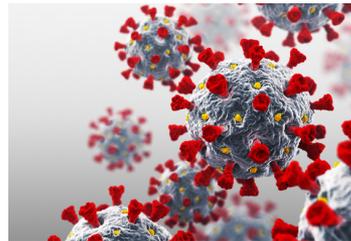


Covid-19 “Vital Signs”

Issue # 271

January 27, 2021



Highlights – Vaccine & Herd Immunity Model

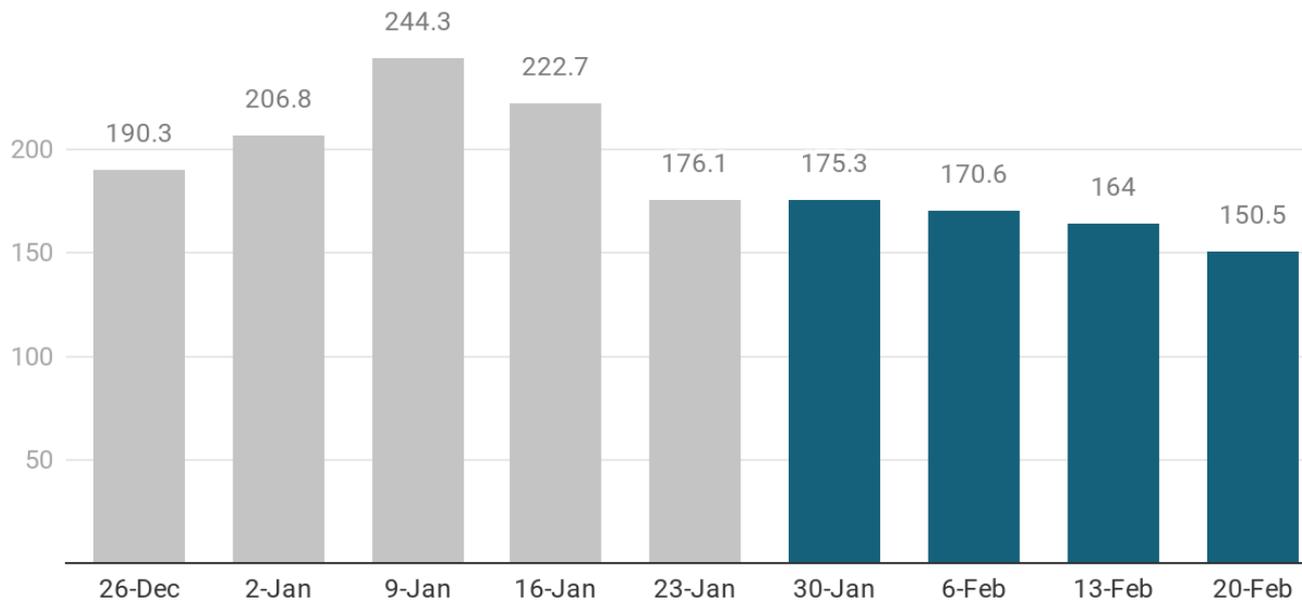
- The vaccination effort is not yet sufficient, but each day seems to bring progress:
 - Yesterday, 1.1 million Americans were vaccinated, bringing the **number of Americans receiving a single dose thus far to 20.8 million and receiving both doses to 3.7 million**;
 - President Biden on Monday increased his target of 100 million doses in his first 100 days to 150 million doses;
 - The President followed-up by **announcing contracts yesterday with Pfizer/BioNTech and Moderna to increase doses from 200 million each to 300 million each (sufficient to vaccinate 300 million Americans in total)**
 - **Moderna and Pfizer both recently reported a slight degradation yet still high efficacy of their respective vaccines against the UK and South African variants; Moderna also announced that it has begun developing a booster shot to enhance efficacy against the South African variant.**
- **Despite the concern about the emerging variants, most Covid-19 modelers continue to project declining infections rates:**
 - **In yesterday's weekly update, the [ensemble forecast of more than 50 academic and research organizations](#) showed the previous forecast had overestimated the new cases for last week by 50,000 per day; The new forecast estimates that new cases will continue to decline each of the first three weeks in February;**
 - **[The Institute For Health Metrics and Evaluation's \(IHME's\) forecast](#) (last updated on Monday) suggests that new infections peaked a week ago and will decline steadily from there; **By February 1, IHME projects new infections to be lower than on any day since mid-November; on March 1, lower than any day since mid-October; and by April 1, lower than any day since at least mid-summer;****
 - **[Youyang Gu's model](#) estimates that new infections peaked around Christmas Day. His model suggests **fewer new infections this month****
- **than this past November; new infections in February will be just higher than in October; and by May, there will be fewer new infections than any month since last March.**
- **Test volumes dropped appreciably over the past week, compared to each of the prior two weeks; still, the recent week's test-positive rate was slightly lower than the preceding week and significantly lower than two weeks ago.**
- **Newly detected cases are falling across the US:**
 - **The 7-day new cases per capita have declined each day for two weeks and are now as low as it has been since December 2;**
 - **Over the past two weeks, this 7-day case rate has declined in all fifty states; the decline has been most dramatic in Arizona, California, Nevada, Oklahoma, and Tennessee.**
- **Covid-19 hospitalization rates are also improving across the US:**
 - **Covid-19 hospital census has now declined eighteen of the past twenty days, falling by 23,500 patients (18%) during that time;**
 - **This census declined in most states over the past three weeks, with only Kansas, Maine, New York, and Vermont posting relatively small increases; Census dropped significantly in Arizona, California, and Nevada.**
- **Deaths reported with coronavirus continue to be a major concern:**
 - **More than 4,000 deaths were reported in the US yesterday; as a result, the 7-day average deaths for the past week were appreciably higher than the prior week and on par with that of two weeks ago;**
 - **About 200 fewer people died per day during the week of January 17-23 than predicted by the ensemble forecast released a week ago; this week's ensemble forecast shows deaths declining the next four weeks.**

Covid-19 Cases (Ensemble Forecast - US)

Last week's ensemble forecast over-estimated cases for the week of January 17-23 by about 50,000 per day. The latest ensemble forecast has new cases dropping slightly each week during the four-week forecast period

Newly-Detected Cases Per Day

Covid-19 Forecast Hub, Composite Forecast As of January 23

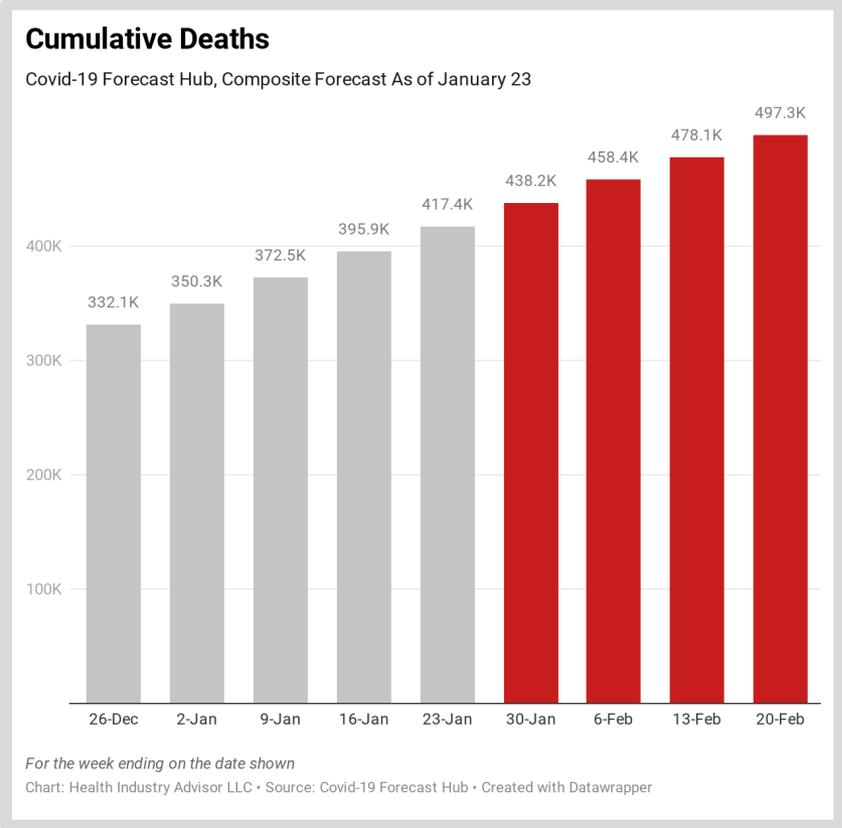
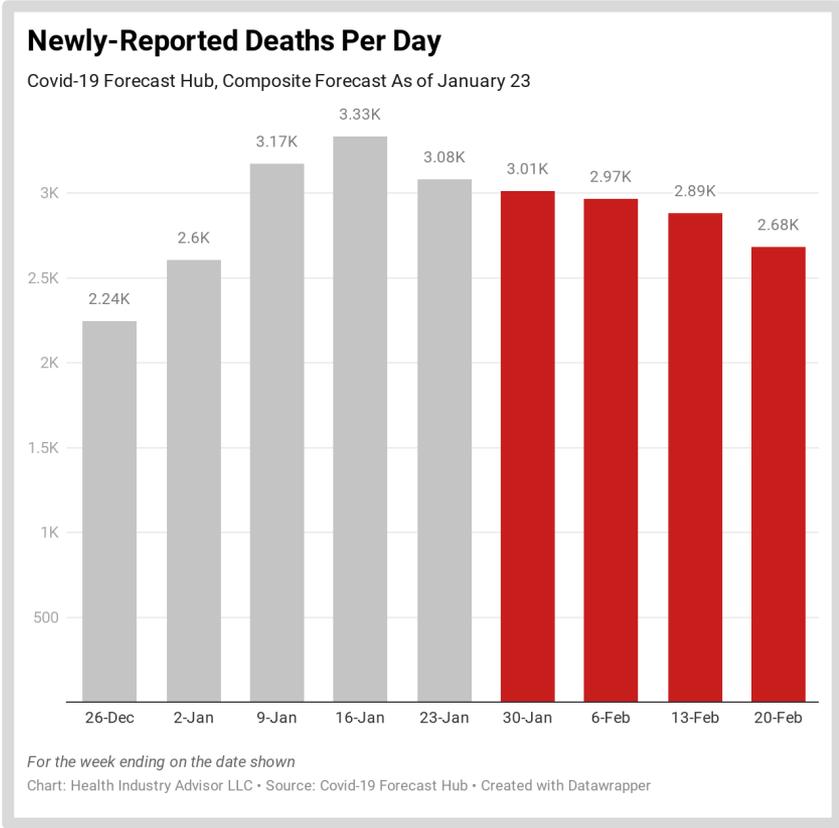


For the week ending on the date shown

Chart: Health Industry Advisor LLC • Source: Covid-19 Forecast Hub • Created with Datawrapper

Death Projections (US)

Last week's ensemble forecast over-projected daily deaths for the week of January 17-23 by 200 deaths per day. The latest ensemble forecast now suggest that deaths could decline faster than previously projected



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Estimated New Infections – US (Gu Model)

Gu has revised his estimated new infections downward from his forecast issued just a week ago. Estimated infections have declined sharply this month and are projected to continue falling until reaching <0.5M in June

Estimated True Infections - US

Using data from <https://covid19-projections.com>, accessed January 27, 2021

Gu Model, As of January 26

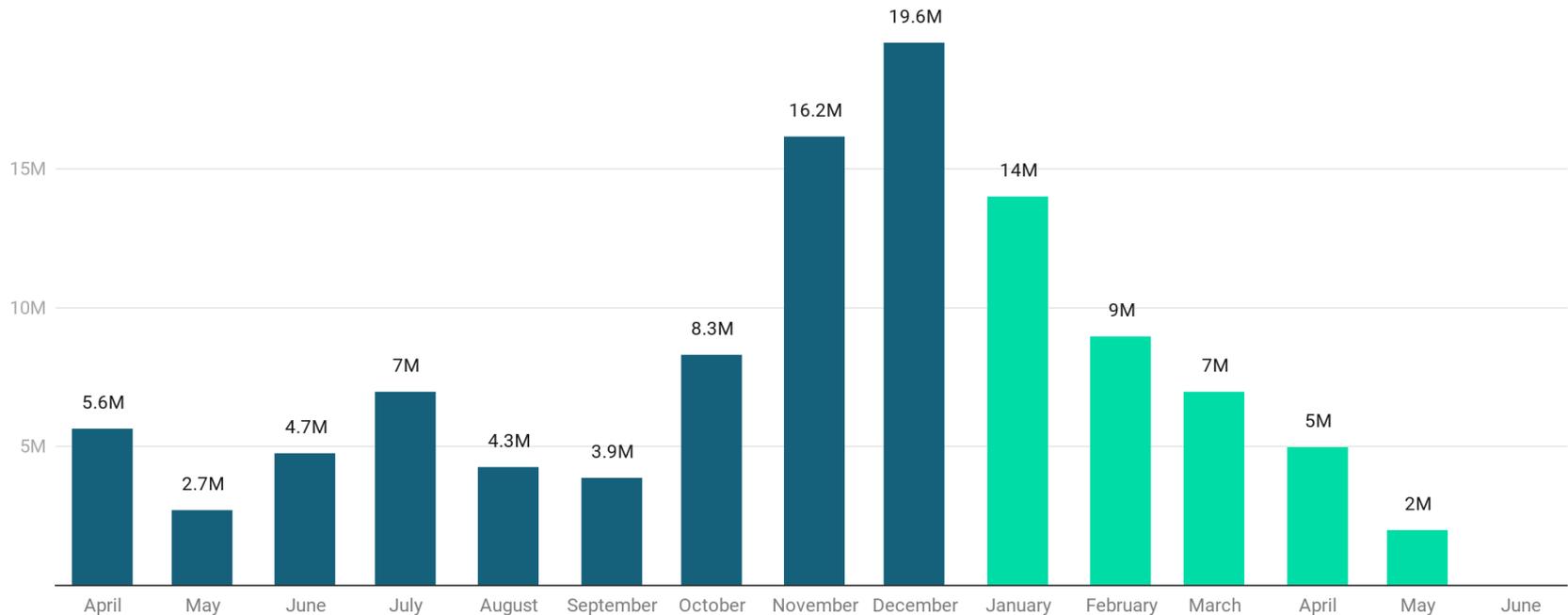


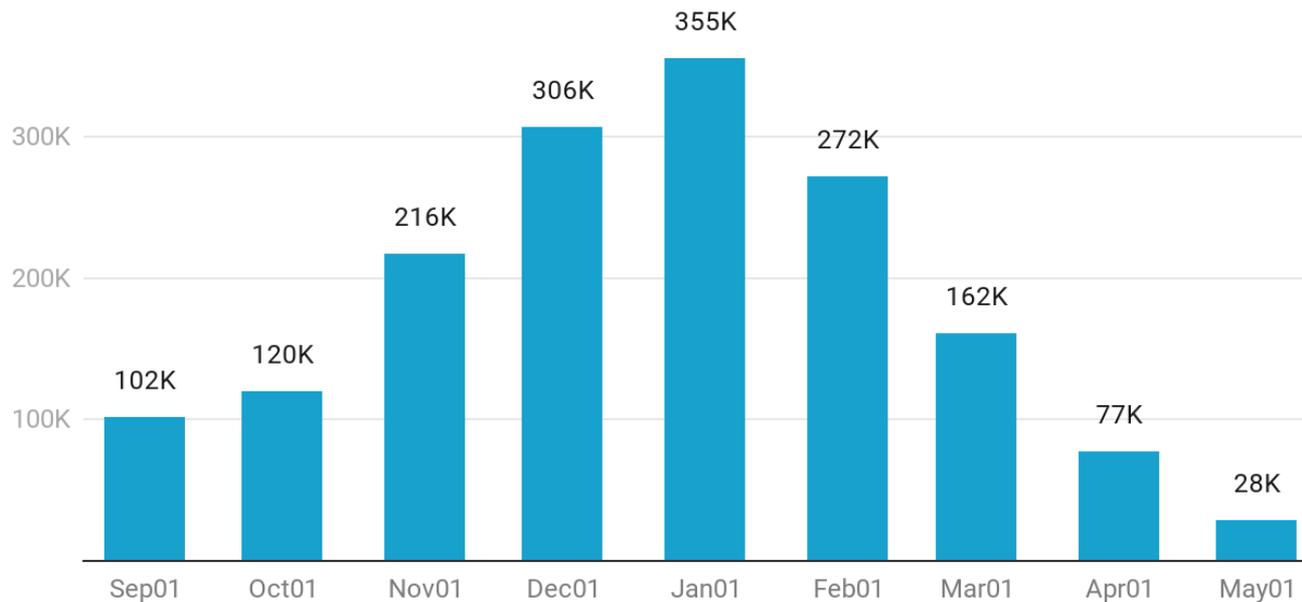
Chart: Health Industry Advisor LLC • Source: Youyang Gu • Created with Datawrapper

Estimated Daily Infections – US (IHME Model)

The Institute for Health Metrics and Evaluation (IHME) produced its latest projections on January 25. Cases are thought to have peaked on January 18 and to decline rapidly through the Spring. By February 1, IHME projects new infections to be lower than at any time since mid-November; by March 1, lower than since mid-October

Estimated Daily Cases

Institute For Health Metrics and Evaluation, As of January 25



Estimate is for the day listed

Chart: Health Industry Advisor LLC • Source: Institute For Health Metrics and Evaluation • Created with Datawrapper

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Vaccine Tracking

As of yesterday, about 24.5 million doses were reportedly administered. There were 1.0 million doses administered yesterday and an average of 1.2 million daily over the past six days. An estimated 3.7 million people have received two doses

Vaccination: Phase 1a Progress (Copy)

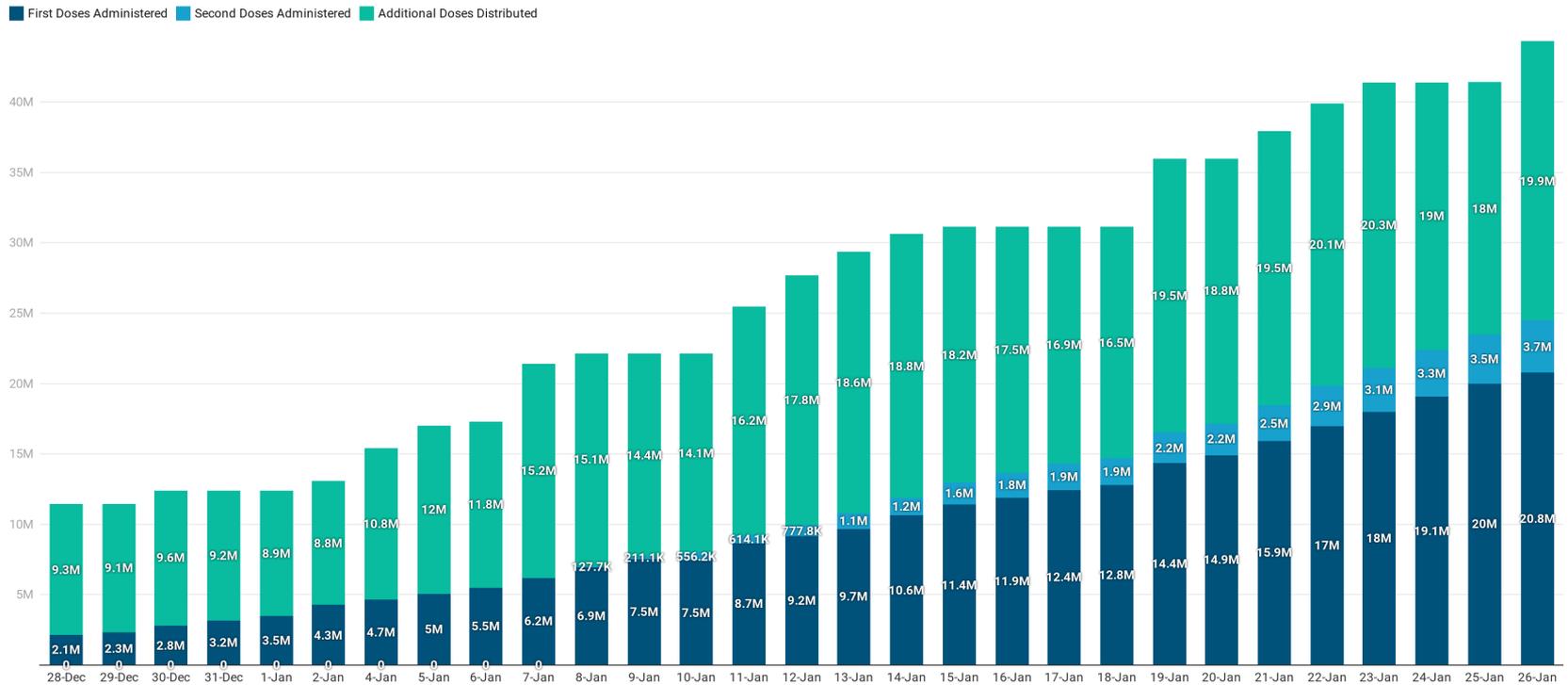


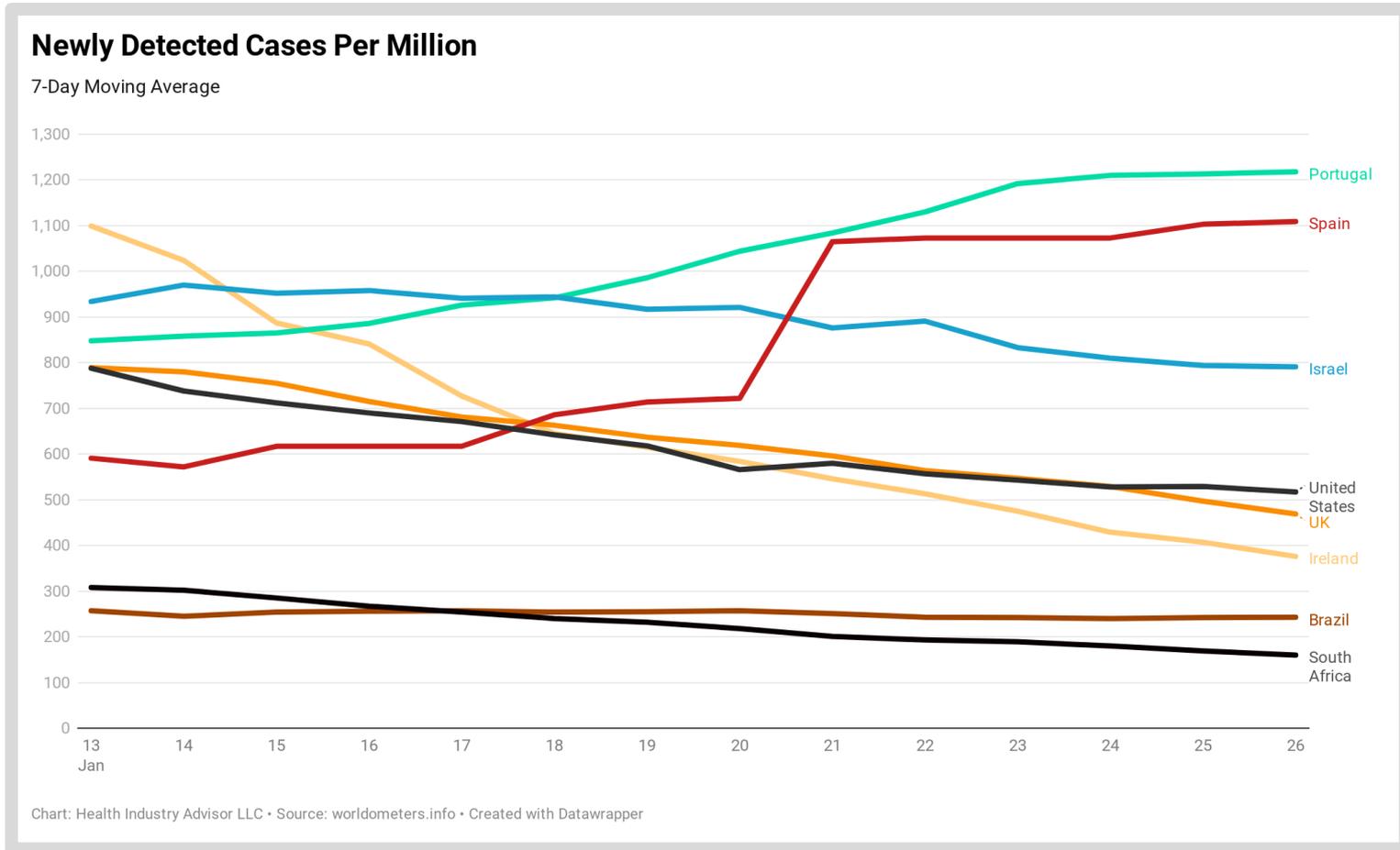
Chart: Health Industry Advisor LLC • Source: CDC, Bloomberg • Created with Datawrapper

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

**Covid-19
"Vital Signs"**

Newly Detected Cases Per Million

Portugal and Spain are experiencing high and rapidly increasing new cases; Case rates are falling in Ireland, Israel, Netherlands, Sweden, United Kingdom and the US. Rates in Brazil and South Africa are relatively low and stable or declining



Covid-19 "Vital Signs"

Two Models of Estimated Daily Infections

Newly detected cases and estimates of actual infections continue downward trajectories. The 7-day new case rate is lower than it has been since December 2

- 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 v. Detected Cases

Gu & Yale School of Public Health Models

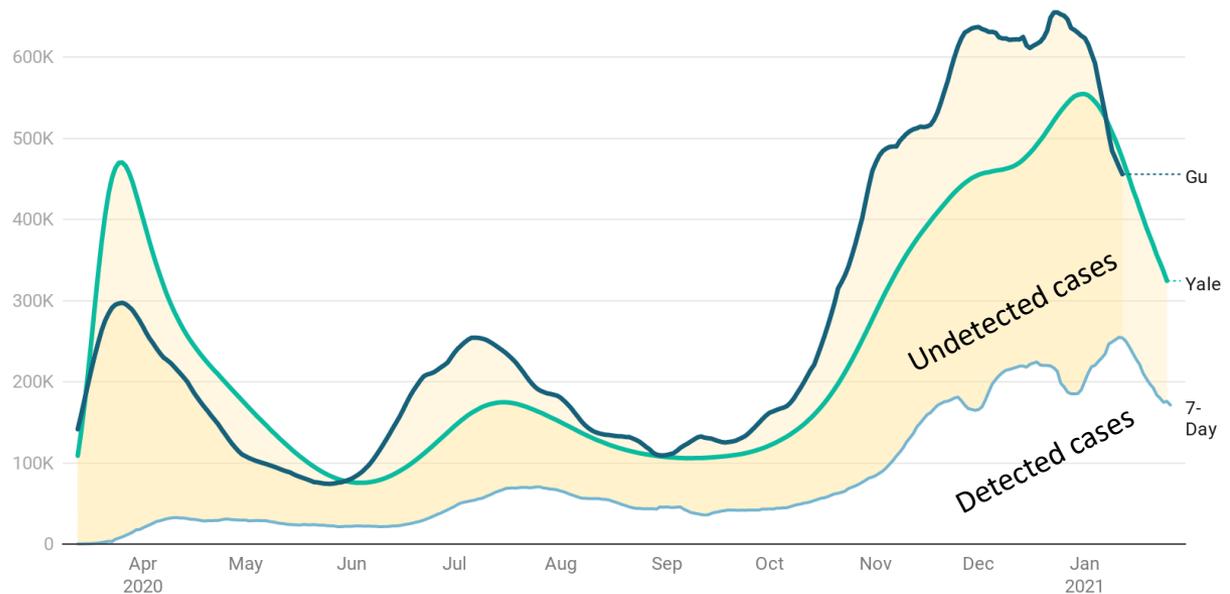


Chart: Health Industry Advisor LLC • Source: Youyang Gu, Yale School of Public Health • Created with Datawrapper

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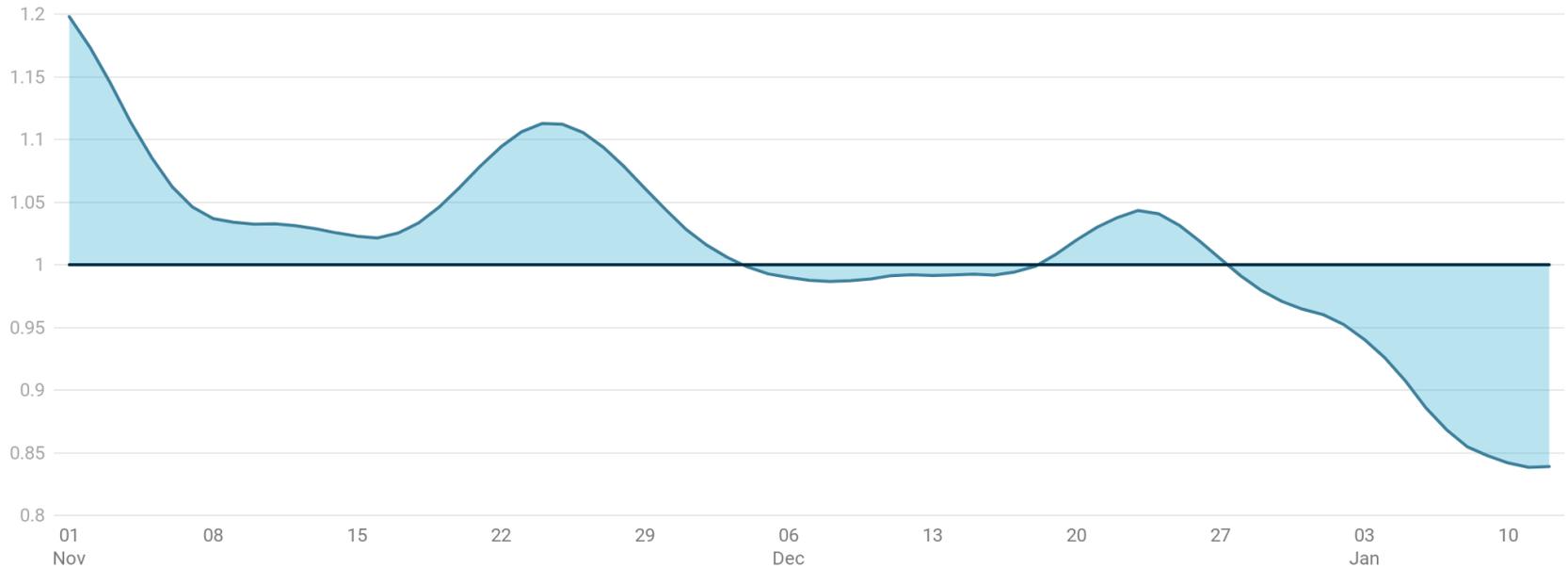
Reproduction Rate (R_t) – Gu* Model

Gu's estimate of R_t continues to decline and has been below 1.0 for fifteen successive days. The most-recent estimate is lower than it has been since May 2. Notably, the recent peaks occurred two days before Thanksgiving and Christmas

Reproduction Rate (R_t) - US

*Youyang Gu: Covid-19projections.com

Youyang Gu Estimate, November 1, 2020 - January 12, 2021

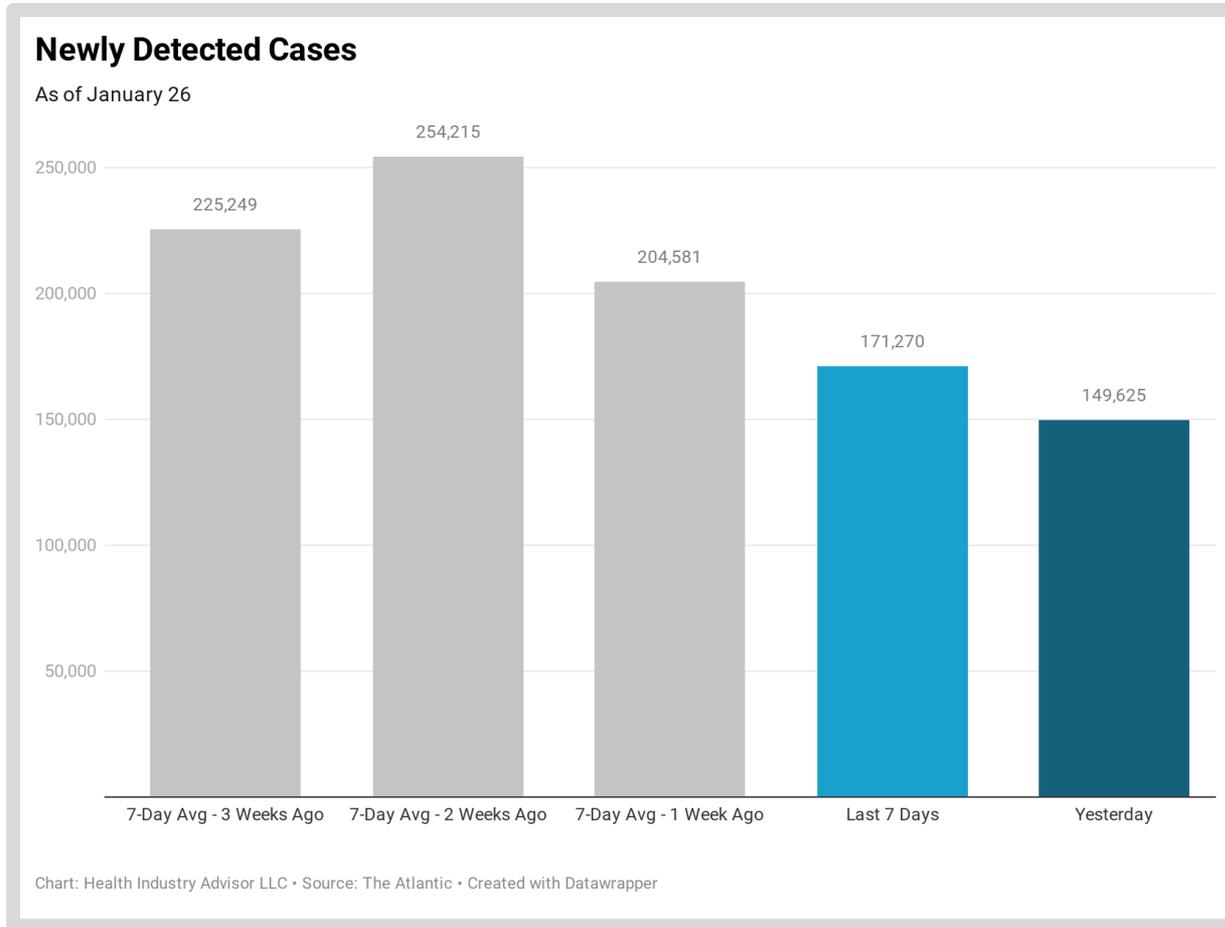


R_t is an estimate of how many additional people a single person will infect

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

Newly Detected Cases Per Day

The 7-day new case rate has dropped sharply each of the past two weeks. Reported new cases in the US yesterday were lower than the 7-day average, typical for a Tuesday.



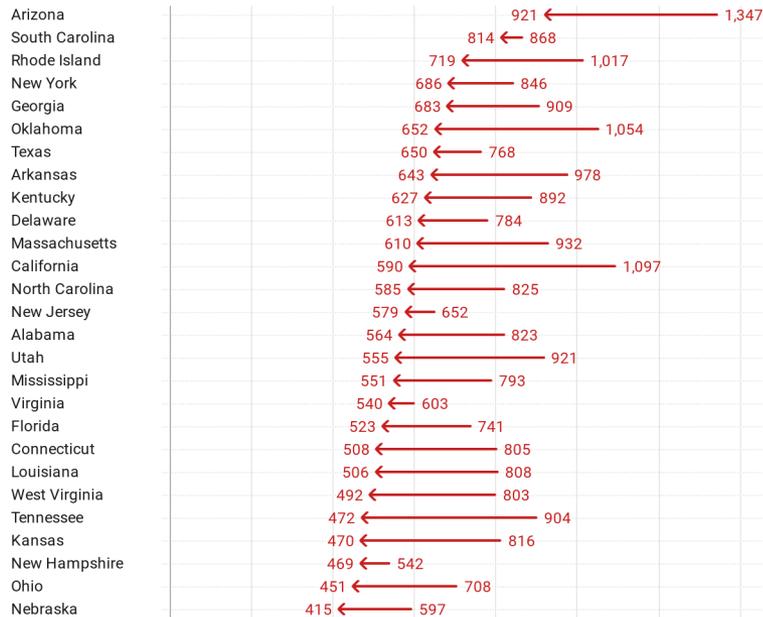
**Covid-19
"Vital Signs"**

New Cases / Million

Over the past two weeks, new case rates declined in every state. The greatest declines have occurred in Arizona, California, Nevada, Oklahoma and Tennessee

Change in New Daily Cases / Million Over Past Two Weeks

7-Day Moving Average, As of January 12 and 26



Change in New Daily Cases / Million Over Past Two Weeks

7-Day Moving Average, As of January 12 and 26

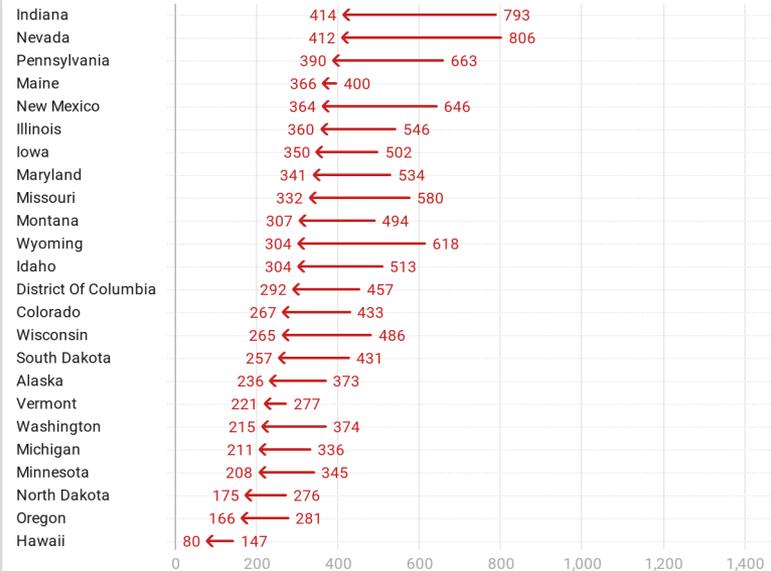


Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Covid-19 "Vital Signs"

Covid-19 Hospitalizations

Hospitalizations have declined eighteen of the past twenty days, dropping more by 23.5k (18%) in that time. Yesterday's Covid-19 census was significantly lower than it was for the same day-of-week each of the prior four weeks

Hospitalized Covid-19 Patients

Compared to Same Day, Prior Weeks, As of January 25

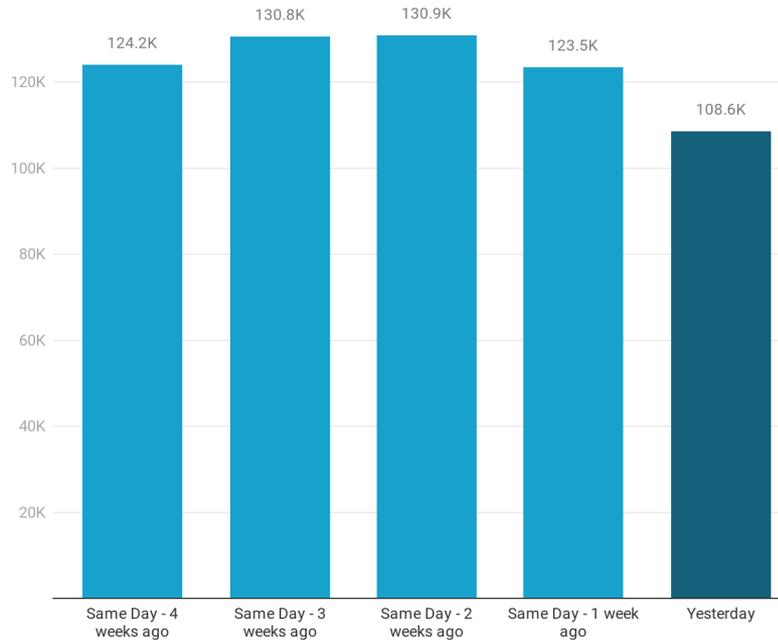


Chart: Health Industry Advisor LLC • Source: The Atlantic • Created with Datawrapper

% in ICU - Hospitalized Covid-19 Patients

Compared to Same Day, Prior Weeks, As of January 26

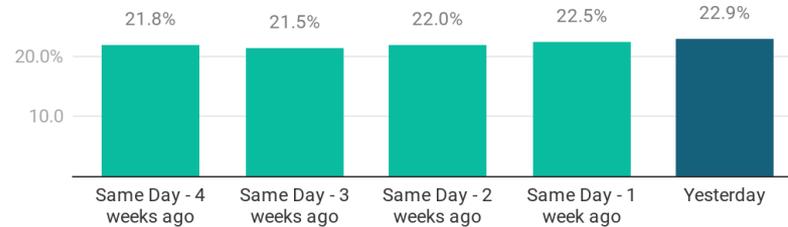


Chart: Health Industry Advisor LLC • Source: The Atlantic • Created with Datawrapper

% on Ventilators - Hospitalized Covid-19 Patients

Compared to Same Day, Prior Weeks, As of January 26

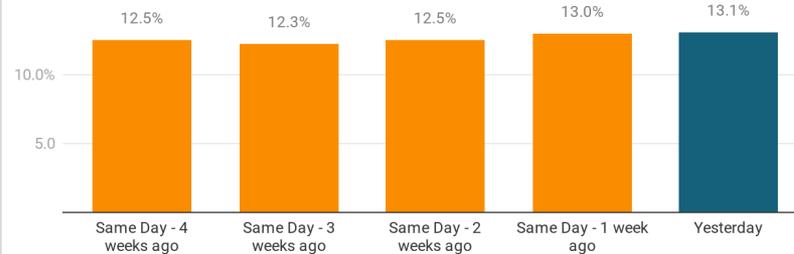


Chart: Health Industry Advisor LLC • Source: The Atlantic • Created with Datawrapper

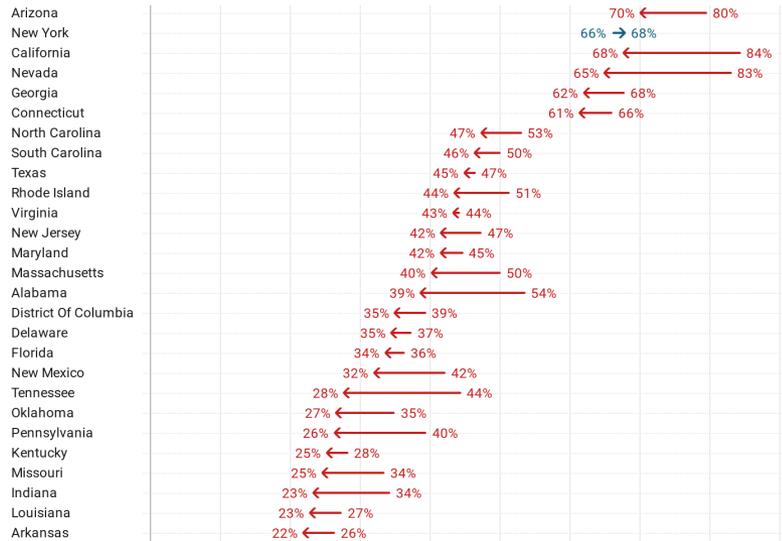
Covid-19 "Vital Signs"

Covid-19 Hospitalizations

Over the past three weeks, Covid-19 hospitalization have fallen in all except four states, each of which experienced a relatively small increase in Covid-19 patients: New York, Maine, Kansas and Vermont. Rates declined significantly in hard-pressed Arizona, California and Nevada

Covid-19 Patients / Total Inpatient Beds

7-Day Moving Average, As of January 5 & 26



Covid-19 Patients / Total Inpatient Beds

7-Day Moving Average, As of January 5 & 26

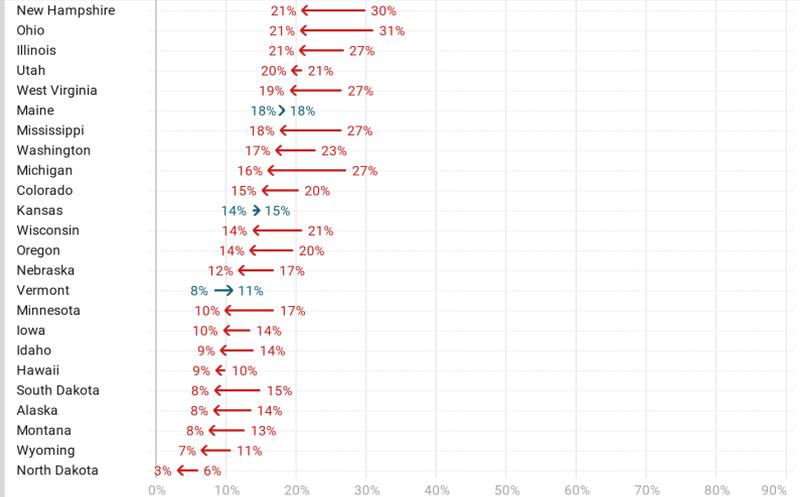


Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking project & worldometers.info • Created with Datawrapper

Covid-19 "Vital Signs"

Testing Results - US

The 7-day average test volume has receded over the past week. Nonetheless, the test-positive rate for the day improved.

Tests / Million / Day (US)

As of January 26

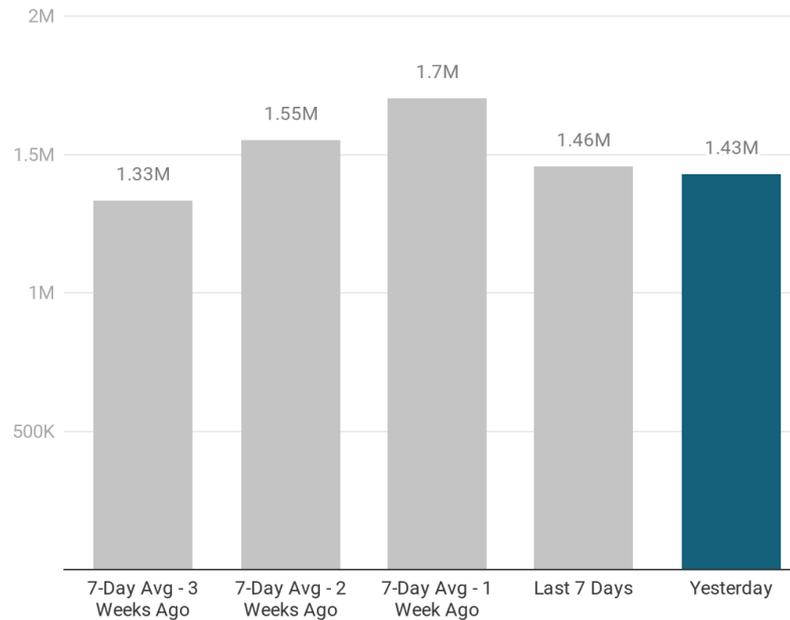


Chart: Health Industry Advisor LLC • Source: The Atlantic • Created with Datawrapper

Test-Positivity Rate

As of January 26

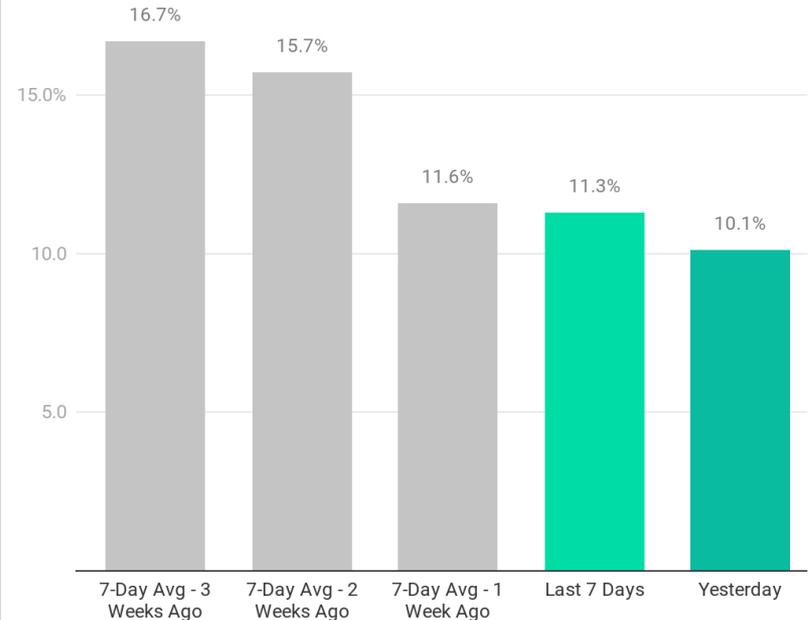
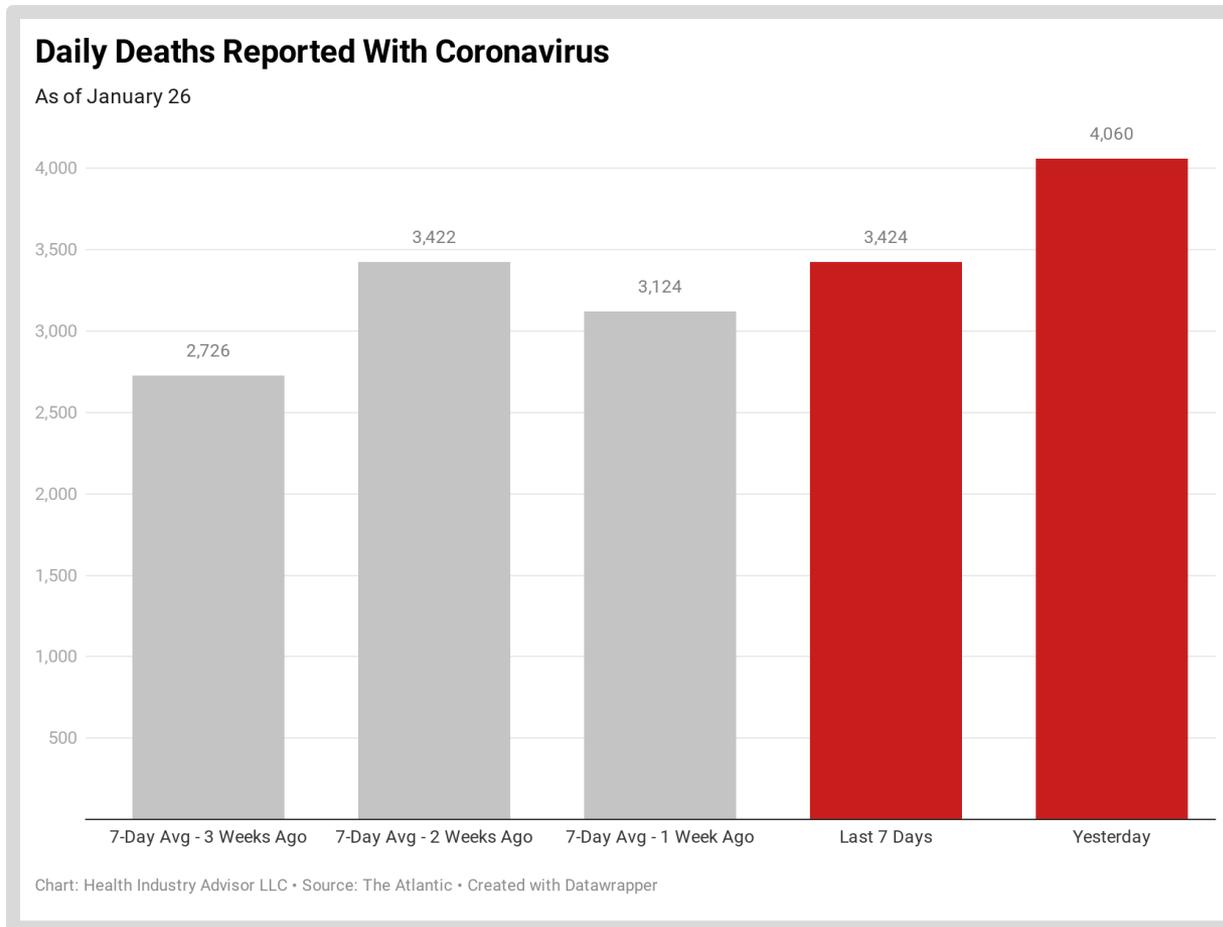


Chart: Health Industry Advisor LLC • Source: The Atlantic • Created with Datawrapper

Deaths Reported With Coronavirus

There were a more than 4,000 deaths reported with coronavirus yesterday. This raised the 7-day average death rate above the prior week's rate and comparable to the rate from two week's ago



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>
- Covid-19 Forecast Hub, <https://viz.covid19forecasthub.org>
- Oliver Wyman Pandemic Navigator, <https://pandemicnavigator.oliverwyman.com/forecast?mode=country®ion=United%20States&panel=mortality>
- [Rt.live](https://rt.live)
- Yale School of Public Health & Harvard TH Chan School of Public Health, <https://covidestim.org>
- Bloomberg Vaccine Trackers, <https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/?sref=Z0b6TmHW>