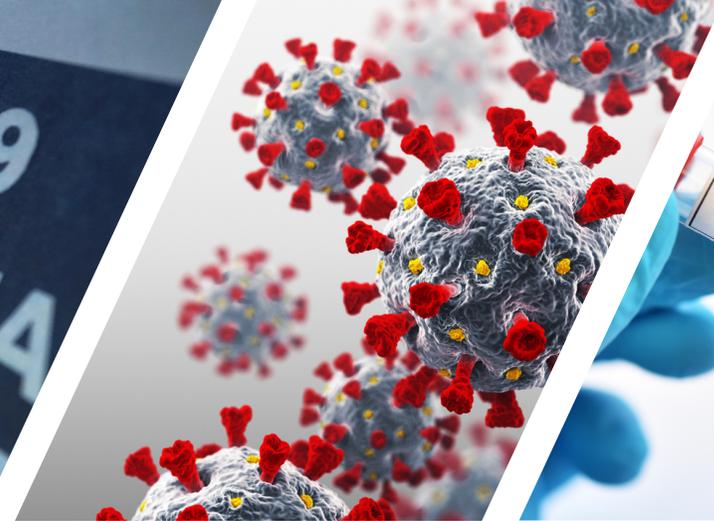
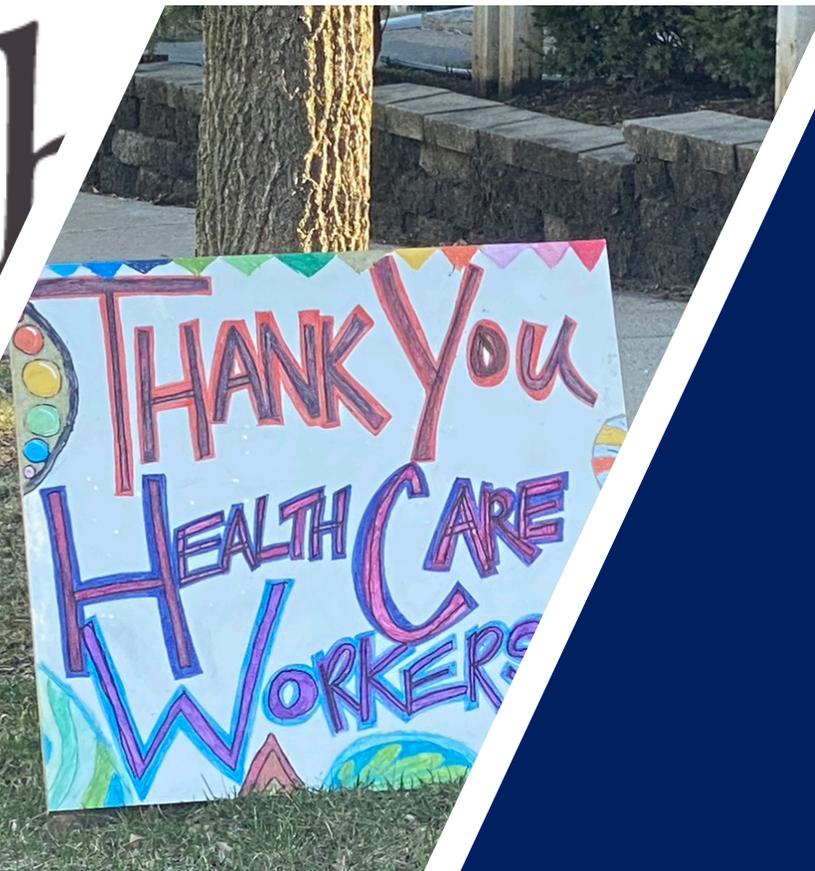


COVID-19
REOPENING PHA
CONGREGATE
SETTINGS
BUSINESSES



Health Industry Adv



Issue # 250

Thursday, December 31, 2020

COVID-19 Report

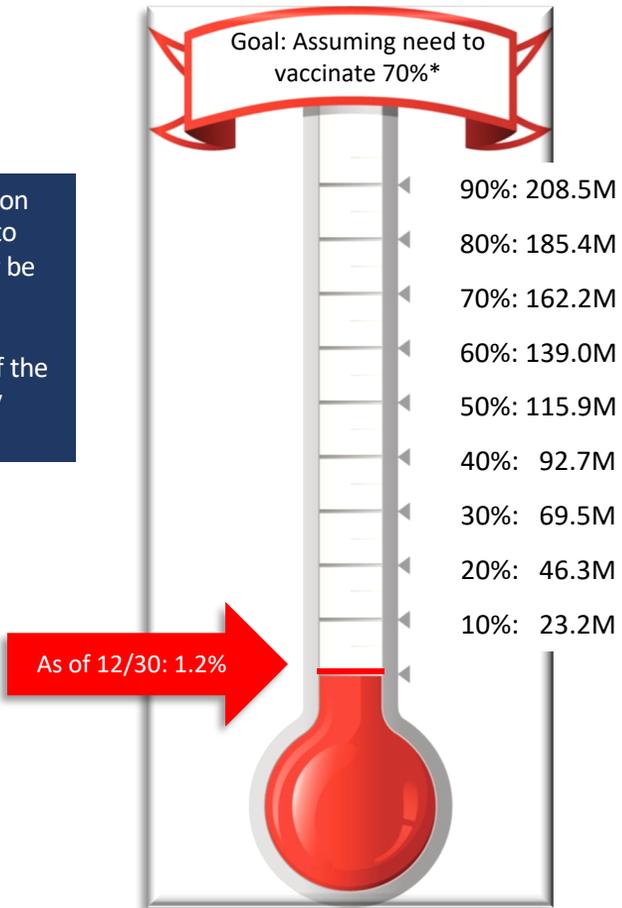
Highlights

- Starting with vaccines, the initial ramp-up has been challenging and a great deal of work remains. Here is where we stand:
 - **Of the estimated 20-22 million people to be vaccinated in Phase 1a of the process (healthcare workers and long-term care residents), only 2.8 million are reported to have been vaccinated (although these data are subject to reporting delays)**
 - **11.4 million doses have been distributed to local areas, representing 55-60% of the number needed to reach the Phase 1a target;** this seems to suggest the magnitude of the underreporting of vaccinations or, at least suggests that vaccinations should increase significantly in the next few days
 - **19.9 million doses have been allocated to the states, representing 90-100% of the number needed to reach the Phase 1a target**
- Newly-detected cases are difficult to ascertain, due to reporting interruptions during this holiday period. Still, we can observe some trends:
 - **Estimated actual infections ([Gu](#)) continue to decline, a trend that started on December 1 and has continued through December 18 - the latest date available**
 - **The Reproduction Rate (Rt) has been < 1.0 for fourteen consecutive days; This rate had been > 1.0 for 70 of the 75 days from September 20 through December 3, reflecting the period of accelerated growth in newly-detected cases in the U.S.**
- In Arizona, California and Tennessee - three states that experienced high and increasing new case rates this month - these rates began to ease prior to the Christmas holiday. It is difficult to determine whether this has continued, however, due to the reporting interruptions. Further, rates remain at relatively high levels
- **New York has experienced increasing new case rates throughout the month - even with the impact of reporting interruptions. Indeed, New York is the only state in which the current rate is the highest experienced at any time during the pandemic**
- **Outside the U.S., Israel and the United Kingdom are experiencing high and increasing rates of new cases, despite any reporting interruptions; Sweden and the Netherlands had been experiencing increasing rates until the holiday**
- **Tragically, deaths reported with the coronavirus were high each of the past two days: 4,200 yesterday and 3,400 on Tuesday.** The 7-day average, however, is significantly lower than it had been prior to Christmas (likely due to the reporting interruptions)
- Testing volumes are lower than they were in November and early December - a trend that accelerated during the holiday. Concomitant with the lower volume, test-positive rates have been higher since Christmas

Vaccine Tracking – U.S.

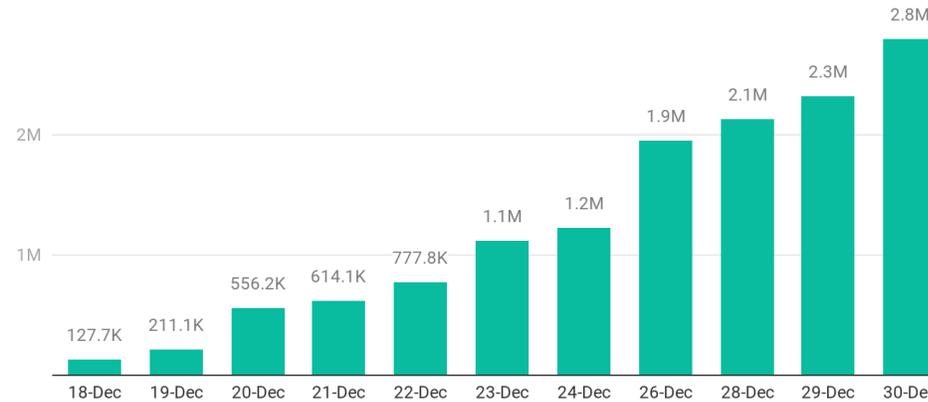
Vaccinations have ramped slowly in the U.S. – whether due to distribution or reporting delays
 As of 12/29, at least 2.8M people have received the initial dose; 19.9M doses have been allocated to the states and 12.4M have been distributed

* 70% is used for illustration only. Actual rate needed to reach herd immunity may be higher or lower.
 Does not reflect impact of the number of people already infected by the virus



Vaccine: Number of Persons Having Received First Dose (U.S.)

Per Bloomberg Vaccine Tracker, Accessed December 30



If 70% are required for herd immunity, 231.7 million people will need to be vaccinated (ignoring immunity via infection)
 Chart: Health Industry Advisor LLC • Source: Bloomberg • Created with Datawrapper

From the CDC vaccine webpage: “Healthcare providers report doses to state, territorial, and local public health agencies up to 72 hours after administration. There may be additional reporting lag for data to be transmitted from the state, territorial, or local public health agency to CDC.”

Vaccine data from: [Centers for Disease Control and Prevention](#) and [Bloomberg Vaccine Tracker](#)

Vaccination: Phase 1a Progress

As of December 30

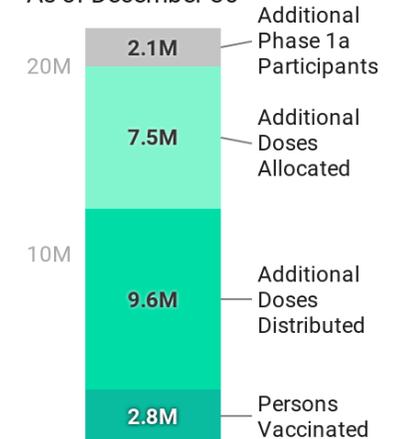


Chart: Health Industry Advisor LLC • Source: CDC, Bloomberg • Created with Datawrapper

According to Gu's model, the reproduction rate has declined since November 23. . . And has been below 1.0 for fourteen consecutive days

This fourteen-day streak below 1.0 follows a 75-day period when R_t was above 1.0 on 70 days

Notes:

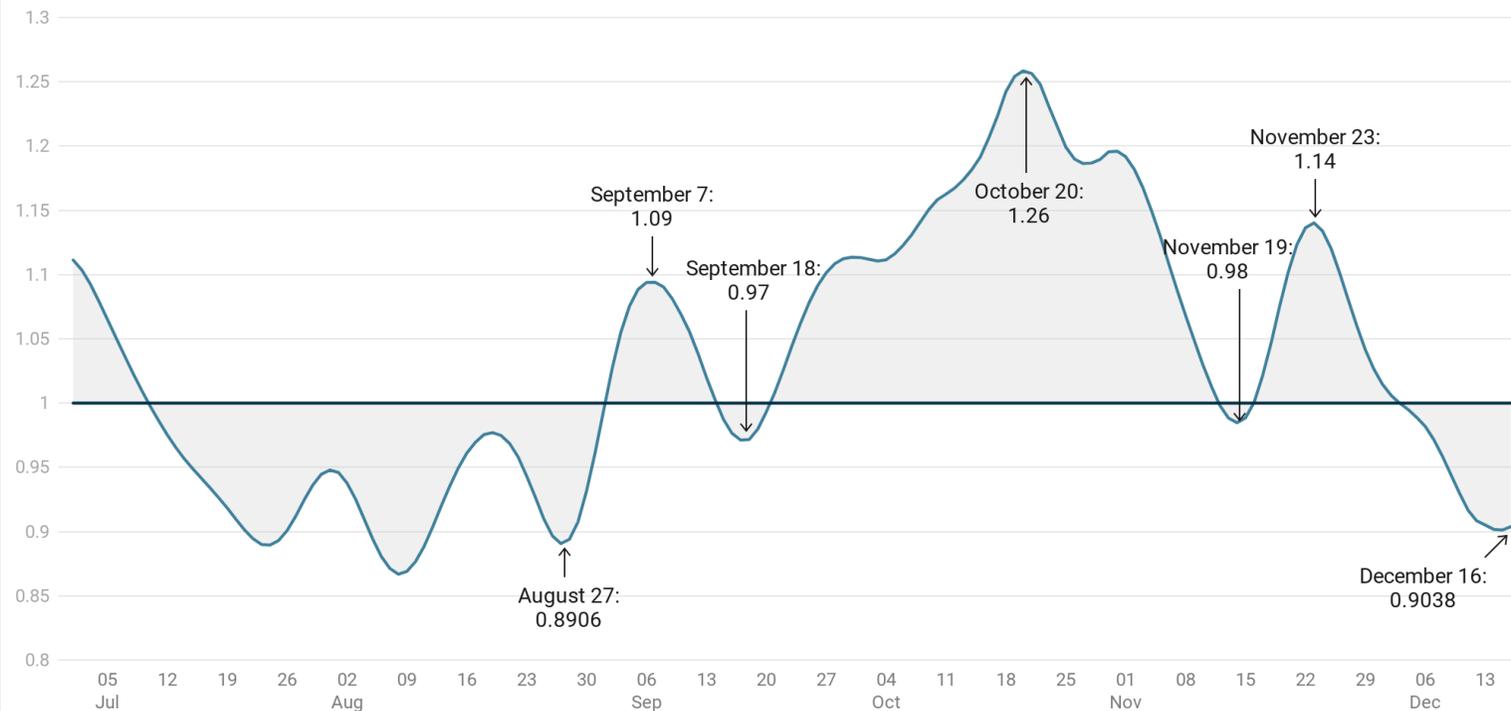
- Gu uses deaths to estimate actual infections and the reproduction rate (R_t), using a machine learning model

- Gu backdates two weeks from the death date to estimate when an infection likely occurred

* - Youyang Gu: Covid-19projections.com

Reproduction Rate (R_t) - U.S.

Youyang Gu Estimate, July 1 - December 16



R_t is an estimate of how many additional people a single person will infect

Chart: Health Industry Advisor LLC • Source: Youyang Gu • Created with Datawrapper

According to Gu's estimates, new infections in the U.S. peaked on December 1 and have declined ~18% since

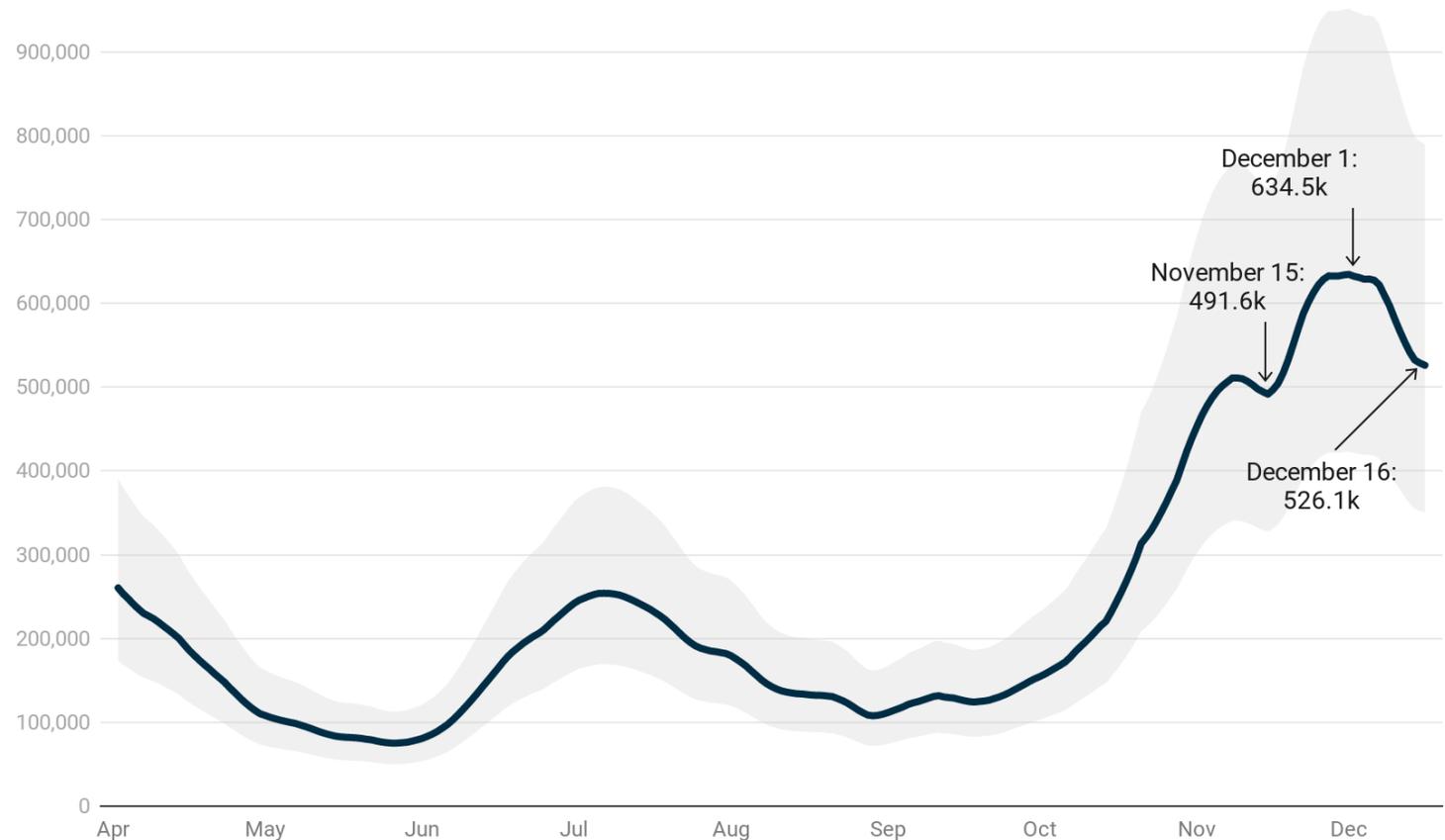
This decline has erased ~3/4 of the increase in new daily infections posted from November 15 – December 1

Gu estimates that 20.3% of the U.S. population had been infected by the SARS-CoV-2 virus (range of 13.6-30.5%) as of December 16

*<https://pandemicnavigator.oliverwyman.com/forecast?mode=country®ion=United%20States&panel=baseline>

Estimated New Daily U.S. Infections

Youyang Gu Model, Through December 16



Using Youyang Gu's COVID-19 Projection Model

Chart: Health Industry Advisor LLC • Source: Youyang Gu • Created with Datawrapper

Reporting interruptions around the Christmas holidays compromises our ability to compare weekly cases counts

So, we are concentrating on same-day, prior week comparisons to elicit insight to any emerging trends

On that basis, fewer cases were this past Monday than on each of the three prior Mondays; the trend was more pronounced on Tuesday, with newly-detected cases falling on consecutive weeks

Wednesday's cases matched last Wednesday's; cases were highest on December 16th

Newly Detected Cases - United States

Most Recent Mondays

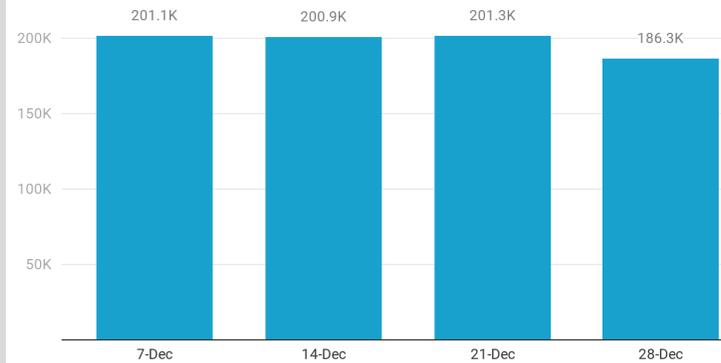


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Newly Detected Cases - United States

Most Recent Tuesdays

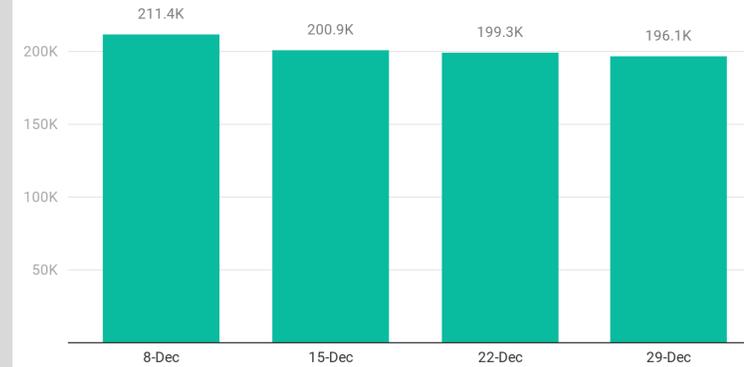


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Newly Detected Cases - United States

Most Recent Wednesdays

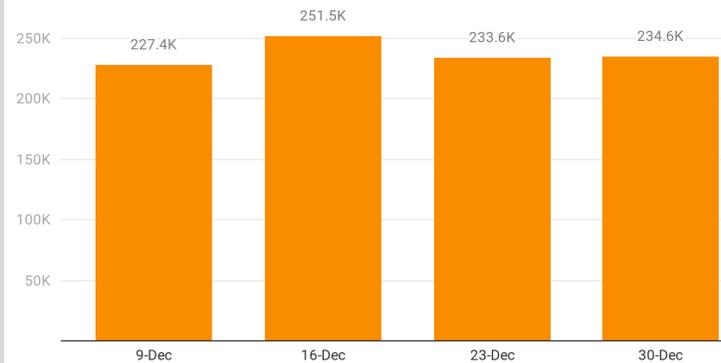


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Newly Detected Cases - United States

Most Recent Thursdays

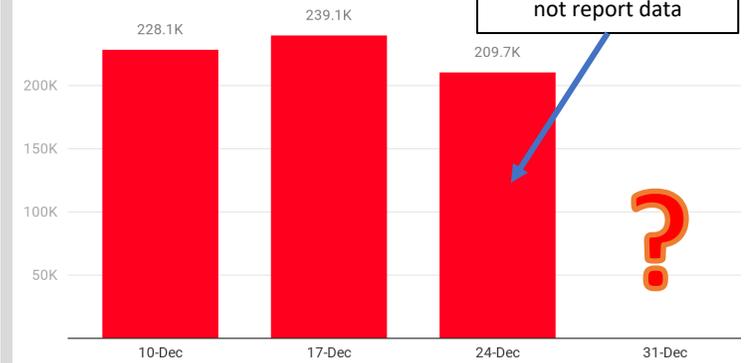


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Reporting interruptions on and following holidays impair our ability to ascertain true trends

Nevertheless, we observe that the 7-day newly-detected case rate peaked on December 18 and was declining even prior to the period of reporting interruptions

Newly-Detected Cases / Million - U.S.

7-Day Moving Average, As of December 30

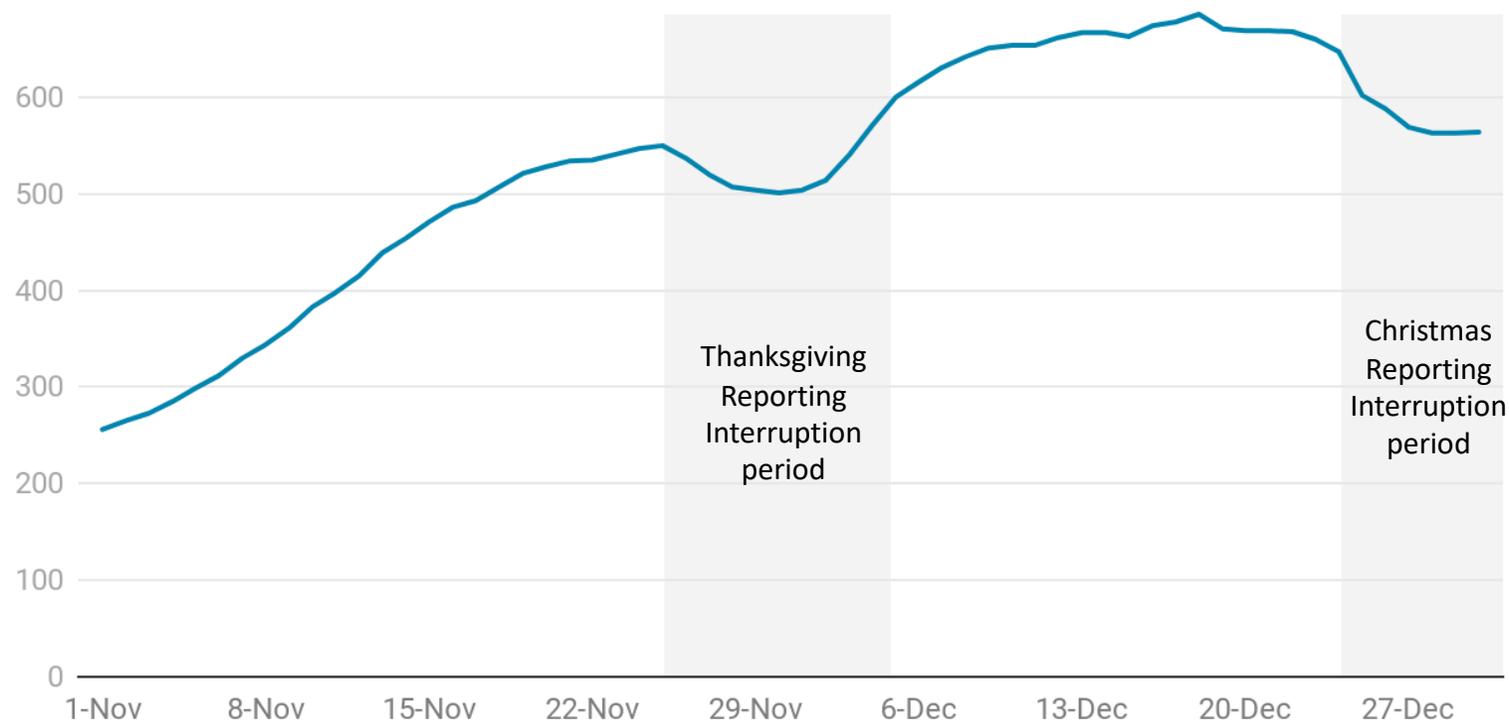


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

The United Kingdom and Israel have experienced accelerating new infection rates over the past month; Sweden's rate acceleration appears to have paused just before Christmas before resuming recently

New York has experienced rising infection rates throughout December; Rates in Arizona, California and Tennessee each began to decline pre-Christmas

Countries of Interest

States of Interest

Newly Detected Cases / Million

7-Day Moving Average

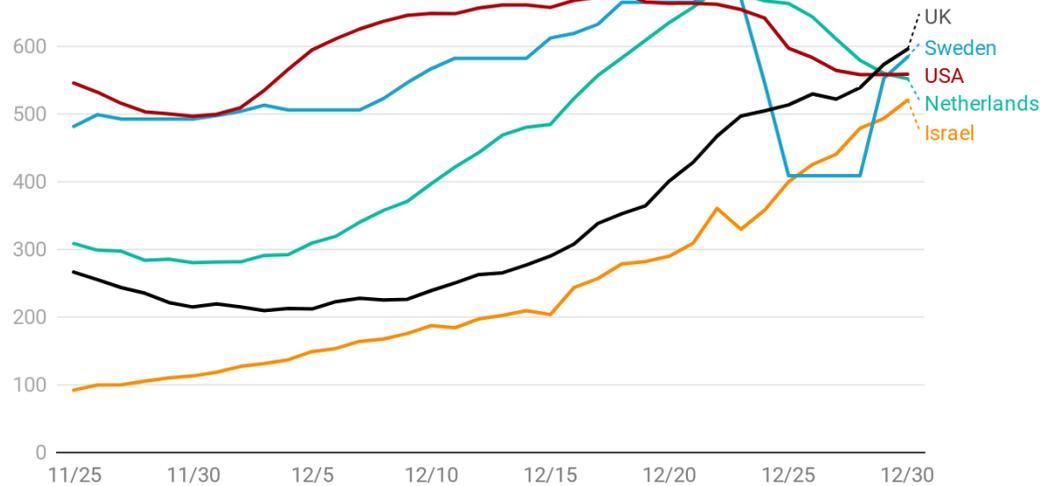


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Newly Detected Cases / Million

7-Day Moving Average

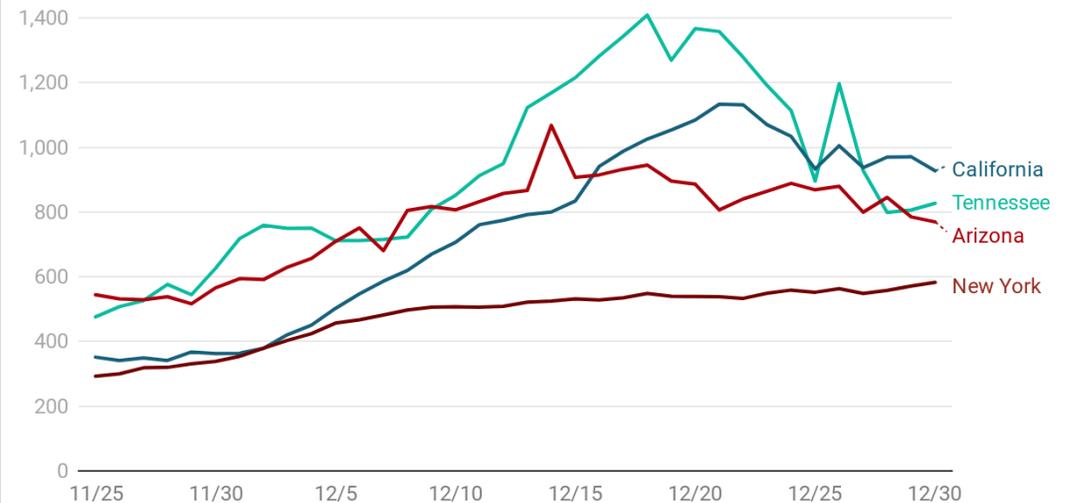


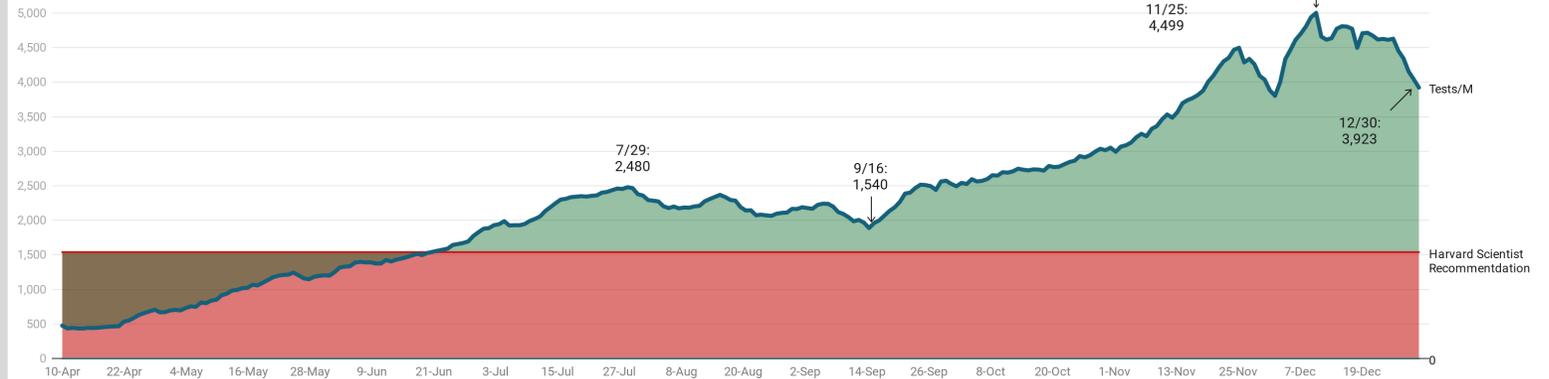
Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Test volume has declined since mid-December, particularly during the current holiday period

Concomitant with declining test volume during the holidays, the 7-day test-positive rate also has increased

Daily Tests Per 1 Million - United States

Trailing 7-Day Moving Average, As of December 30



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

7-Day Moving Average, As of December 30

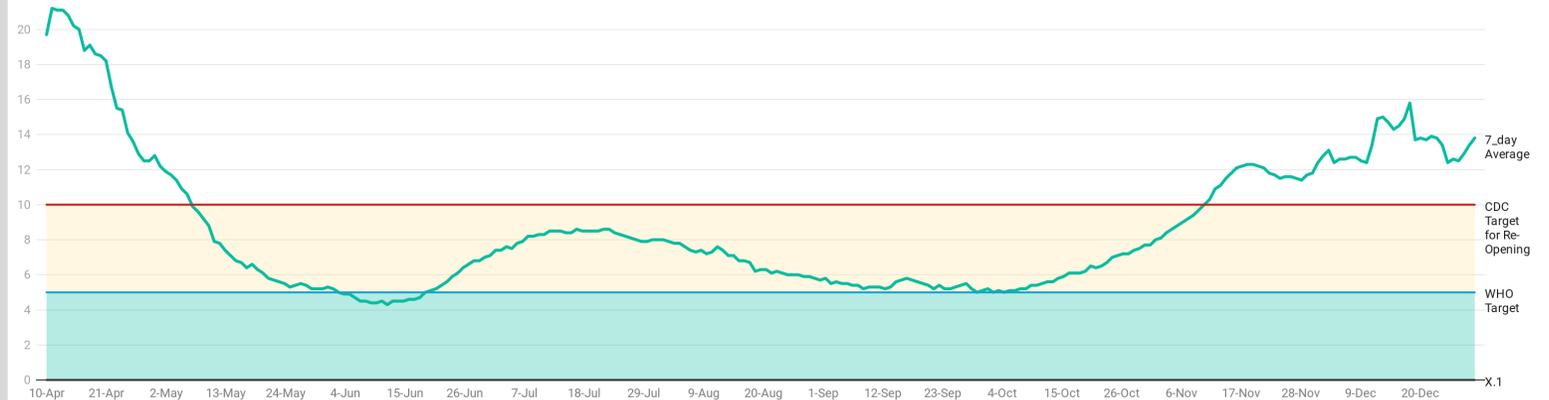


Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking Project • Created with Datawrapper

Yesterday, there were ~4,200 reported deaths with coronavirus in the U.S.

The reported 7-day average death rate remains far lower than its peak on December 22. This is likely due to reporting interruptions during the holiday

Deaths Reported With Coronavirus in the U.S.

Trailing 7-Day Moving Average, As of December 30



Health Industry Advisor LLC analysis

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

State-By-State Scorecard
(Next Slide)

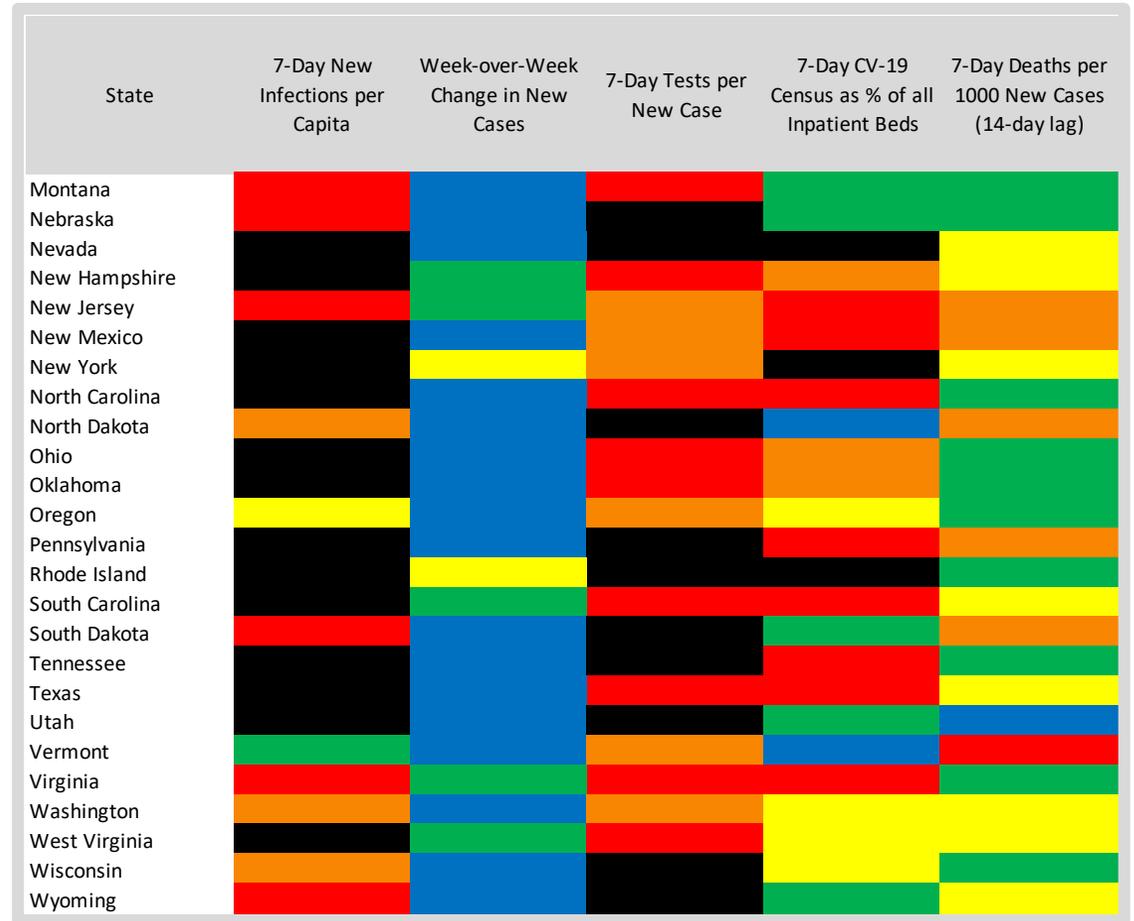
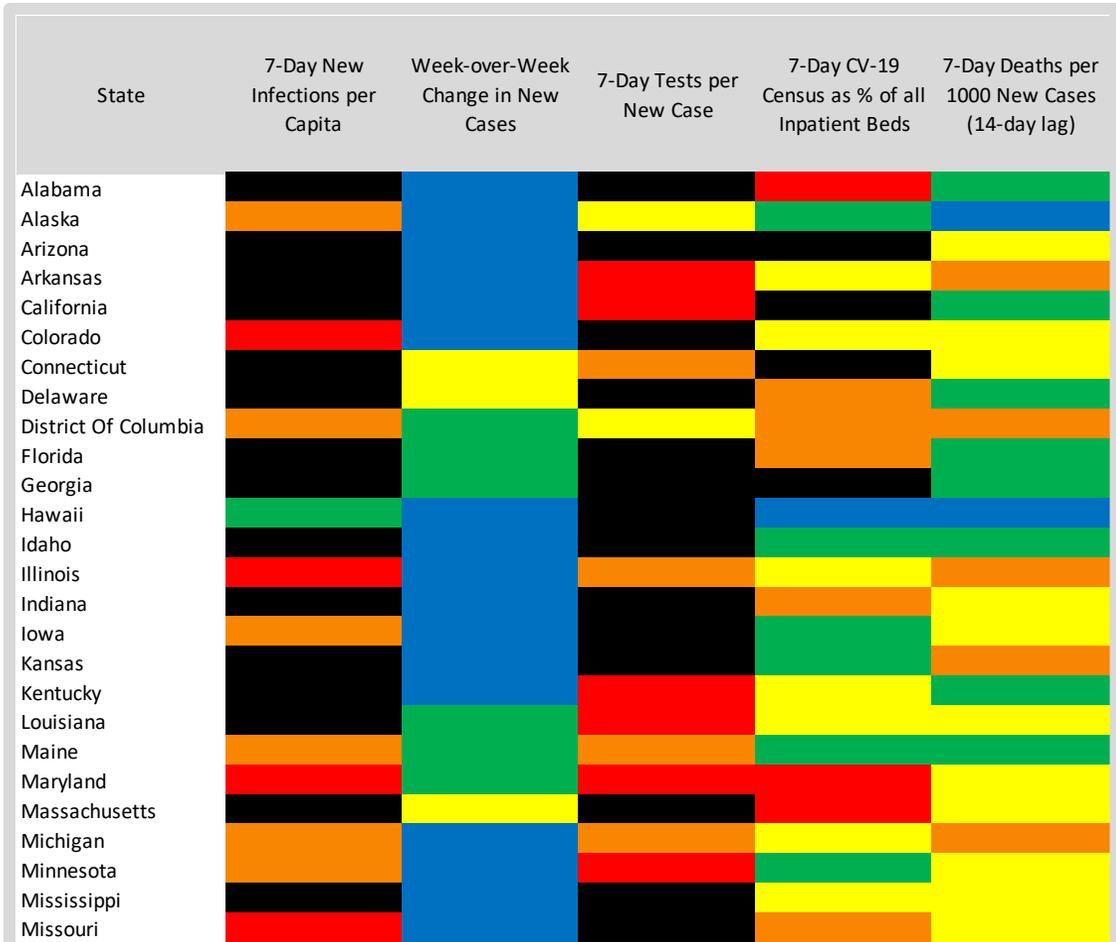
Designed to reflect five critical measures of a state’s current experience with Covid-19

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	50%	40%	30%	20%	10%	0%
7-Day Deaths per 1000 New Cases (14-day lag)	Greater than	25	20	15	10	5	0



Scale



Reproduction Rates (R_t) are an indication of how fast the virus is spreading. Rates > 1 suggest that spread is increasing; < 1 , that it is declining

Twenty states have $R_t > 1$; Thirty have rates < 1

Maine, Tennessee and Vermont have the highest rates; Alaska, Wisconsin and Oregon, the lowest

Reproduction Rate (R_t)

Source: Rt.live

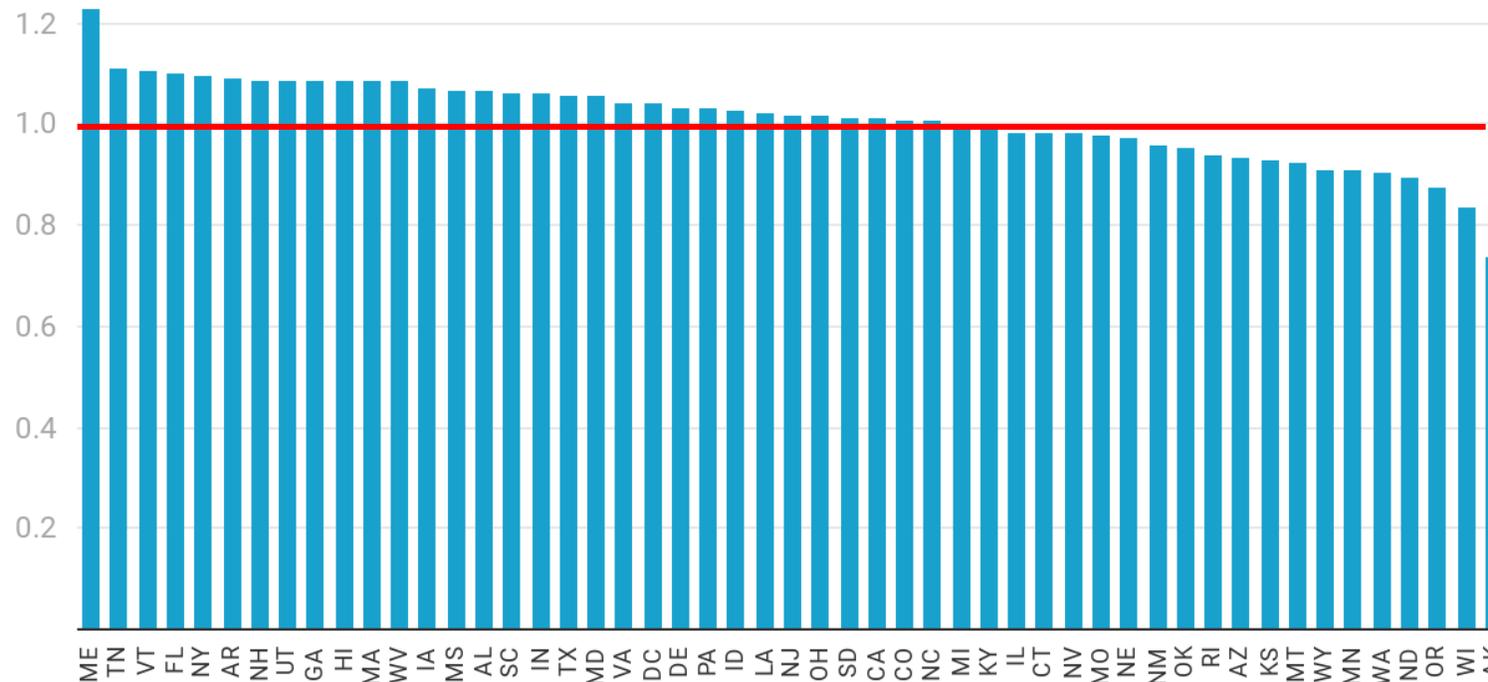


Chart: Health Industry Advisor LLC • Created with Datawrapper

Reproduction Rates (R_t) and Newly-Detected Cases / Million (7-Day Moving Average) Alabama - California

Reproduction Rates (R_t) By State

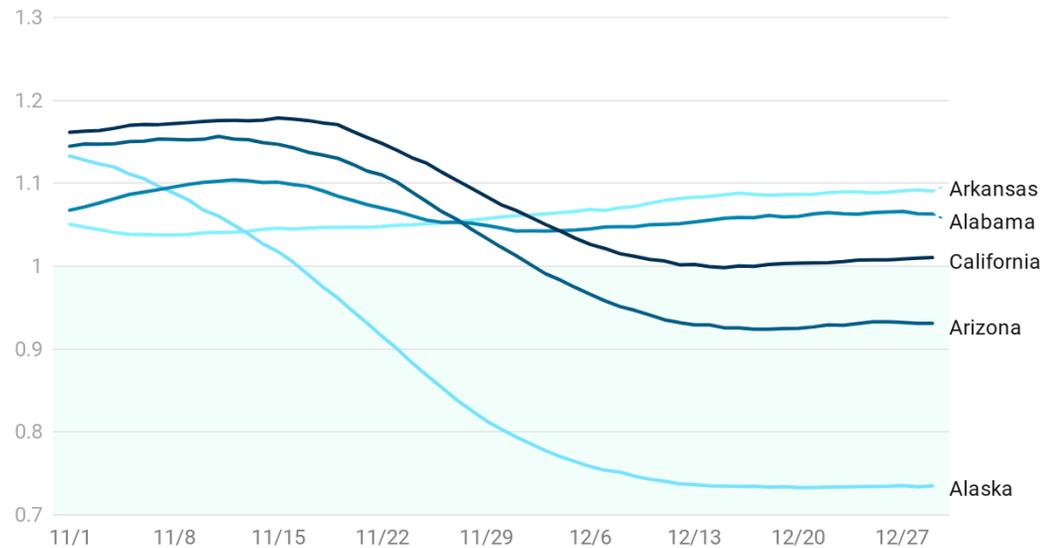


Chart: Health Industry Advisor LLC • Source: rt.live • Created with Datawrapper

Newly Detected Cases / Million

7-day Average

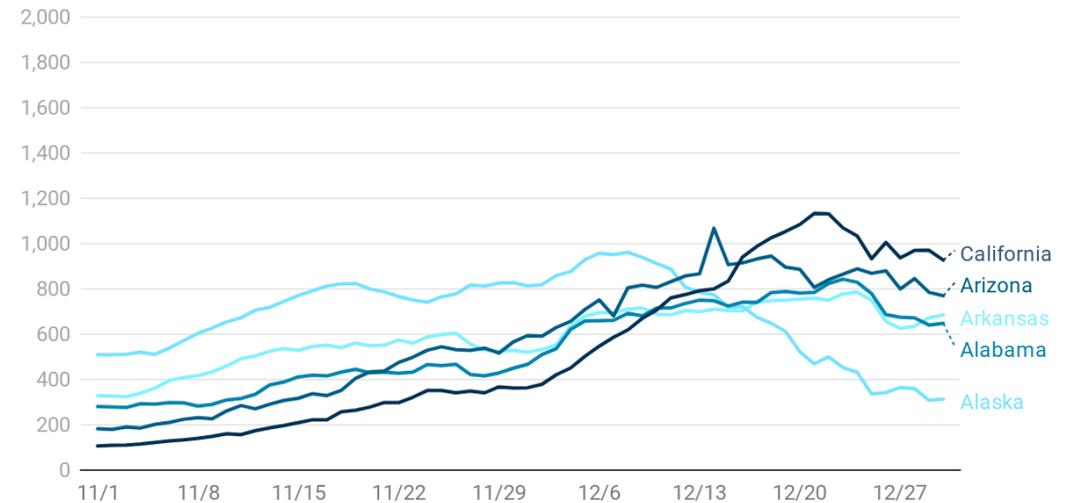


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Reproduction Rates (Rt) and Newly-Detected Cases / Million (7-Day Moving Average) Colorado - Georgia

Reproduction Rates (Rt) By State

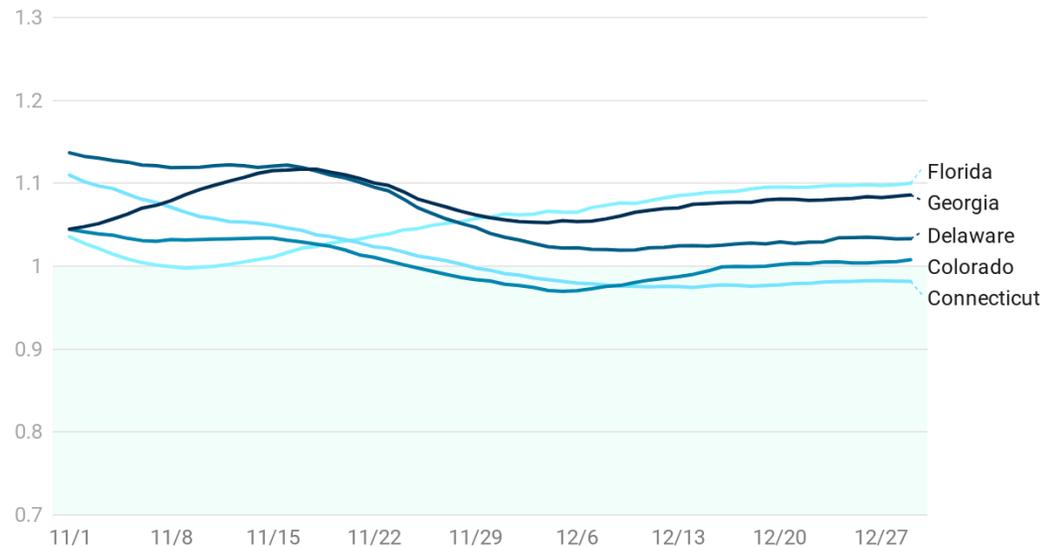


Chart: Health Industry Advisor LLC • Source: rt.live • Created with Datawrapper

Newly Detected Cases / Million

7-day Average

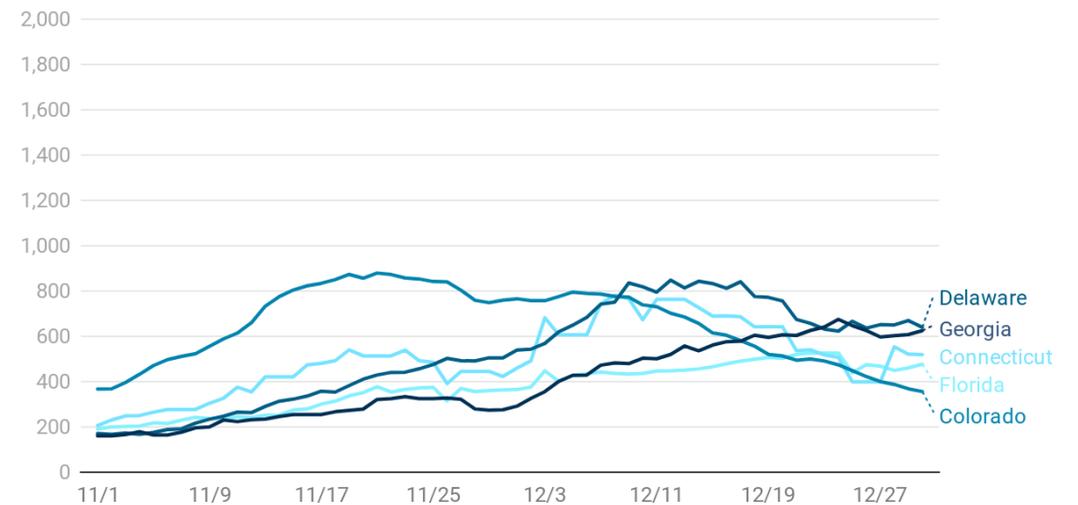


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Reproduction Rates (Rt) and Newly-Detected Cases / Million (7-Day Moving Average) Hawaii - Iowa

Reproduction Rates (Rt) By State

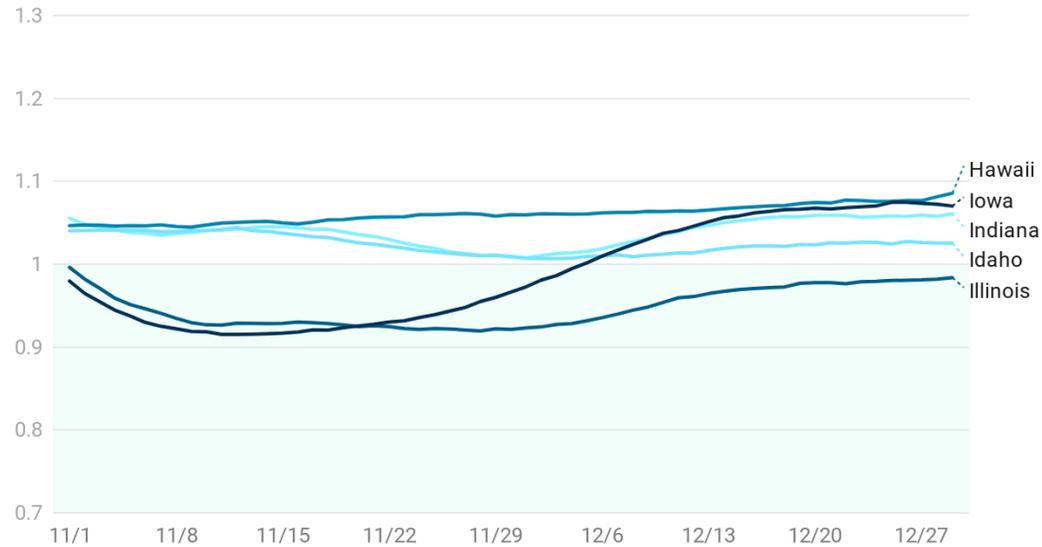


Chart: Health Industry Advisor LLC • Source: rt.live • Created with Datawrapper

Newly Detected Cases / Million

7-day Average

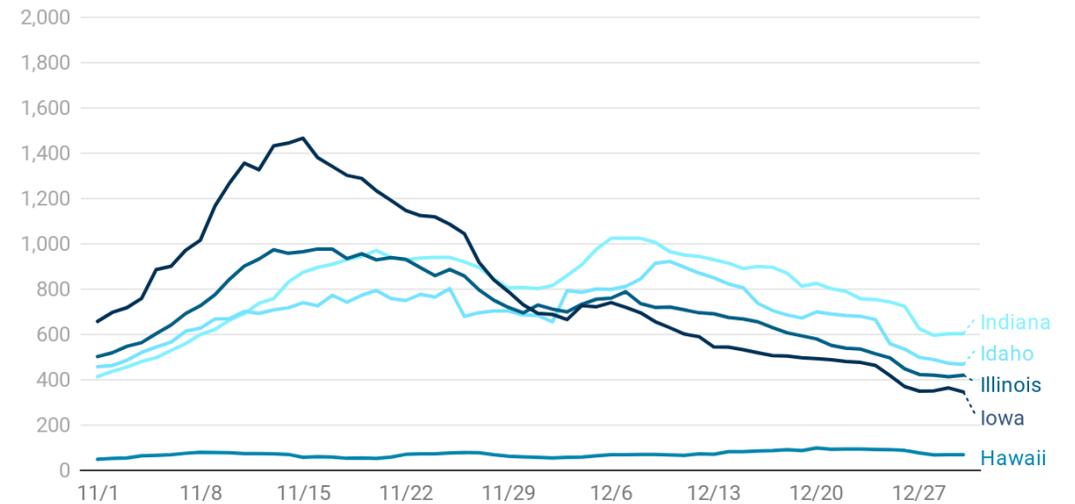


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Reproduction Rates (R_t) and Newly-Detected Cases / Million (7-Day Moving Average) Kansas - Maryland

Reproduction Rates (R_t) By State

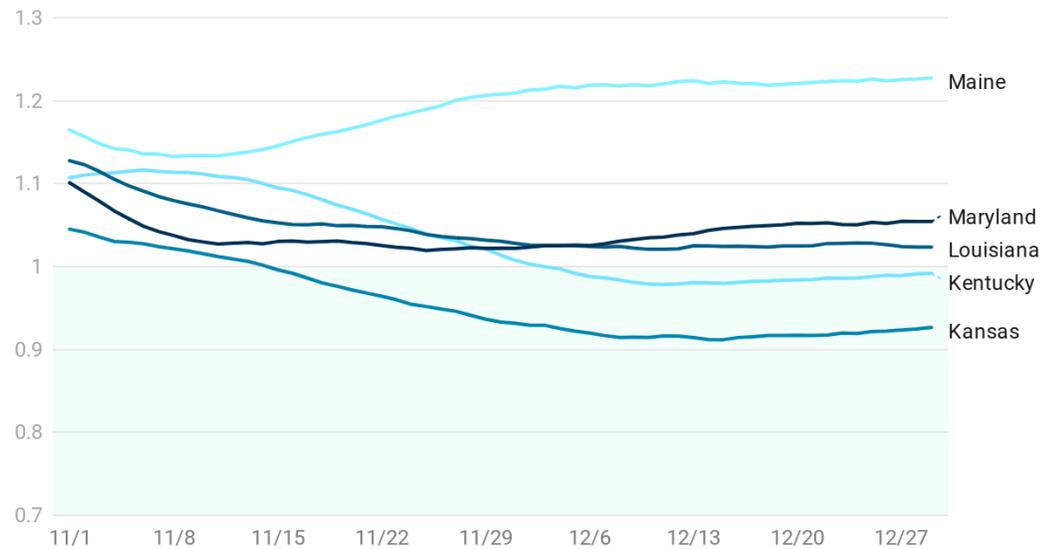


Chart: Health Industry Advisor LLC • Source: rt.live • Created with Datawrapper

Newly Detected Cases / Million

7-day Average



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

Reproduction Rates (R_t) and Newly-Detected Cases / Million (7-Day Moving Average) Massachusetts - Missouri

Reproduction Rates (R_t) By State

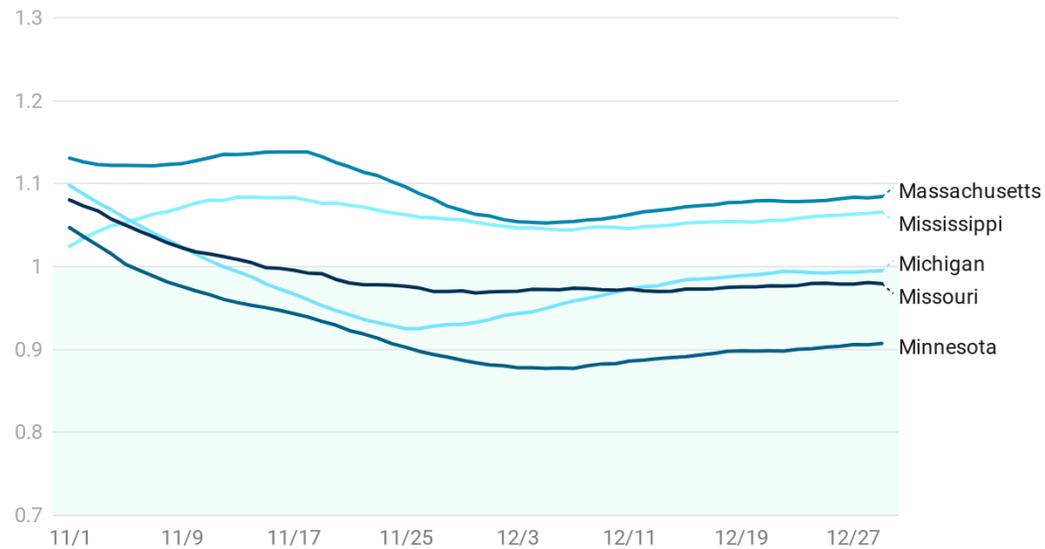


Chart: Health Industry Advisor LLC • Source: rt.live • Created with Datawrapper

Newly Detected Cases / Million

7-day Average



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

Reproduction Rates (R_t) and Newly-Detected Cases / Million (7-Day Moving Average) Montana – New Jersey

Reproduction Rates (R_t) By State

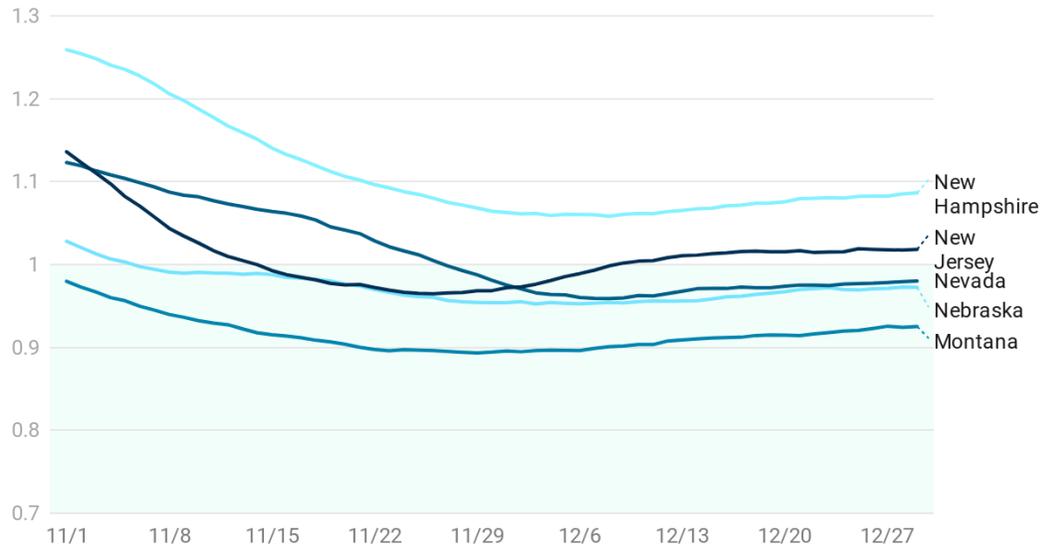


Chart: Health Industry Advisor LLC • Source: rt.live • Created with Datawrapper

Newly Detected Cases / Million

7-day Average



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

Reproduction Rates (R_t) and Newly-Detected Cases / Million (7-Day Moving Average) New Mexico - Ohio

Reproduction Rates (R_t) By State

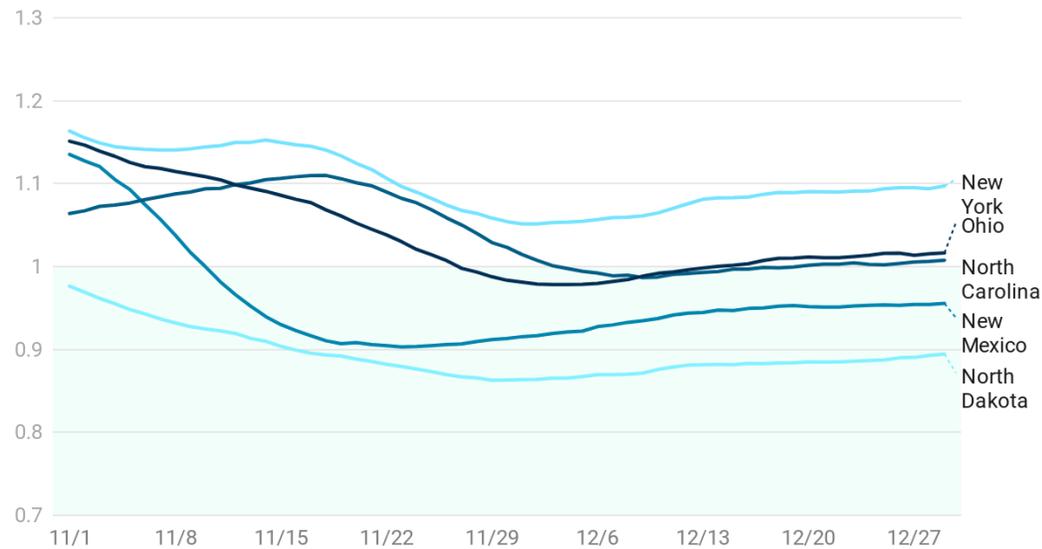


Chart: Health Industry Advisor LLC • Source: rt.live • Created with Datawrapper

Newly Detected Cases / Million

7-day Average



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

Reproduction Rates (Rt) and Newly-Detected Cases / Million (7-Day Moving Average) Oklahoma – South Carolina

Reproduction Rates (Rt) By State

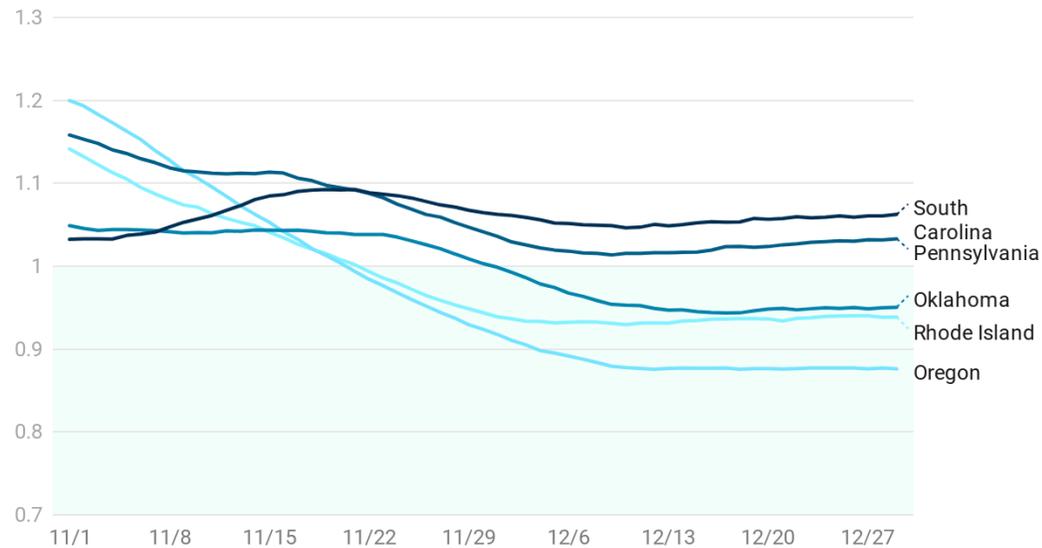


Chart: Health Industry Advisor LLC • Source: rt.live • Created with Datawrapper

Newly Detected Cases / Million

7-day Average

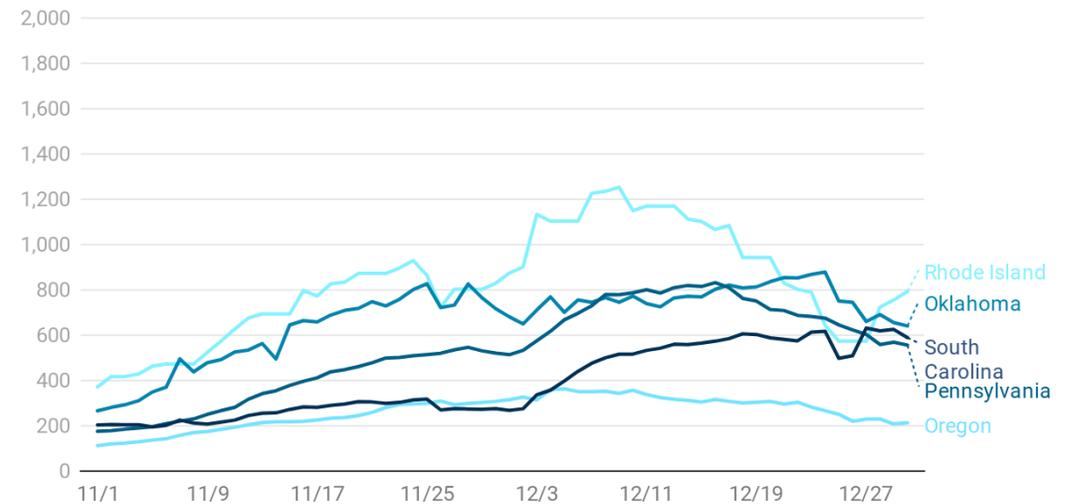


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Reproduction Rates (R_t) and Newly-Detected Cases / Million (7-Day Moving Average) South Dakota - Vermont

Reproduction Rates (R_t) By State

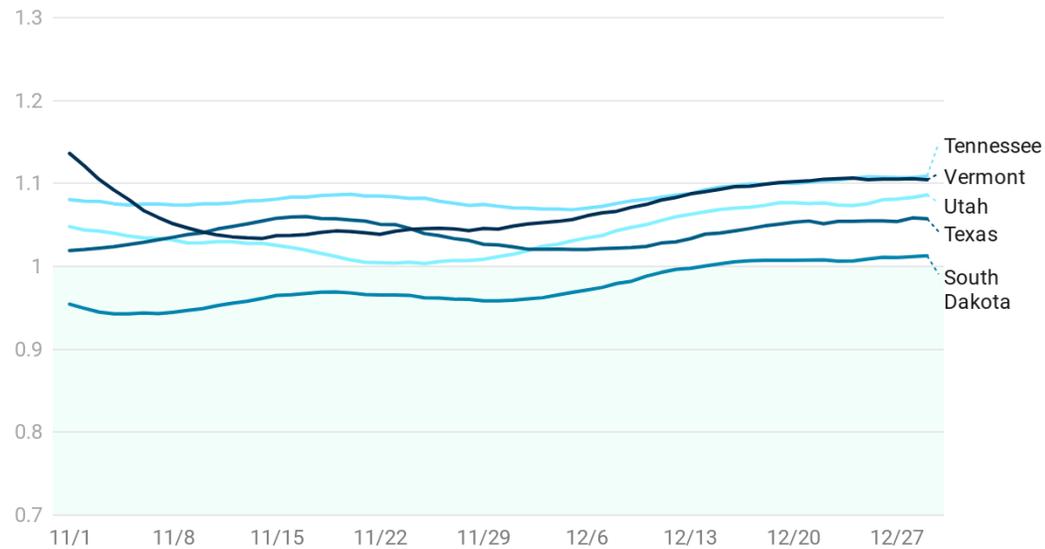


Chart: Health Industry Advisor LLC • Source: rt.live • Created with Datawrapper

Newly Detected Cases / Million

7-day Average



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

Reproduction Rates (R_t) and Newly-Detected Cases / Million (7-Day Moving Average) Virginia - Wyoming

Reproduction Rates (R_t) By State

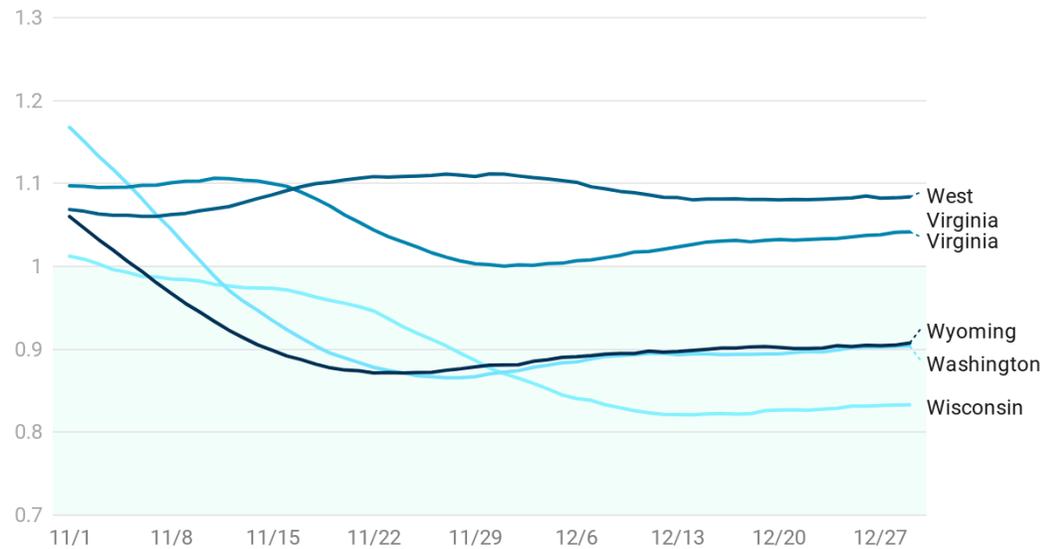


Chart: Health Industry Advisor LLC • Source: rt.live • Created with Datawrapper

Newly Detected Cases / Million

7-day Average



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

State-By-State Comparisons

As of December 30

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 , 14-Day Lag
Alabama	72.8k	974	1,616	40.1%	648	2	49%	-23%	7
Alaska	61.5k	276	8,800	3.6%	313	28	11%	-31%	2
Arizona	70.4k	1,198	2,317	33.2%	770	3	75%	-11%	12
Arkansas	73.7k	1,205	3,433	20.0%	686	5	24%	-12%	18
California	57.4k	643	7,790	11.8%	927	8	80%	-13%	7
Colorado	57.5k	825	1,419	25.1%	356	4	24%	-27%	12
Connecticut	51.5k	1,673	8,421	6.2%	519	16	67%	0%	13
Delaware	58.1k	946	2,528	25.3%	640	4	35%	1%	9
District Of Columbia	40.7k	1,105	8,658	3.6%	310	28	39%	-6%	17
Florida	60.8k	1,003	1,781	26.1%	477	4	31%	-9%	9
Georgia	61.7k	1,022	2,942	15.6%	625	5	59%	-3%	8
Hawaii	15k	201	73	100.0%	69	1	9%	-26%	0
Idaho	78k	783	907	52.1%	469	2	15%	-31%	9
Illinois	75.4k	1,406	5,523	7.6%	421	13	29%	-21%	17
Indiana	75k	1,212	1,409	42.9%	604	2	35%	-20%	12
Iowa	88.4k	1,211	606	38.0%	347	2	14%	-27%	13
Kansas	77.2k	941	1,914	32.7%	628	3	16%	-16%	16
Kentucky	59.4k	587	2,900	16.5%	479	6	27%	-23%	7

State-By-State Comparisons

As of December 30

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 , 14-Day Lag
Louisiana	66.9k	1,602	4,127	12.9%	531	8	24%	-6%	13
Maine	17.5k	248	4,666	6.9%	320	15	17%	-5%	8
Maryland	45.3k	967	2,023	18.5%	374	5	44%	-2%	15
Massachusetts	52.9k	1,775	2,546	25.8%	656	4	47%	0%	13
Michigan	52.9k	1,304	3,762	7.7%	289	13	27%	-21%	18
Minnesota	73.3k	944	1,847	14.5%	268	7	19%	-34%	13
Mississippi	71.6k	1,595	611	100.0%	611	1	26%	-13%	14
Missouri	68k	979	861	41.3%	396	2	32%	-28%	11
Montana	76.1k	889	2,755	13.5%	371	7	13%	-28%	8
Nebraska	85.5k	833	1,147	35.1%	416	3	17%	-25%	6
Nevada	72.3k	995	1,552	37.7%	586	3	88%	-20%	11
New Hampshire	31.8k	545	3,009	16.5%	497	6	30%	-7%	11
New Jersey	54.4k	2,151	5,637	7.7%	442	13	48%	-8%	15
New Mexico	67.3k	1,162	6,324	8.6%	541	12	45%	-11%	17
New York	51.3k	1,947	8,993	6.4%	583	15	61%	6%	14
North Carolina	50.8k	642	4,529	11.5%	522	9	47%	-10%	9

State-By-State Comparisons

As of December 30

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 , 14-Day Lag
North Dakota	121k	1,682	746	37.1%	277	3	6%	-27%	15
Ohio	59.1k	758	3,452	16.3%	561	6	31%	-23%	8
Oklahoma	72.5k	620	3,831	16.7%	641	6	35%	-26%	8
Oregon	26.6k	348	3,881	5.5%	213	18	21%	-25%	7
Pennsylvania	49.7k	1,233	1,375	40.7%	556	2	41%	-18%	17
Rhode Island	83k	1,677	2,667	29.8%	793	3	54%	0%	9
South Carolina	58.9k	1,019	4,859	12.1%	589	8	43%	-4%	11
South Dakota	111.6k	1,655	1,023	42.3%	433	2	16%	-22%	16
Tennessee	85k	997	3,594	23.0%	827	4	44%	-30%	7
Texas	60.7k	962	3,231	15.4%	505	6	42%	-11%	11
Utah	84.8k	392	1,794	35.4%	635	3	19%	-16%	3
Vermont	11.7k	215	1,497	9.1%	136	11	6%	-11%	23
Virginia	40.3k	584	3,319	12.7%	422	8	41%	-6%	9
Washington	32.3k	465	3,915	6.2%	257	15	25%	-25%	14
West Virginia	47.1k	737	5,691	11.6%	663	9	26%	-9%	15
Wisconsin	82k	827	1,241	31.2%	336	4	20%	-27%	9
Wyoming	76.3k	700	1,072	33.8%	363	3	11%	-38%	13

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 and Prevention, National, Regional, and State Level Outpatient Illness and Viral Surveillance
<https://gis.cdc.gov/grasp/fluview/fluportaldashboard.html>
- Centers for Disease Control and Prevention, COVID-19 Laboratory-Confirmed Hospitalizations https://gis.cdc.gov/grasp/COVIDNet/COVID19_5.html
- Centers for Disease Control and Prevention, COVID Data Tracker
<https://www.cdc.gov/covid-data-tracker/index.html#mobility>
- Centers for Disease Control and Prevention, Vaccines,
<https://www.cdc.gov/coronavirus/2019-ncov/vaccines/index.html>
- 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>
- Bloomberg Vaccine Trackers, <https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/?sref=Z0b6TmHW>