Health Industry Advisor, llc

"Strategic Advice in an Era of Unprecedented Change"

Covid-19 "Vital Signs"

Issue # 283

February 12, 2021

Covid-19 "Vital Signs"

Highlights

- Vaccines:
  - **President Biden announced contracts with Pfizer/BioNtech and Moderna for the third tranche of vaccine doses**. This tranche swells the number of contracted doses of approved vaccines from 400 million to 600 million - enough to vaccinate 300 million Americans. **The government telegraphed these additional doses a few weeks ago, and we had already reflected them in our projections;**
  - **The Centers for Disease Control and Prevention (CDC) announced yesterday that previously-vaccinated persons without symptoms would no longer need to quarantine following a possible exposure to an infected person. This new guidance hints that the CDC is less-concerned that vaccinated persons could unknowingly transmit the virus ;**
  - **The US jabbed more than 2 million Americans yesterday with either the Pfizer or Moderna vaccine**. This rate marks the third time in a week that the number of jabs exceeded 2 million;
  - To date, the US has administered 48 million doses, with 11.8 million people having received both required shots.
- Infection prevalence and immunity in the US:
  - Covid-19 case prevalence (i.e., percentage of persons with a detected case) reached 8.4% in the US yesterday; as mentioned above, this marks the seventh-highest rate in the world;
  - Estimated infections exceed detected cases by a large margin. **Gu estimates infection prevalence of 27.3% as of January 28** (his model requires a two-week lag, to account for reporting delays and other factors); t**he Yale/Harvard model estimates infection prevalence of 35%**;
  - **We estimate immunity in the US exceeds 30%, based on vaccinations to-date, Gu's infection prevalence estimate, and a presumed two-week lag between infection or vaccination and immunity.** The Yale/Harvard infection prevalence estimate implies an even higher immunity level.
- **Estimated Covid-19 patient days free-fall through the end of May**, Covid-19 testing and new case detection:
  - **Covid-19 testing spiked yesterday, following weeks of declining volume. More tests were reported yesterday than any day in February**. Still, test volumes dropped more than 20% week-over-week;
  - **Test-positivity tells an encouraging story: Yesterday's rate fell lower than on any day since October 26; the 7-day rate declined 20% from last week and 35% from three weeks ago;**
  - **The 7-day new case rate dropped 20% from last week and nearly 50% from three weeks ago; It required sixty-five days for this rate to grow from 310 daily cases per million to its peak of 771, and only thirty-seven days to erase that increase.**
- Hospitalizations:
  - **The number of Covid-19 inpatients dropped for the thirty-first straight day, falling by a remarkable 58,000 during that time;**
  - **The number of Covid-19 patients in ICUs plunged 43% over the past three weeks; the number of patients on ventilators fell by nearly 40% in that same time;**
  - **New York is the only state devoting more than half its inpatient beds to Covid-19 patients**; four weeks ago, New York dedicated more than 60% to these patients, and Arizona, California, Georgia, and Utah, more than 70%;
  - **Projected hospital admissions plummet for the next three weeks; in several states by 30% or more.** Only Vermont's projected admissions increase during this time (albeit from a low starting occupancy).
- Deaths with Covid-19:
  - The 7-day death rate dropped 12% from a week ago and 20% from two weeks ago.

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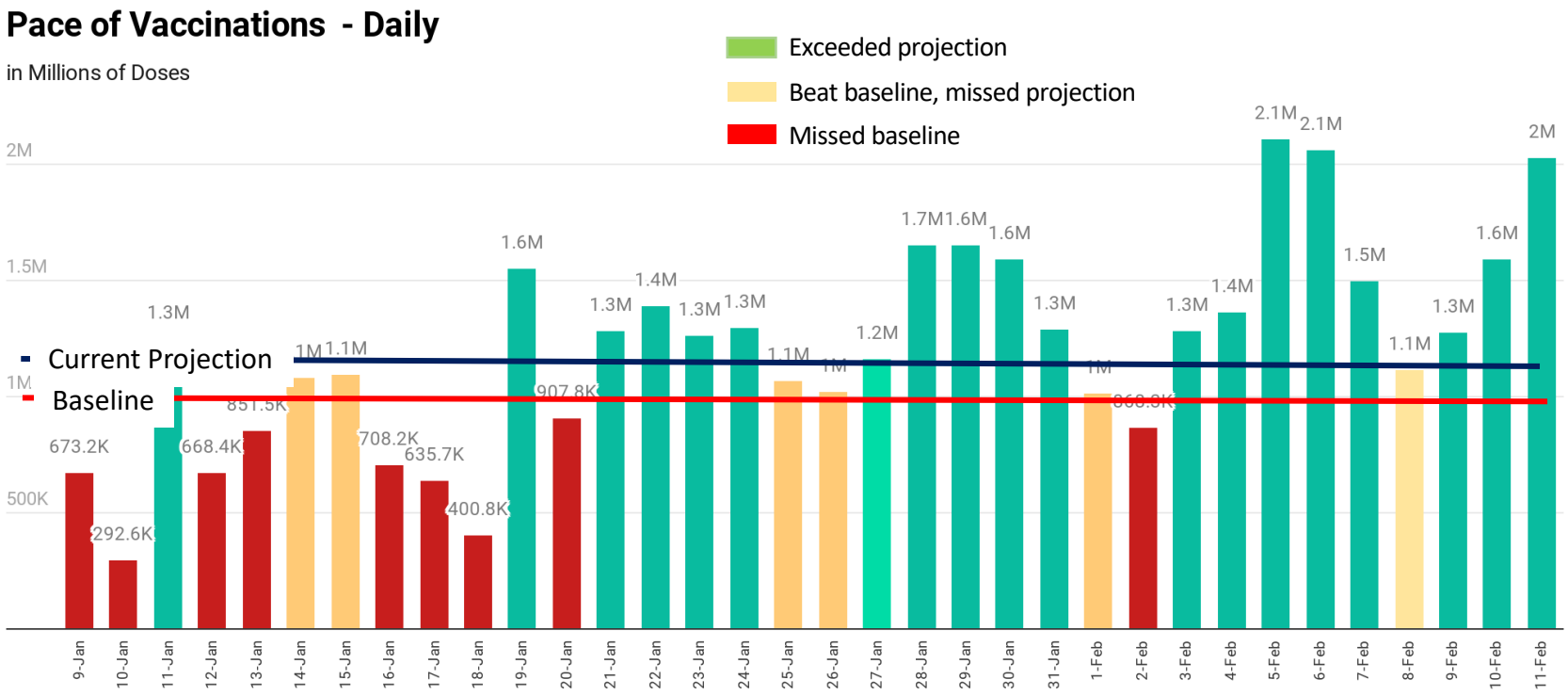
Pace of Vaccinations

The US jabbed more than 2 million citizens yesterday, for the third time in a week. Vaccinations surpassed our Current Projection on twelve of the past fifteen days.



Baseline: 100 Million Doses in 100 Days Current Projection: Ramped-Up Vaccinations; Additional 100M Pfizer and Moderna doses; and JNJ vaccine available on 3/1

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

"Current projection" is from Health Industry Advisor's vaccination model, reflecting recent developments: increase pace of vaccinations; increase in Pfizer and Moderna doses to 300 million each; and anticipated availability of JNJ vaccine

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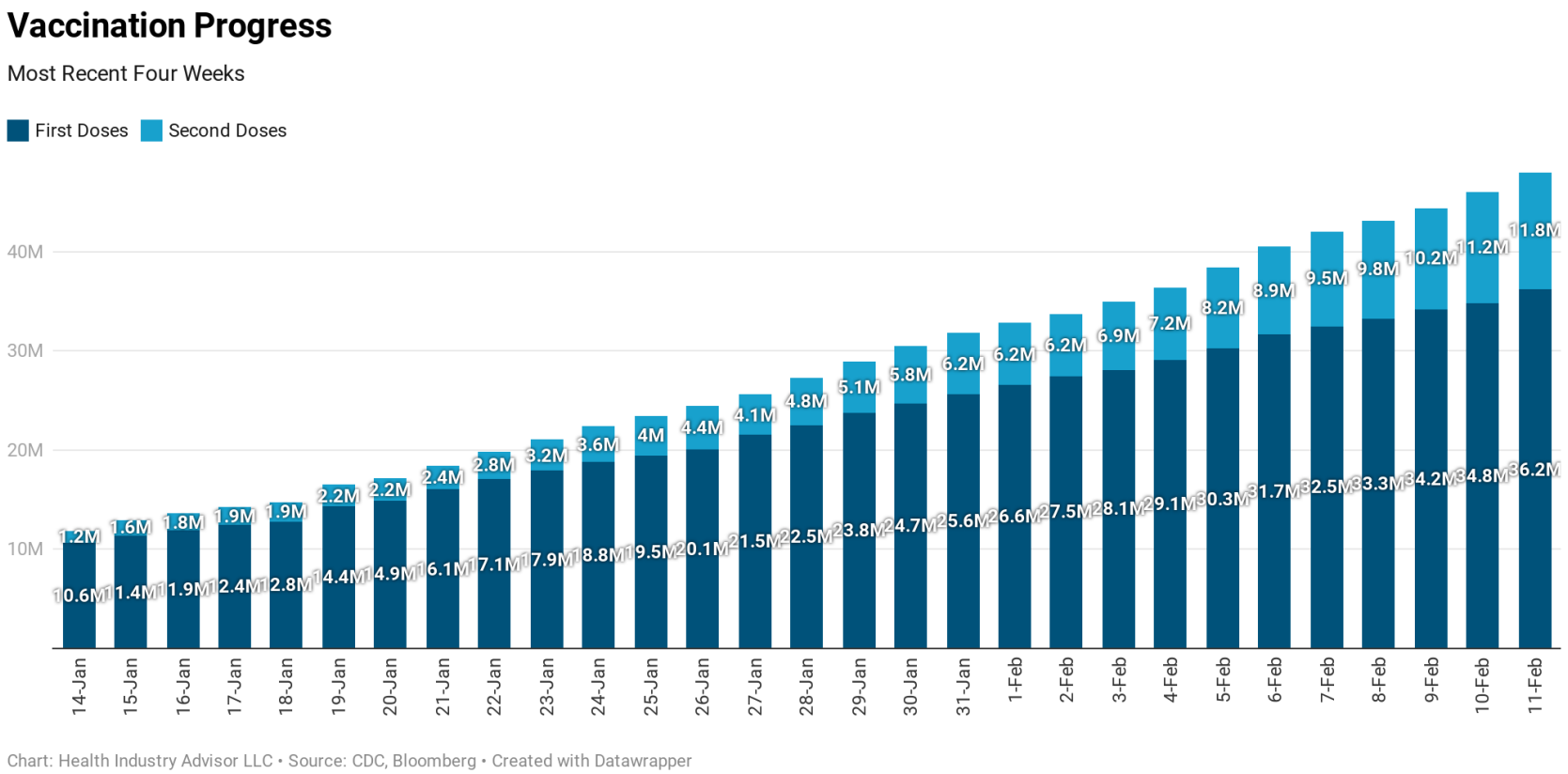
Vaccine Tracking

To date, the US has administered 48 million doses, with 11.8 million people jabbed twice.



Vaccine data from: Centers for Disease Control and Prevention and Bloomberg Vaccine Tracker

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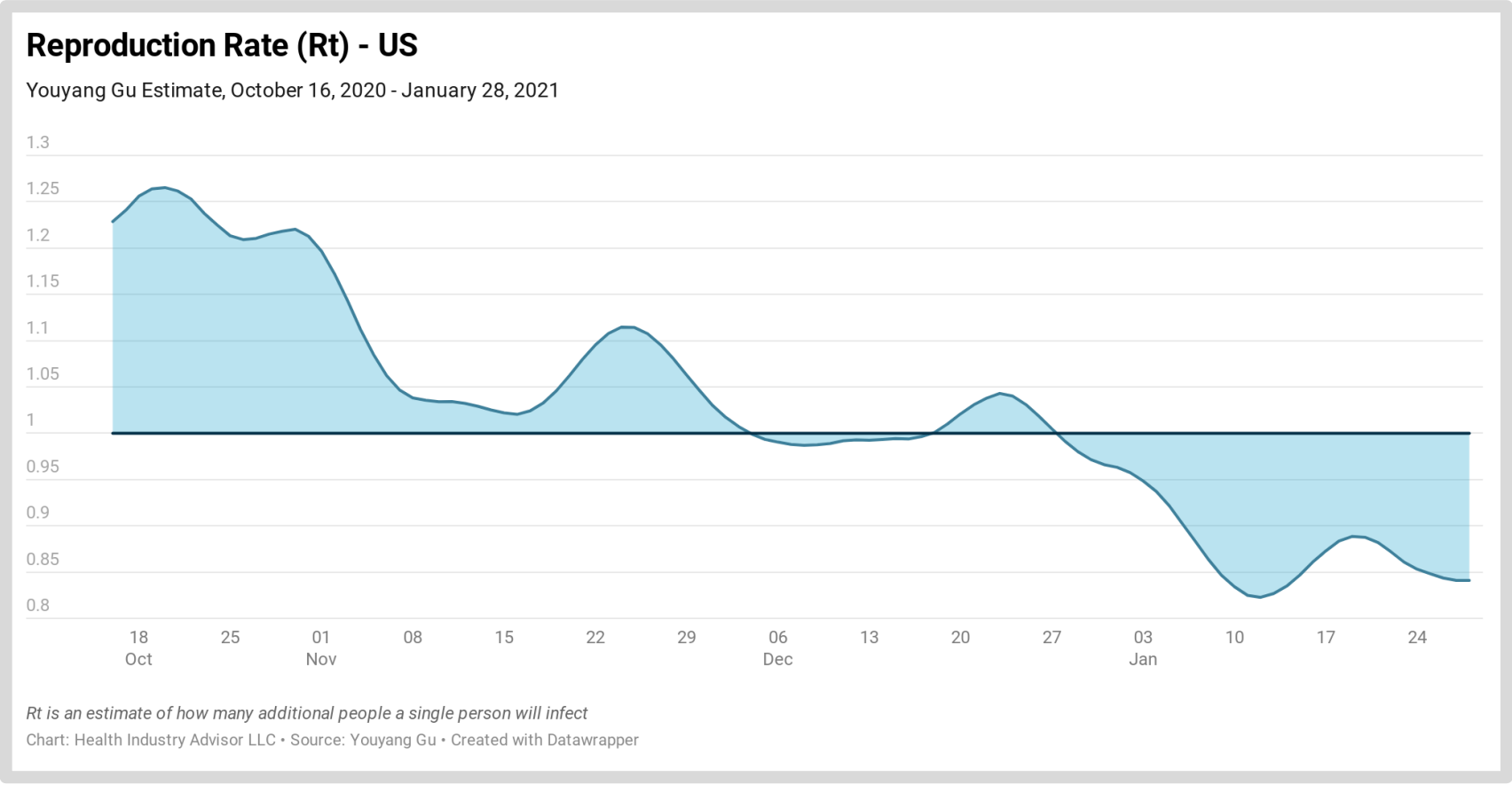
Reproduction Rate (R_t) – Gu* Model

Gu's estimate of R_t remained below 1.0 for the thirty-second straight day.



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Estimated Daily Infections & New Case Rates

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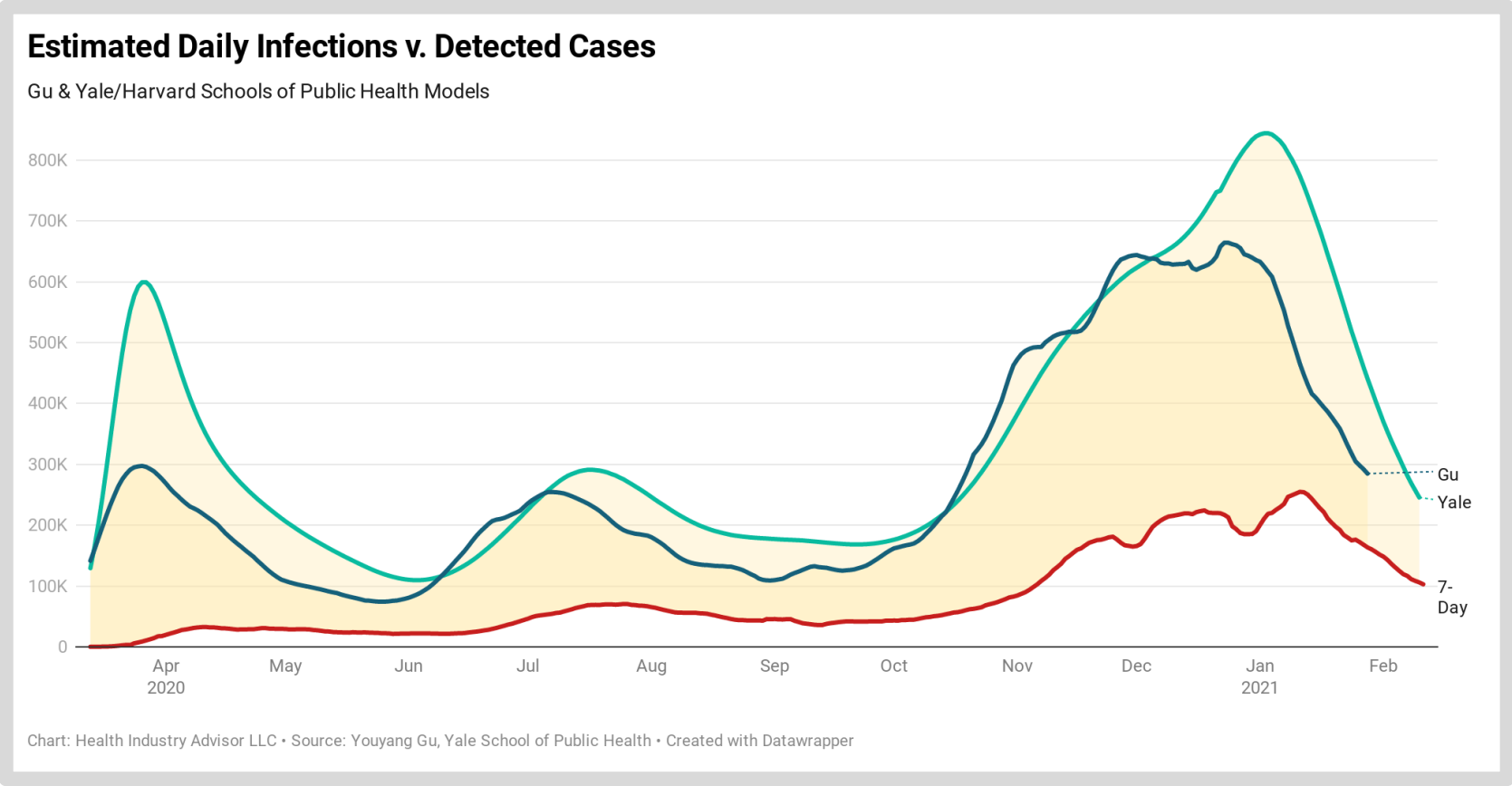
Estimated new infections and reported cases are plunging in the US. The Yale/Harvard team revised their model this week, resulting in higher infection estimates. This model suggests that the infection prevalence is the US is now 35%; Gu estimates it to be 27.3%, as of January 28.



Two models:

- Youyang Gu: https://covid19-projections.com, lags by two weeks
- Yale School of Public Health: https://covidestim.org

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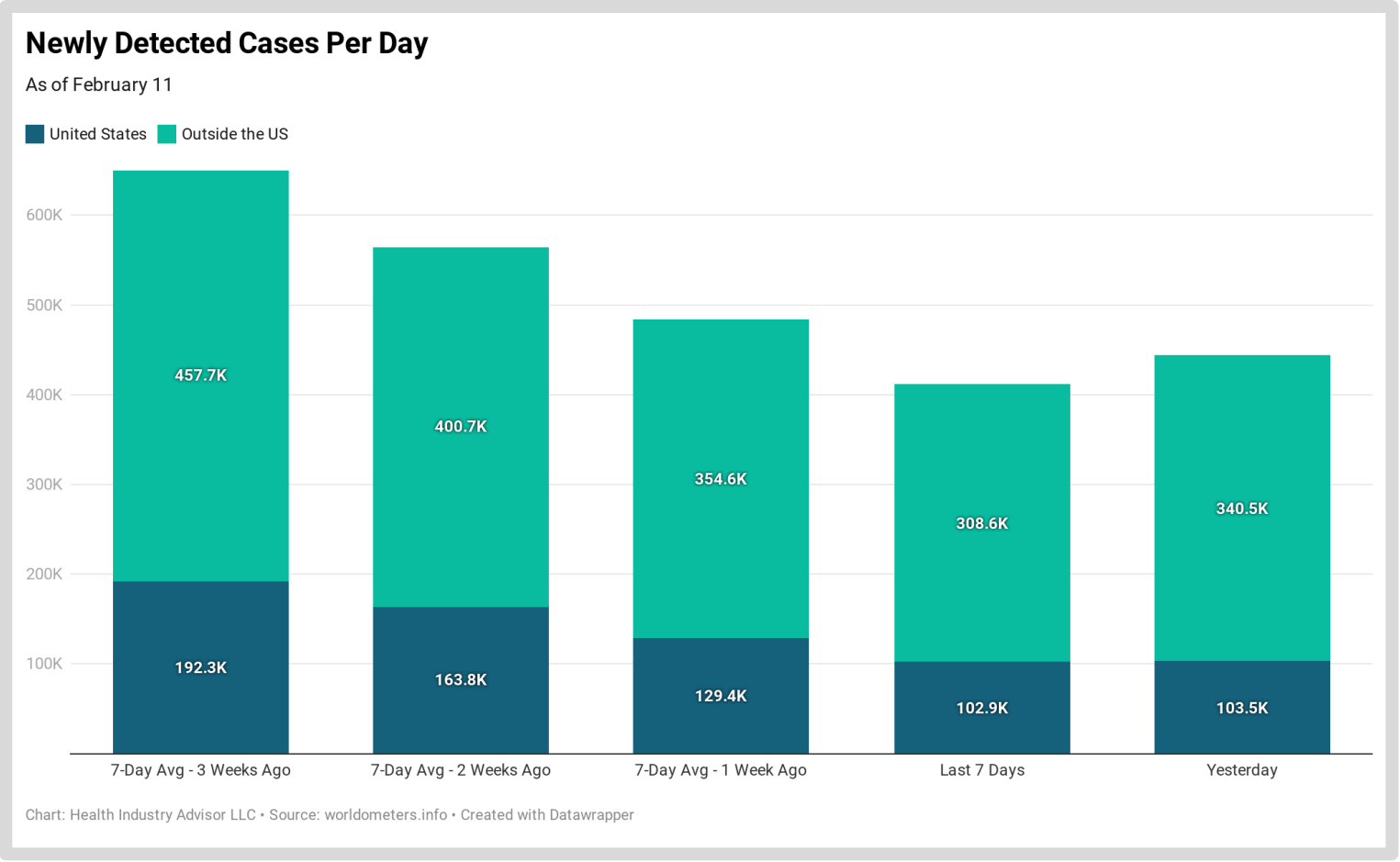
Newly Detected Cases Per Day

Worldwide and in the US, 7-day new case rates receded during each of the past three weeks



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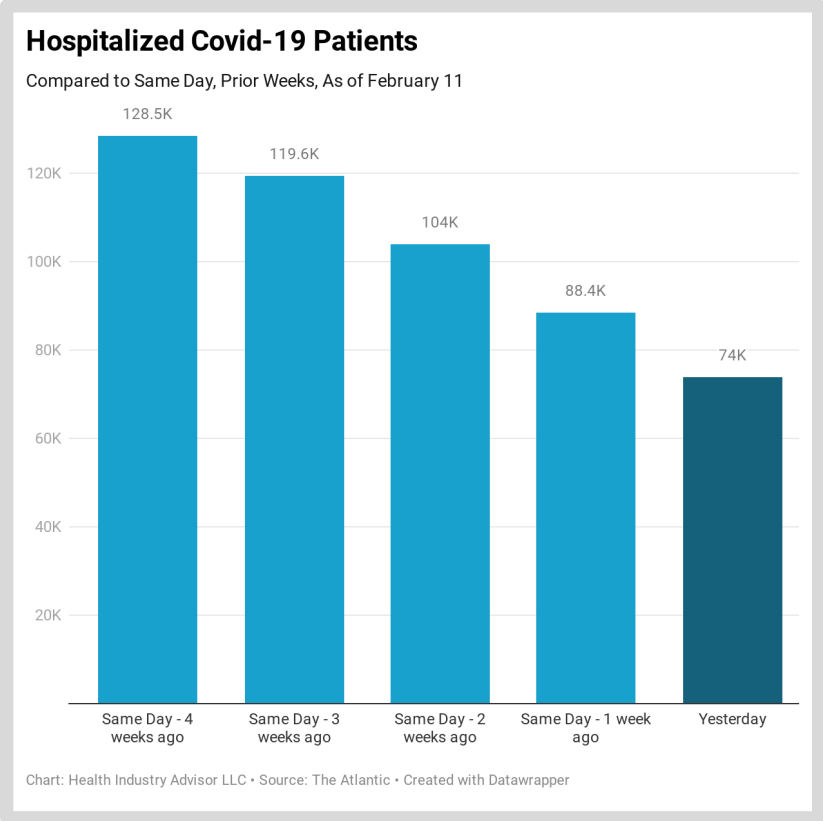
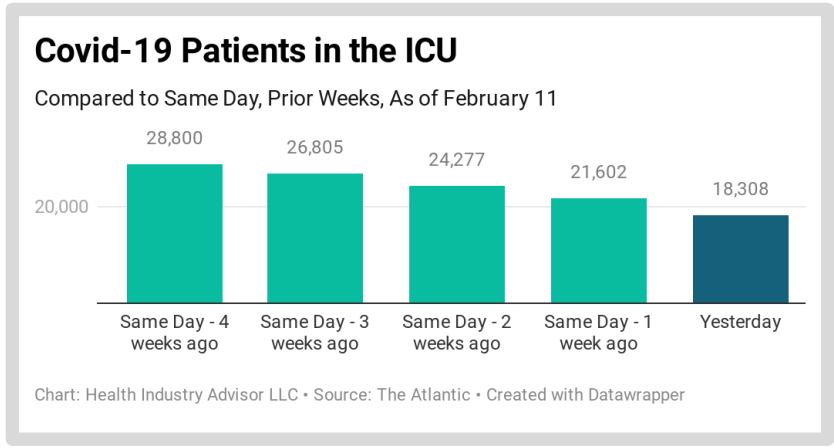
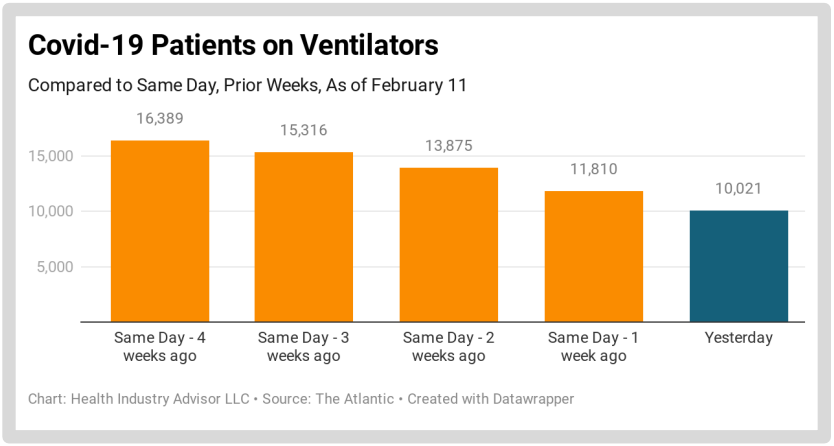
Covid-19 Hospitalizations

Covid-19 hospitalizations plunged over the past month, with 58,000 fewer patients yesterday than on January 6 (44%). Yesterday's Covid-19 census fell to its lowest point since November 16. ICU and ventilator days declined each of the past three weeks.







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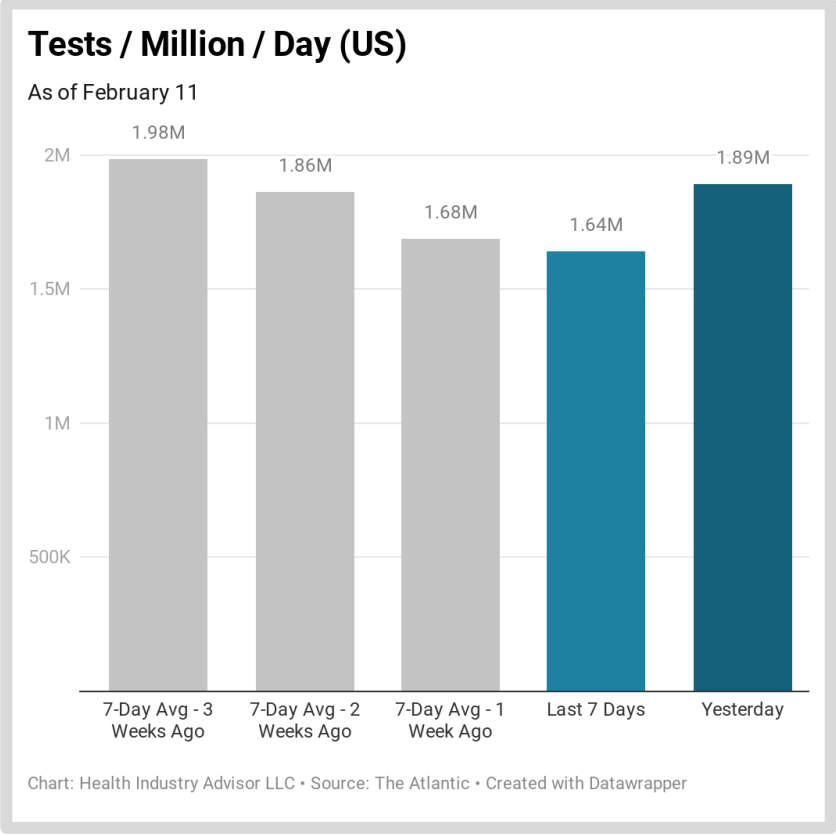
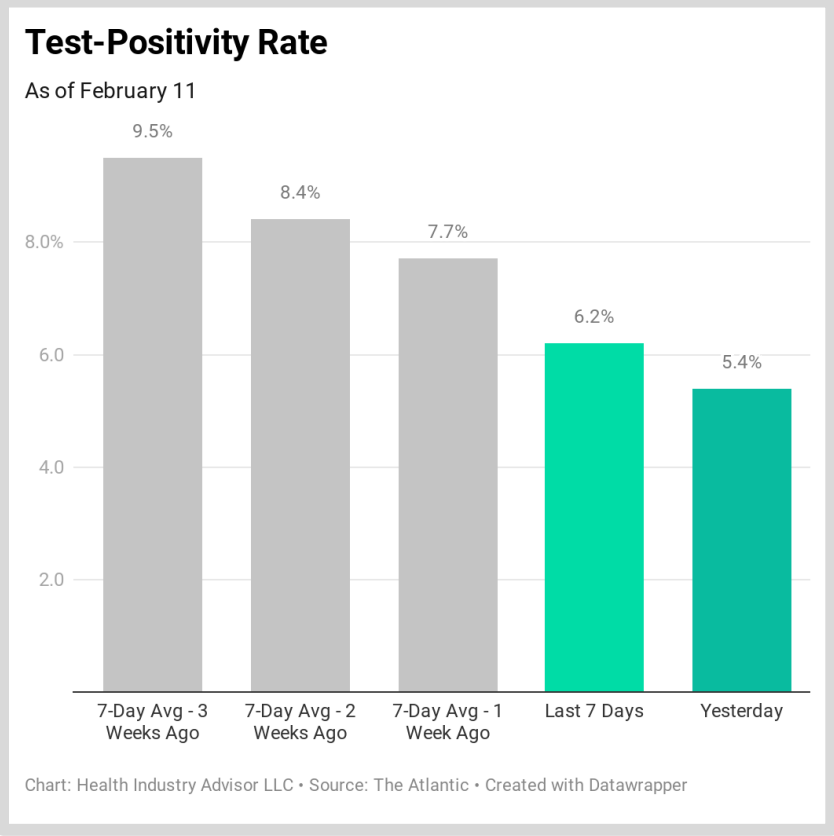
Testing (US)

Test volume for the past seven days dropped from each of the prior three weeks – are fewer people fearing a recent exposure? The test-positive rate improved over the three preceding weeks. Yesterday, this rate dropped to its lowest point since October 26.





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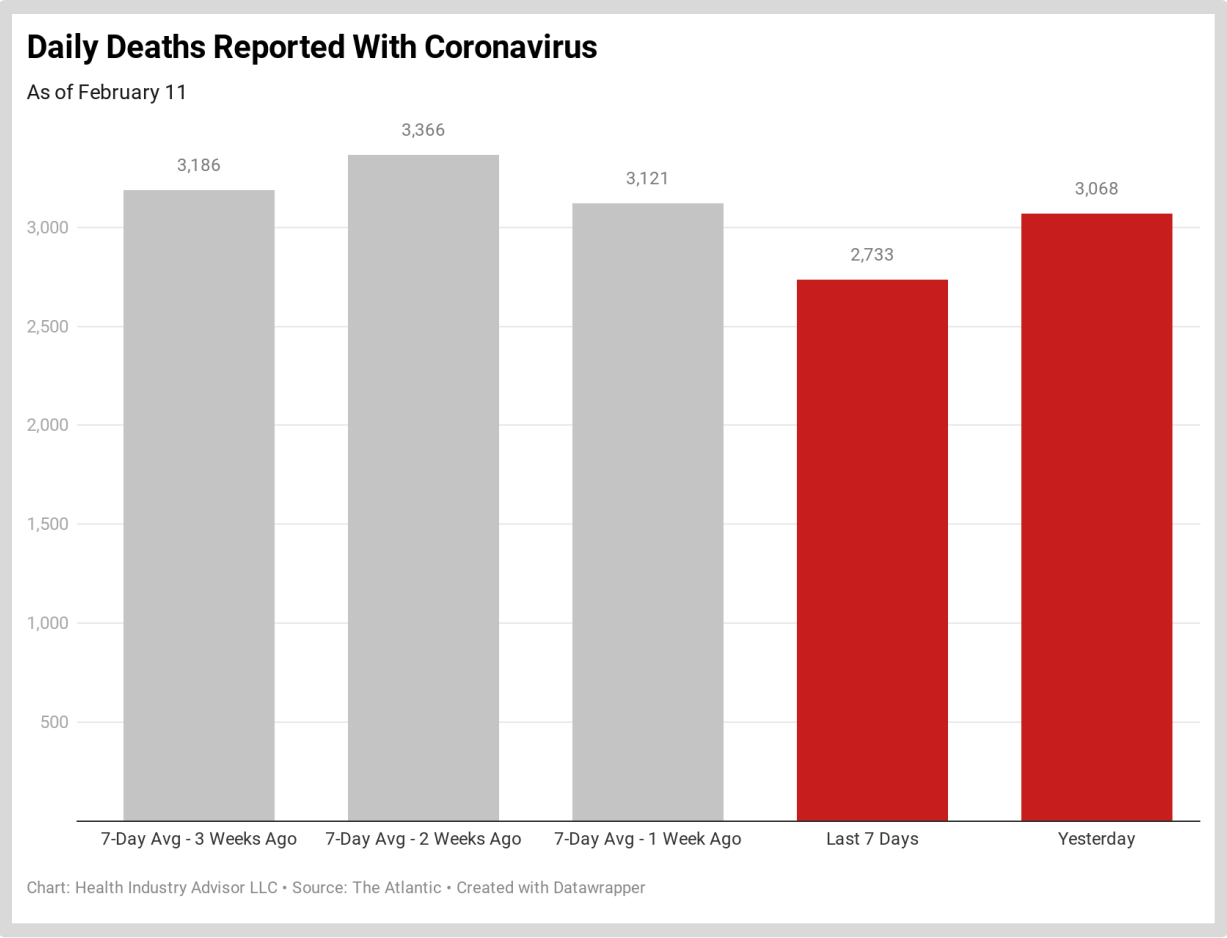
Deaths Reported With Coronavirus

The 7-day average death rate fell lower than levels for each of the prior three weeks.



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State-By-State Scorecard: Scoring Grid

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

Worse ← → Better

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

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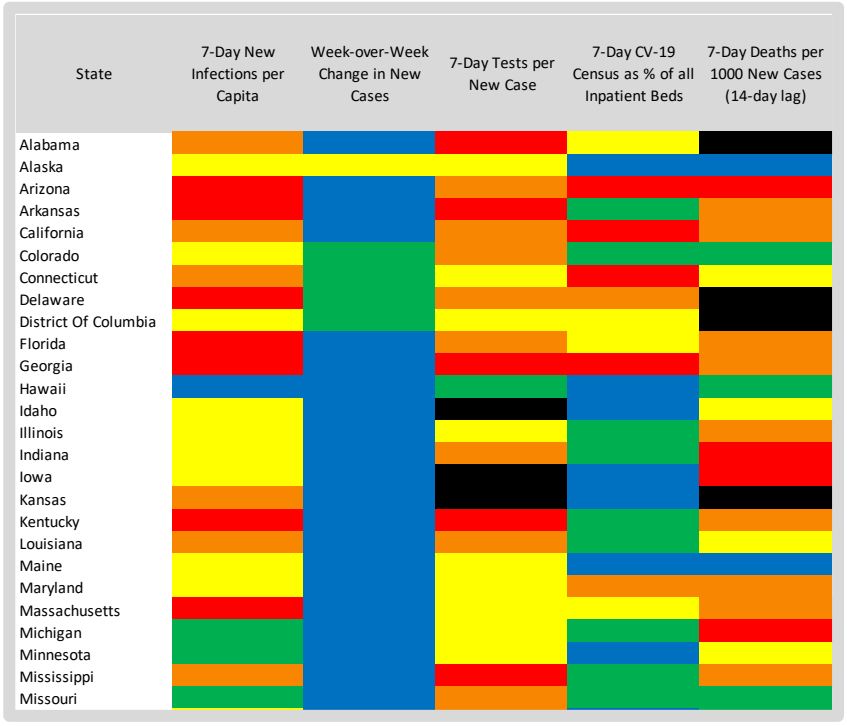
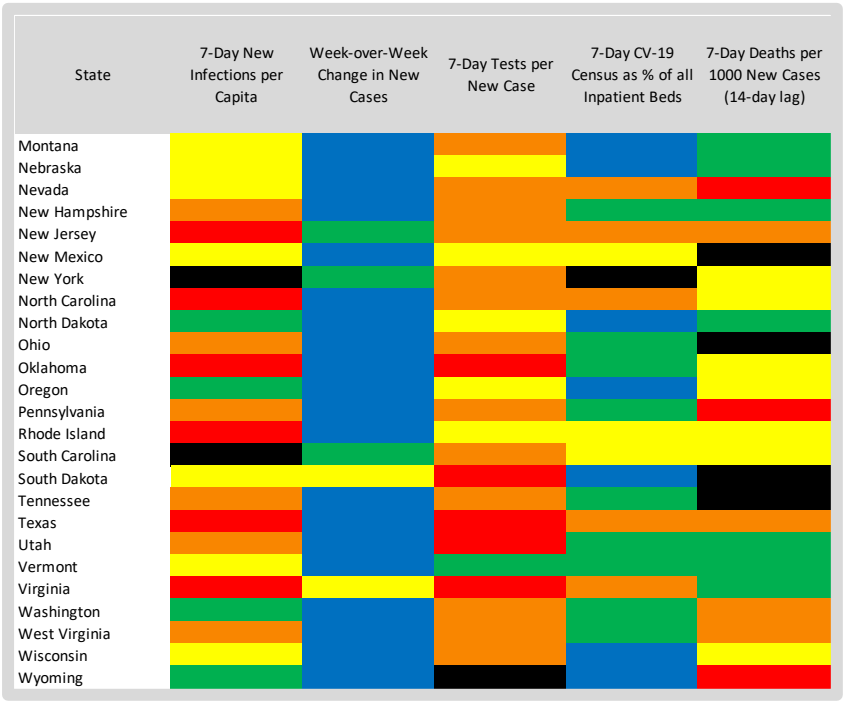
State-By-State Scorecard:

New case rates urge caution across many parts of the country; however, the week-over-week changes in new cases are encouraging. The hospital crisis eased for most of the country.





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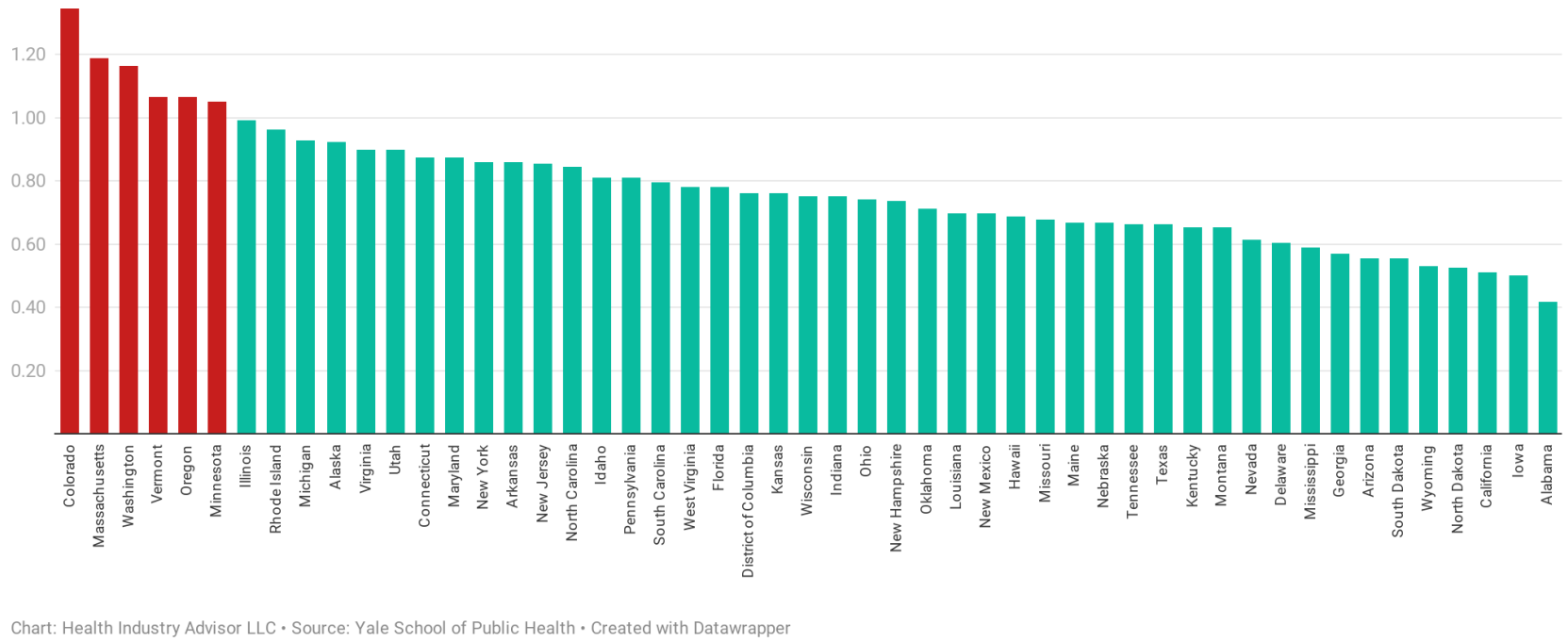
Reproduction Rate (R_t) – Yale* Model

Infection rates are retreating, as the Reproduction Rate (R_t) is below 1.0 in most states



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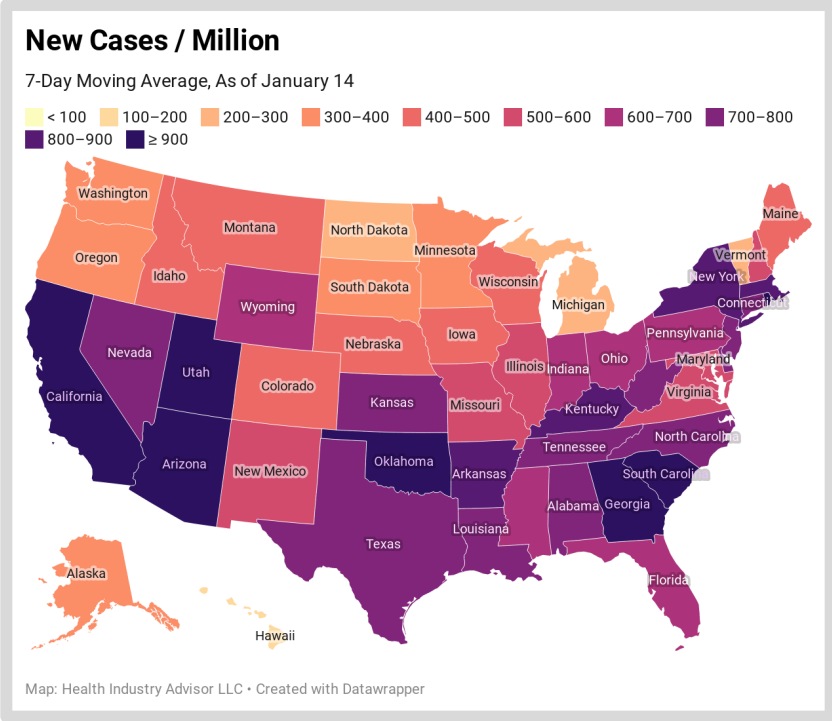
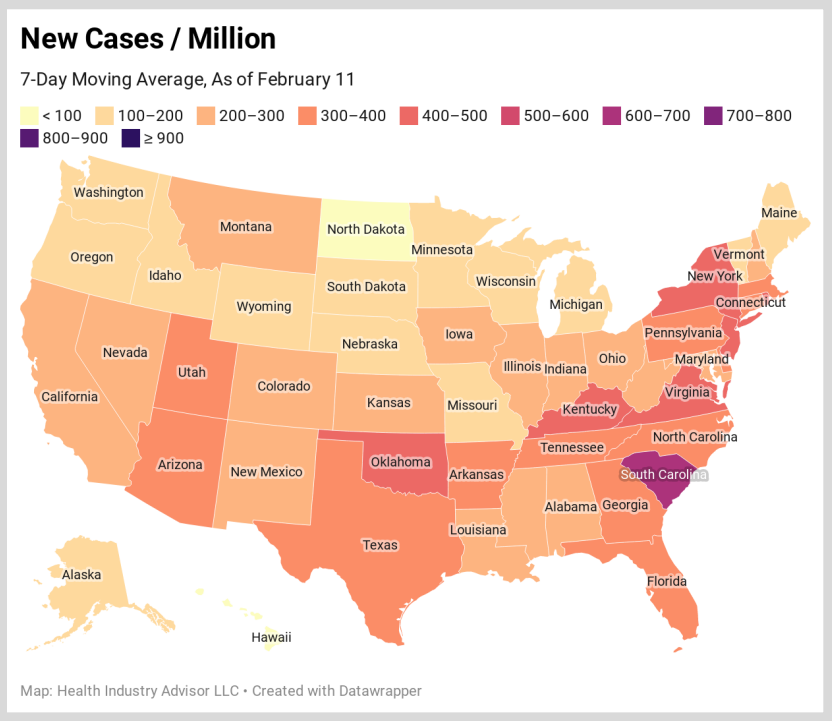
New Cases / Million

Much of the US rebounded from the high infection rates seen early- to mid-January.

January 14	February 11





Note the change in scale from previous reports. This was done to better depict the changing case rates.

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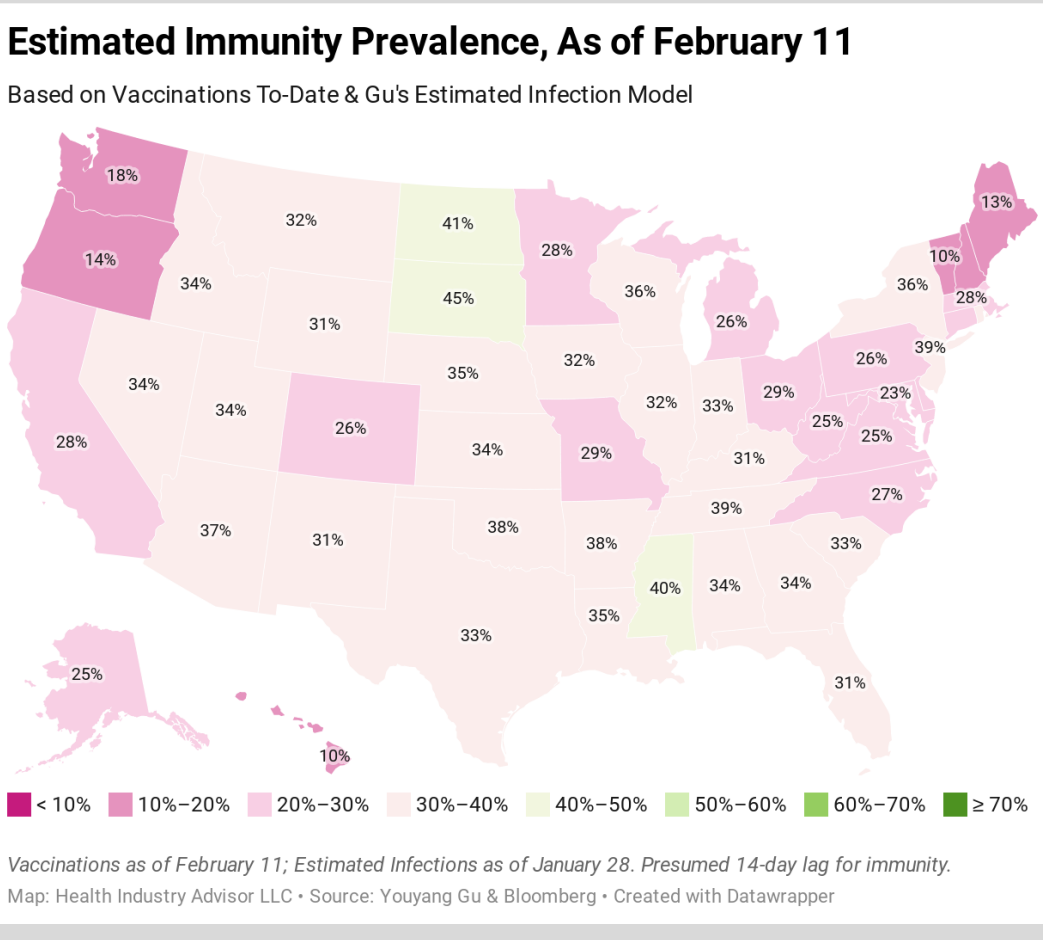
Estimated Immunity By State

North Dakota, Tennessee and South Dakota lead the country in the race to herd immunity, with estimated immunity above 40%.

- 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



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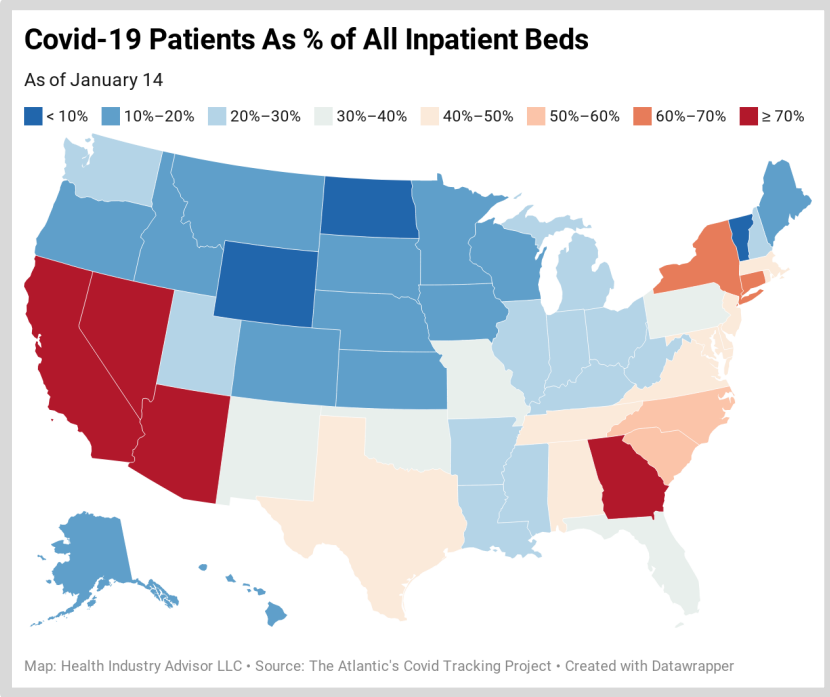
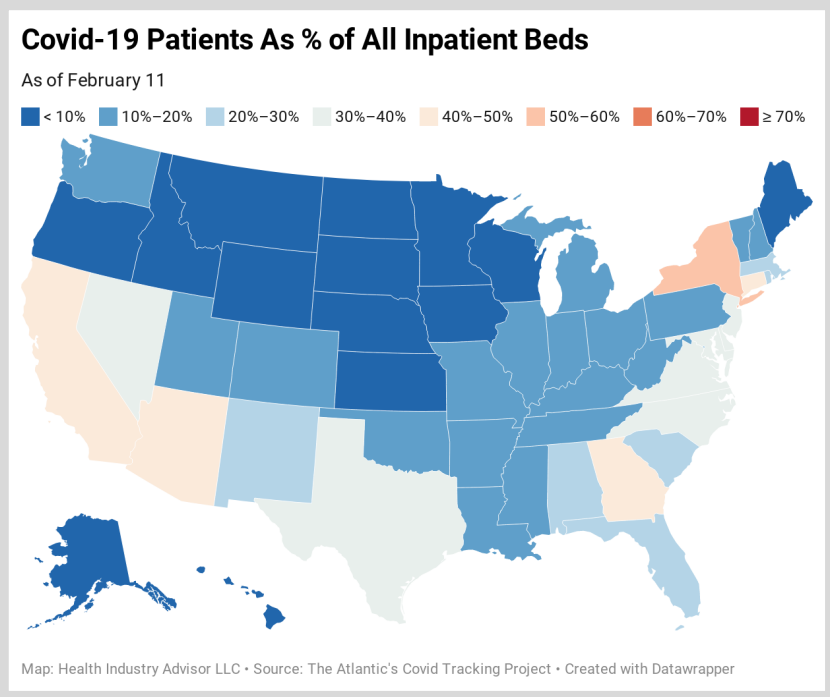
Covid-19 Hospitalizations

Covid-19 hospital census plunged in the past four weeks. Covid-19 patients occupied less than 24% of US beds yesterday versus 42% four weeks ago.

January 14	February 11





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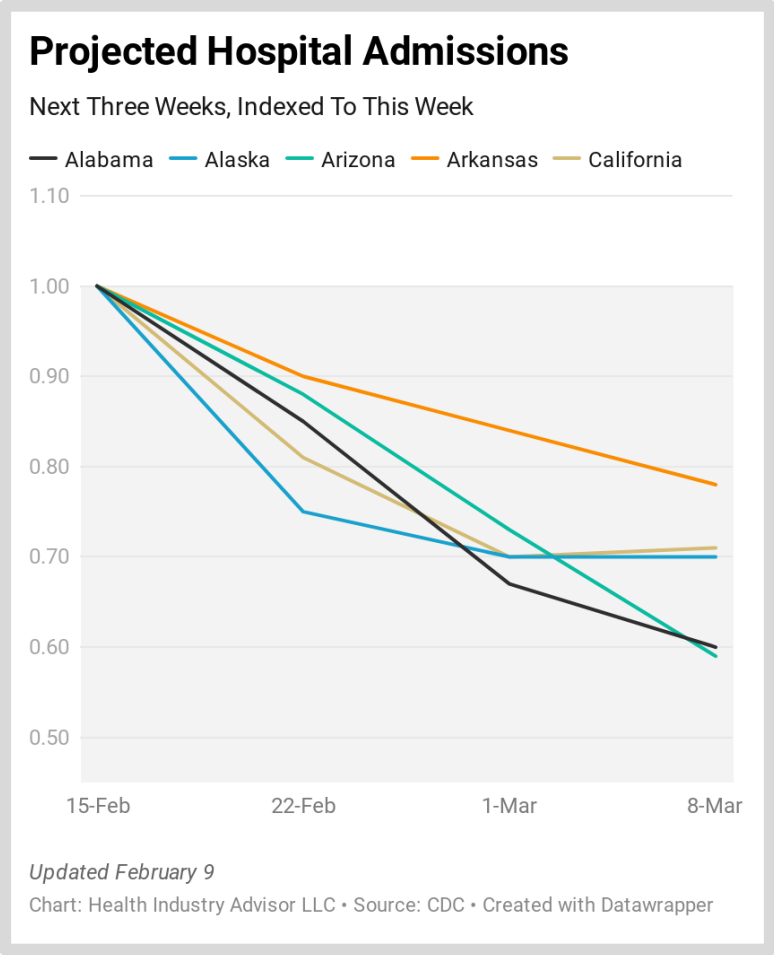
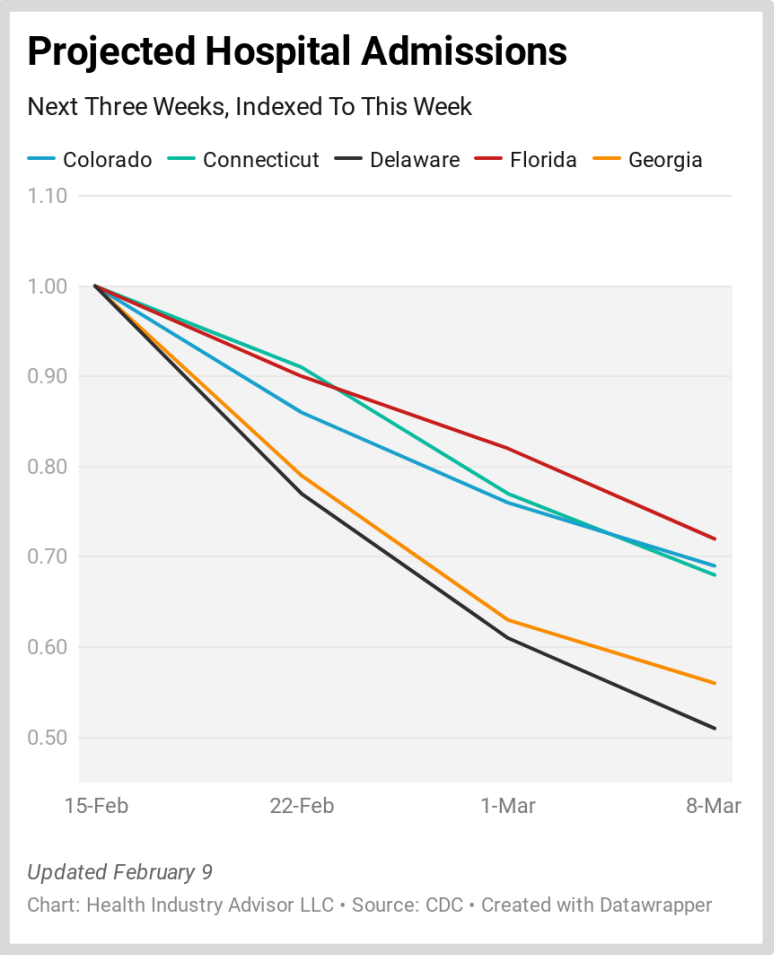
Projections of Hospital Admissions (US) – 1 of 5

Projected hospital admissions decline over the next few weeks across most of the country – in many states by 30% or more; Vermont expects increased admissions, albeit from a low occupancy rate.





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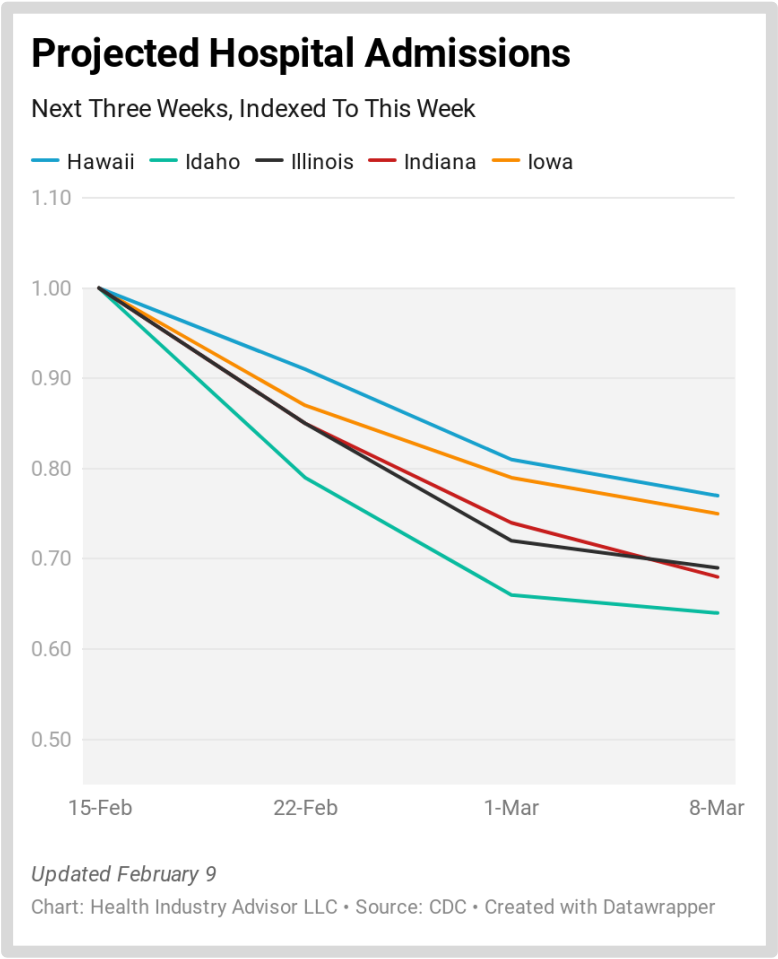
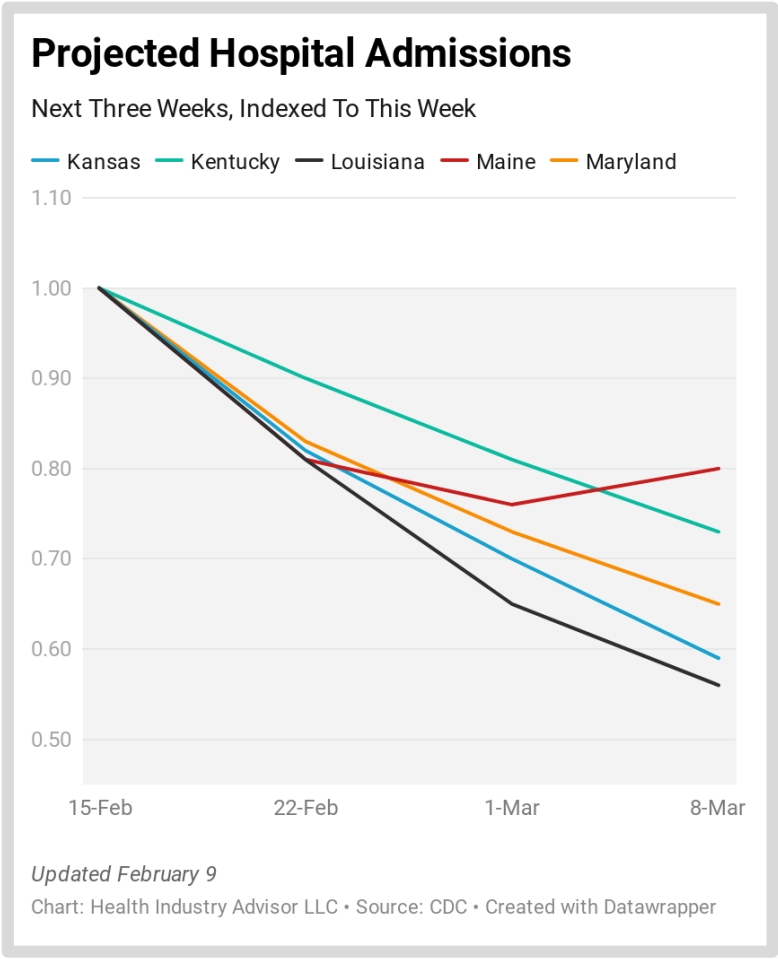
Projections of Hospital Admissions (US) – 2 of 5

Projected hospital admissions decline over the next few weeks across most of the country – in many states by 30% or more; Vermont expects increased admissions, albeit from a low occupancy rate.





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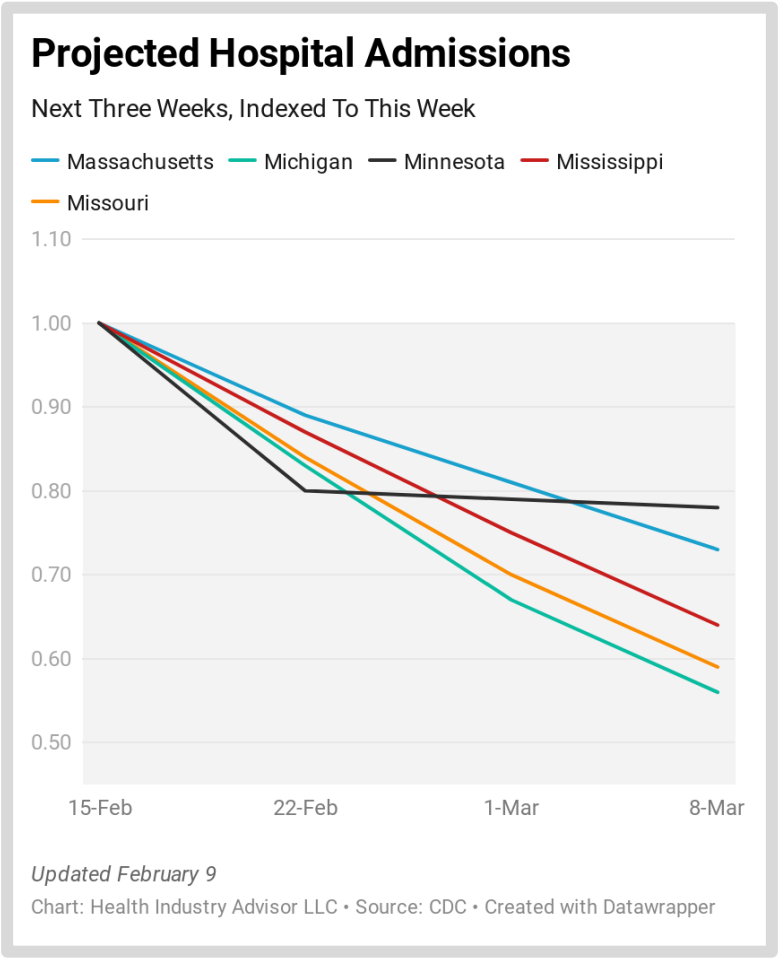
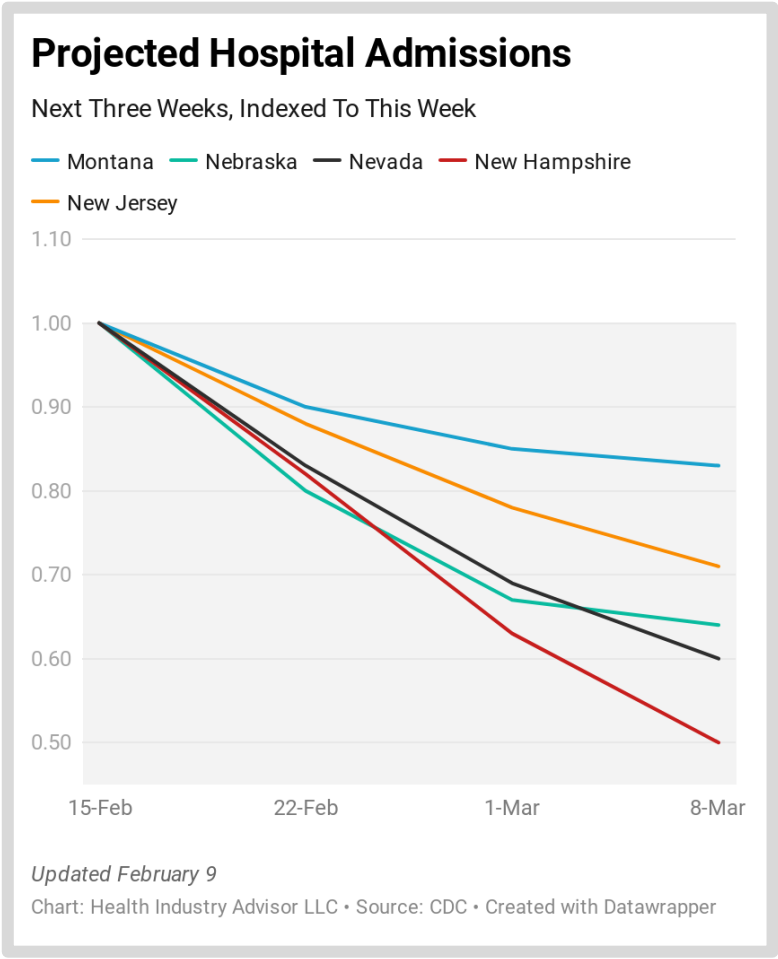
Projections of Hospital Admissions (US) – 3 of 5

Projected hospital admissions decline over the next few weeks across most of the country – in many states by 30% or more; Vermont expects increased admissions, albeit from a low occupancy rate.





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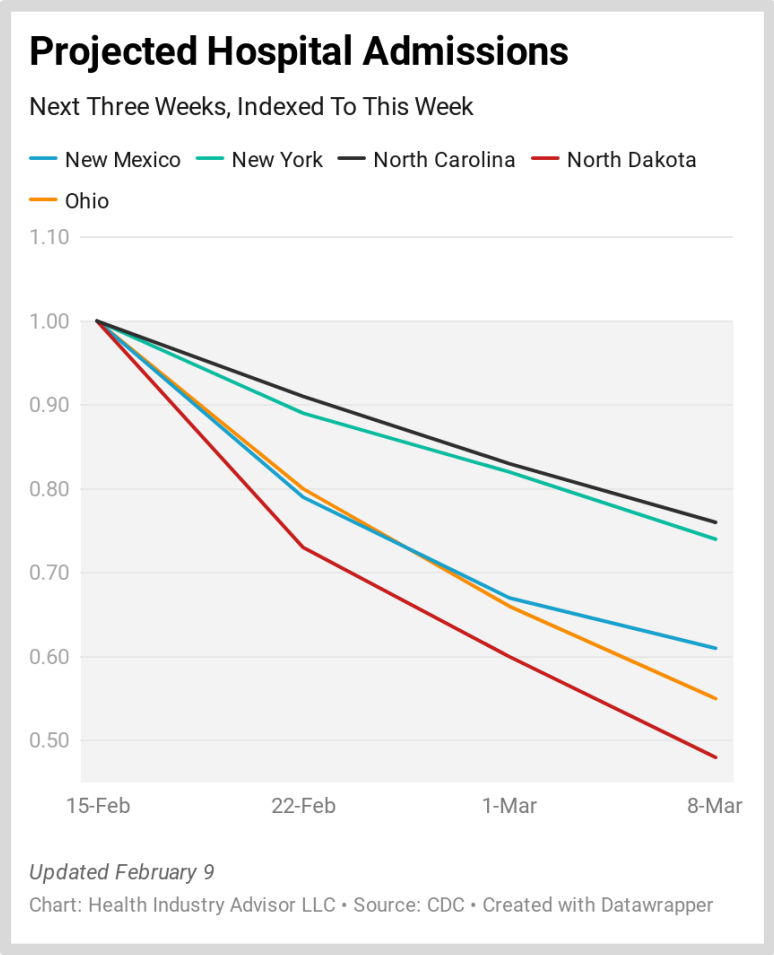
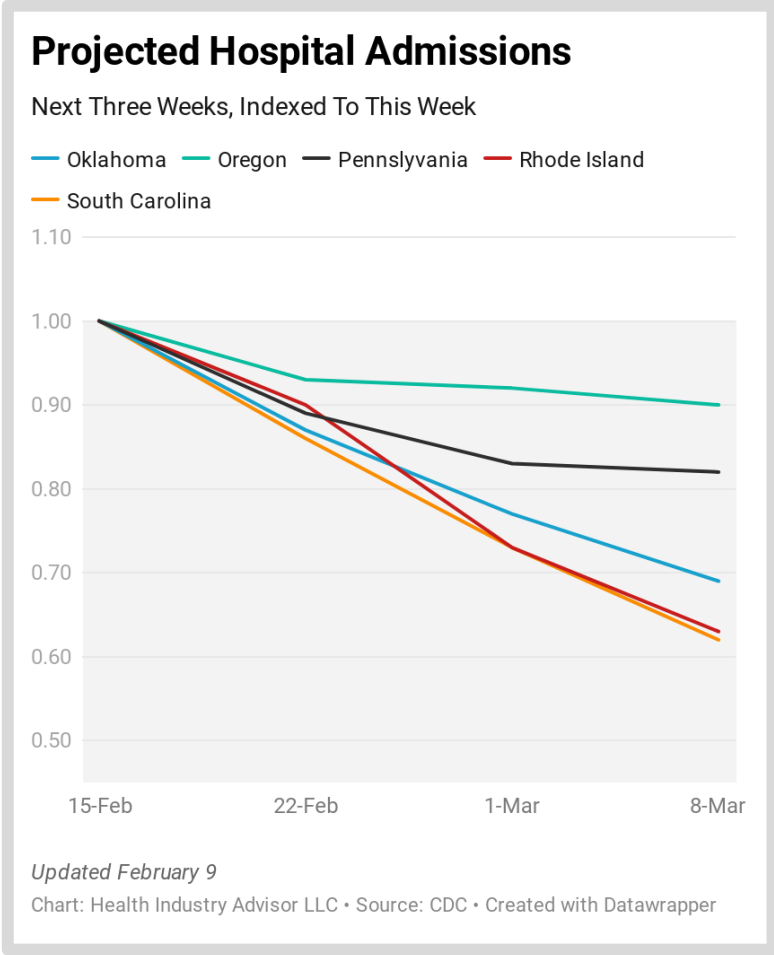
Projections of Hospital Admissions (US) - 4 of 5

Projected hospital admissions decline over the next few weeks across most of the country – in many states by 30% or more; Vermont expects increased admissions, albeit from a low occupancy rate.





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Projections of Hospital Admissions (US) – 5 of 5

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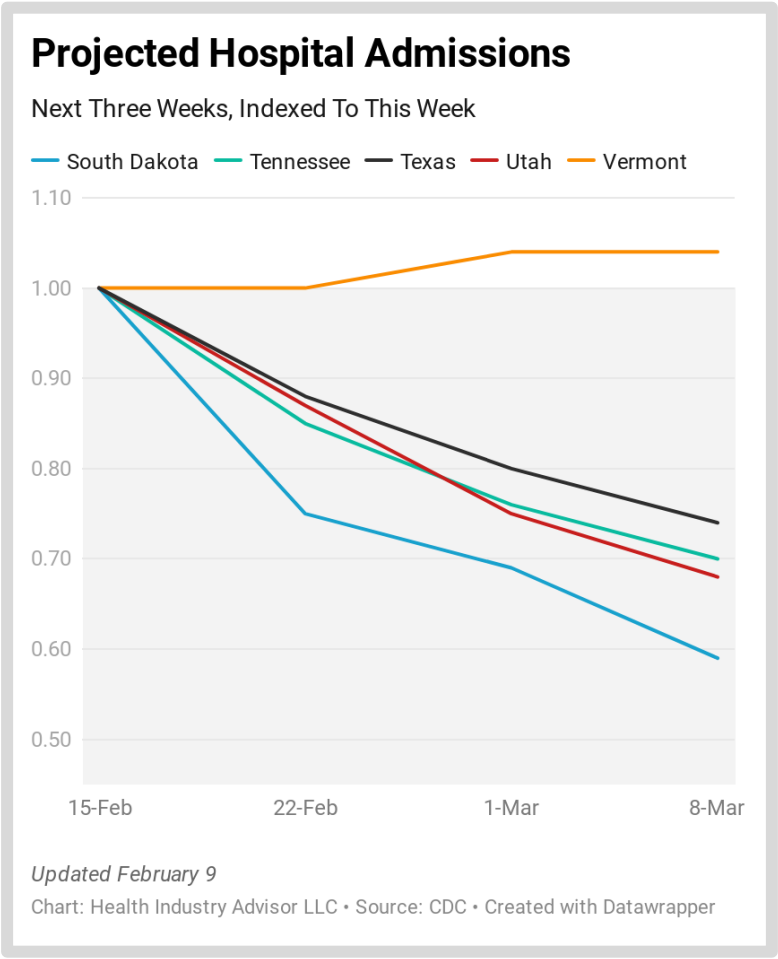

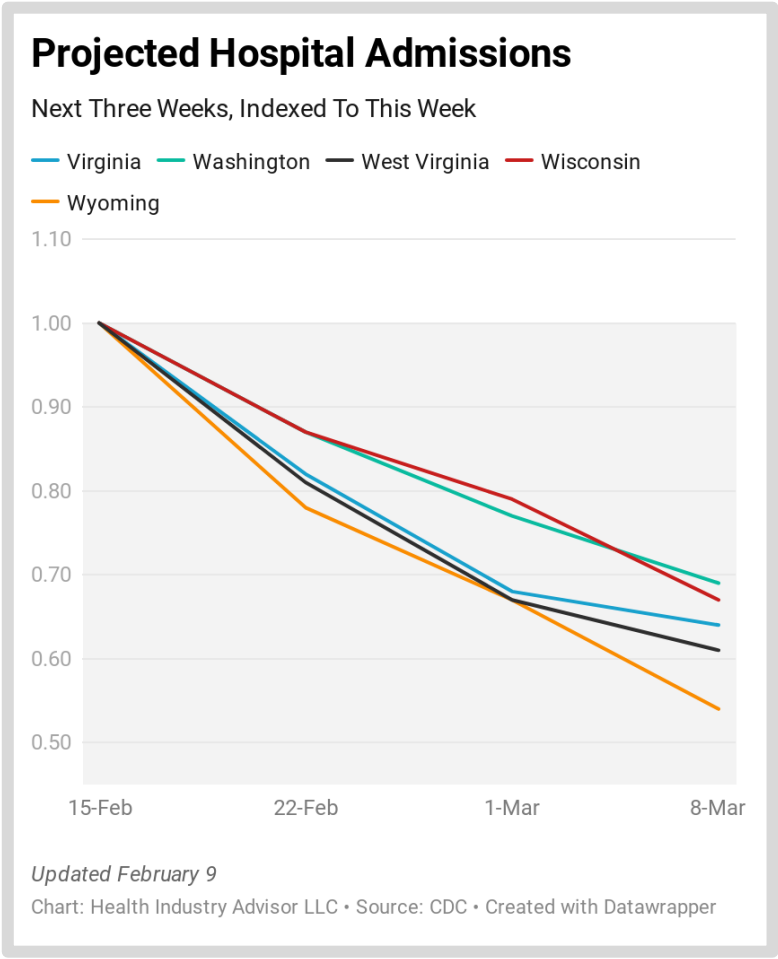

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State-By-State Data Table (1 of 3)

State-By-State Comparisons

State	Infection Prevalence	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	9.7%	1,840	1,797	15.8%	284	6	22%	-35%	32
Alaska	7.4%	380	9,332	2.1%	199	47	5%	6%	1
Arizona	10.9%	2,014	5,177	7.3%	379	14	42%	-32%	21
Arkansas	10.3%	1,723	3,160	12.2%	386	8	14%	-32%	16
California	8.7%	1,163	6,105	4.6%	292	21	41%	-24%	19
Colorado	7.1%	1,004	5,086	4.3%	219	23	10%	-4%	10
Connecticut	7.5%	2,063	10,593	3.2%	343	31	42%	-7%	13
Delaware	8.4%	1,296	6,216	6.3%	389	16	32%	-3%	32
District Of Columbia	5.5%	1,379	7,113	3.3%	236	30	23%	-5%	27
Florida	8.4%	1,322	5,048	7.0%	362	14	24%	-16%	15
Georgia	9.0%	1,461	2,748	13.2%	363	8	42%	-23%	16
Hawaii	1.9%	299	3,529	1.5%	49	72	5%	-25%	10
Idaho	9.3%	999	744	25.6%	184	4	10%	-19%	13
Illinois	9.1%	1,735	6,305	3.3%	206	31	13%	-14%	16
Indiana	9.6%	1,786	5,820	4.1%	240	24	14%	-17%	22
Iowa	10.4%	1,647	600	25.9%	213	3	6%	-22%	23
Kansas	9.9%	1,477	1,208	24.3%	285	4	8%	-12%	45
Kentucky	8.6%	943	2,303	17.9%	412	6	18%	-20%	16

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"Vital Signs"

State-By-State Data Table (2 of 3)

State-By-State Comparisons

State	Infection Prevalence	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	9.0%	1,987	4,798	5.4%	259	19	15%	-40%	12
Maine	3.1%	477	6,048	2.7%	162	3..	9%	-27%	4
Maryland	6.1%	1,235	5,710	3.7%	209	27	32%	-14%	15
Massachusetts	7.9%	2,197	13,900	2.6%	359	39	27%	-12%	17
Michigan	6.3%	1,604	3,409	3.7%	125	27	10%	-22%	21
Minnesota	8.3%	1,137	4,336	3.3%	143	30	6%	-14%	12
Mississippi	9.6%	2,147	1,879	15.7%	294	6	12%	-24%	18
Missouri	8.3%	1,269	2,128	6.7%	138	15	19%	-53%	9
Montana	9.1%	1,235	4,431	5.2%	231	19	7%	-21%	5
Nebraska	10.1%	1,029	5,044	3.6%	181	28	7%	-35%	9
Nevada	9.3%	1,505	2,796	7.9%	222	13	39%	-28%	25
New Hampshire	5.1%	821	5,637	4.7%	262	22	14%	-13%	8
New Jersey	8.3%	2,514	5,297	8.3%	438	12	34%	-2%	15
New Mexico	8.6%	1,659	6,795	3.1%	212	3...	21%	-31%	25
New York	8.0%	2,346	11,227	4.2%	468	24	56%	-5%	13
North Carolina	7.7%	981	5,075	7.7%	390	13	31%	-32%	14

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"Vital Signs"

State-By-State Data Table (3 of 3)

State-By-State Comparisons

State	Infection Prevalence	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	12.9%	1,876	2,907	2.1%	60	49	3%	-56%	9
Ohio	8.0%	1,076	3,128	8.0%	252	12	13%	-24%	31
Oklahoma	10.3%	998	3,329	13.4%	445	7	15%	-21%	15
Oregon	3.5%	487	4,422	3.4%	127	3..	9%	-17%	12
Pennsylvania	7.0%	1,793	3,557	8.6%	305	12	19%	-16%	21
Rhode Island	11.4%	2,147	16,871	2.5%	417	40	30%	-13%	13
South Carolina	9.3%	1,522	6,412	9.7%	622	10	30%	-1%	13
South Dakota	12.4%	2,067	953	17.7%	169	6	6%	3%	29
Tennessee	11.0%	1,582	3,395	9.6%	327	10	18%	-17%	31
Texas	8.8%	1,406	3,249	12.3%	394	8	31%	-32%	17
Utah	11.2%	553	2,917	11.2%	326	9	13%	-17%	5
Vermont	2.1%	301	11,096	1.5%	171	65	10%	-24%	7
Virginia	6.3%	815	3,386	12.2%	412	8	33%	8%	9
Washington	4.3%	617	3,167	5.0%	144	22	14%	-24%	17
West Virginia	7.1%	1,224	5,911	4.6%	270	22	12%	-25%	18
Wisconsin	9.5%	1,055	3,572	5.0%	151	24	9%	-29%	14
Wyoming	9.2%	1,118	-17,176	-0.7%	126	-136	4%	-51%	23

Table: Health Industry Advisor LLC • Created with Datawrapper

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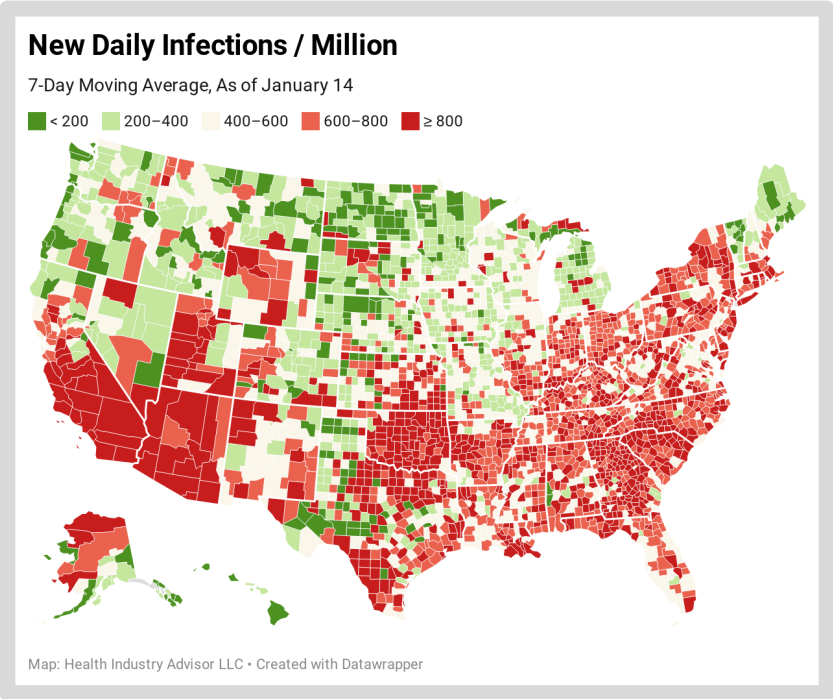
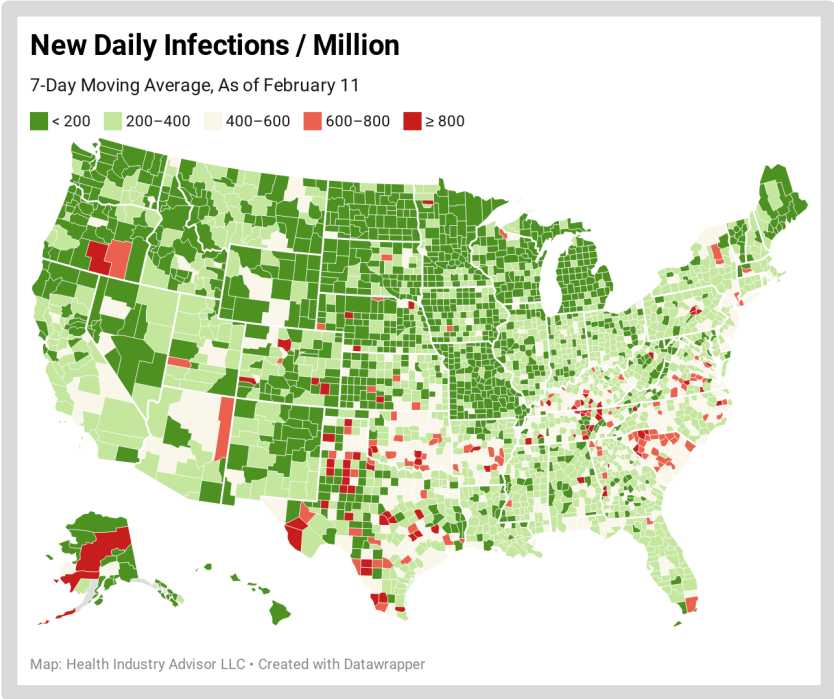
Metro Areas in the US

The improved case rate over the past several weeks can be seen at the Metro Area-level

January 14	February 11





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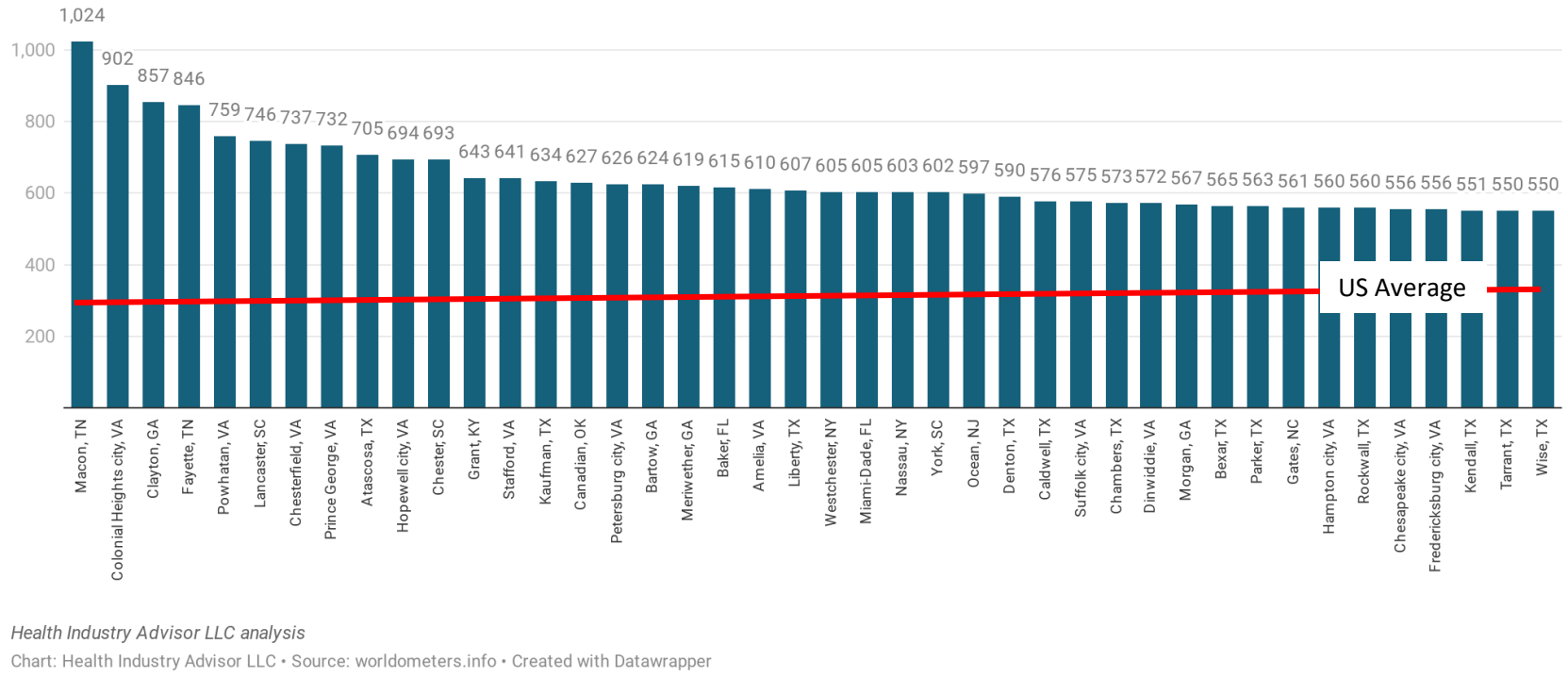
Large Central & Large Fringe Metro Areas

Virginia and Texas lead the country in the number of Large Central and Large Fringe Metro Areas with the highest case rates - thirteen and twelve, respectively, of the top forty-two.



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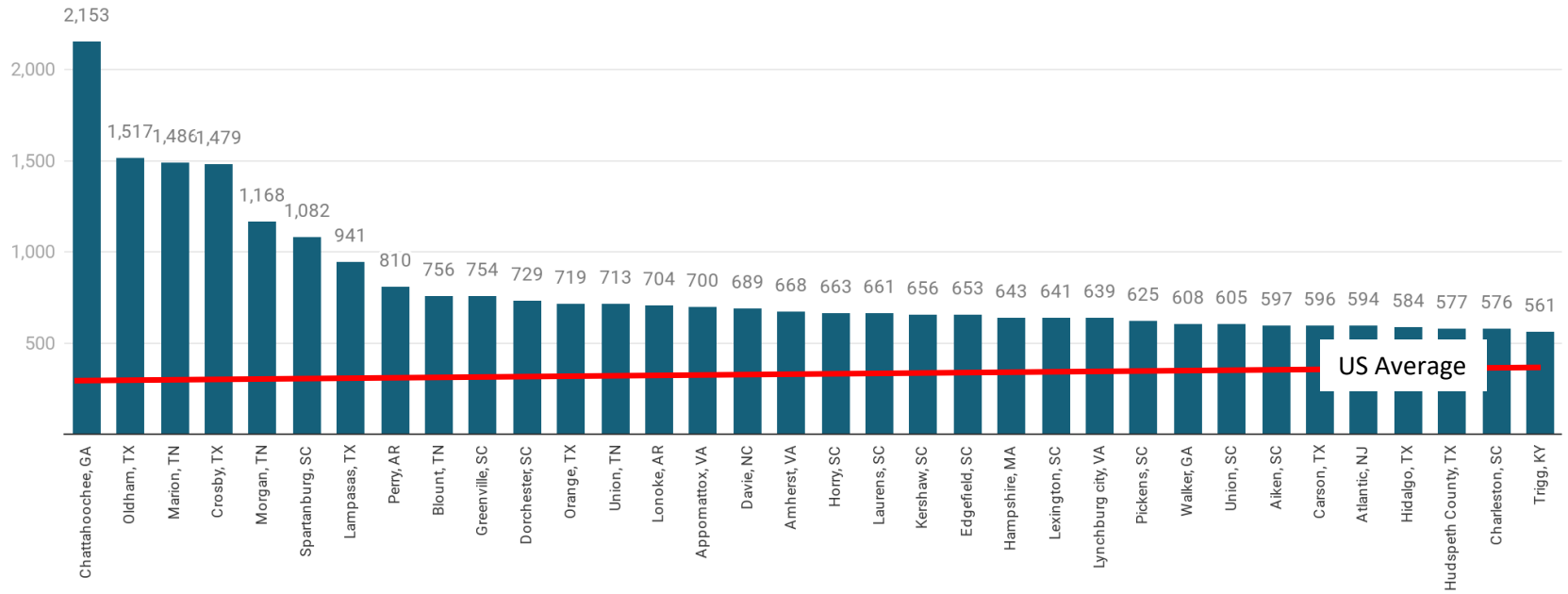
Medium Metro Areas in the US

South Carolina and Texas outpace other states with twelve and seven, respectively, of the thirty-four Medium Metro counties with the highest case rates



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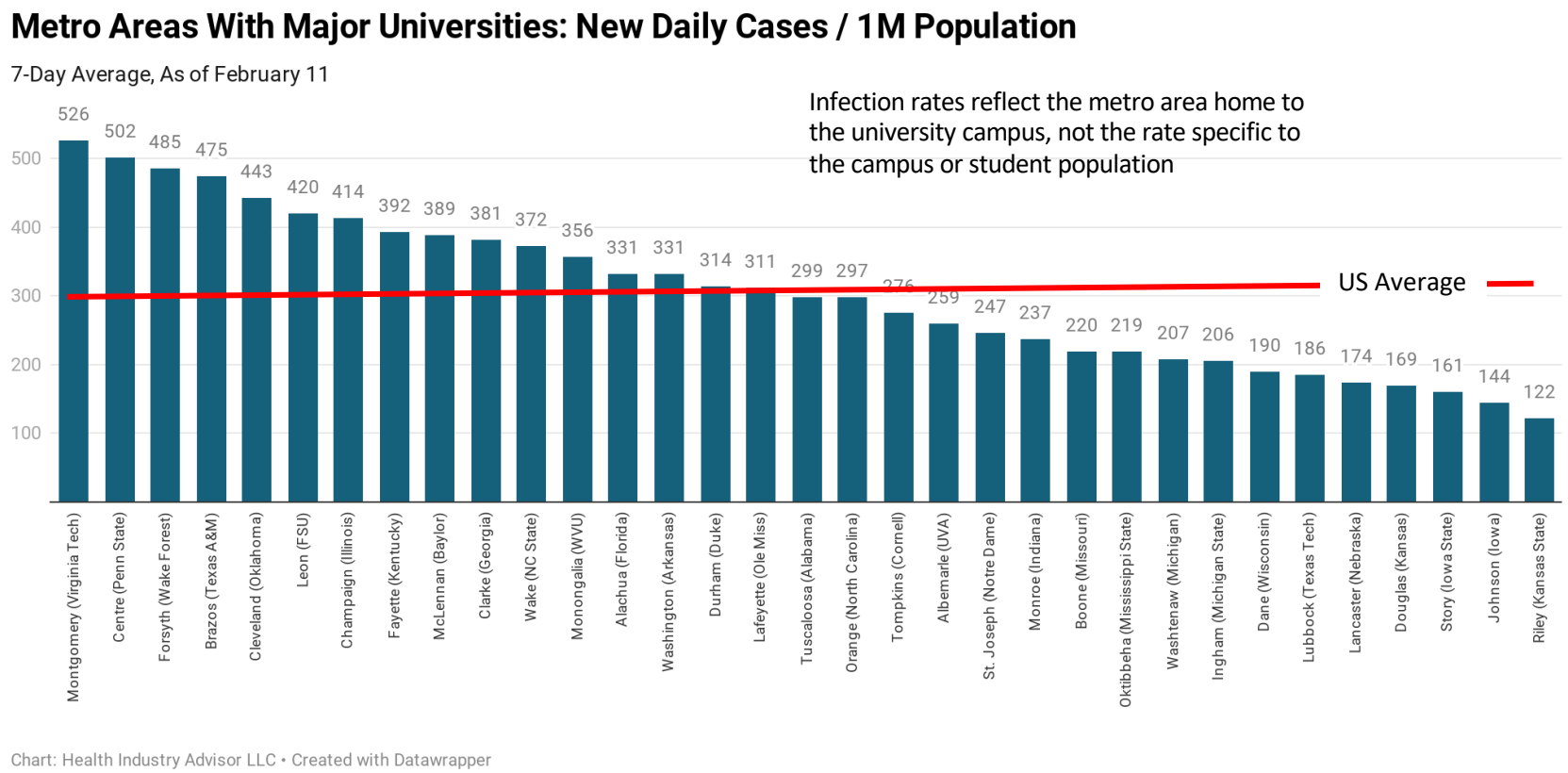
Metro Areas With Major Universities

Montgomery County County, home to Virginia Tech, reported the highest new case rate of the 33 such areas we track; Riley County (Kansas State), the lowest.



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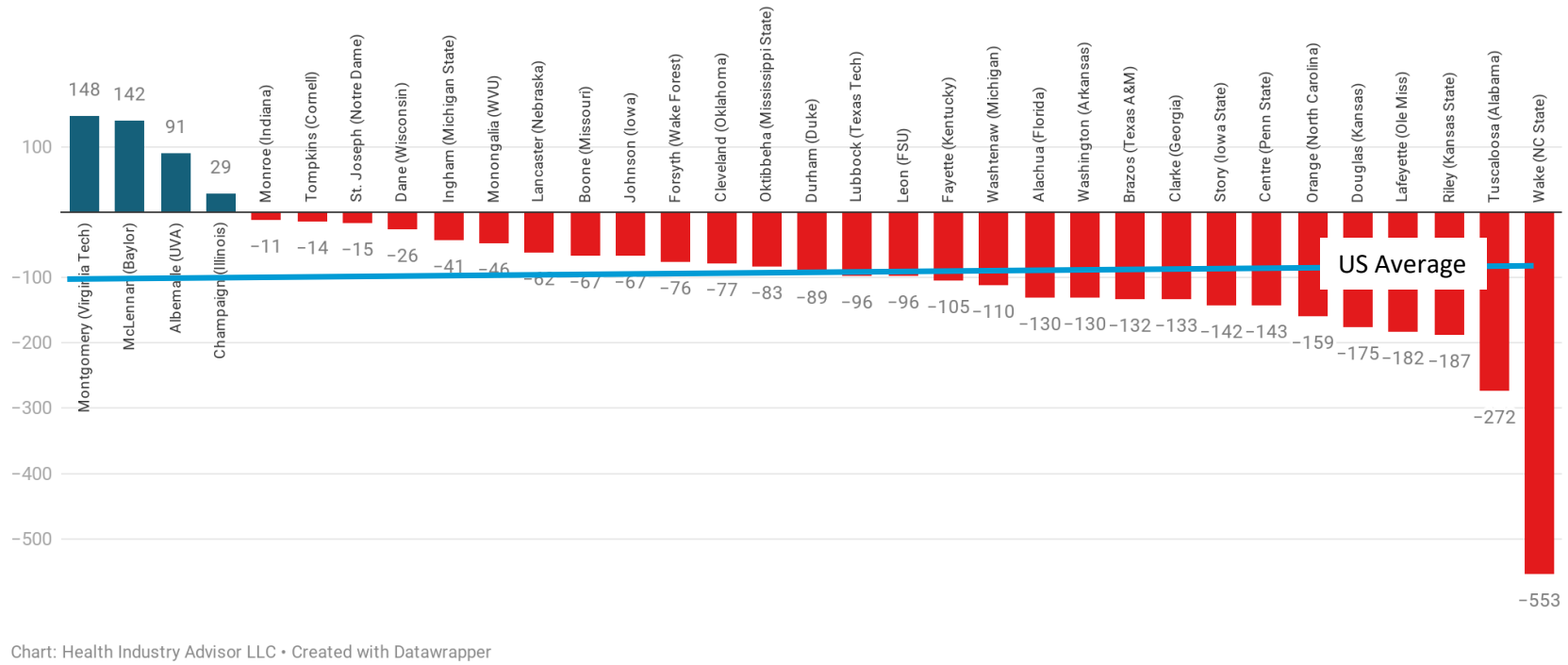
Metro Areas With Major Universities

Following the national pattern, new case rates declined week-over-week in twenty-eight of the thirty-three metro areas that we track. Wake County, home of the North Carolina State University, reported the sharpest decline – one week after posting the sharpest increase



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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
- Covid-19 Forecast Hub, https://viz.covid19forecasthub.org
- Oliver Wyman Pandemic Navigator, https://pandemicnavigator.oliverwyman.com/forecast?mode=country&region=United%20States&panel=mortality
- 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

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