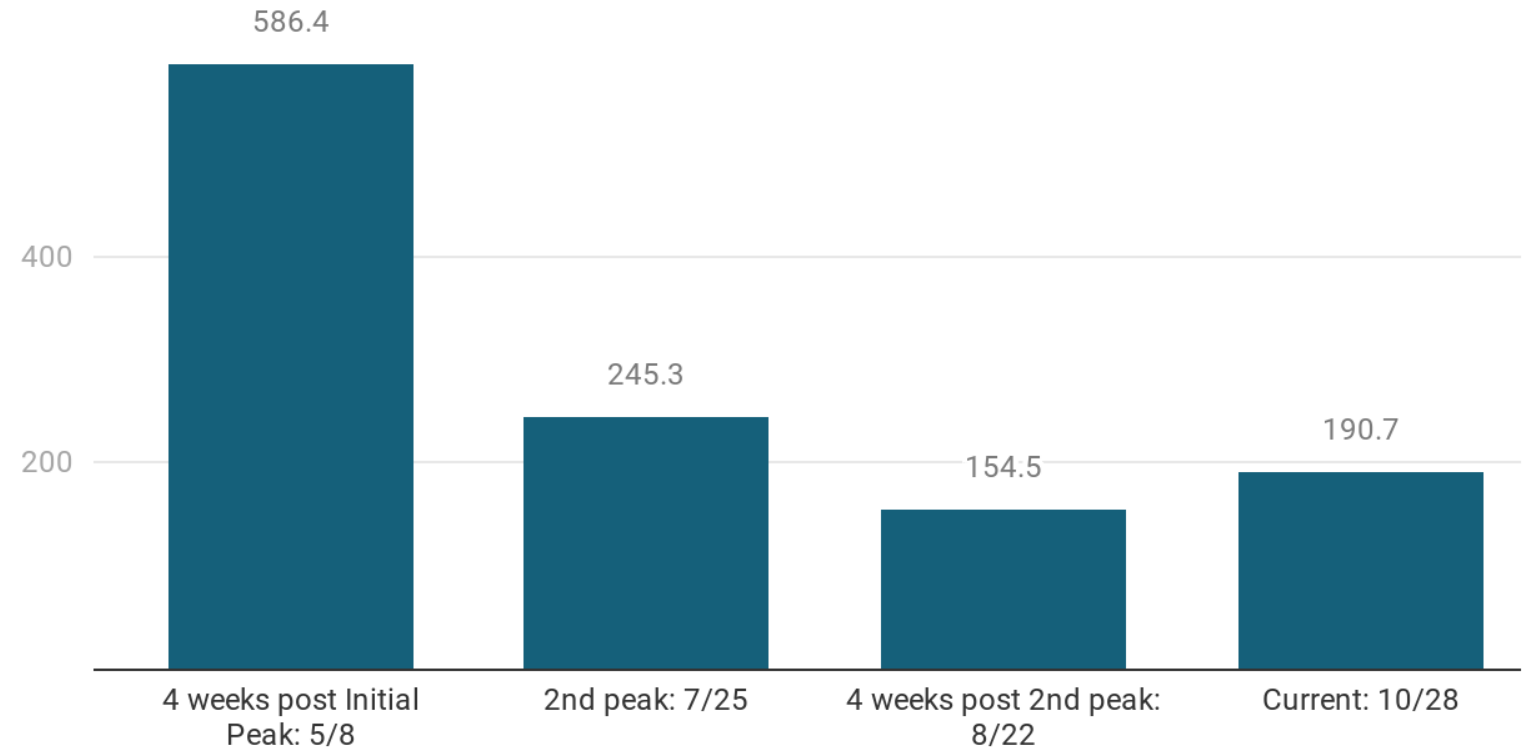


The case fatality rate fell sharply from the first peak in new cases (4-week lag of May 8) and the second peak (4-week lag of August 22)

As could be expected, this rate was higher on the date of the case peak (July 25) than on the 4-week lag date (August 22) (this also held true for the first case peak date of April 10 not shown here)

The current case fatality rate is lower than where it was on the initial two peaks

Comparison of 7-day Death Rates / New Case (4 Weeks Lagged) - U.S.



Created with Datawrapper

Studies suggest a 2 to 6-week latency period between infection onset and death

Rhode Island, Massachusetts and New Hampshire – states with low rates of new cases – have the highest current case fatality rate

Vermont and Maine have not experienced any deaths with Covid-9 in the past week

Reported Deaths / 10,000 New Cases (4-Week Lag)

7-Days Moving Averages, As of October 28

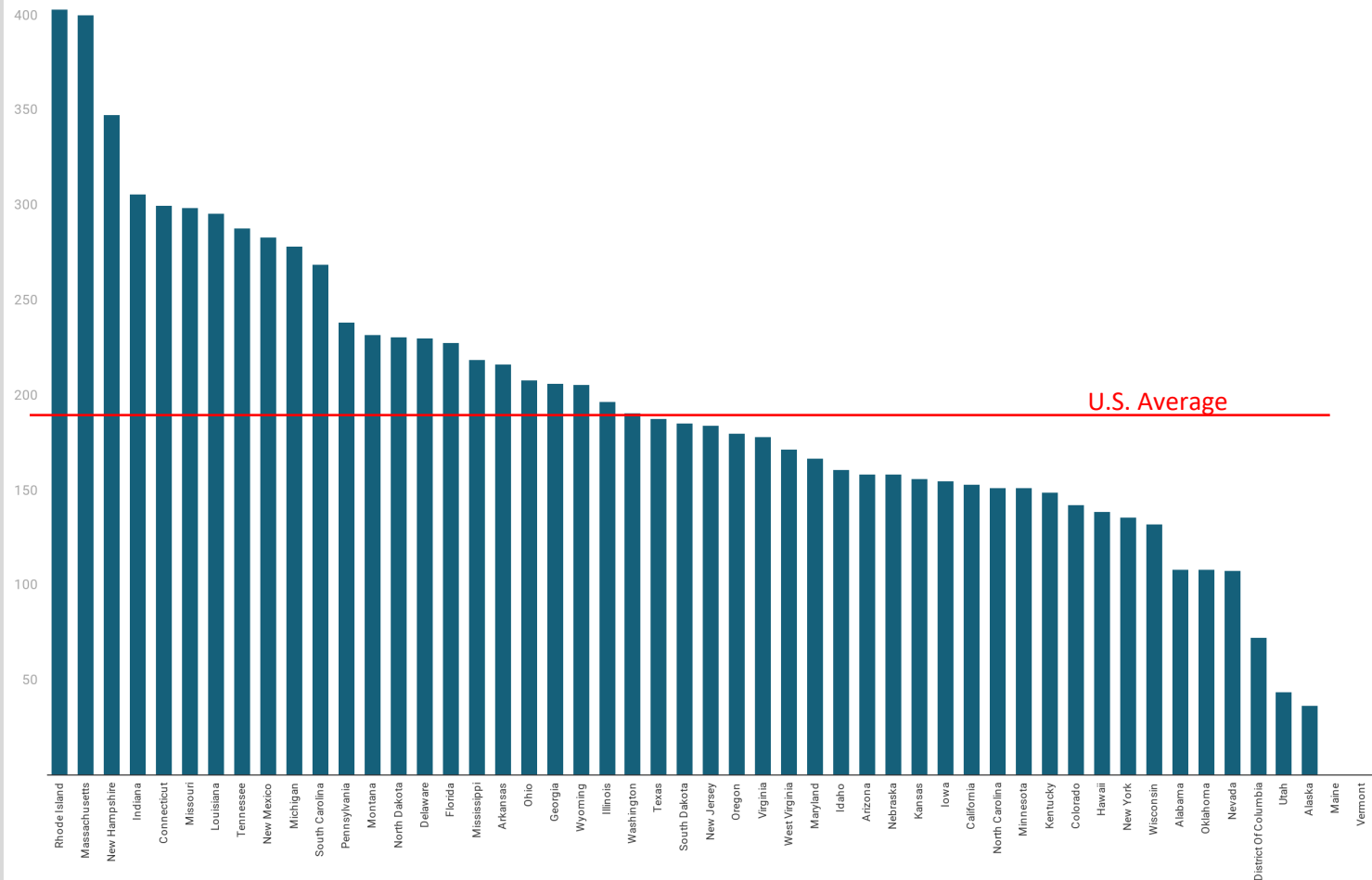


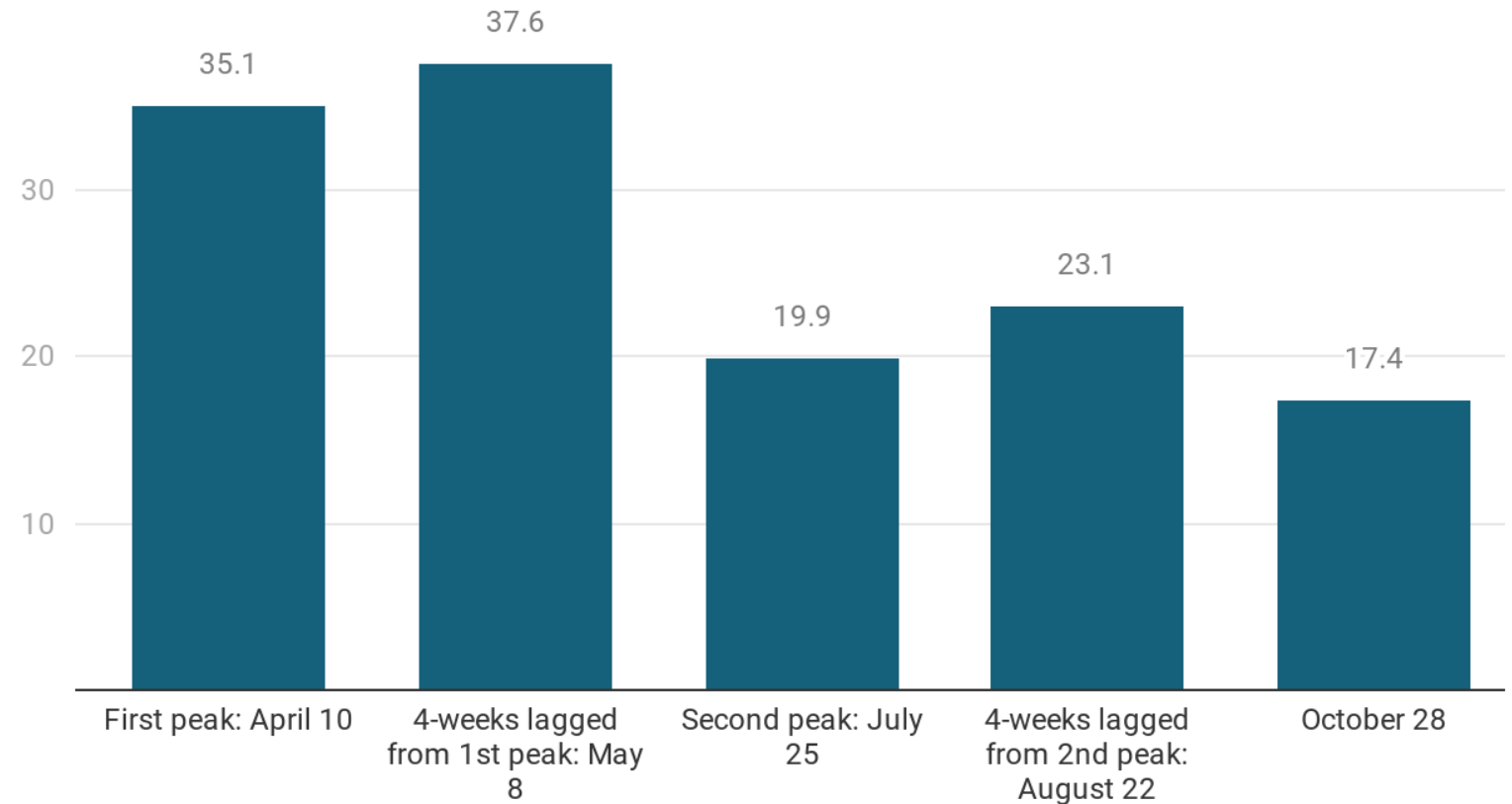
Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

As expected, eaths with the coronavirus per capita tend to increase from the peak date of new cases to the date 4-weeks later (the presumed latency period)

Notably, deaths per capita declined sharply from the first to the second peak, whether viewed on the date of the peak of the date 4-weeks post-peak

The current death rate per capita remains lower than it was during the prior peaks

Comparison of 7-day Deaths / Million - U.S.



Created with Datawrapper

Three states currently hard-hit by new cases - North Dakota, South Dakota and Montana – also have experienced the highest deaths per capita over the past week

Reported Deaths Past 7 Days / Million

As of October 28

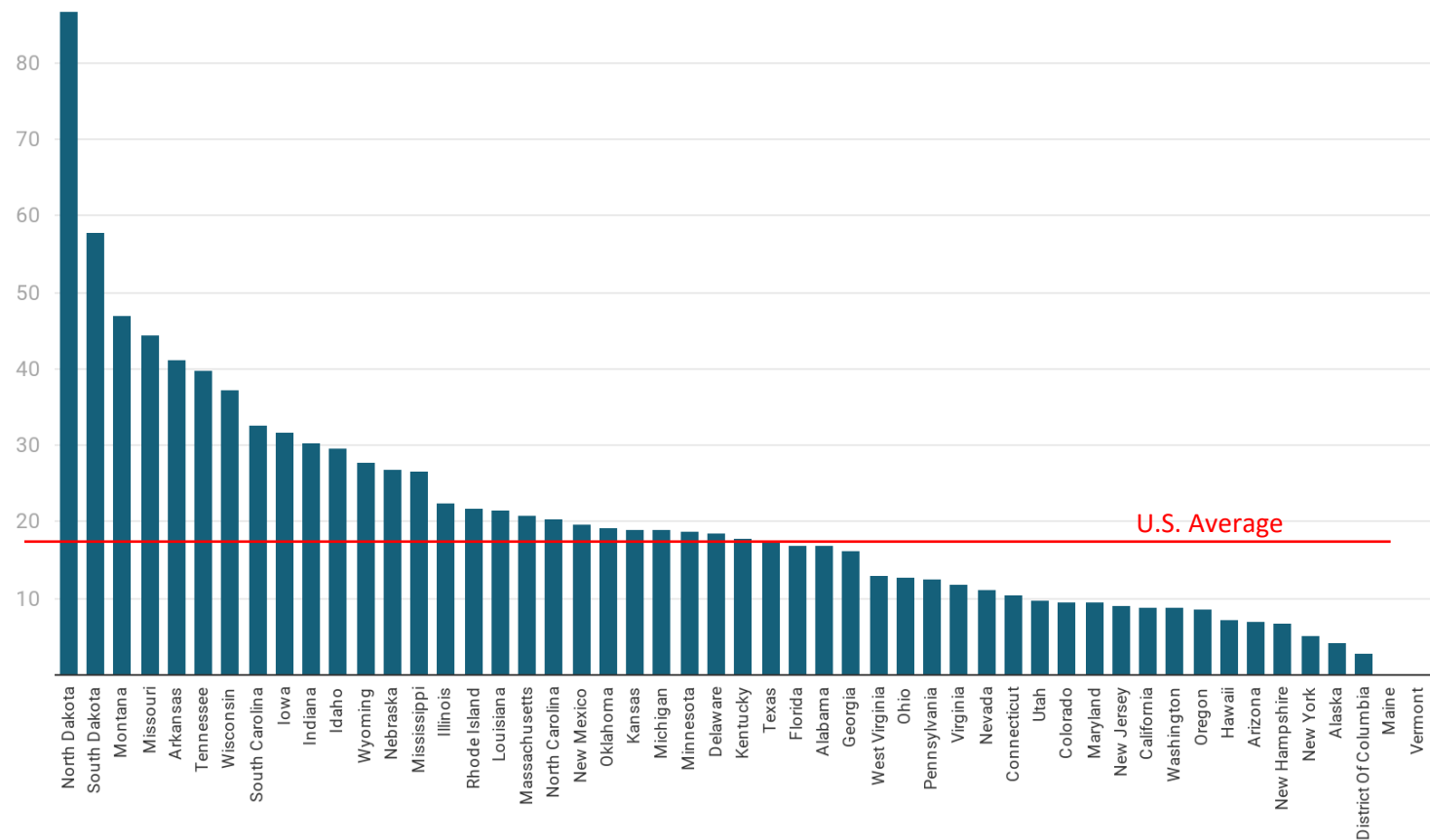


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Covid-19 hospital census / new case declined sharply from the first peak in new daily cases to the second

This rate is even lower as of yesterday

Comparison of Covid-19 Census / 1000 New Daily Cases In Previous Week

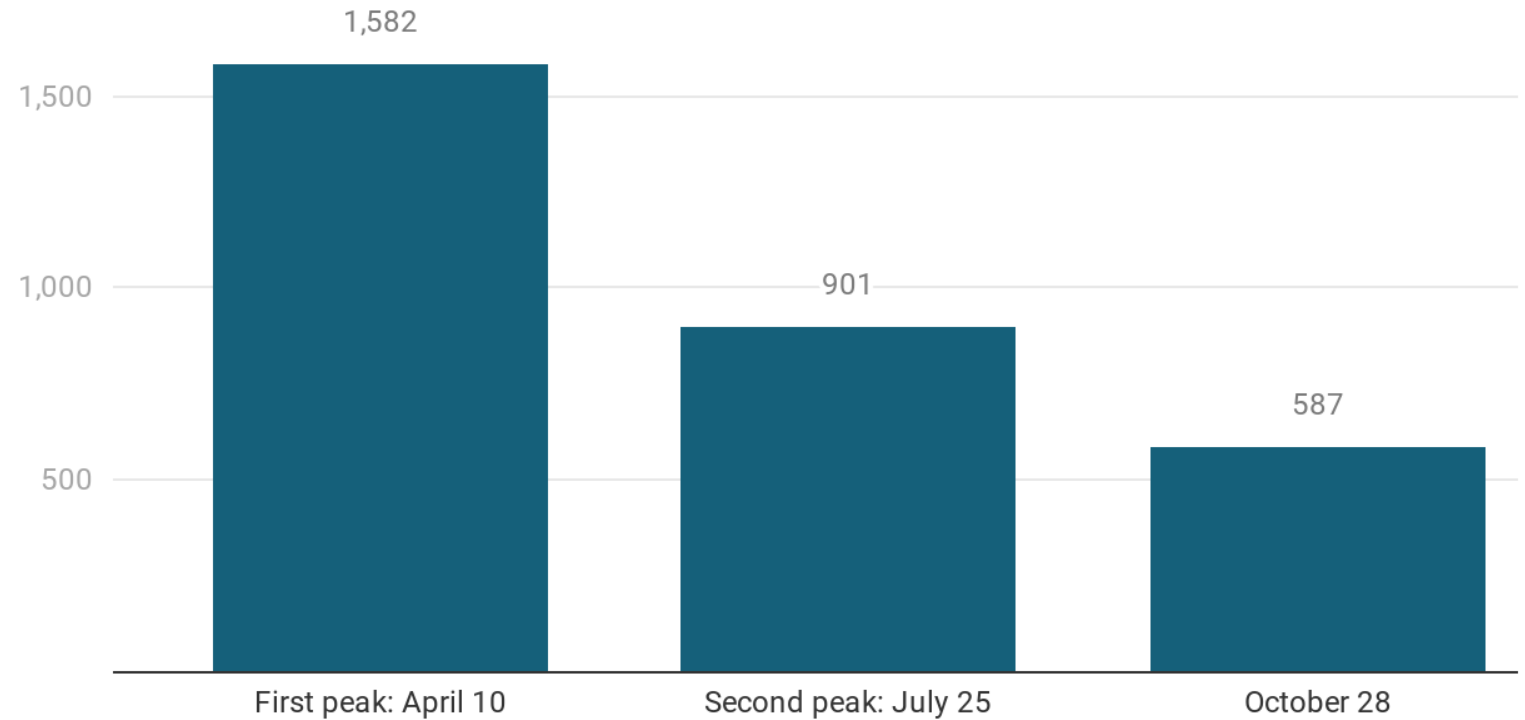
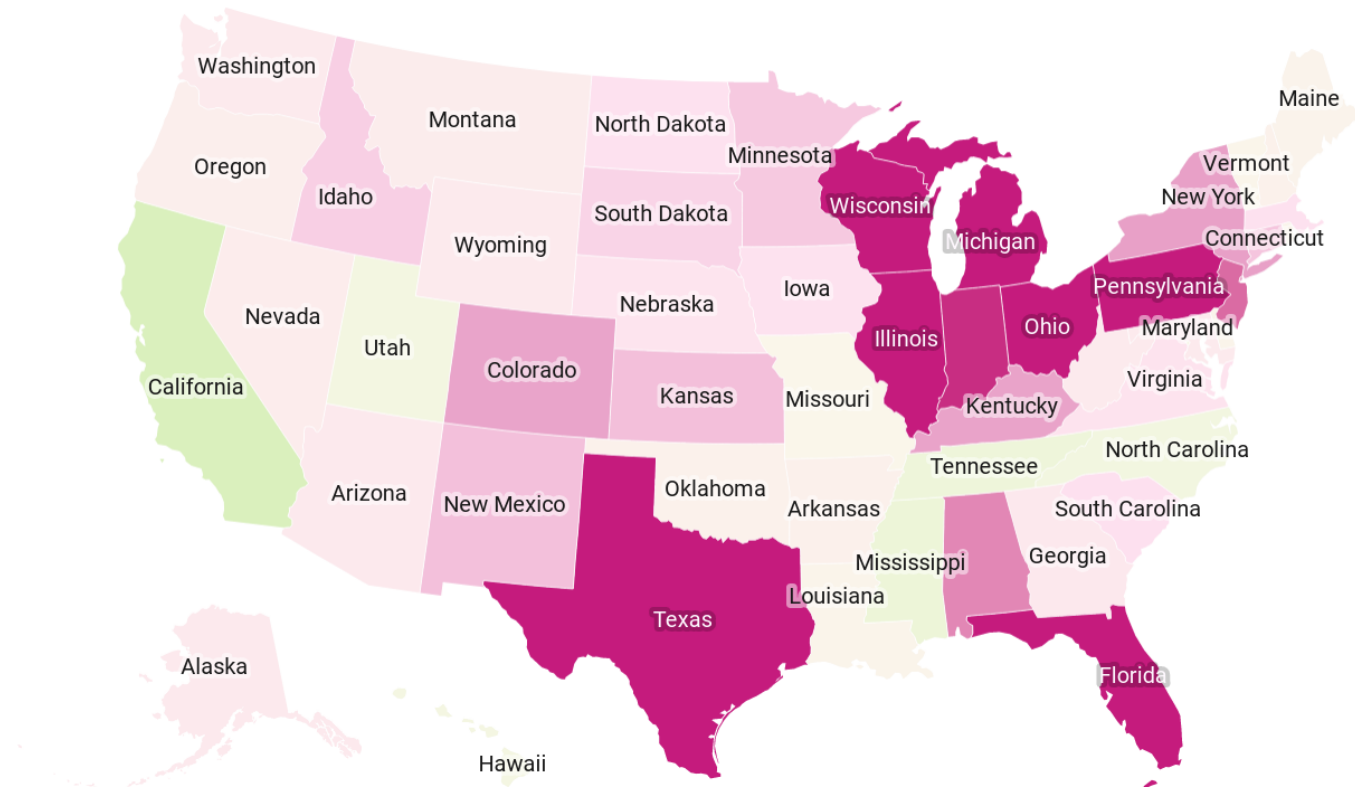
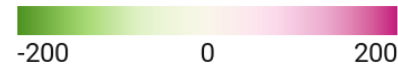


Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking Project & worldometers.info • Created with Datawrapper

Several states have experienced sharp increase in Covid-19 census in the past week, especially Illinois, Indiana Florida, Michigan, Pennsylvania, Texas and Wisconsin

Weekly Change in COVID-19 Hospital Census

October 21 -28



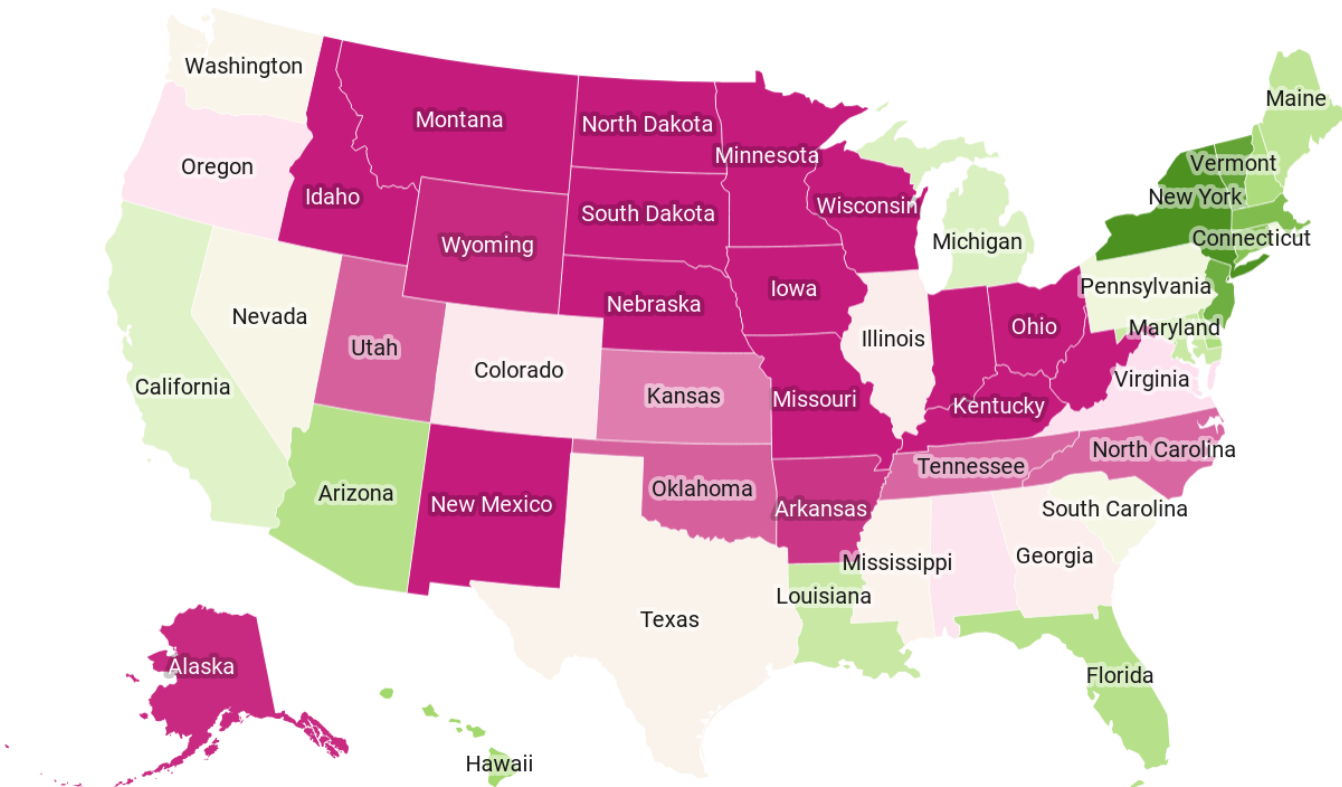
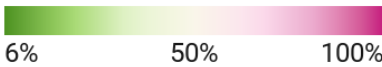
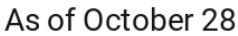
Map: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking Project • Created with Datawrapper

Several states across the middle of the country are at or near their highest levels of Covid-19 inpatients

Notably, Florida, Pennsylvania and Texas – which were noted on the previous page for experiencing significant increases in Covid-19 census – are far below the peak census experienced during the pandemic

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

The appropriate testing level depends on the test-positive results, not simply the volume per capita

Most concerning here, is that Montana, North Dakota, South Dakota and Wisconsin – states with already high infection rates – may not be testing sufficiently to identify their true infection rates

Testing Volume v. Test-Positive %

7-Day Average, As of October 28

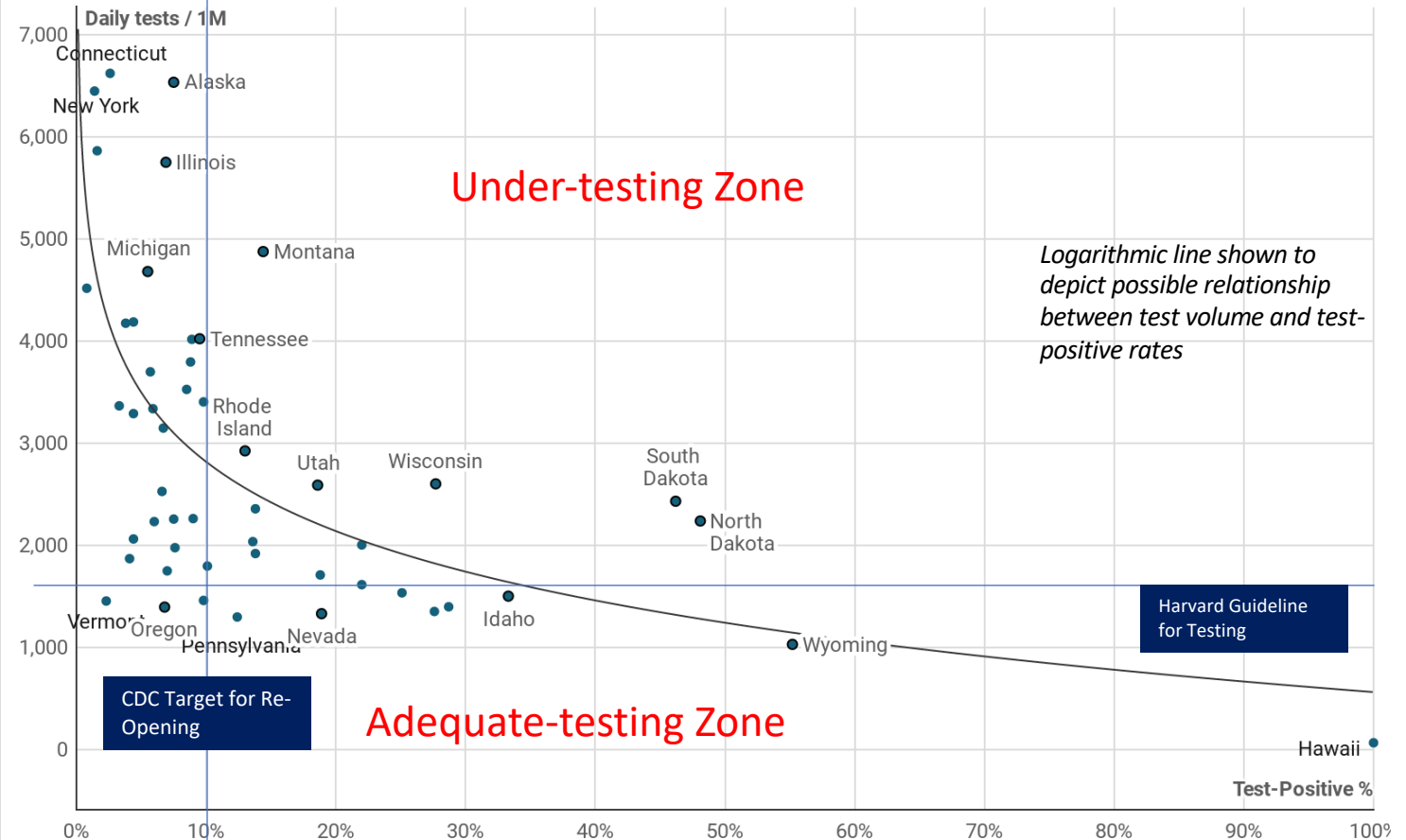


Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking Project • Created with Datawrapper

State-By-State Comparisons (page 1 of 3):

States with high infection rates:

Alaska is experiencing a high week-over-week increase in cases yet, low case fatality rate

Arkansas, Idaho and Kansas are near-peak Covid-19 census and have relatively high case fatality rates

Alaska and Iowa are at or near peak Covid-19 census

Illinois has a high case fatality rate

State-By-State Comparisons

As of October 28

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	7-Day M.A. Hospital Census % of Peak	Week-Over-Week Change in New Cases	7-Day Deaths / 1000 New Cases, 28-Day Lag
Alabama	36.4k	594	1,544	22.3%	276	6	54%	28%	11
Alaska	15.9k	97	6,761	6.3%	487	14	56%	83%	4
Arizona	32.1k	811	1,478	9.4%	142	10	24%	17%	16
Arkansas	33.7k	621	3,429	9.8%	333	10	100%	12%	22
California	22.6k	444	3,400	3.2%	107	32	35%	20%	15
Colorado	15.4k	391	1,743	13.9%	282	6	48%	52%	14
Connecticut	18.2k	1,291	6,745	2.4%	171	40	11%	54%	30
Delaware	24k	707	1,915	7.4%	149	13	21%	9%	23
District Of Columbia	23.4k	913	5,901	1.4%	96	61	29%	26%	7
Florida	35.5k	772	1,630	10.1%	186	9	22%	29%	23
Georgia	32.4k	742	1,979	7.2%	152	13	54%	23%	21
Hawaii	10.1k	150	66	100.0%	61	1	27%	3%	14
Idaho	31.1k	334	1,492	33.4%	489	3	77%	13%	16
Illinois	28.4k	780	5,672	6.5%	386	15	46%	25%	20
Indiana	22.6k	628	1,560	21.0%	355	4	95%	33%	31
Iowa	34.8k	534	1,392	25.6%	467	3	100%	32%	15
Kansas	26k	346	1,350	20.7%	360	4	67%	28%	16

State-By-State Comparisons (page 2 of 3):

States with high infection rates:

Missouri, Montana, Nebraska and New Mexico are at peak Covid-19 census and have relatively high case fatality rates

State-By-State Comparisons

As of October 28

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	7-Day M.A. Hospital Census % of Peak	Week-Over-Week Change in New Cases	7-Day Deaths / 1000 New Cases, 28-Day Lag
Kentucky	20.4k	323	3,611	8.5%	336	11	100%	34%	15
Louisiana	38.2k	1,267	3,230	4.5%	124	26	28%	4%	30
Maine	4.5k	109	4,163	0.7%	38	109	12%	72%	0
Maryland	22.7k	681	1,693	6.5%	123	14	27%	18%	17
Massachusetts	21k	1,428	2,475	6.1%	166	15	13%	59%	40
Michigan	16.8k	762	4,531	4.9%	258	18	26%	38%	28
Minnesota	22.4k	433	2,273	12.2%	326	7	97%	17%	15
Mississippi	37.7k	1,109	248	100.0%	264	1	57%	2%	22
Missouri	27.3k	489	1,696	17.7%	370	5	100%	-4%	30
Montana	23.1k	304	4,539	15.1%	702	6	96%	17%	23
Nebraska	31.2k	325	1,966	21.5%	461	4	100%	6%	16
Nevada	29.9k	573	1,873	13.2%	251	7	46%	16%	11
New Hampshire	7.3k	352	1,924	3.6%	76	25	11%	32%	35
New Jersey	25.6k	1,852	3,820	3.6%	162	24	10%	37%	18
New Mexico	18.5k	473	4,357	7.9%	348	13	92%	22%	28
New York	27k	1,728	6,257	1.3%	93	67	5%	22%	14
North Carolina	23.9k	405	3,059	6.5%	212	14	94%	9%	15

State-By-State Comparisons (page 3 of 3):

States with high infection rates:

North Dakota, South Dakota, Tennessee and Wyoming are at peak Covid-19 census and have relatively high case fatality rates

Wisconsin and Utah are at peak Covid-19 census

Rhode Island has a high case fatality rate

State-By-State Comparisons

As of October 28

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	7-Day M.A. Hospital Census % of Peak	Week-Over-Week Change in New Cases	7-Day Deaths /1000 New Cases, 28-Day Lag
North Dakota	44.8k	640	2,201	47.7%	1,076	2	94%	6%	23
Ohio	16.1k	454	3,594	5.6%	212	17	100%	24%	21
Oklahoma	28k	325	3,568	9.4%	300	12	100%	3%	11
Oregon	9.6k	159	1,415	6.3%	94	15	57%	18%	18
Pennsylvania	14.9k	687	1,226	11.3%	162	8	35%	41%	24
Rhode Island	27.5k	1,125	2,773	13.0%	380	7	37%	67%	40
South Carolina	32.3k	753	3,414	5.6%	198	17	43%	8%	27
South Dakota	39.6k	434	2,365	40.3%	1,123	2	100%	36%	19
Tennessee	34.5k	474	3,889	9.6%	384	10	95%	25%	29
Texas	30.7k	631	2,094	9.7%	223	9	44%	22%	19
Utah	30.6k	183	2,522	18.6%	481	5	100%	22%	4
Vermont	3.2k	93	1,479	2.1%	34	43	5%	113%	0
Virginia	19.8k	424	2,155	5.8%	134	16	62%	15%	18
Washington	13.6k	309	2,431	3.6%	96	25	46%	14%	19
West Virginia	11.6k	244	3,868	4.0%	186	21	98%	19%	17
Wisconsin	31.4k	326	2,524	28.0%	673	4	100%	19%	13
Wyoming	17k	133	1,752	30.5%	567	3	97%	47%	21

Table: Health Industry Advisor LLC • 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>