

Covid-19 Report

Issue # 257

January 11, 2021

Covid-19 Highlights

- Starting with vaccinations, which are behind schedule:
 - **As of yesterday, 8 million Americans had reportedly received an initial dose; this is far short of the goal of 20-22 million** by the end of December/first week of January. **Of note, enough doses have been distributed to the states to reach this goal**
 - Several explanations have been suggested for the shortfall: poor handoffs between the federal government and the states; lack of funding; slow ramp of necessary infrastructure; high incidence of targeted individuals refusing the vaccination, etc.
 - Another factor that seems under-appreciated is the **delay in reporting: Twenty-one states have not updated vaccination totals since at least Friday; another eight did not update totals yesterday**
- Of course, the goal of vaccination is to achieve herd immunity levels. Immunity is also achieved via infection, and a [Science magazine report](#) we cited on Saturday suggests that immunity from infections appears to be long-lasting
 - Using [Gu's estimated infection model](#) and current reported vaccination rates, **the US may be about 1/4 to 1/3 of the way to herd immunity levels** (suggested to be 60-80% of the population being immune)
 - **North Dakota and South Dakota - states with high rates of both estimated infections and vaccinations - may be 1/2 to 2/3 of the way to herd immunity**
 - **The number of states that may be 1/3 to 1/2 way is growing: Arizona, Arkansas, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Mississippi, Montana, Nebraska, New Jersey, New York, Oklahoma, Tennessee, Utah and Wisconsin**
- **The number of hospitalized Covid-19 patients declined each of the past four days;** while it is routine for hospital census to decline on weekends, it does not often decline on Thursdays and Fridays (these are typically the highest census days of the week)
 - Covid-19 hospitalizations in Arizona, California, Connecticut, Nevada and New York continue to be a great concern
- **Deaths with coronavirus over the past seven days were significantly higher than for any other 7-day period during the pandemic**
- **Newly-detected cases in the US continue to rise, however:**
 - The rate of increase in this measure seems to have eased over the past few days
 - These rates of new cases are currently highest in Arizona, Arkansas, California, Oklahoma, Rhode Island and Utah
 - Rates in Arizona and Oklahoma have eased somewhat in recent days, while rates in Rhode Island and Utah may have leveled-off; Rates in California, as well as New Jersey and New York, continue to steadily rise
 - Worldwide, **Ireland has experienced a rapid surge in new cases recently, as have Israel and Portugal to a lesser extent; rates in the UK and US appeared to have leveled-off recently while the rate in the Netherlands has declined from a recent peak**
 - [Gu's estimate of the reproduction rate \(Rt\)](#) reached an intermediate peak on December 21, then declined on the next five consecutive days; this rate remains above 1.0
- Testing volume may be rebounding to pre-holiday season levels; nevertheless, **test-positive rates remain at levels higher than recent experience as well as above public health guidelines**

Covid-19

Estimated Immunity By State

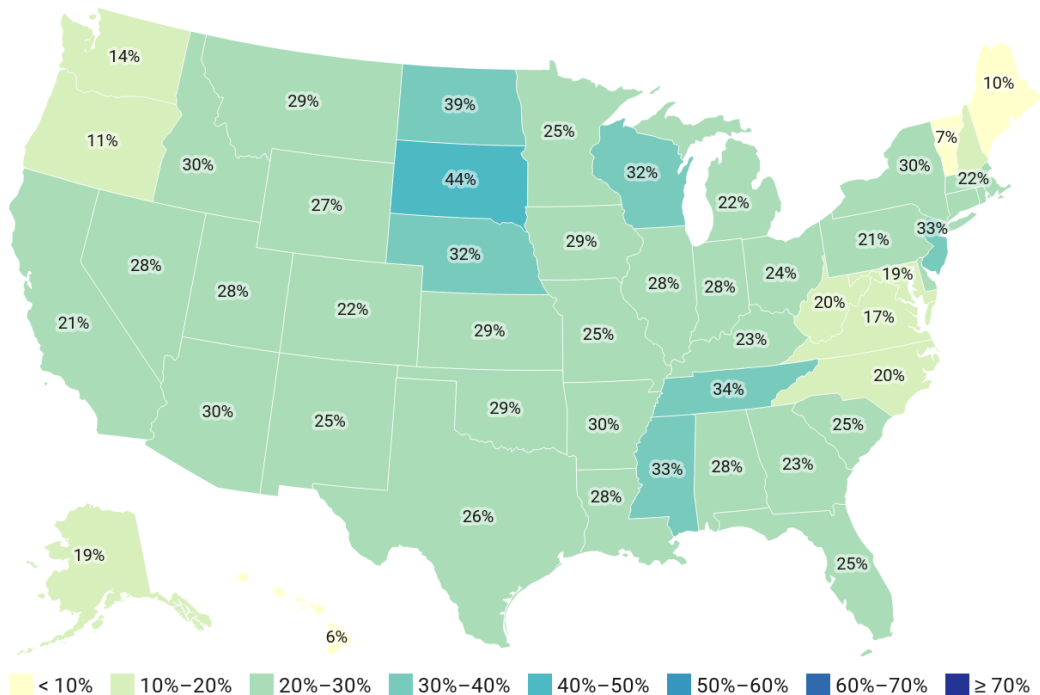
South Dakota and North Dakota may be furthest along toward herd immunity levels – perhaps, 1/2 to 2/3 of the necessary immunity required; Arizona, Arkansas, Idaho, Illinois, Indiana, Iowa, Kansas, Louisiana, Mississippi, Montana, Nebraska, New Jersey, New York, Oklahoma, Tennessee, Utah and Wisconsin could be at 1/3 to 1/2

- Public health experts have suggested that 60-80% of the population would need immunity, for herd immunity to be reached
- Immunity could result from an infection or via vaccination
- It is not established how long immunity, from either infection of vaccination, will last
- For purposes of this illustration, we use both reported vaccination rates and Youyang Gu's* mean estimates of true infections

* <https://covid19-projections.com>

Estimated Immunity

Based on Vaccinations To-Date & Gu's Estimated Infection Model



Vaccinations as of January 10; Estimated Infections as of December 27

Map: Health Industry Advisor LLC • Source: Youyang Gu & Bloomberg • Created with Datawrapper

Covid-19 Hospitalizations

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Covid-19 hospitalizations continue to rise, although census declined each of the last 4 days since Wednesday (unusual for Thursdays and Fridays); the mix of ICU patients is declining; the mix of ventilator patients is relative stable

Hospitalized Covid-19 Patients

Compared to Same Day, Prior Weeks, As of January 10

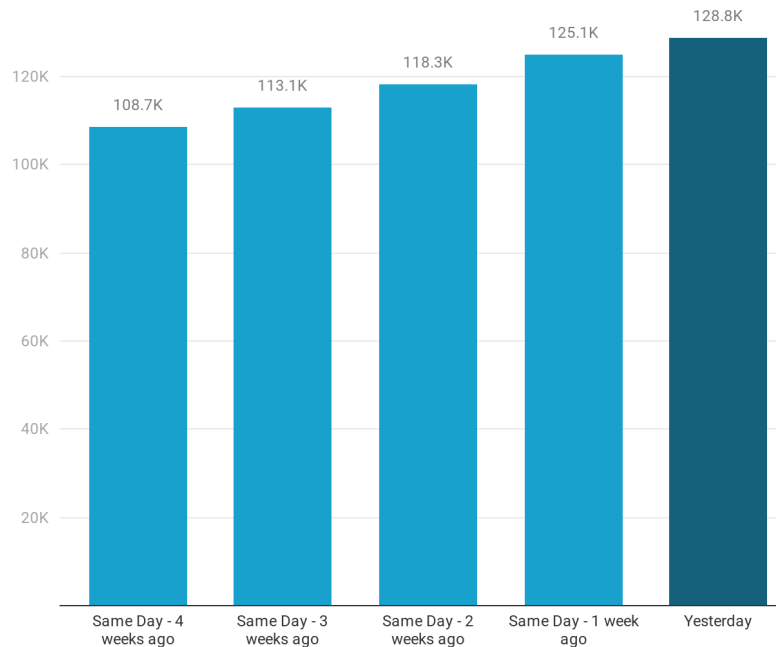


Chart: Health Industry Advisor LLC • Source: The Atlantic • Created with Datawrapper

% in ICU - Hospitalized Covid-19 Patients

Compared to Same Day, Prior Weeks, As of January 10

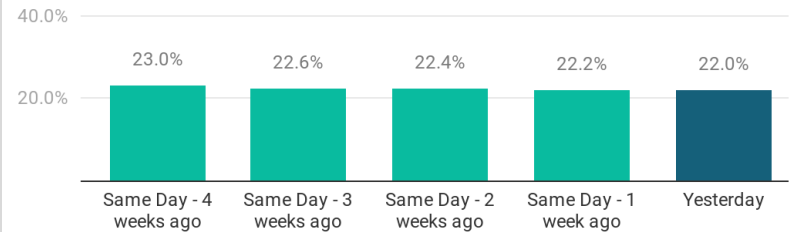


Chart: Health Industry Advisor LLC • Source: The Atlantic • Created with Datawrapper

% on Ventilators - Hospitalized Covid-19 Patients

Compared to Same Day, Prior Weeks, As of January 7

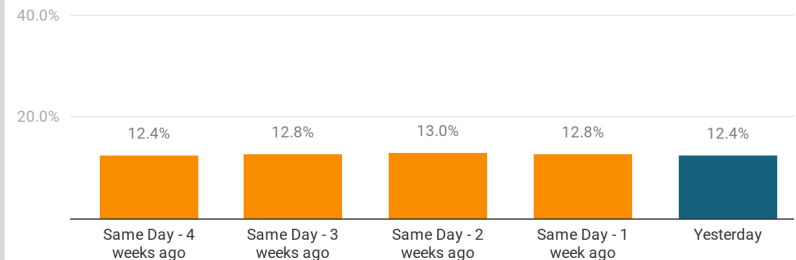


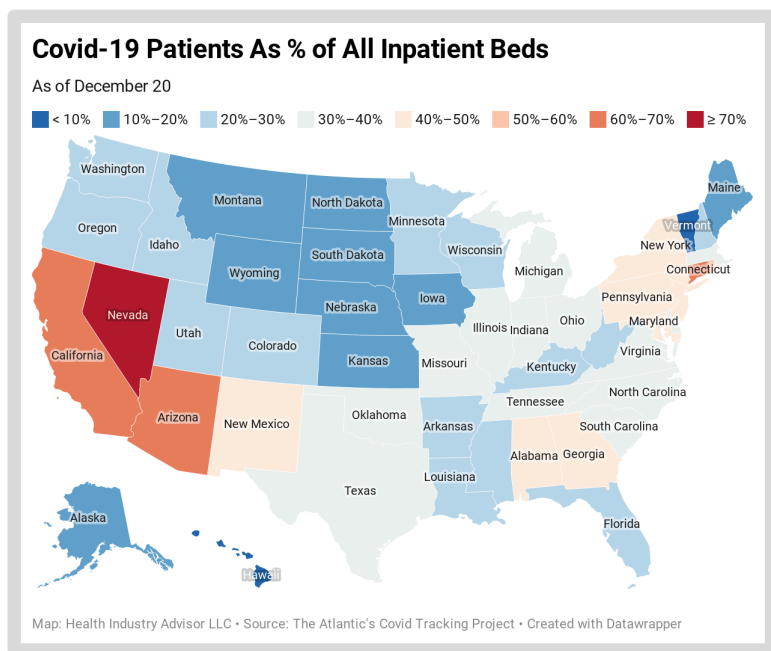
Chart: Health Industry Advisor LLC • Source: The Atlantic • Created with Datawrapper

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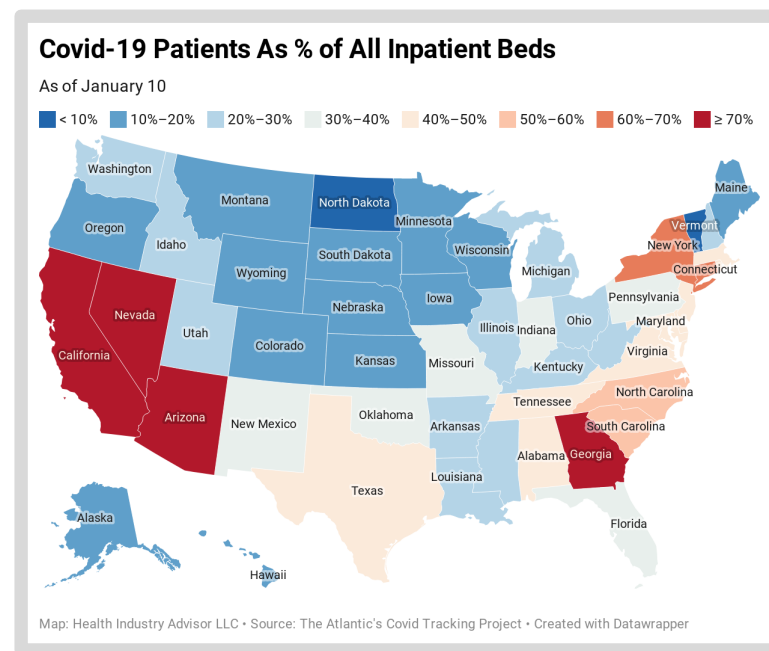
Hospitalized Covid-19 Patients

Greatest strain on hospital beds is in Arizona, California, Georgia and Nevada; Situation is worsening in Connecticut and New York

As of December 20



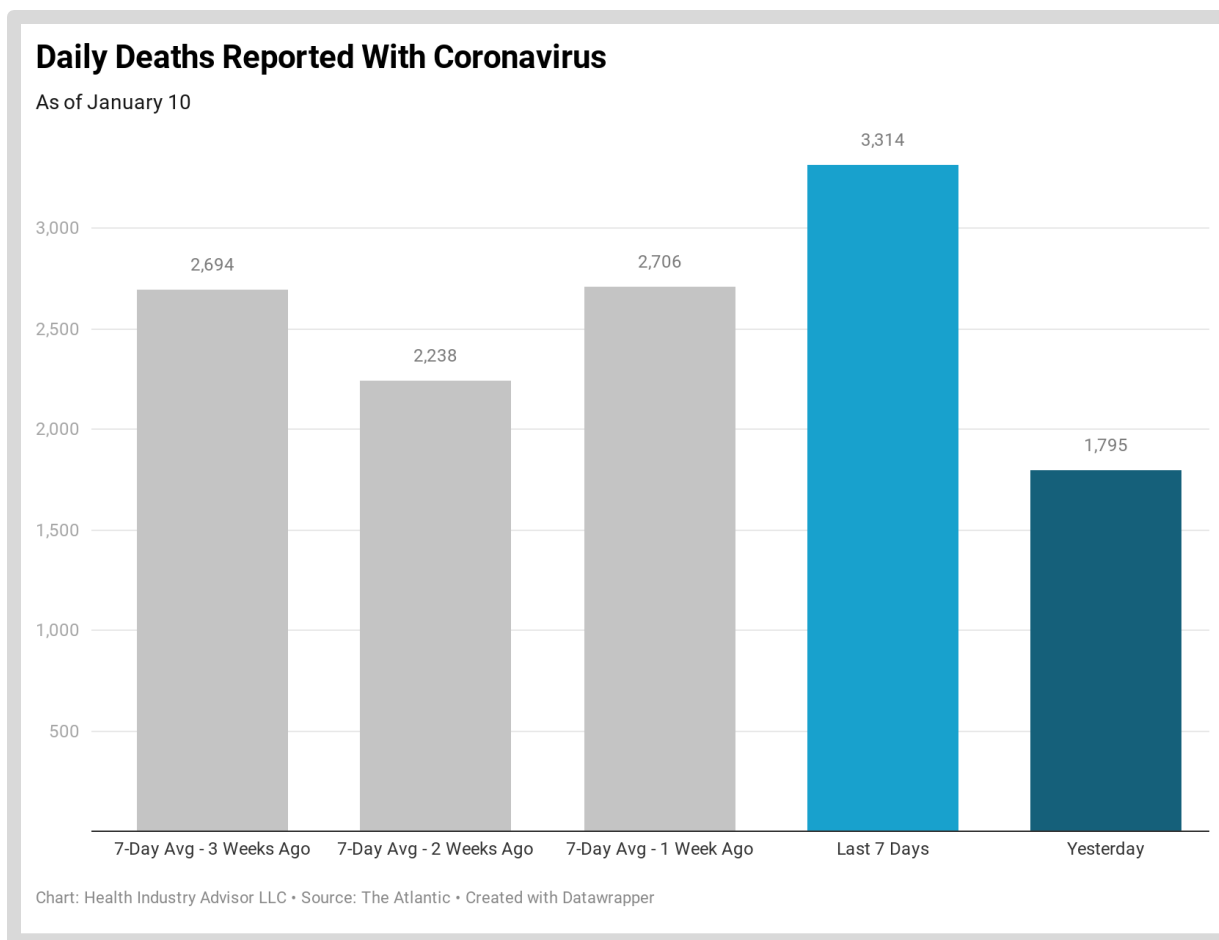
As of January 10



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Deaths Reported With Coronavirus

Typical for a Sunday, the number of reported deaths yesterday was lower than on previous days; nevertheless, the 7-day average is now higher than at any time during the pandemic



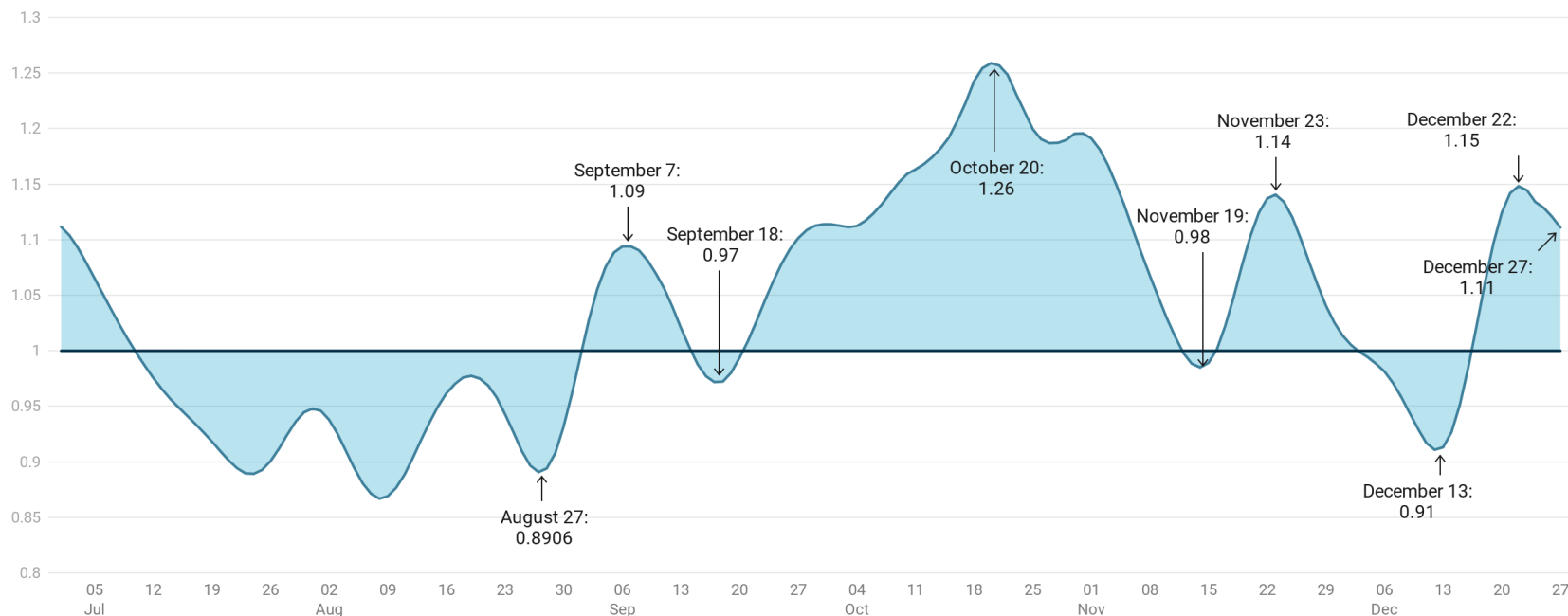
Reproduction Rate (R_t) – Gu* Model

Gu's estimate of R_t reached an intermediate peak on December 21 Before declining the next 5 days; it remains >1

Reproduction Rate (R_t) - U.S.

*Youyang Gu: Covid-19projections.com

Youyang Gu Estimate, July 1 - December 27



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

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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 900k 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

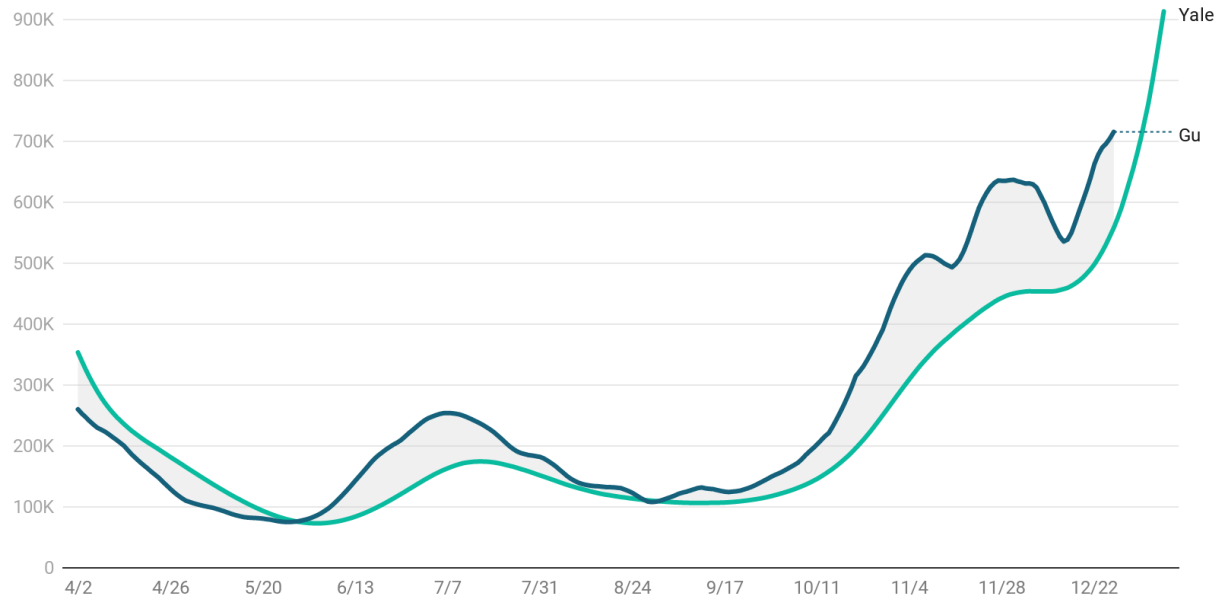


Chart: Health Industry Advisor LLC • Source: Youyang Gu, Yale School of Public Health • Created with Datawrapper

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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

Newly-Detected Cases / Million - US

7-Day Moving Average

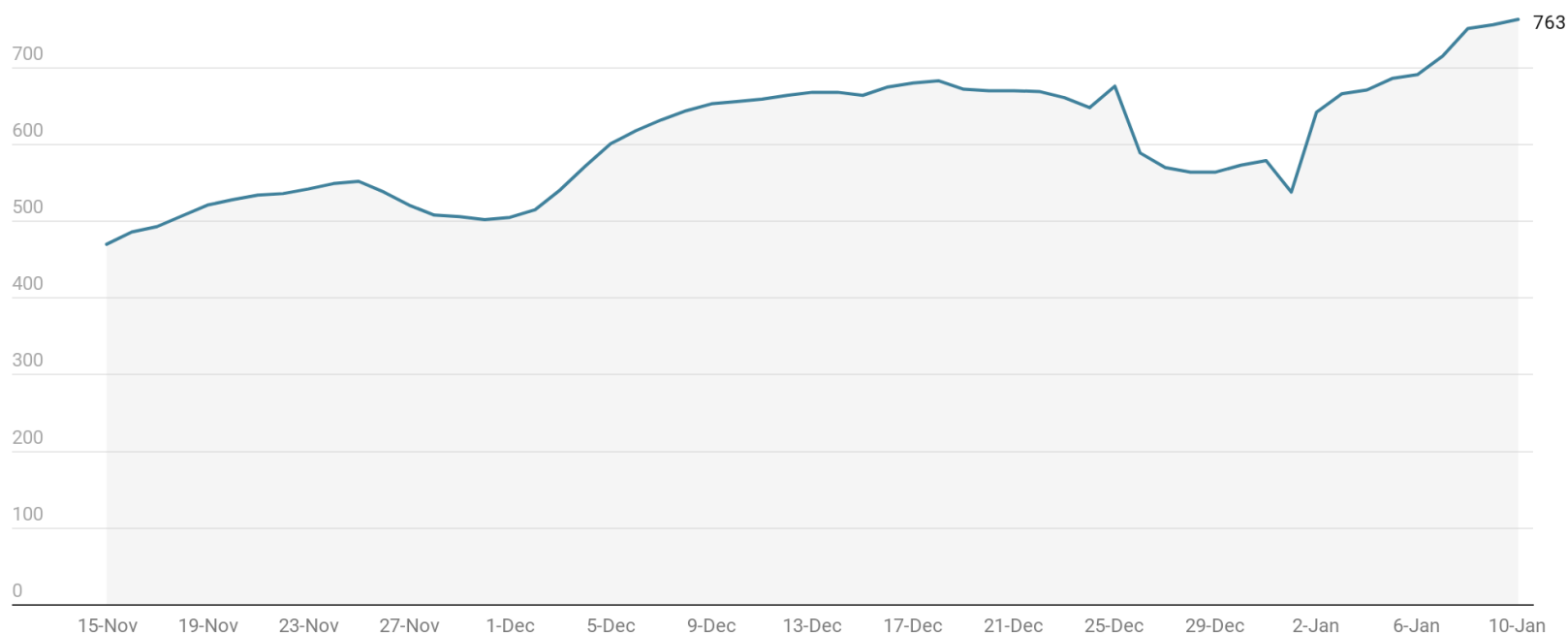
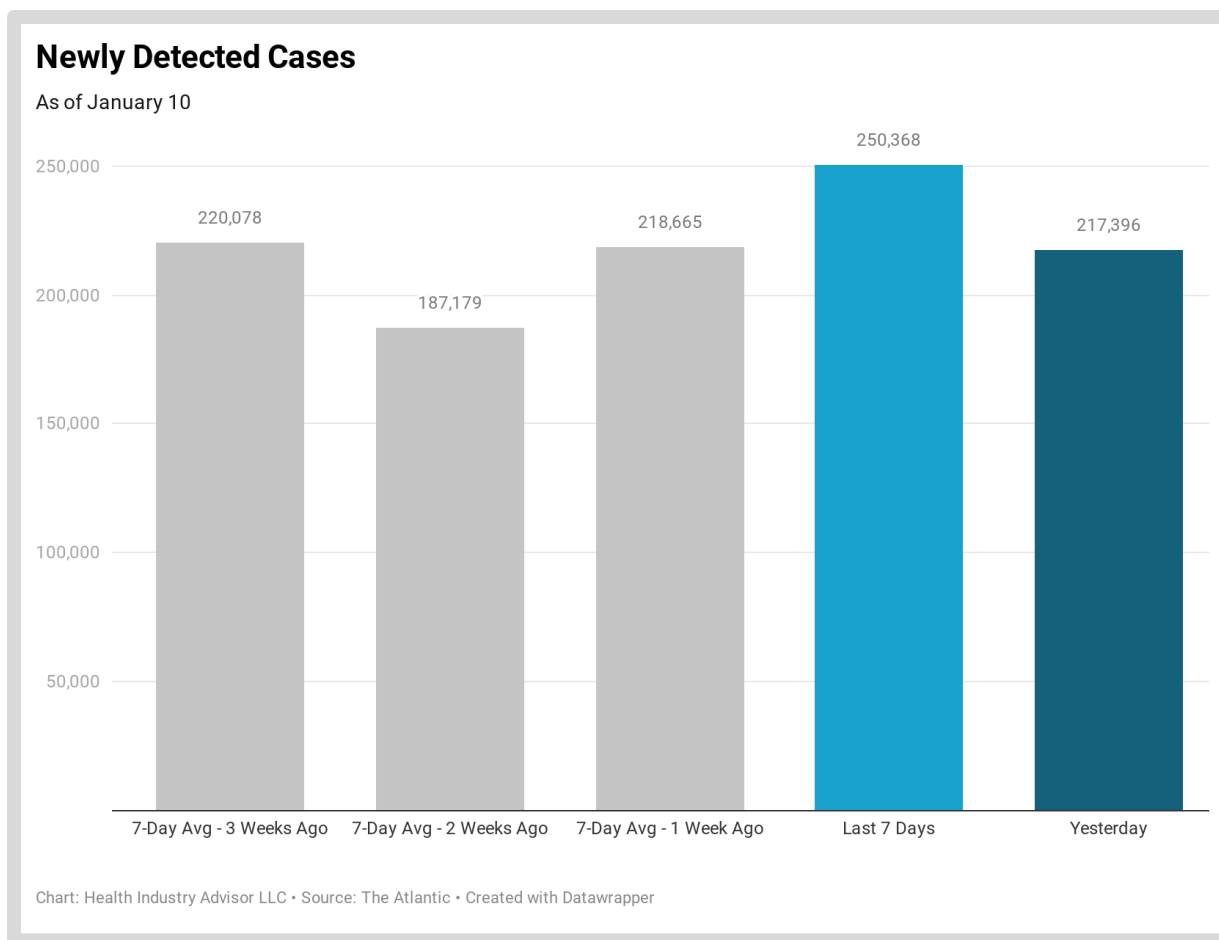


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

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Newly Detected Cases

Typical for a Sunday, reports of the number of new cases were relatively low; on a 7-day average basis, however, newly detected cases have rebounded from the low levels reported during the extended holiday season

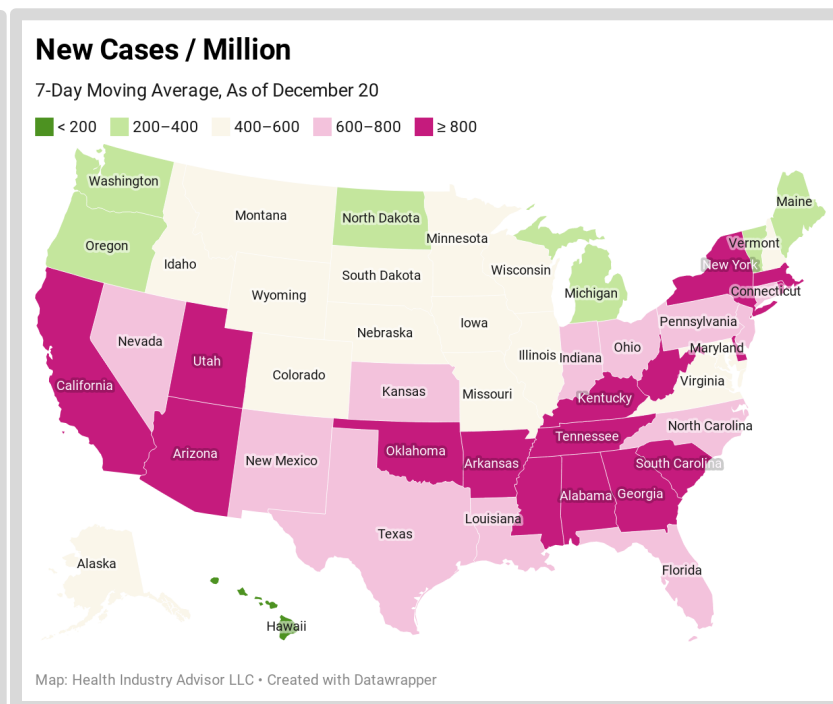
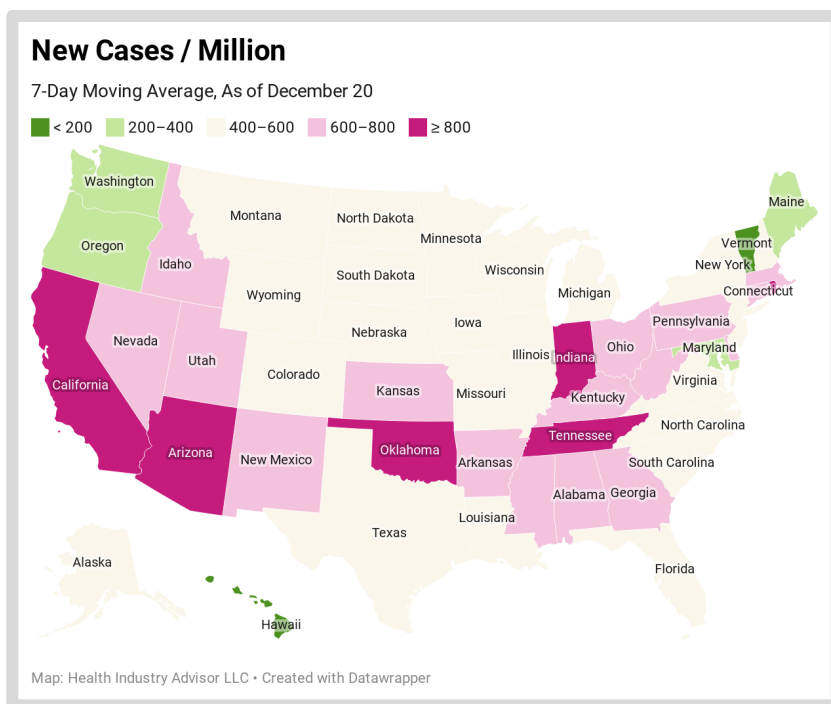


Newly Detected Cases / Million

Case rates may have eased in the Upper Midwest since just prior to Christmas; worsened in Connecticut, New Jersey, New York and parts of the South

As of December 20

As of January 10



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Newly Detected Cases / Million

Case rates were spiking in Arizona and Oklahoma but eased somewhat in recent days, while rates in Rhode Island and Utah may have leveled-off. Rates in California, New Jersey and New York continued to rise

Newly Detected Cases Per Million

7-Day Moving Average

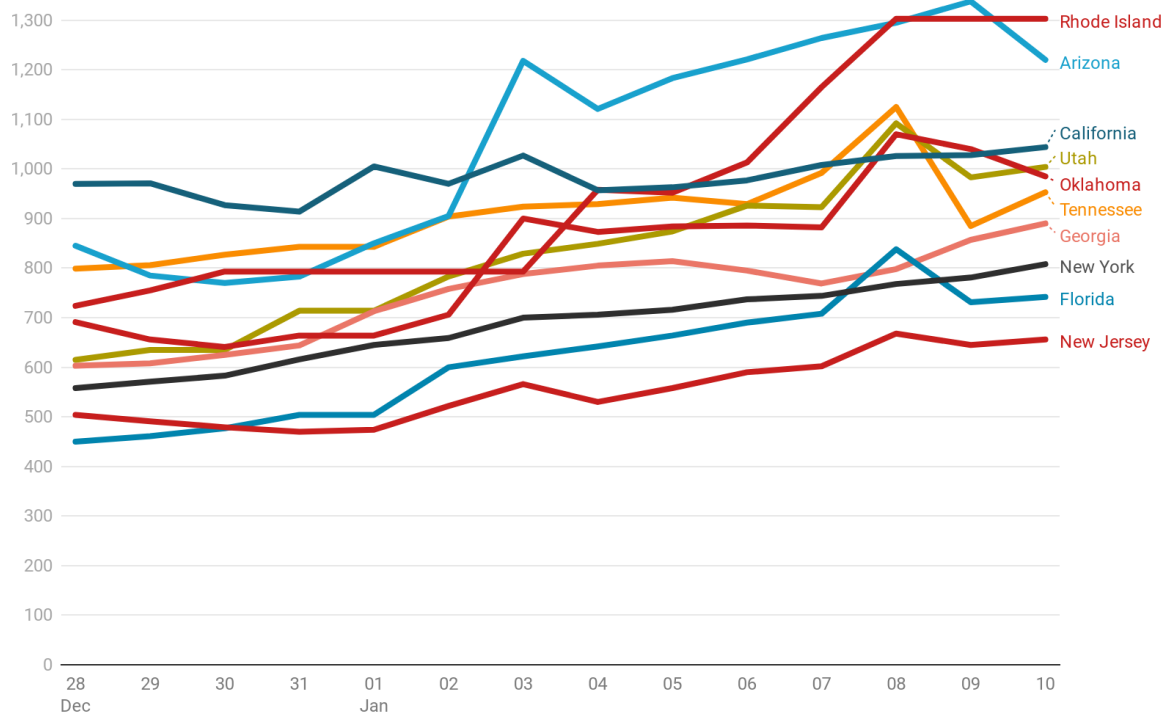


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

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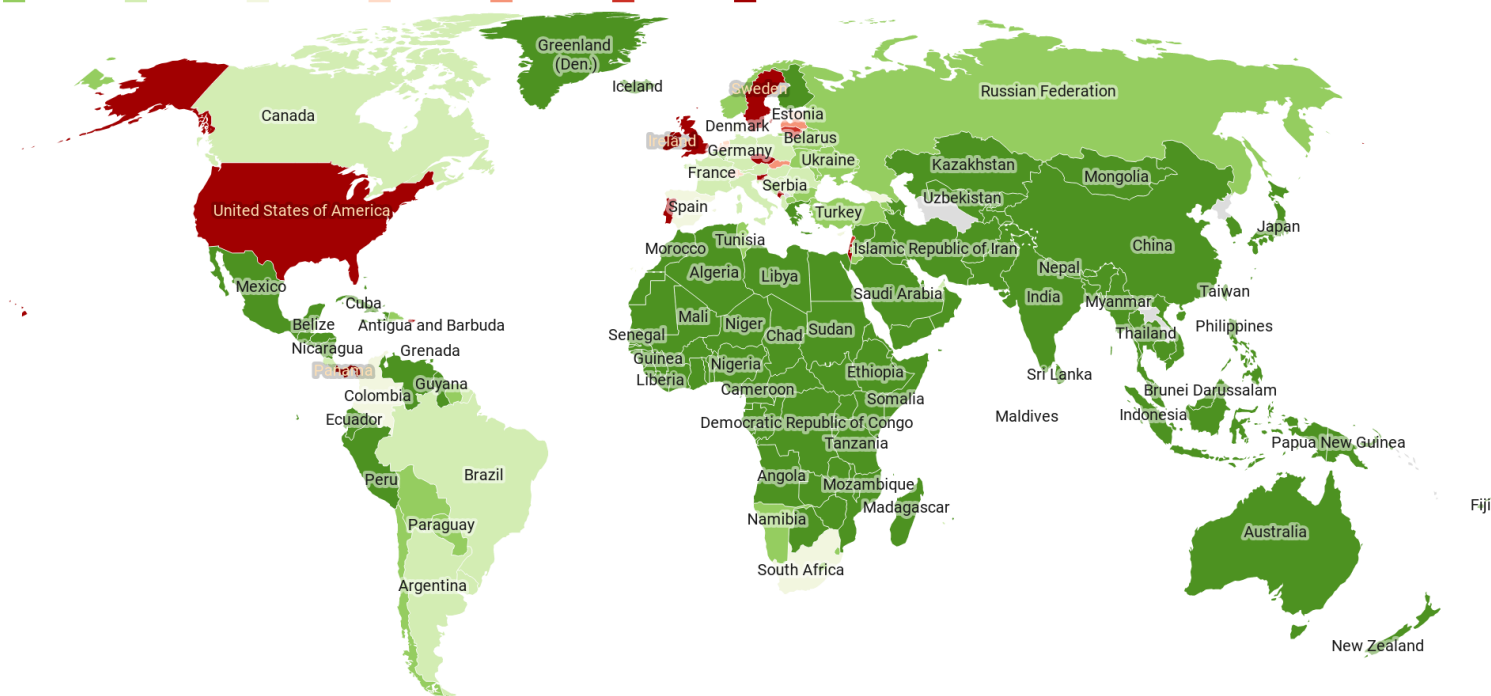
Newly Detected Cases / Million

The ten countries with the highest current new case rates: Czechia, Gibraltar, Ireland, Israel, Panama, Portugal, San Marino, Slovenia, United Kingdom and United States

New Infections / Million

7-Day Moving Average, As of January 10

< 100 100-200 200-300 300-400 400-500 500-600 600-700 ≥ 700



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

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Newly Detected Cases / Million

Ireland has experienced a rapid surge in new cases recently, as have Israel and Portugal to a lesser extent; rates in the UK and US appeared to have leveled-off recently while the rate in the Netherlands has declined from a recent peak

Newly Detected Cases Per Million

7-Day Moving Average

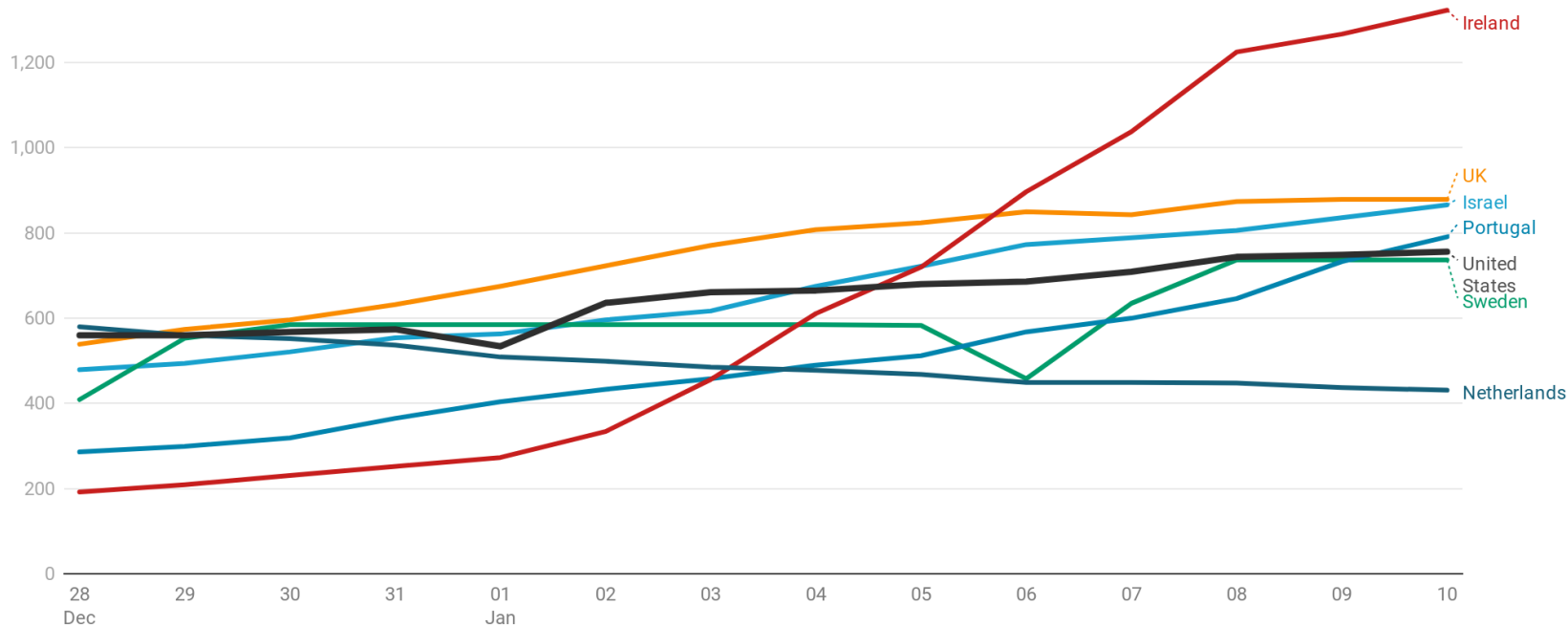


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

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Testing Results - US

Test volume rebounded yesterday, especially for a Sunday; volumes may be returning to preholiday level. The test-positive rate was lower for the day but remains high by recent standards and by public health guidelines

Tests / Million / Day (US)

As of January 10

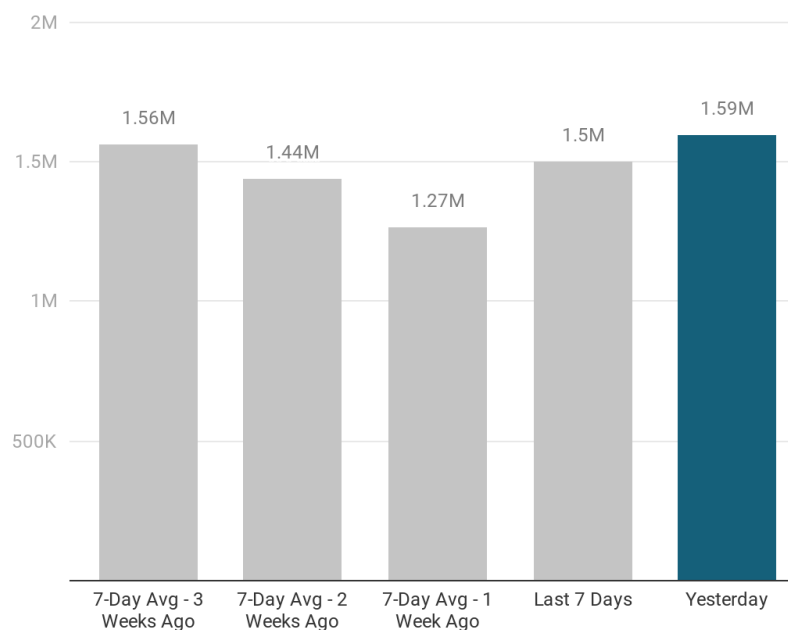


Chart: Health Industry Advisor LLC • Source: The Atlantic • Created with Datawrapper

Test-Positivity Rate

As of January 10

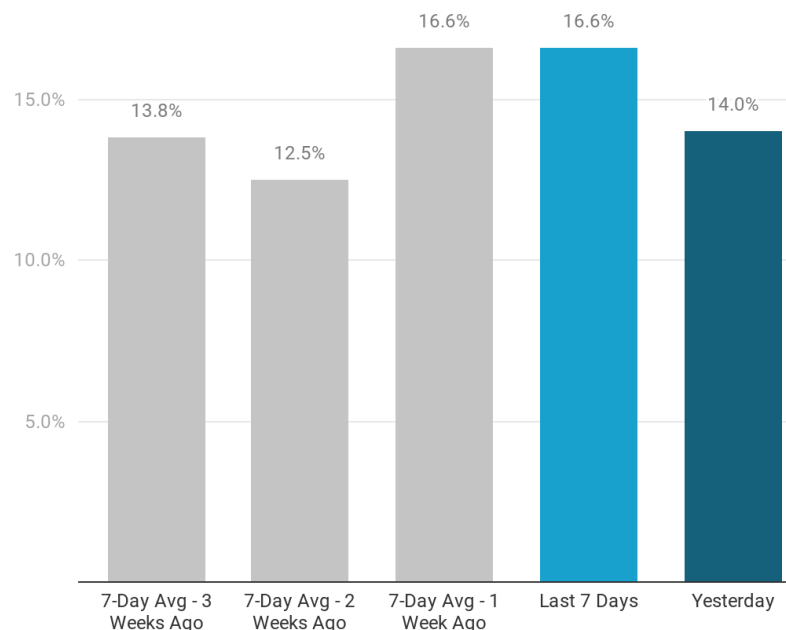


Chart: Health Industry Advisor LLC • Source: The Atlantic • Created with Datawrapper

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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>