

Covid-19 Report

Issue # 258

January 12, 2021

Covid-19 Highlights

On the surface, we made progress on the vaccine front yesterday:

- **More than 1.25 million Americans reportedly received an initial vaccine dose yesterday; however, this is likely caused in part by catching-up on weekend reporting:**
 - As reported yesterday, twenty-nine states did not report vaccination data on Sunday; twenty-one of these also did not report on Saturday
 - Addressing this, **the three-day average (Saturday-Monday) was a relatively modest 739k doses per day**
 - Our modeling, and earlier federal pronouncements of the vaccination schedule, would suggest a target of 1 million doses daily
- According to a [USAToday report](#) published this morning, **the Department of Health and Human Services asked the states to accelerate vaccinations of persons 65 and older, and those with high-risk conditions**; this guidance encourages the states to no longer hold back supplies for persons scheduled to receive a second dose
- **The federal government's Operation Warp Speed effort released an additional 3.3 million doses to the states yesterday, bringing the total to 25.5 million; this compares to the 9.3 million reportedly administered**

Certain states are doing better than most on this vaccination process:

- **South Dakota, West Virginia and North Dakota have vaccinated the highest % of residents – each >5%;** Alabama, California, Georgia, Mississippi and Nevada have vaccinated the lowest % of residents, each <2%
- **North Dakota and South Dakota have administered >70% of their available doses;** Colorado, Connecticut, Maine, Montana, Nebraska, New Hampshire, North Dakota, South Dakota, Tennessee and West Virginia have administered >50%

Similarly, certain states have a higher infection prevalence than others; this will impact how quickly these states achieve herd immunity and, the extent of vaccination necessary:

- **South Dakota leads the country in infection prevalence (estimated % of residents infected), at 40%; Mississippi, New Jersey, North Dakota, and Tennessee may be above 30%**
- **Hawaii, Maine, New Hampshire, Oregon, Vermont and Washington have the lowest infection prevalence, implying that vaccinations will need to be more extensive in these states to achieve herd immunity levels**
- In [Gu's model of the path to herd immunity](#), he suggests that the US will achieve herd immunity via a near equal balance of infection and vaccination
 - He recently updated his model to assume that 70% immunity is required for herd immunity, as well as to acknowledge the impacts of vaccination delays and the more transmissible variant of the virus
 - **Gu now projects herd immunity by June 28**
- **Hypothetically, as infection prevalence increases, fewer potential "hosts" are available for the virus to infect. Thus, at some level of infection prevalence, we should observe slowing infection rates.** Contrasting recent infection prevalence and the change in infection rates by state:
 - **The two states with the highest infection prevalence - South Dakota and North Dakota - and four of the six states with infection prevalence >30% exhibited declining or stable infection rates between December 20 and January 10;** Both South Dakota's and North Dakota's infection rates fell by more than 20% during this period
 - Conversely, the three states with the lowest infection prevalence - Hawaii, Maine and Vermont - each exhibited increases in infection rates >20% between December 20 and January 10

Covid-19

Vaccination Progress By State

South Dakota, West Virginia and North Dakota have vaccinated the highest % of residents – each >5%. North Dakota and South Dakota have administered >70% of their available doses; Colorado, Connecticut, Maine, Montana, Nebraska, New Hampshire, North Dakota, South Dakota, Tennessee and West Virginia have administered >50%

Vaccination Progress

% of Population Vaccinated; Additional Doses That Have Been Allocated But Not Yet Administered, As of January 11

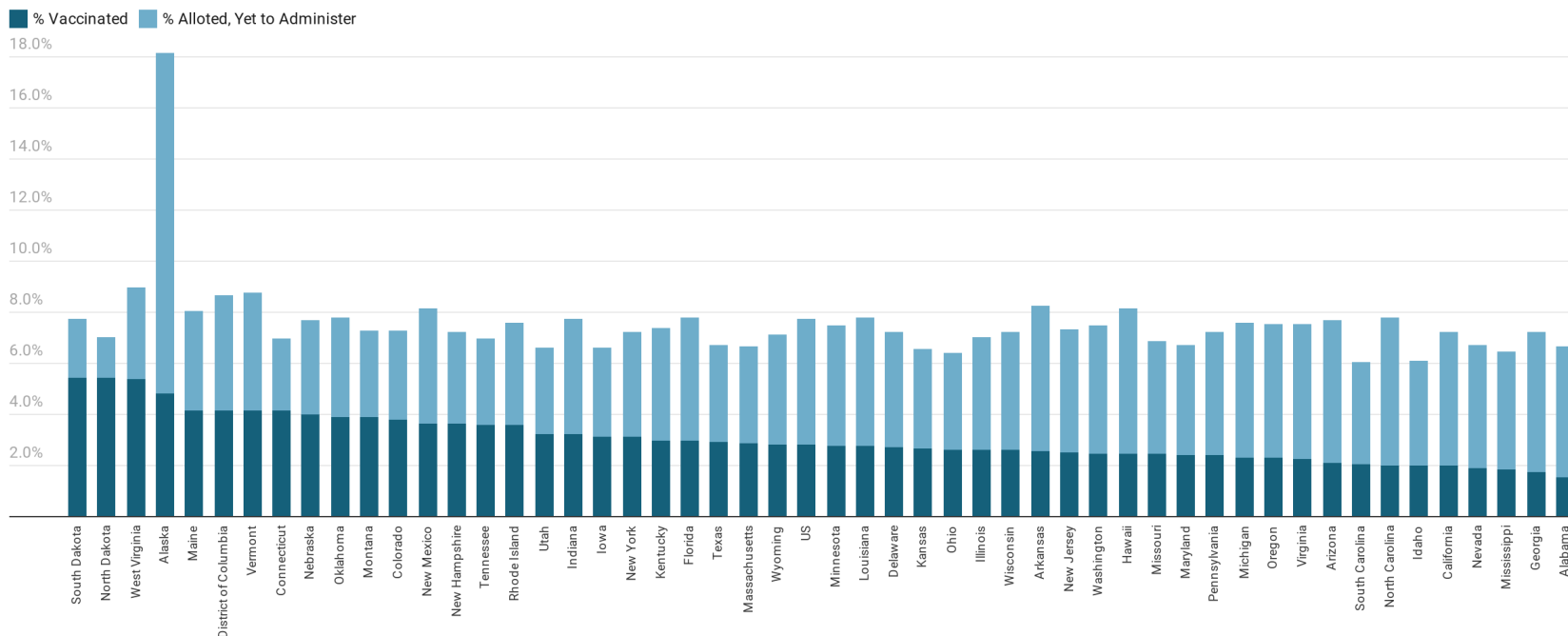


Chart: Health Industry Advisor LLC • Source: Bloomberg • Created with Datawrapper

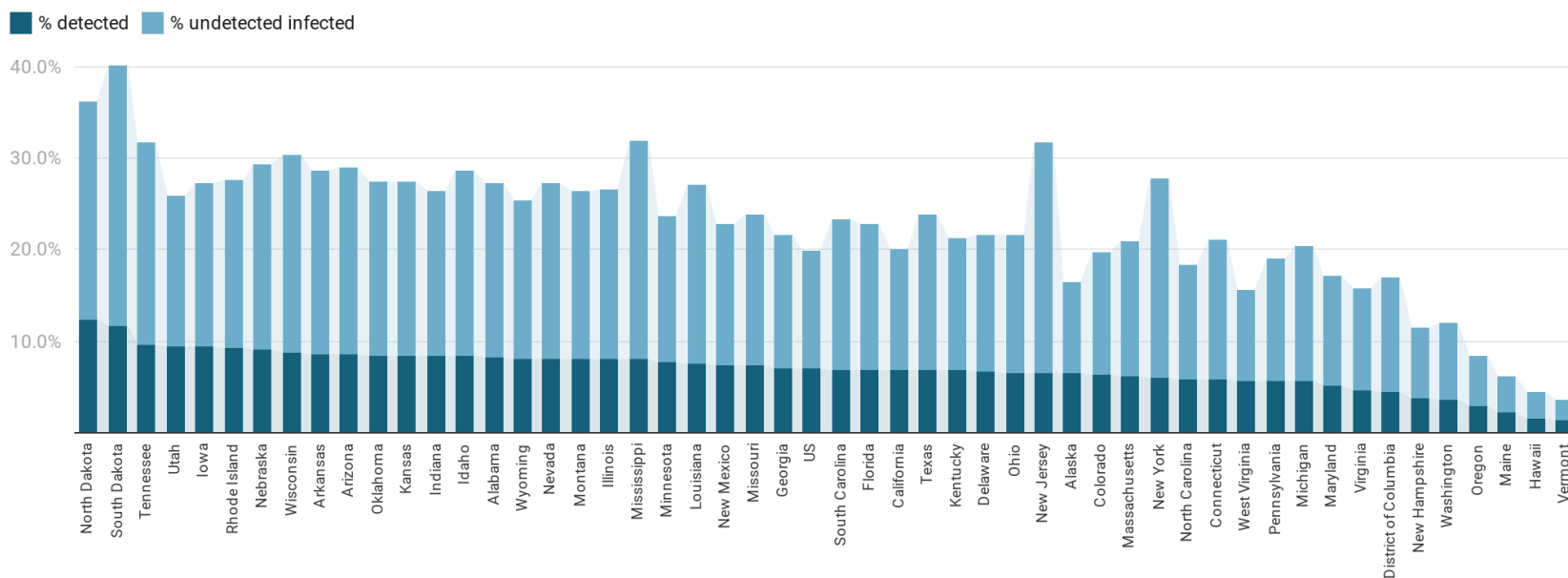
Covid-19

Infection Prevalence By State

South Dakota leads the country in estimated % of residents infected, at 40%; Mississippi, New Jersey, North Dakota and Tennessee may be above 30%

Infection Prevalence

% of Population Infected - Detected & Undetected, As of January 11



Undetected Estimate from Youyang Gu Model - estimates are 14 days in arrears due to model design

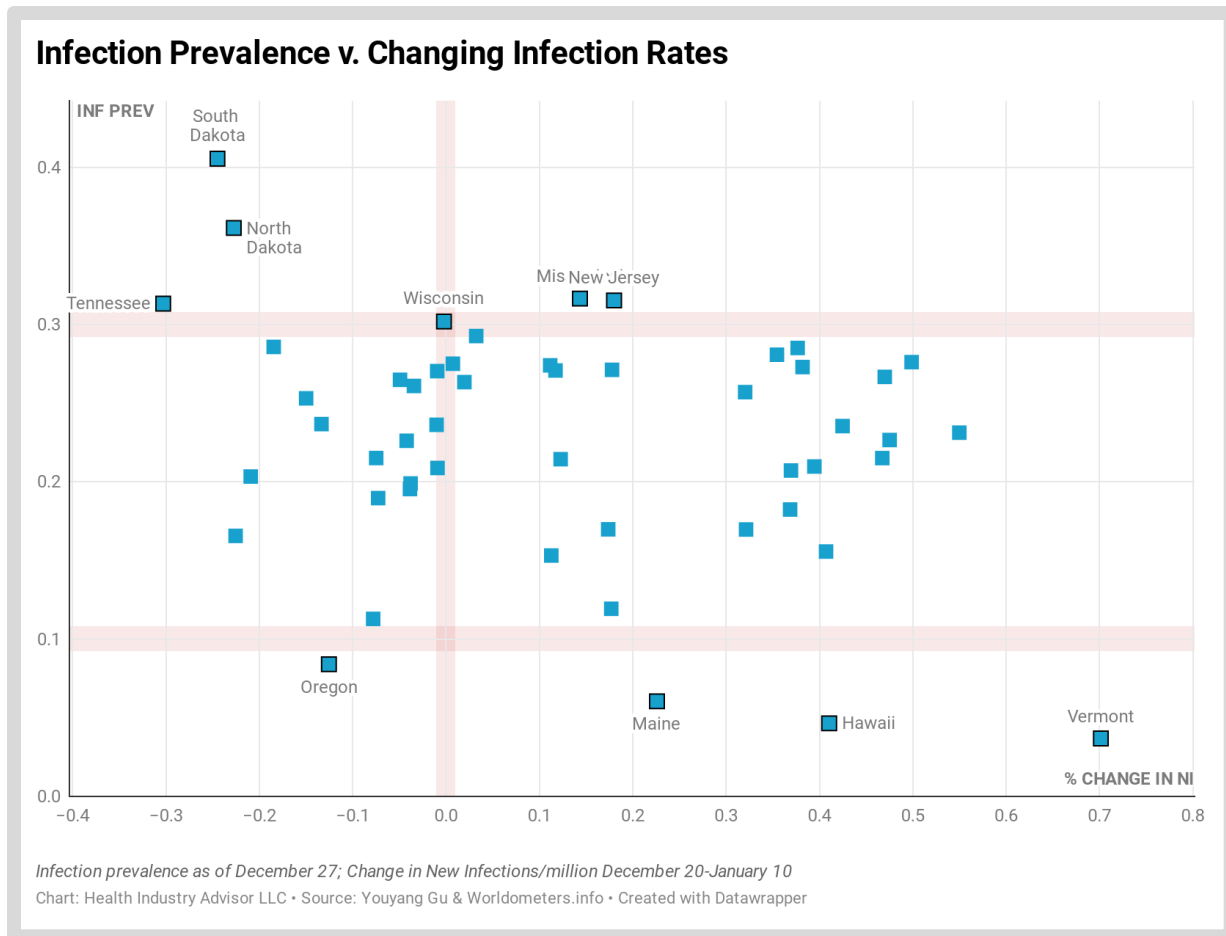
Chart: Health Industry Advisor LLC • Source: Bloomberg • Created with Datawrapper

Covid-19

Infection Prevalence v. Change in Infection Rates

Does infection prevalence impact the rate of change in new infection rates?

Four of the six states with infection prevalence >30% saw infection rates decline or stay steady from December 20-January 10; Three of four that had infection prevalence < 10% had infection rates increases > 20% during this period



Covid-19 Hospitalizations

Covid-19

Covid-19 hospitalizations increased only slightly from Sunday to Monday, after declining each of the 4 previous days - this counters the typical pattern for Thursdays, Fridays and Mondays; the mix of ICU patients is declining

Hospitalized Covid-19 Patients

Compared to Same Day, Prior Weeks, As of January 11

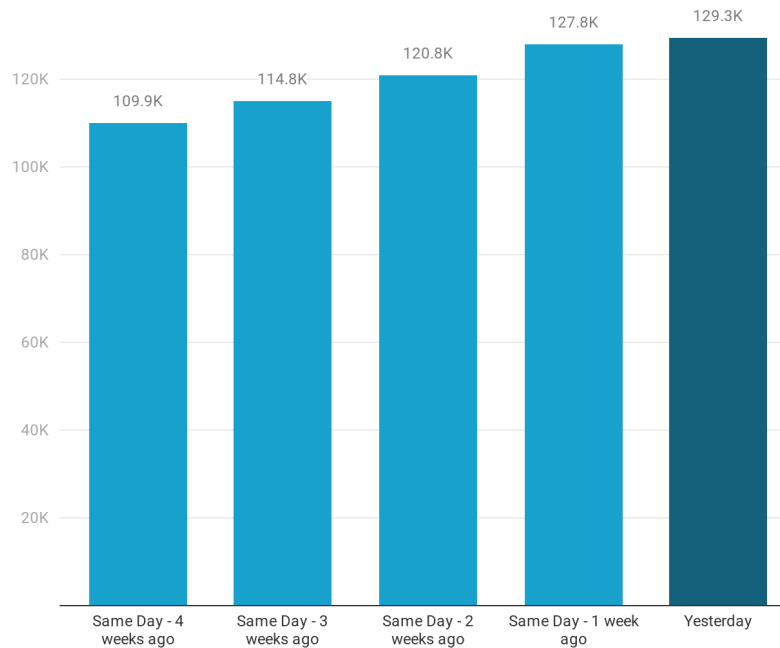


Chart: Health Industry Advisor LLC • Source: The Atlantic • Created with Datawrapper

% in ICU - Hospitalized Covid-19 Patients

Compared to Same Day, Prior Weeks, As of January 11

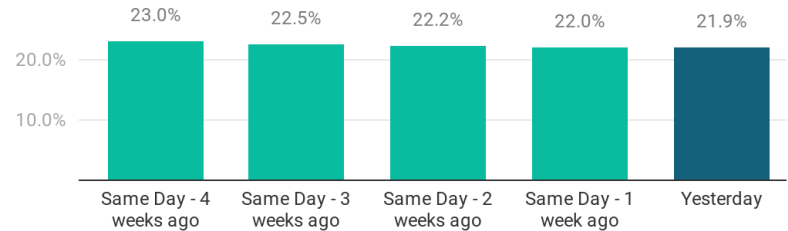


Chart: Health Industry Advisor LLC • Source: The Atlantic • Created with Datawrapper

% on Ventilators - Hospitalized Covid-19 Patients

Compared to Same Day, Prior Weeks, As of January 11

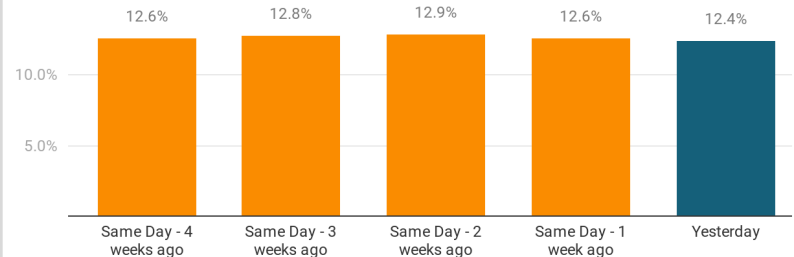


Chart: Health Industry Advisor LLC • Source: The Atlantic • Created with Datawrapper

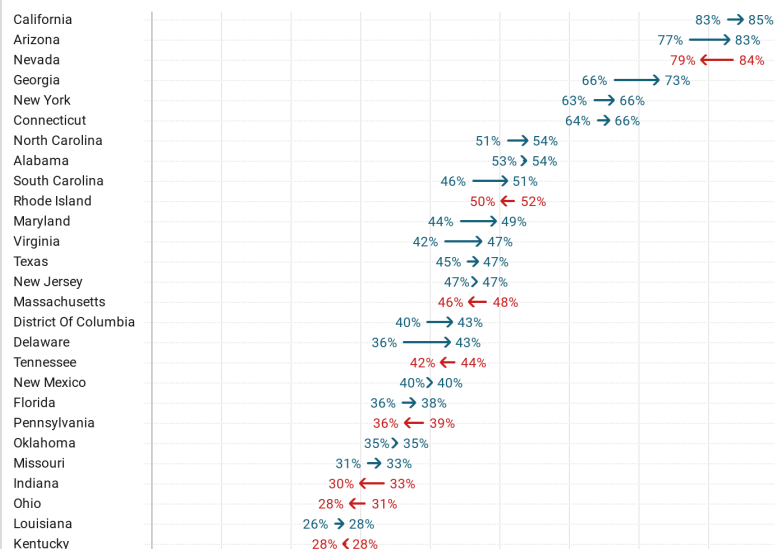
Covid-19

Hospitalized Covid-19 Patients

Greatest strain on hospital beds is in Arizona, California, Georgia and Nevada; Situation is worsening in Connecticut and New York. Seven of the eight states with the highest rates a week ago saw it increase this week

Covid-19 Patients / Total Inpatient Beds

7-Day Moving Average, As of January 4 & 11



Covid-19 Patients / Total Inpatient Beds

7-Day Moving Average, As of January 4 & 11

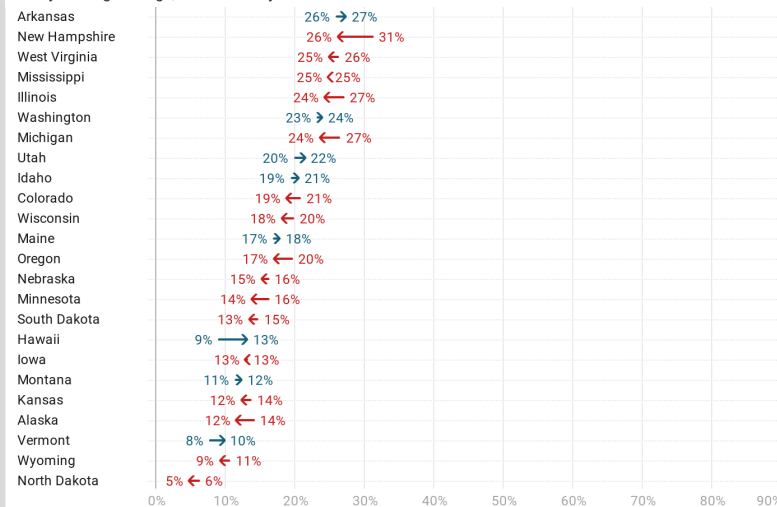
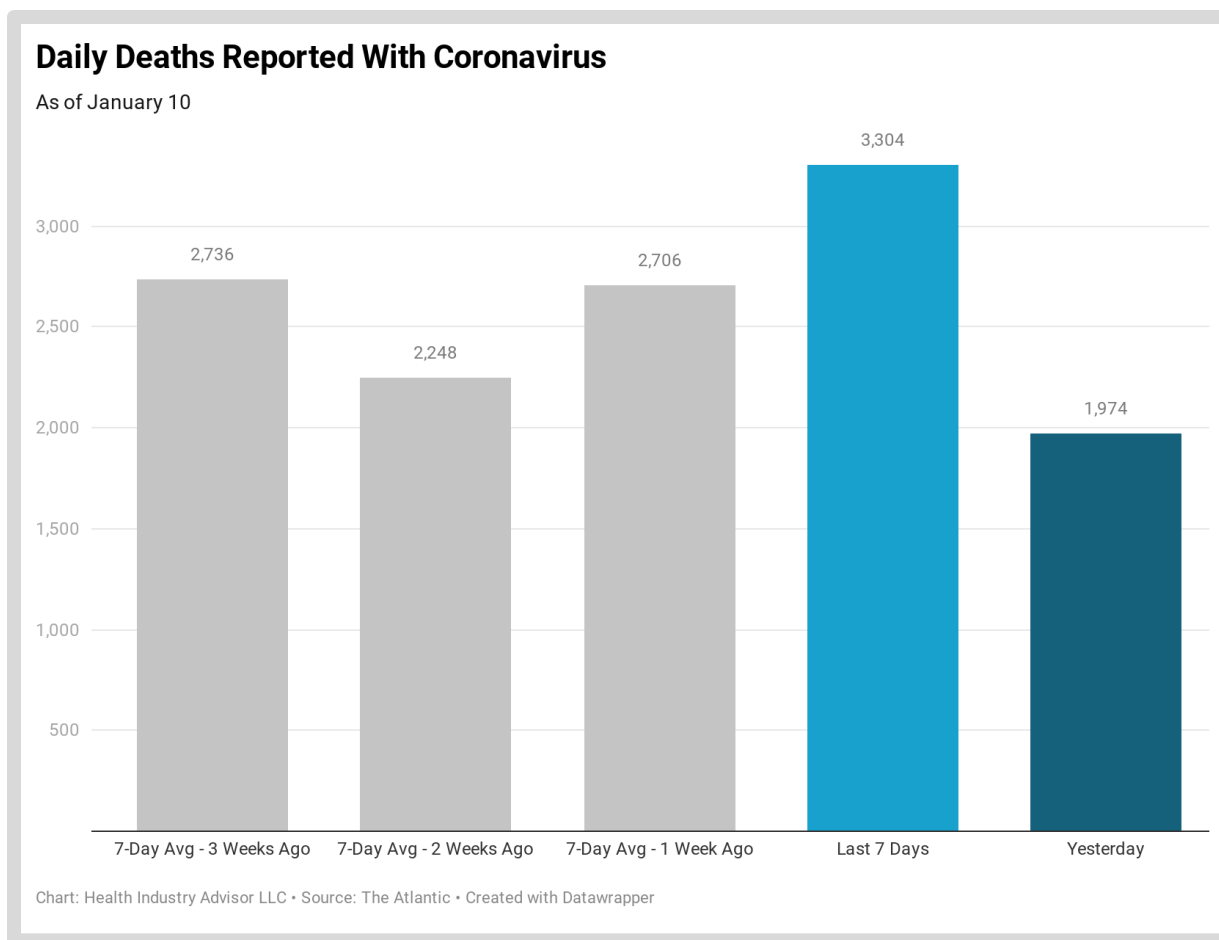


Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking project & worldometers.info • Created with Datawrapper

Covid-19

Deaths Reported With Coronavirus

The number of reported deaths yesterday were consistent with (slightly lower than) each of the previous three Mondays; nevertheless, the 7-day average remains very high



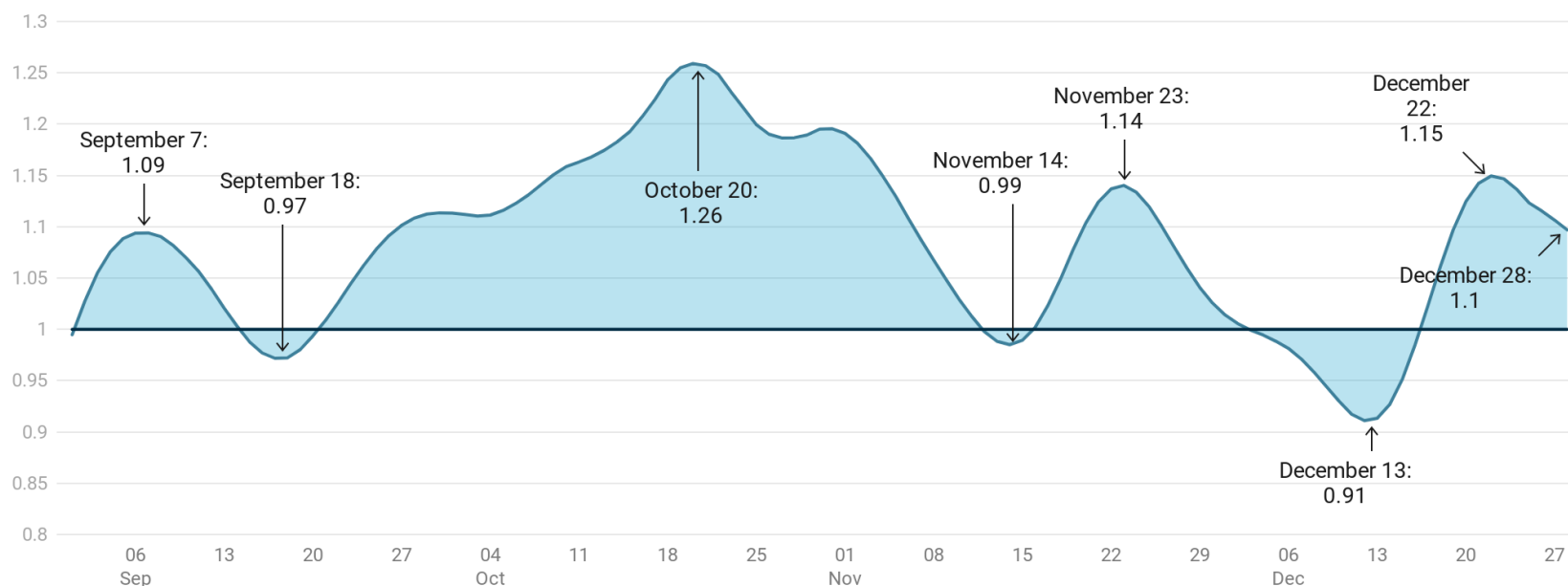
Reproduction Rate (R_t) – Gu* Model

Gu's estimate of R_t reached an intermediate peak on December 22 Before declining the next 6 days; it remains >1

Reproduction Rate (R_t) - U.S.

*Youyang Gu: Covid-19projections.com

Youyang Gu Estimate, September 1 - December 28



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

Covid-19

Two Models of Estimated Daily Infections

Models from both Youyang Gu and the Yale School of Public Health suggests that actual infections are at all-time highs; The Yale model suggests that new infections now exceed 1M per day

- Two models:
- Youyang Gu:
<https://covid19-projections.com>
- Yale School of Public Health:
<https://covidestim.org>
- Gu model lags by two weeks

Estimated Daily Infections

Gu & Yale School of Public Health Models

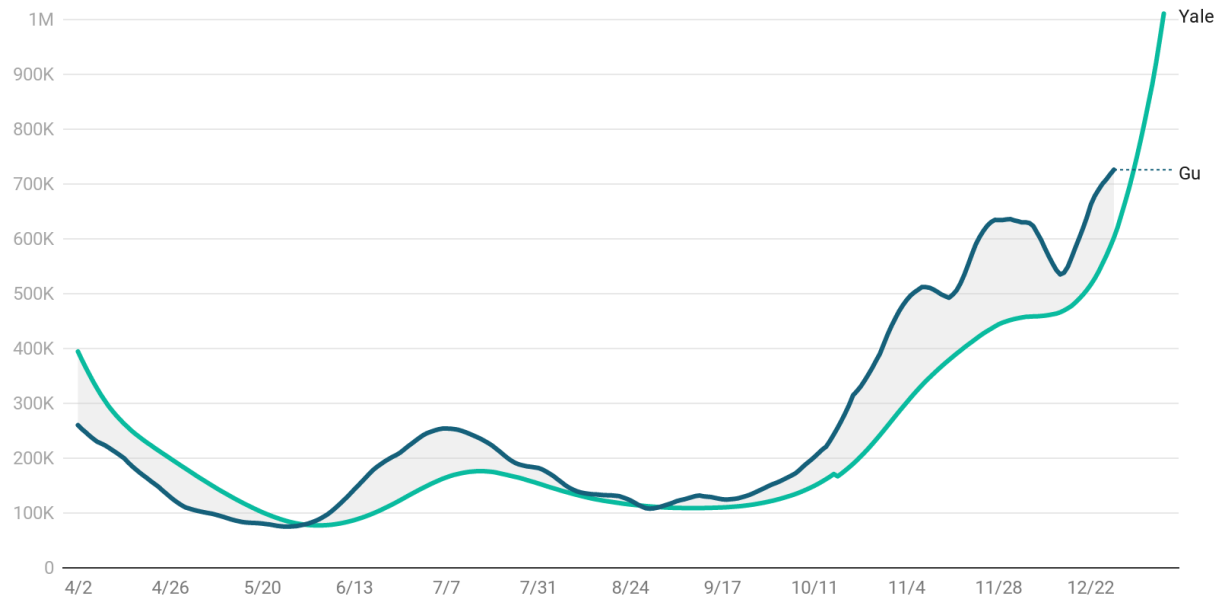


Chart: Health Industry Advisor LLC • Source: Youyang Gu, Yale School of Public Health • Created with Datawrapper

Covid-19

Newly-Detected Cases – US & Worldwide

Newly detected cases seem to be spiking outside the US but, perhaps leveling-off in the US

Newly Detected Daily Cases - U.S. & Worldwide

7-Day Moving Average, As of January 11

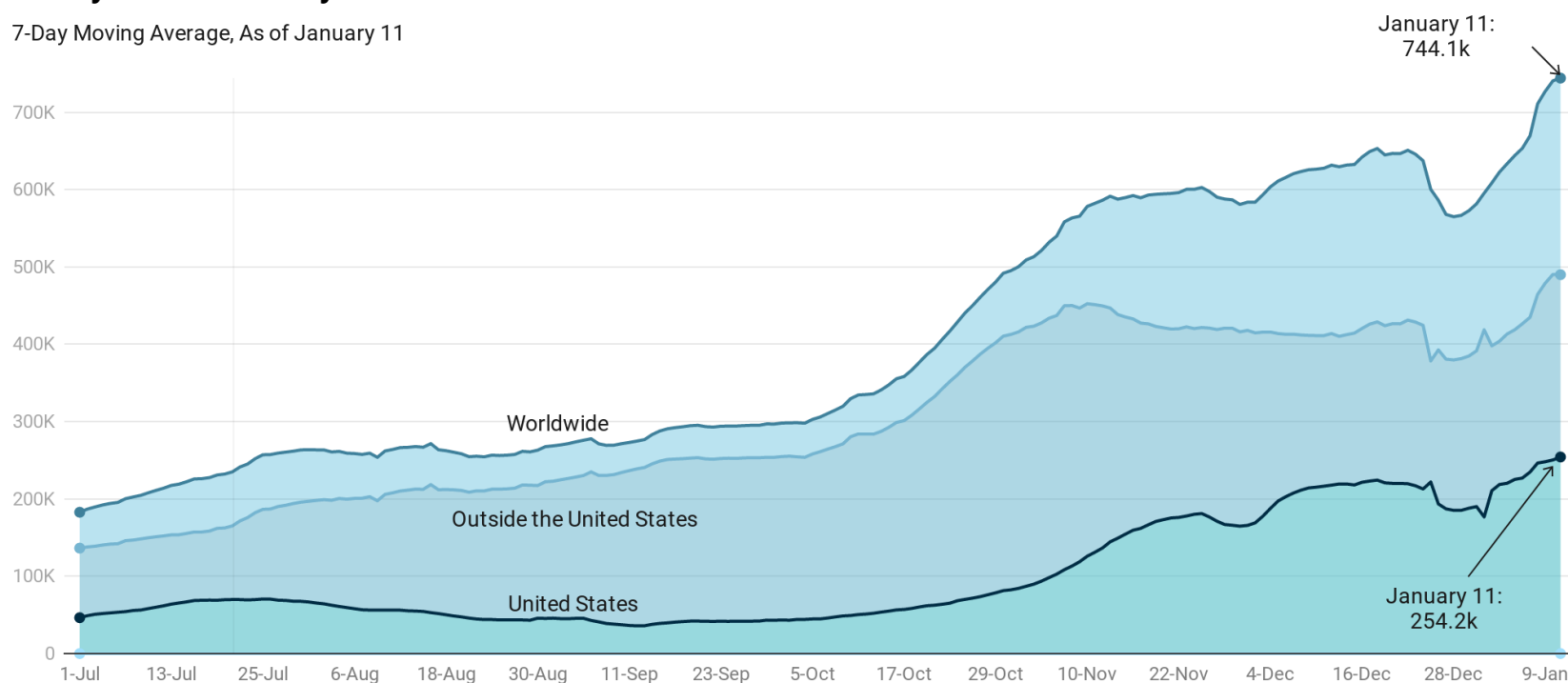


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Covid-19

Newly Detected Cases / Million - US

Newly detected cases (7-day average) continue to rise; however, the rate of increase appears to have slowed in the past several days - perhaps, as the impact of catching-up from the holiday-induced reporting interruptions has waned

Newly-Detected Cases / Million - US

7-Day Moving Average

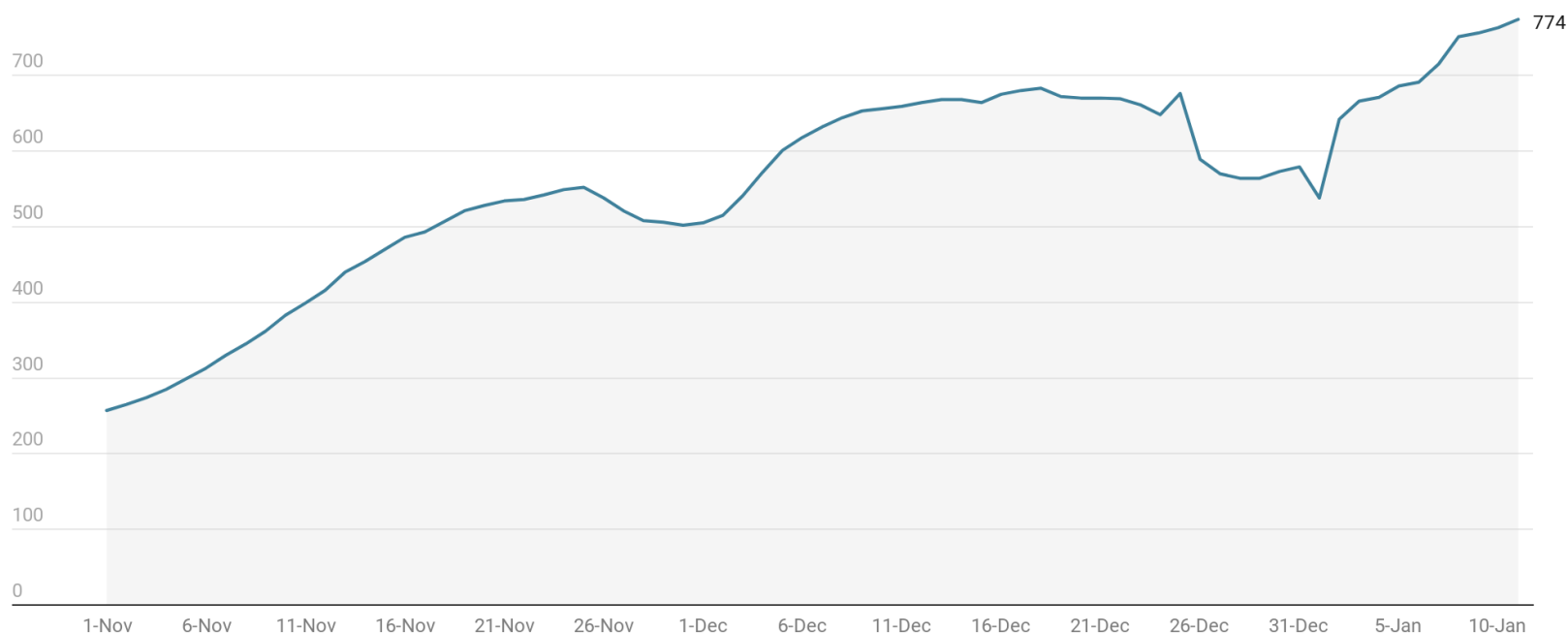
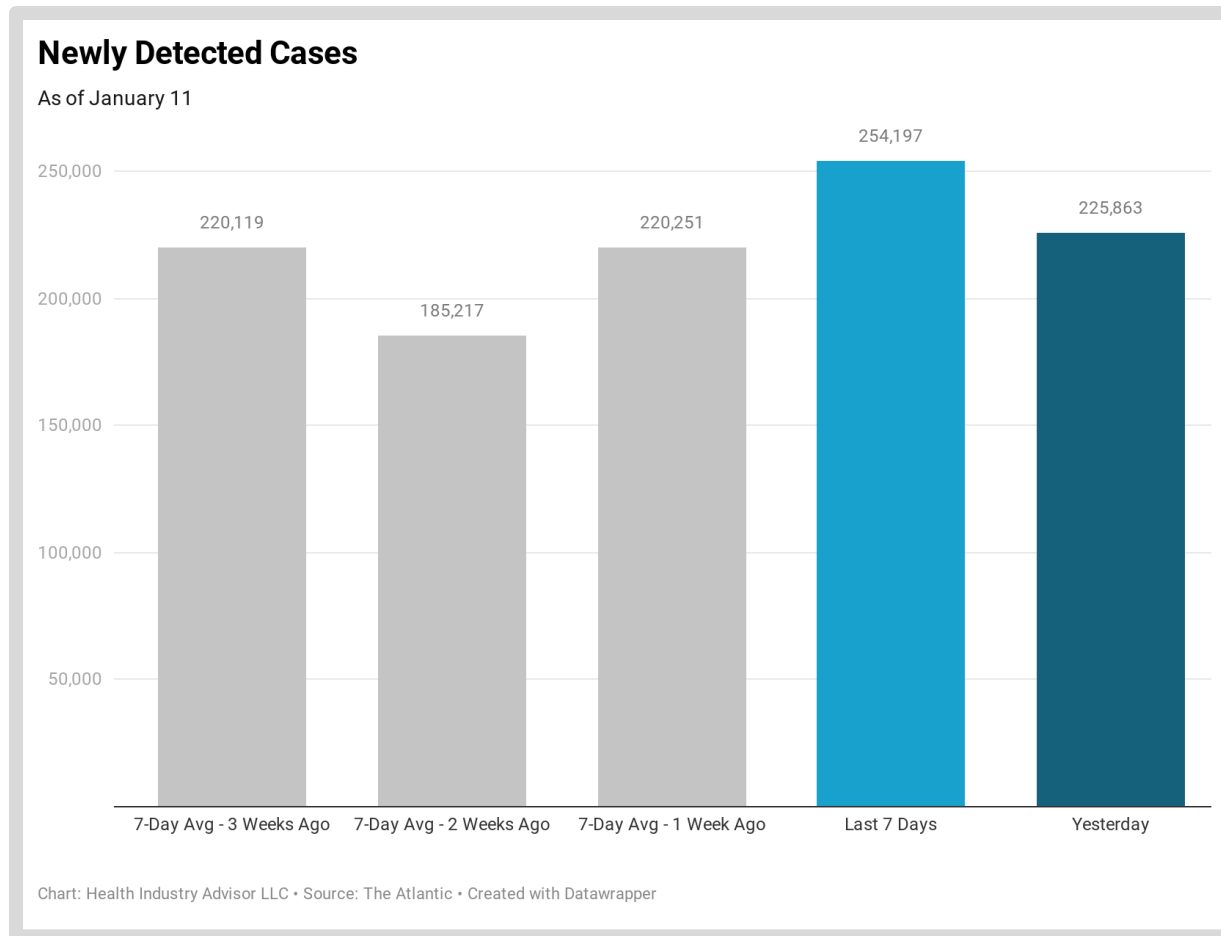


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Newly Detected Cases

Typical for a Monday, reports of the number of new cases were than the 7-day average basis



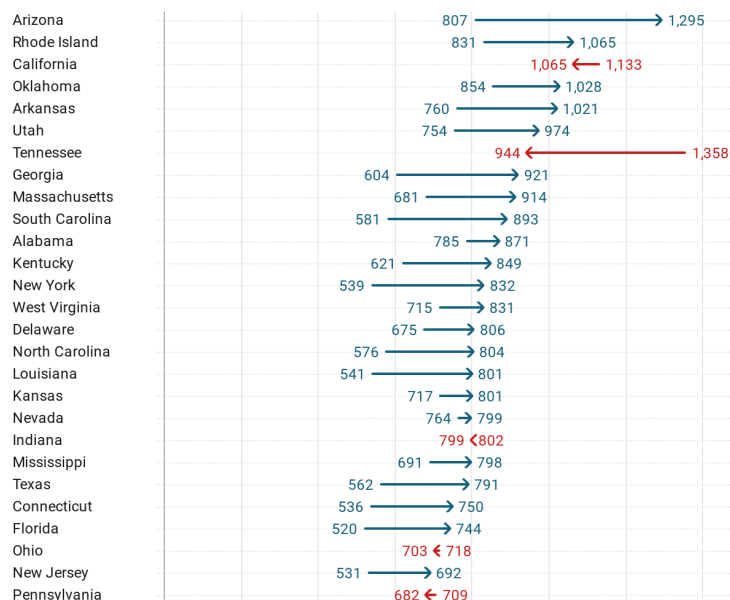
Covid-19

Newly Detected Cases / Million

Encouragingly, new case rates in California and Tennessee have declined since the pre-holiday period – these states had the highest rates in the country at that time; however, rates have increased significantly during this time in Arizona, Arkansas, Georgia, Massachusetts, Oklahoma, Rhode Island and Utah

New Daily Cases / Million

7-Day Moving Average, As of December 21 & January 11



New Daily Cases / Million

7-Day Moving Average, As of December 21 & January 11

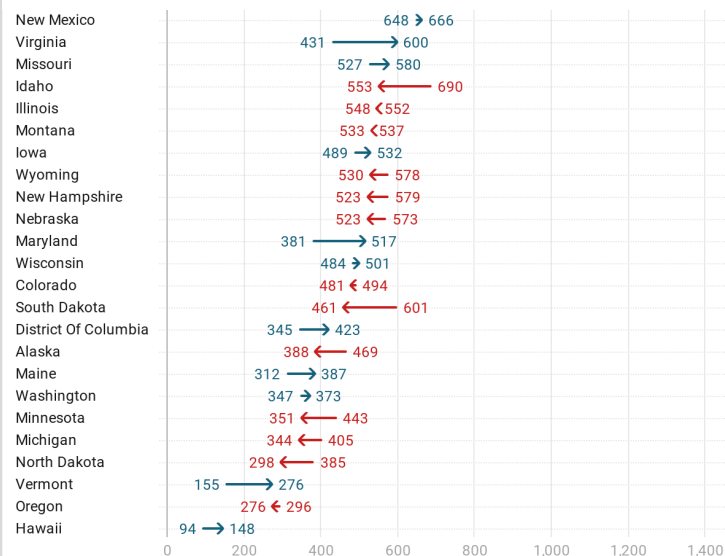


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Covid-19

Testing Results - US

Test volume showed signs of continued growth rebounded yesterday; volumes may be returning to preholiday level. With this higher volume, the test-positive rate was lower for the day; however, it remains high by recent standards and by public health guidelines

Tests / Million / Day (US)

As of January 11

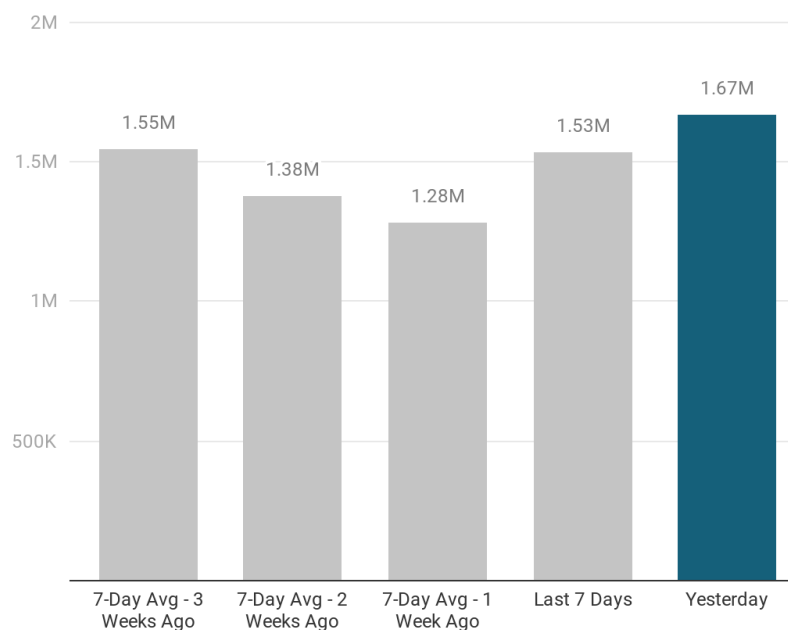


Chart: Health Industry Advisor LLC • Source: The Atlantic • Created with Datawrapper

Test-Positivity Rate

As of January 11

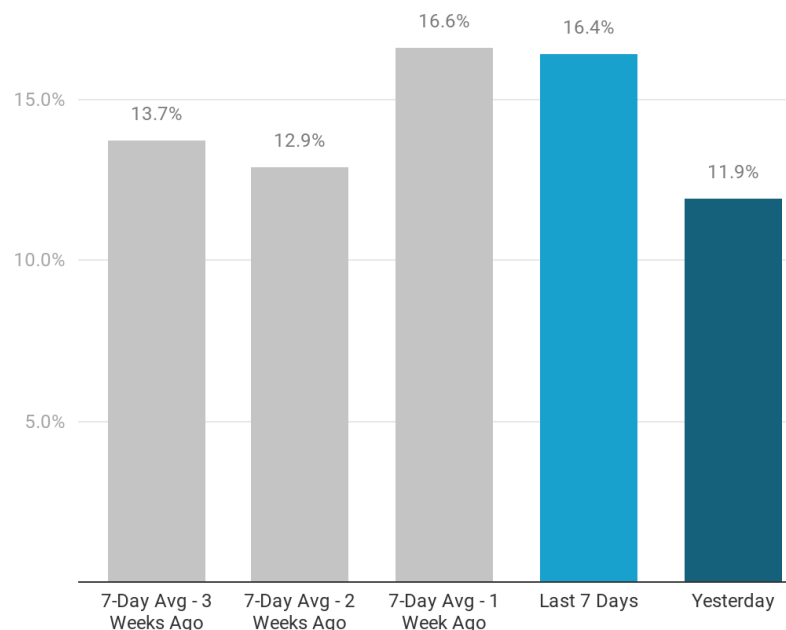


Chart: Health Industry Advisor LLC • Source: The Atlantic • Created with Datawrapper

Covid-19

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>