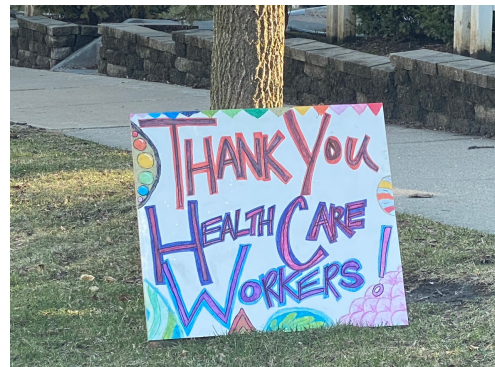
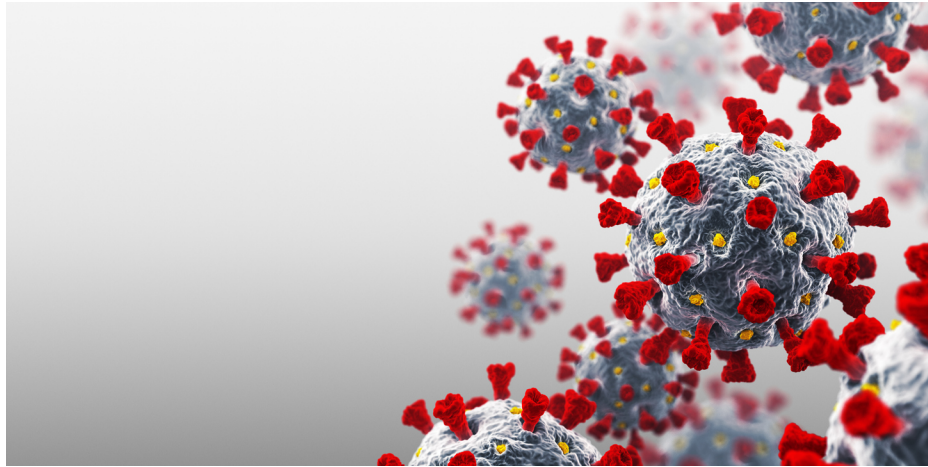
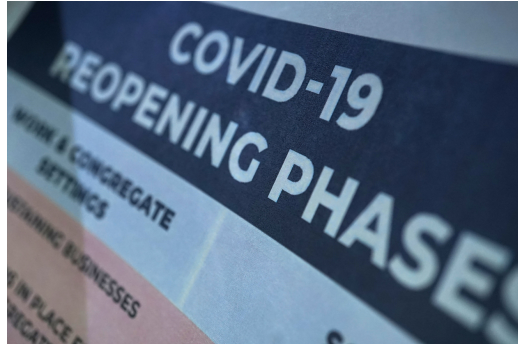




COVID-19 Report

Issue # 127

Thursday, August 6, 2020

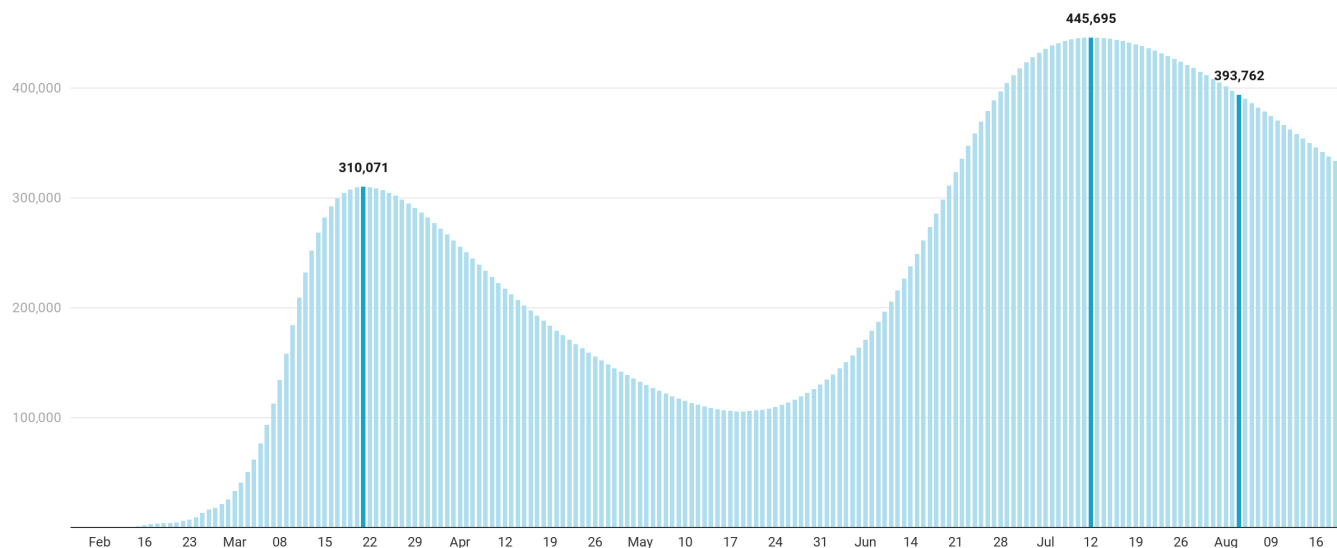
- We introduce a model by MIT data scientist Youyang Gu. Gu's model would put infection prevalence the U.S. in the range of 9-16% of the population, with a mean estimate of 12.1% (our calculations, using his projections). This compares to the 1.5% of the population currently reported in case totals
 - Several states, including Mississippi, Louisiana, New York, Florida, Arizona and New Jersey would have a mean estimated infection prevalence of >20% of the population
 - Gu opines that the infection rate peaked in the U.S. in early-to-mid-July at about 450,000 new cases daily, compared to a peak of ~300,000 in March/April (and, versus a peak of ~70,000 in reported cases)
 - Further, his analysis suggests that the "implied infection fatality rate" declined from 1% in March to 0.6% in May to 0.25% in July. He attributes this improvement to several factors:
 - Lower median age of infected persons
 - Improved treatments
 - Better protection of vulnerable populations
 - Earlier detection
 - He suggests that infection spread slows in an area after the infection prevalence reaches 10-35%
 - In his estimation this, more so than changes in behavior, explains the recent reversal of the infection spread in Arizona, California, Florida and Texas
 - Additionally, due to use of face masks and other measures, herd immunity can occur at a lower rate than it would have in March/April
- Momentum continued yesterday toward easing the virus spread in the United States:
 - The U.S. was one of fourteen countries worldwide that have experienced significant week-over-week declines in new infections per capita
 - Yesterday, for the third time in the past four days, new cases were lower than any previous day since July 5; On a week-over-week basis, new cases are down more than 15%
 - New infections per capita, on a 7-day moving average basis, declined yesterday for the 11th consecutive day; This rate is now at its lowest point since July 10th
 - On a state level, new infections per capita declined on a week-over-week basis in 43 states. Hawaii is the notable exception, as it is experiencing significantly greater new infection per capita than the week prior
- Testing continues to be an issue in the US:
 - While several states and school systems are mandating confirmed negative tests before permitting travel/attendance, many test sites require symptoms before allowing testing. Furthermore, turnaround times are unacceptable in many instances (6-15 days have been reported)
 - Testing volumes continued to decline on a week-over-week basis; However, the test-positive rate remains stable
- Stress on the healthcare system continues to ease:
 - Hospital COVID-19 census was higher yesterday, however, it was still down 11.3% its July 23 peak. Hawaii is the most notable case of increasing census week-over-week; Arizona, California, Florida and Texas are seeing fewer COVID-19 inpatients week-over-week
 - ICU census as a % of COVID-19 census eased somewhat yesterday
 - ER visits (%) for COVID-19 illnesses continued to decline yesterday; this rate is back to mid-June levels

How many true infections are there in the United States?

- True infection rates are unknown, due to poor availability of testing; low and asymptomatic cases, etc.
- Gu hypothesizes a model that incorporates test-positive rates; tested against various other models for reasonableness
- Gu concludes:
 - Infection rate in US peaked on July 12 at ~450,000 new daily cases – higher than ~300,000 mini-peak in March
 - Implied infection fatality rate dropped from 1% in March to 0.6% in May to 0.25% in July, due to:
 - Lower median age
 - Improved treatments
 - Better protection of vulnerable persons
 - Earlier detection
 - Infections slow after reaching 10-35% population prevalence. Effective herd immunity is lower now than in March/April

True New Daily Infections - Model Projections

United States



True New infections - daily confirmed cases x (16 *(positivity rate)*0.5+2.5)
 Chart: Health Industry Advisor LLC • Source: Youyang Gu • Created with Datawrapper

[Source: “Estimating True Infections: A Simple Heuristic to Measure Implied Infection Fatality Rate”, Youyang Gu, July 29, 2020 \(Updated August 5\)](#)

United States

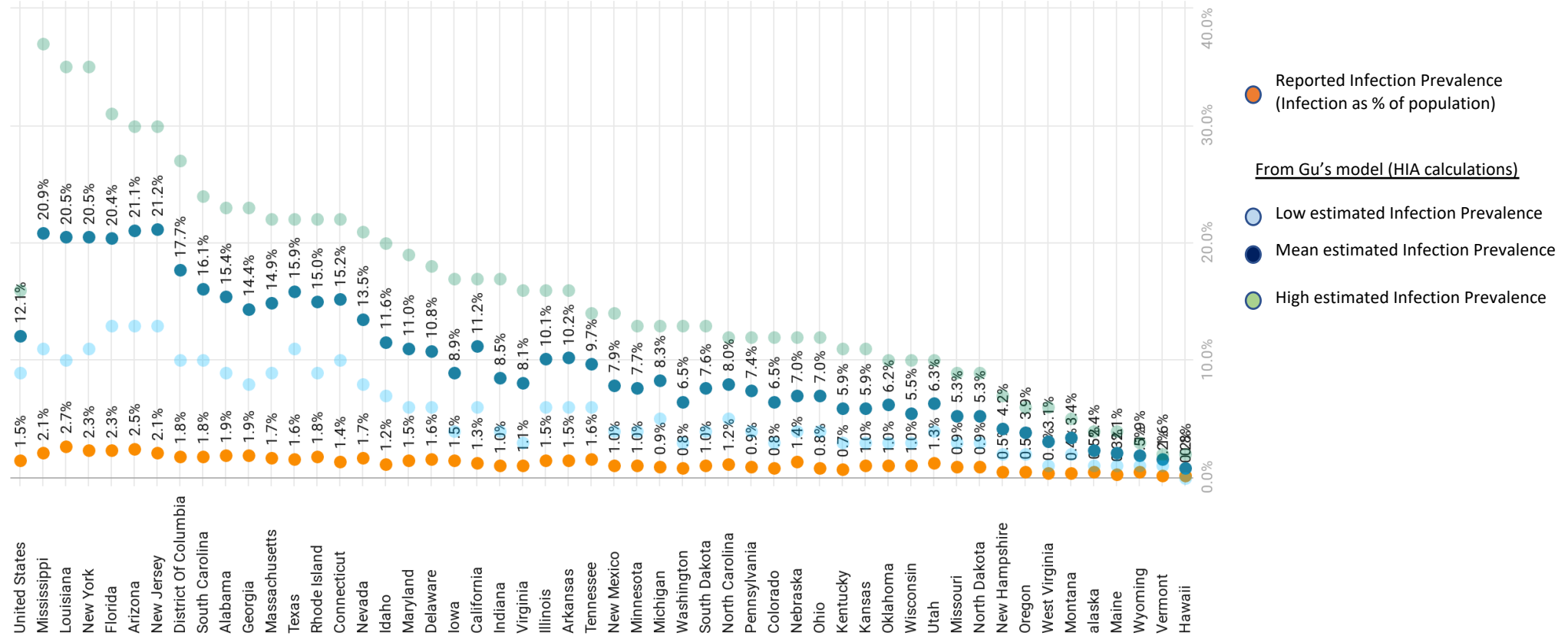
Building upon Gu's model, what % of the population has been infected? For the U.S, mean estimate of 12.1% v. 1.5% reported

Using Gu's model, we calculate that, the mean estimate of infection prevalence would be > 20% for:

- Mississippi
- Louisiana
- New York
- Florida
- Arizona
- New Jersey

And, > 15% in:

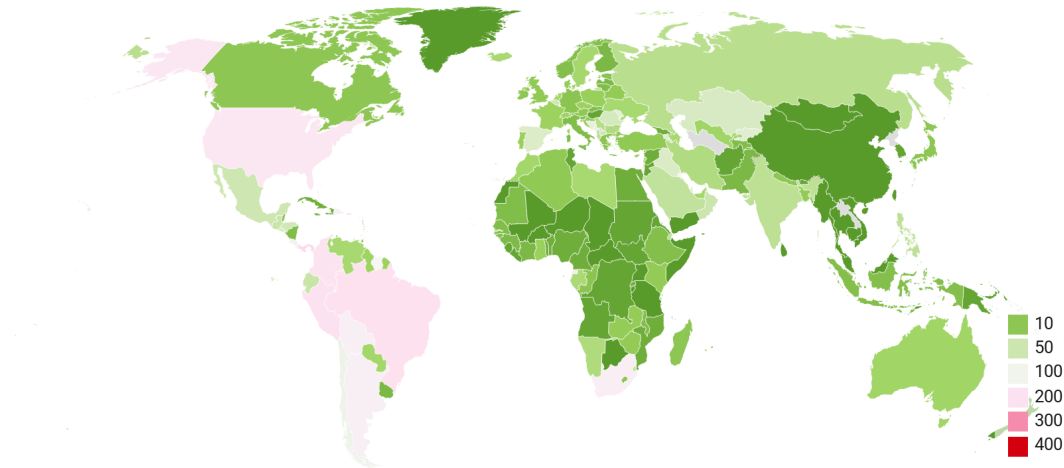
- DC
- South Carolina
- Alabama
- Texas
- Rhode Island
- Connecticut



In past week, United States is one of fourteen countries with significant declines in the new infection rate*; Fourteen other countries saw significant increases in this rate

New Daily Infections / 1 Million Population

Trailing 7-Day Moving Average, As of August 5



Health Industry Advisor LLC analysis

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

Week-Over-Week Change in New Daily Infections / Million

Trailing 7-Day Moving Average, August 5 v. July 29

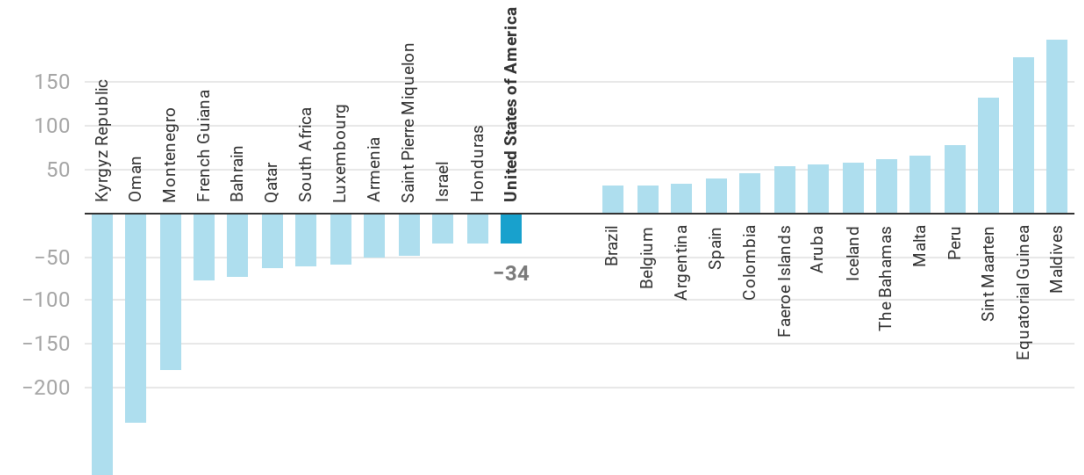


Chart: Health Industry Advisor LLC • Created with Datawrapper

* - per million per day, trailing 7-day moving average

On 3 of last 4 days, new cases were lower than any day in the past month; On a week-over-week basis, new cases are now down 14.9%

New Cases

Through August 5

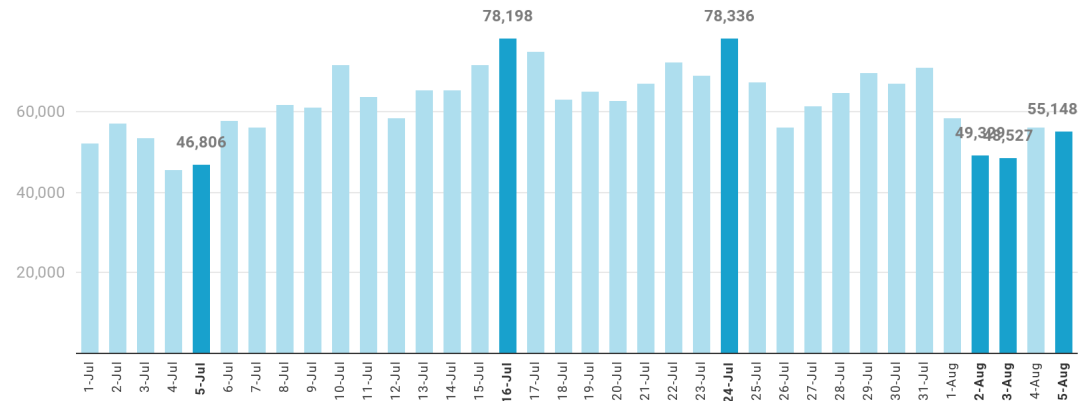
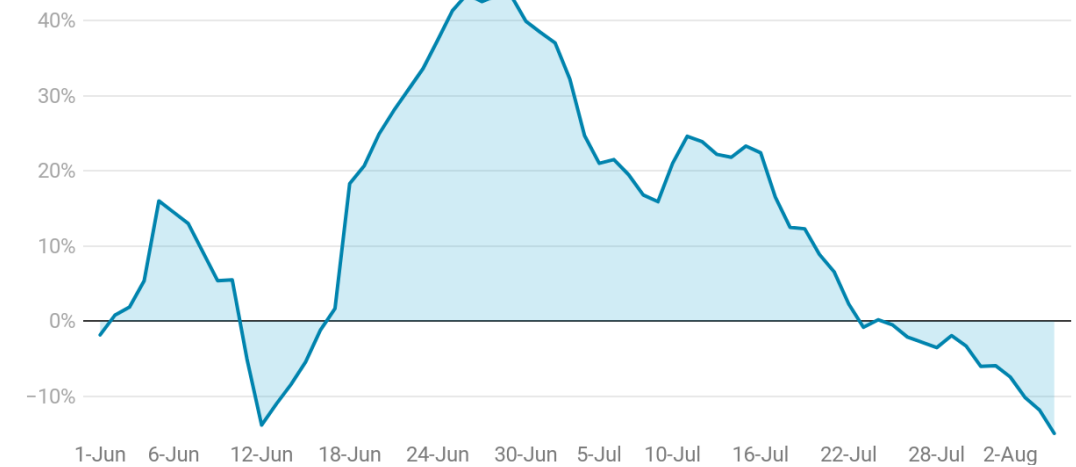


Chart: Health Industry Advisor LLC • Source: eorlometers.info • Created with Datawrapper

Week-Over-Week Change In New Cases

Through August 5



Health Industry Advisor LLC analysis

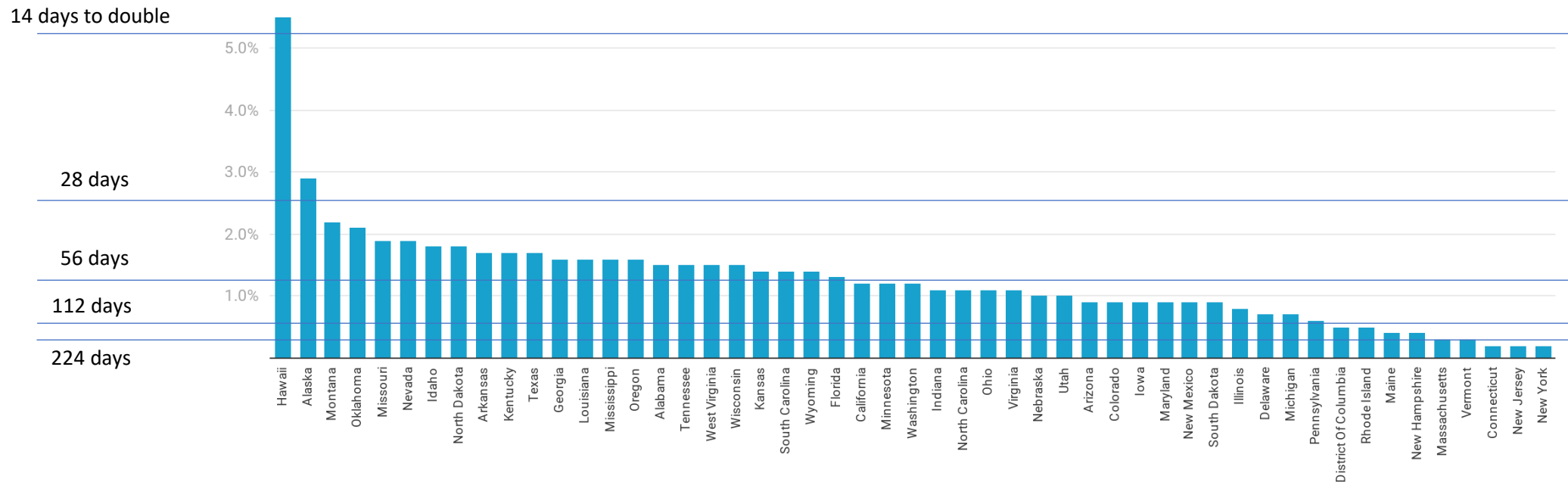
Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

State-By-State

Case growth is slowing but, Hawaii remains a concern here. At current rates, cases are doubling every 12-13 days in Hawaii; every 425 days in New York; 61-62 for the United States overall

Growth Rate in Total Cases

Trailing 5-Day Moving Average, Through August 5



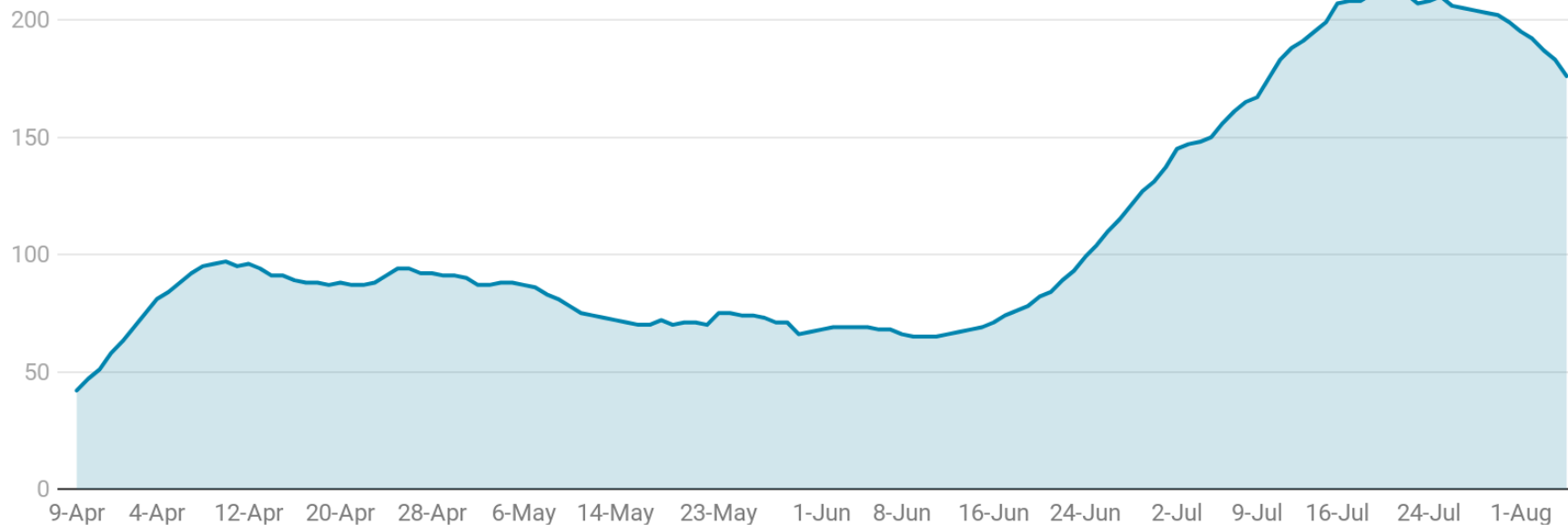
Health Industry Advisor LLC analysis

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

New infections per capita* declined for the 11th consecutive day on Tuesday; At its lowest level since July 10th

New Infections Per 1 Million Population - United States

Trailing 7-Day Moving Average, Through August 5



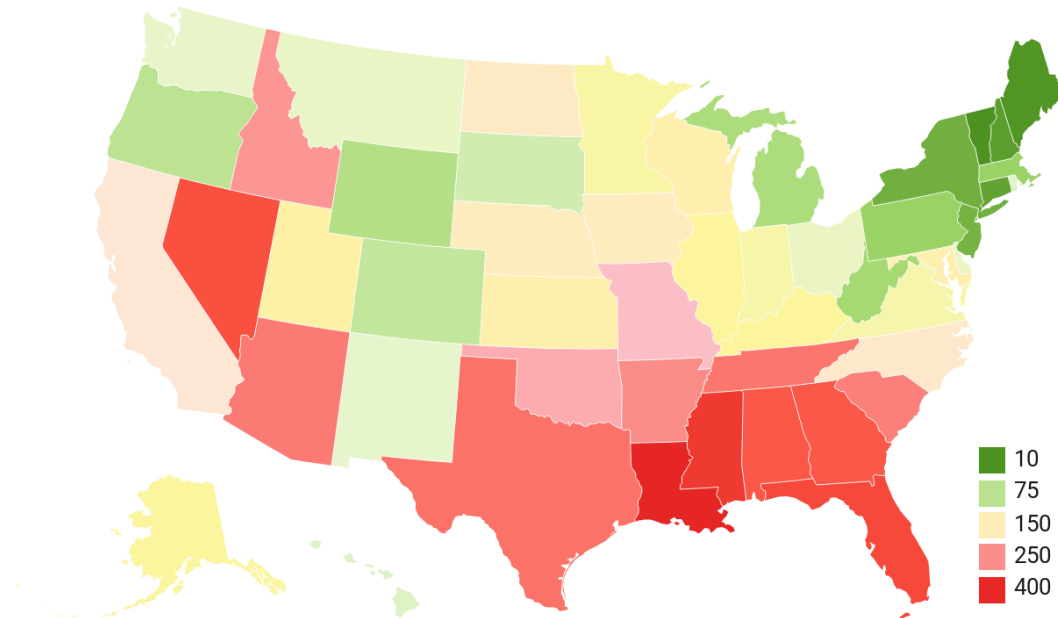
Health Industry Advisor LLC analysis

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

ng average

New Daily Infections Per 1 Million Population

Trailing 7-Day Moving Average, As of August 5



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

Week-Over-Week Change in New Daily Infections / Million

Trailing 7-Day Moving Average, August 5 v. July 29

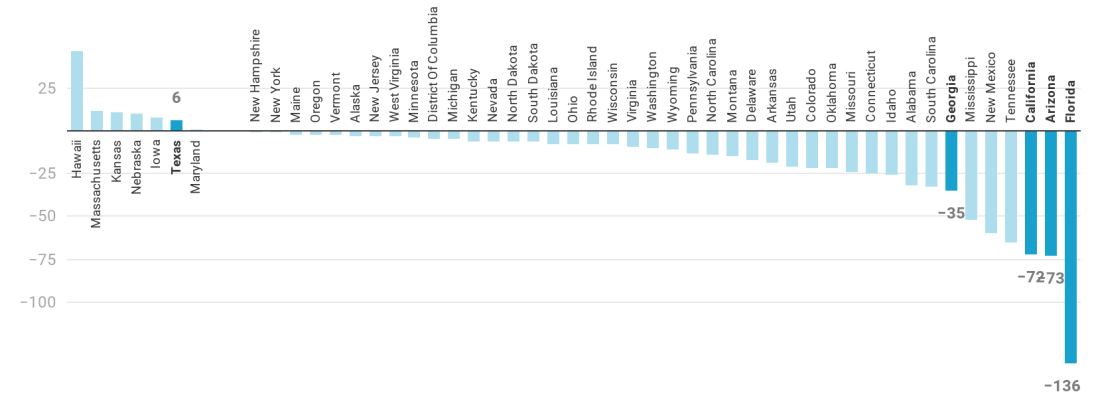


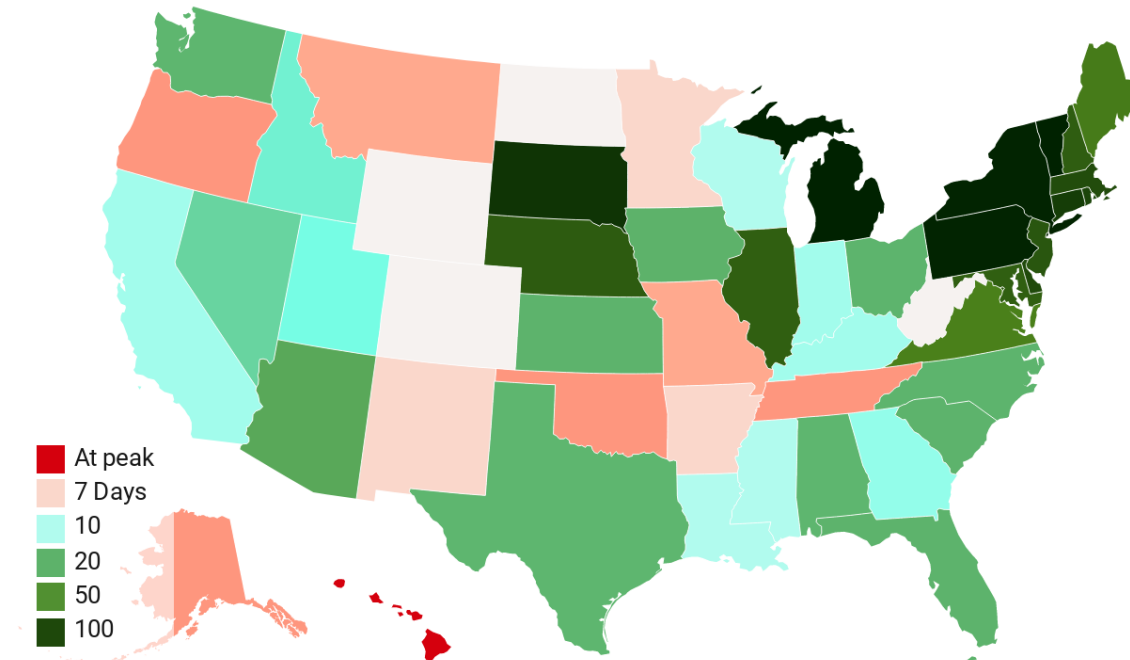
Chart: Health Industry Advisor LLC • Created with Datawrapper

State-By-State

New Infections – Are we turning a corner? Only Hawaii has posted its highest rate during the past 4 days; Of states at least a week past peak, Indiana and Minnesota are near peak rate

Days Since Peak New Infections Per Capita

Trailing 7-Day Moving Average, As of August 5



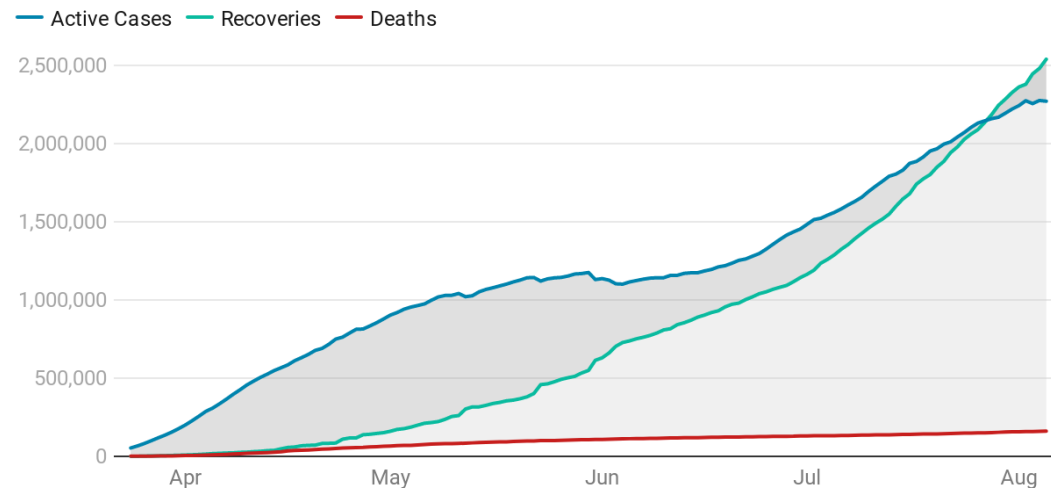
Health Industry Advisor LLC analysis

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

Recoveries accelerating, exceeding active cases in the United States; Now, nearly 16 recovered persons for each death

Active Cases v. Recoveries & Deaths

Through August 5

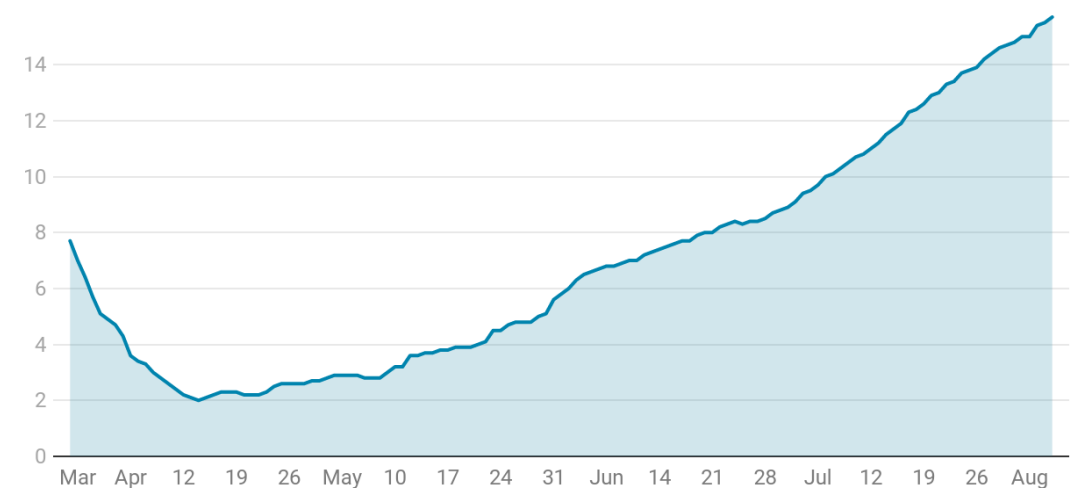


Health Industry Advisor LLC analysis

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

Recoveries: Deaths - United States

As of August 5



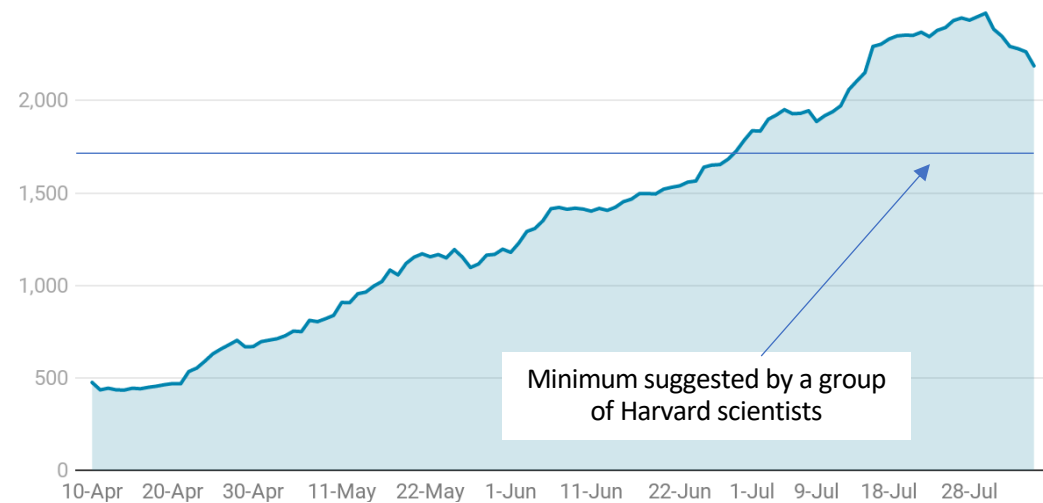
Health Industry Advisor LLC analysis

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

Test volume trending downward; Test-positive rate, however, is stable. Is limiting access-to-testing to only presumed infections keeping test volumes low and test-positive rates higher than expected?

Daily Tests Per 1 Million - United States

Trailing 7-Day Moving Average, As of August 5

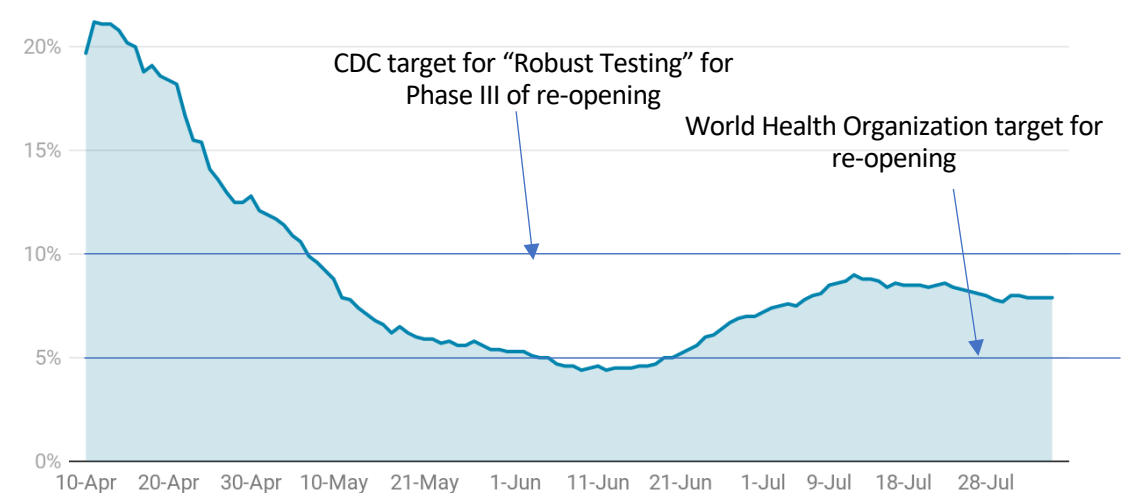


Health Industry Advisor LLC analysis

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

Test-Positive Rate - United States

Trailing 7-Day Moving Average, As of August 5



Health Industry Advisor LLC analysis

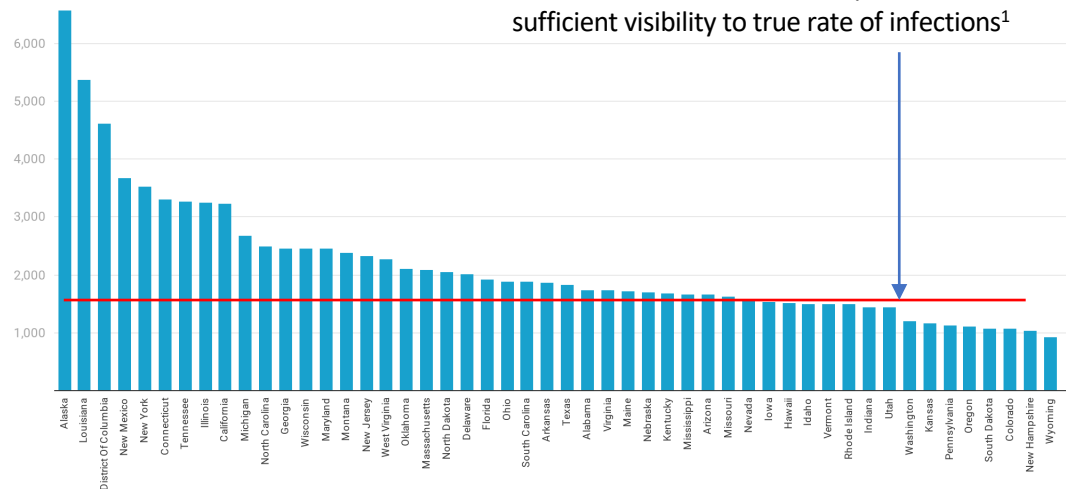
Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking Project • Created with Datawrapper

State-By-State

Most states are testing at or above the minimum level suggested by a group of Harvard scientists; Twelve states, however, have test-positive rates above recommended levels

Daily Tests Per 1 Million Population

Trailing 7-Day Moving Average, As of August 5



Health Industry Advisor LLC analysis

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

Test-Positive Rate

Trailing 7-Day Moving Average

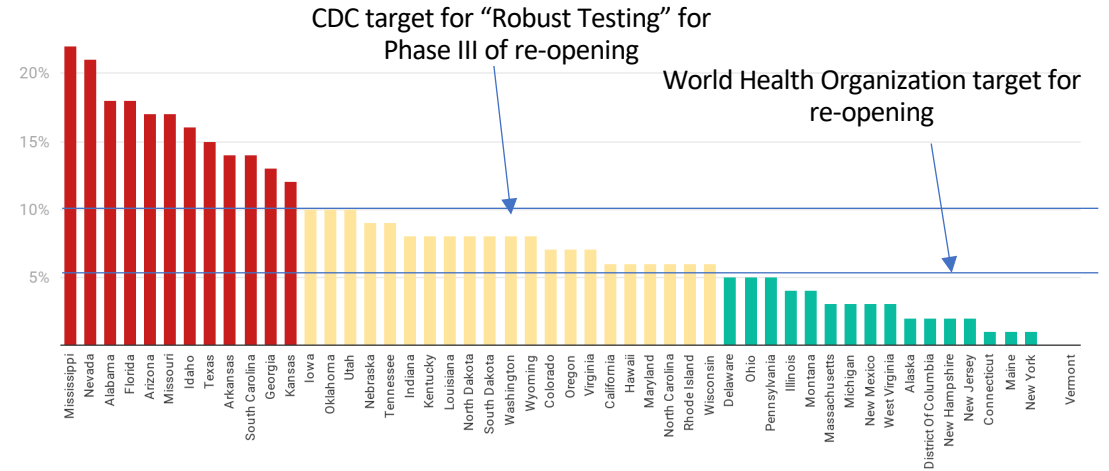


Chart: Health Industry Advisor LLC • Source: The Atlantic's Covid Tracking Projects • Created with Datawrapper

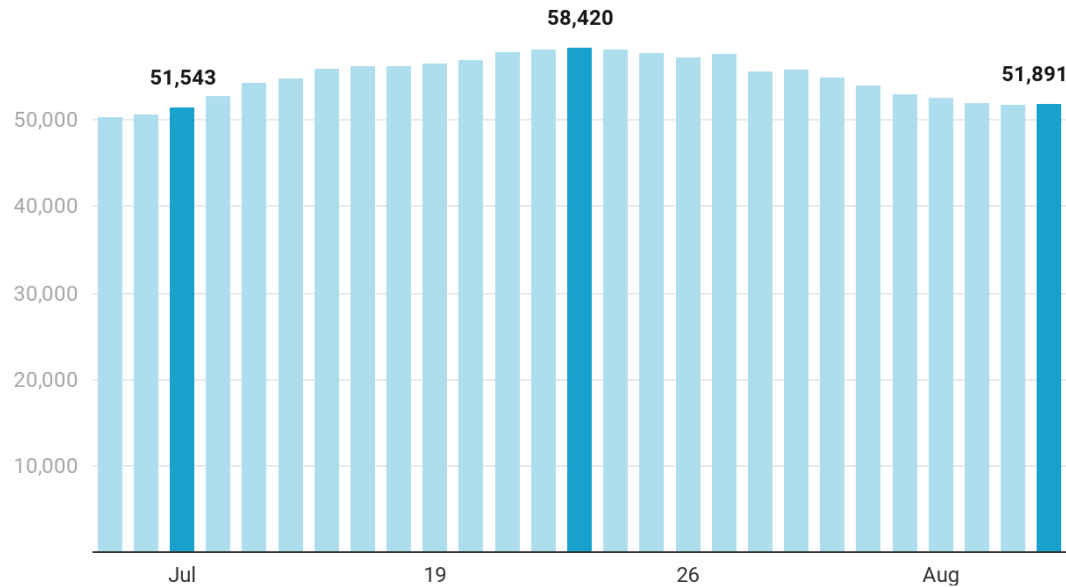
1 – source: (source: <https://www.kff.org/coronavirus-policy-watch/what-testing-capacity-do-we-need/>)

2- Minnesota made an adjustment to tests counts this week, rendering this value meaningless

COVID-19 census was up yesterday, following six consecutive days of decline; remains down 11.3% since July 23. Census down in recently hard-hit Arizona, California, Florida, Georgia and Texas; Up significantly in Hawaii

Hospital Census: COVID-19 Patients

As of August 5

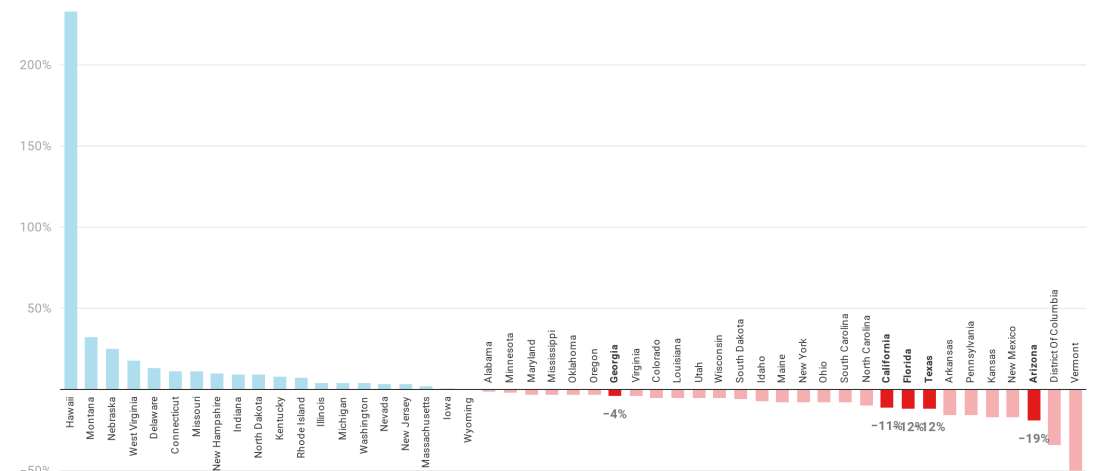


Florida data first available on July 10

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

Week-Over-Week Change COVID-19 Census

Trailing 7-Day Moving Average, August 5 v. July 29



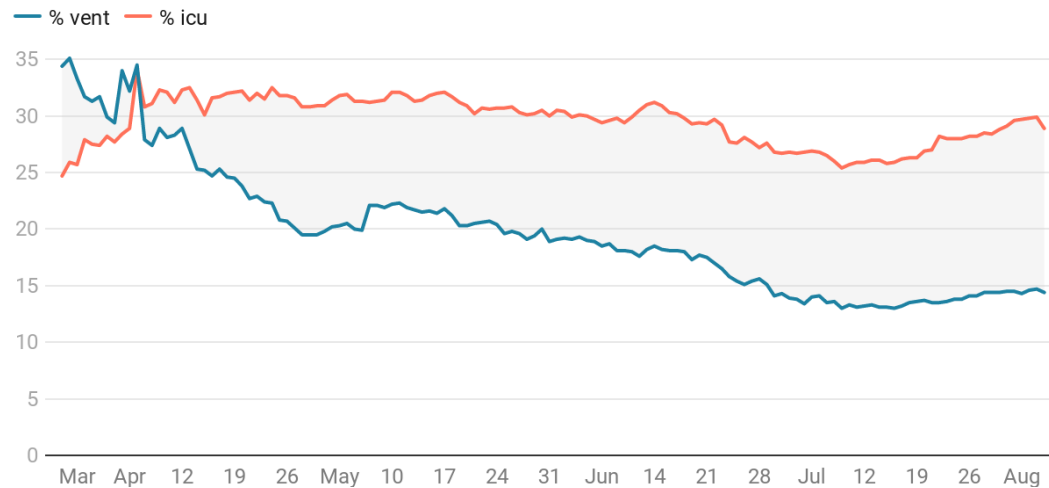
Health Industry Advisor LLC analysis

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

A greater % of patients are in the ICU

Severity of Hospitalized Patients

% of patients on ventilators and in the ICU, As of August 5



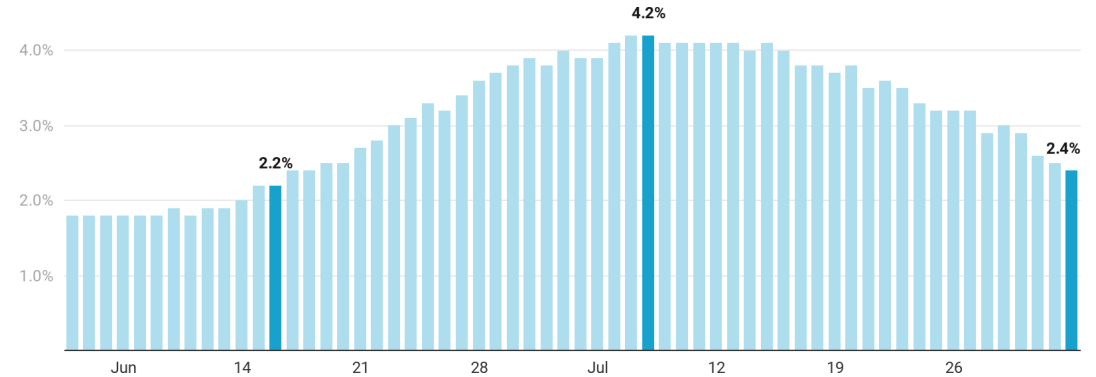
Health Industry Advisor LLC analysis

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

Stress on ERs from COVID-19 cases is diminishing

% of Emergency Department Visits for COVID-Like Illness

As of August 2



Health Industry Advisor LLC analysis

Chart: Health Industry Advisor LLC • Source: Centers for Disease Control • Created with Datawrapper

A slight respite? Fewer deaths yesterday and these declined on a week-over-week basis. Deaths per case are still declining

Deaths Recorded With Coronavirus in the U.S.

Trailing 7-Day Moving Average, As of August 5

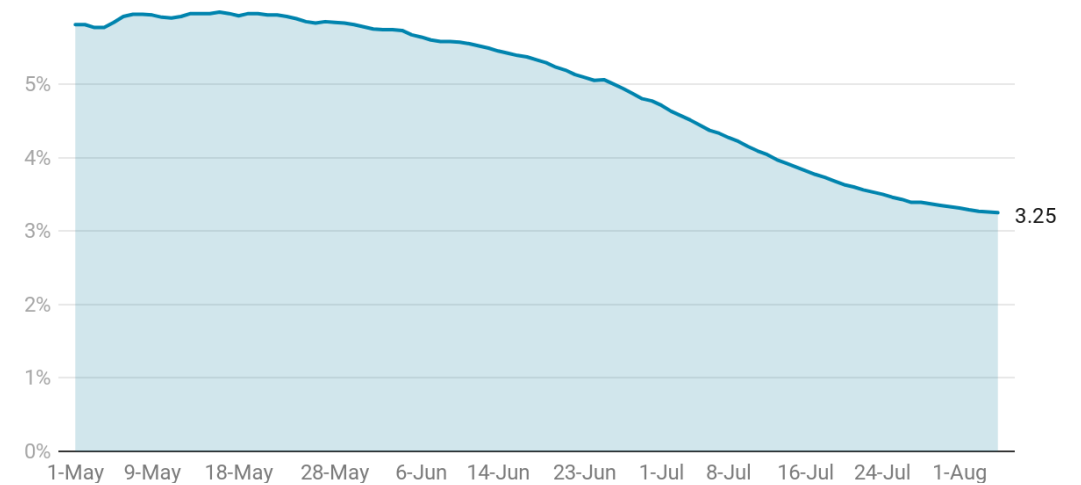


Health Industry Advisor LLC analysis

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

Deaths Per Case

As of August 5



Health Industry Advisor LLC analysis

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

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>