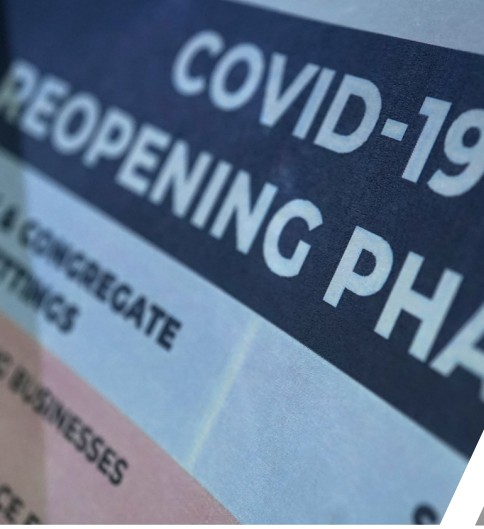

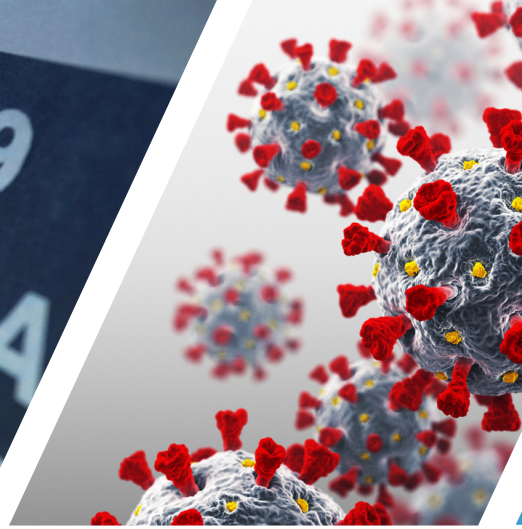

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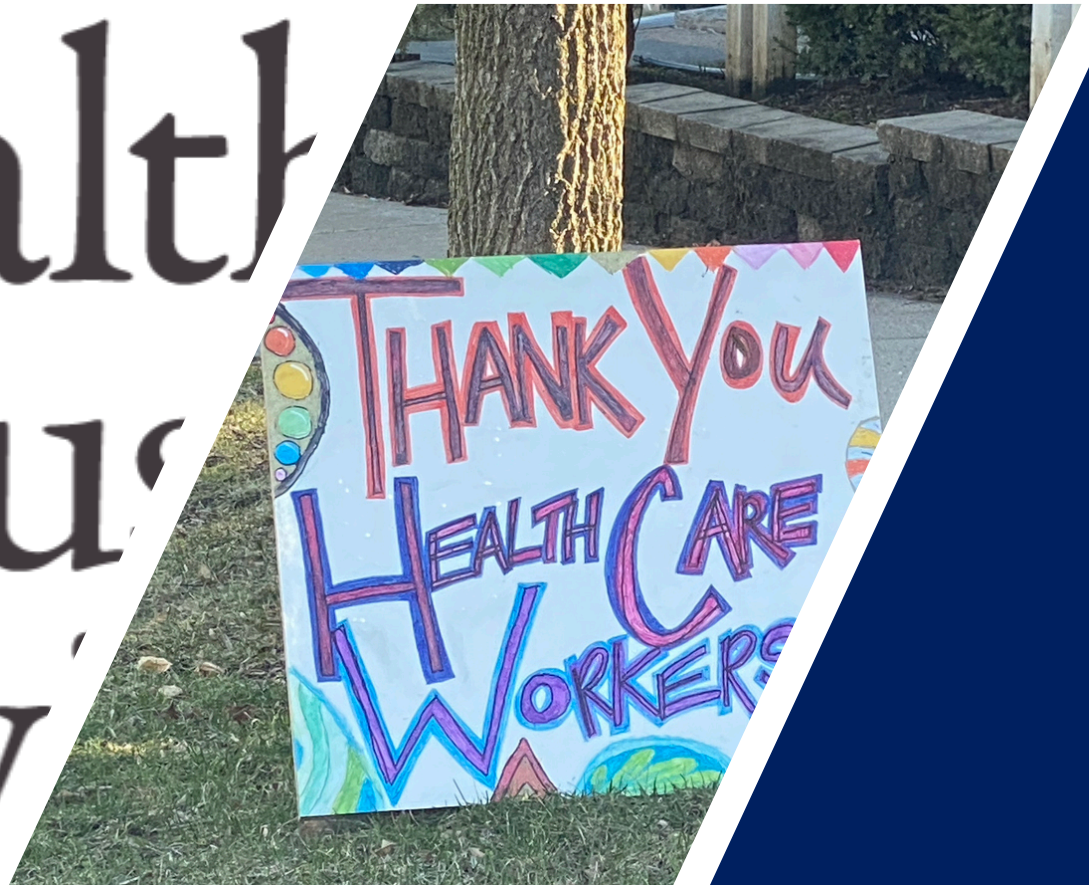

Issue # 239

Thursday, December 17, 2020

COVID-19 Report

Highlights

- Starting with **Reproduction Rates (R_t) - an indication of whether the virus spread is increasing or decreasing**
  - R_t measures how many people one infected person subsequently infects
  - $R_t > 1$ indicates that the virus spread is increasing; values < 1 indicate that it is declining
  - **Several states have R_t values < 1, indicating that the spread is declining: Alaska, Illinois, Iowa, Michigan, Minnesota, Missouri, Montana, Nebraska, New Jersey, New Mexico, North Dakota, South Dakota, Wisconsin and Washington**
  - Among the states with $R_t>1$, the following have experienced declines in this rate recently: Alabama, Georgia, Kentucky, Louisiana, Maryland, Massachusetts, Nevada, Oregon, Rhode Island, Texas, Utah and Virginia
  - **States that have both an R_t >1 and an increasing R_t are Arizona, Hawaii, Maine, Mississippi, North Carolina, Tennessee, Vermont and West Virginia**
- **Infection rates per capita are beginning to decline in several states, including Colorado, Illinois, Indiana, Iowa, Michigan, Minnesota, Montana, North Dakota, Ohio, South Dakota, Wisconsin and Wyoming**
  - **Relatively high and increasing rates are of concern in Arizona, California, Delaware, Massachusetts, Mississippi, New Hampshire, Nevada and Tennessee**
  - Increasing rates are of concern in Kentucky, Louisiana, Maine, Maryland, New Mexico, New York, North Carolina, Oklahoma, Pennsylvania, Rhode Island and South Carolina

- **Covid-19 patient census remains high across much of the country**
  - **Covid-19 patients occupied 36% of all inpatient beds yesterday, unchanged from Wednesday Nevada continues to experience the highest rate at 72%; this rate is down, however, from its recent high of 90%**
  - **New York has seen its Covid-19 occupancy increase, from 45% a week ago to 60% yesterday**
  - The rate of patient days-to-new cases remains low compared to earlier in the pandemic. As of yesterday, every two new cases equated to one additional patient day
  - **Over the past 4-6 weeks, the rate at which Covid-19 patients were receiving ICU care has dropped yet, the rate these patients are on ventilators has increased in that time**
  - The % of ER patient visits due to Covid-19-like illnesses had declined since Thanksgiving Day
- Tragically, deaths with the coronavirus continue to increase
  - **Yesterday, 3,556 deaths were reported - the highest for any single day during the pandemic**
  - The 7-day average deaths have increased every day since Thanksgiving

State-By-State Scorecard

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

At his point, we have elected not to provide an overall score – in our view, different audiences would assign different priorities to each of the five measures

For example, health systems might weigh the Covid-19 census as a % of available beds; A community might weigh the deaths per case highest

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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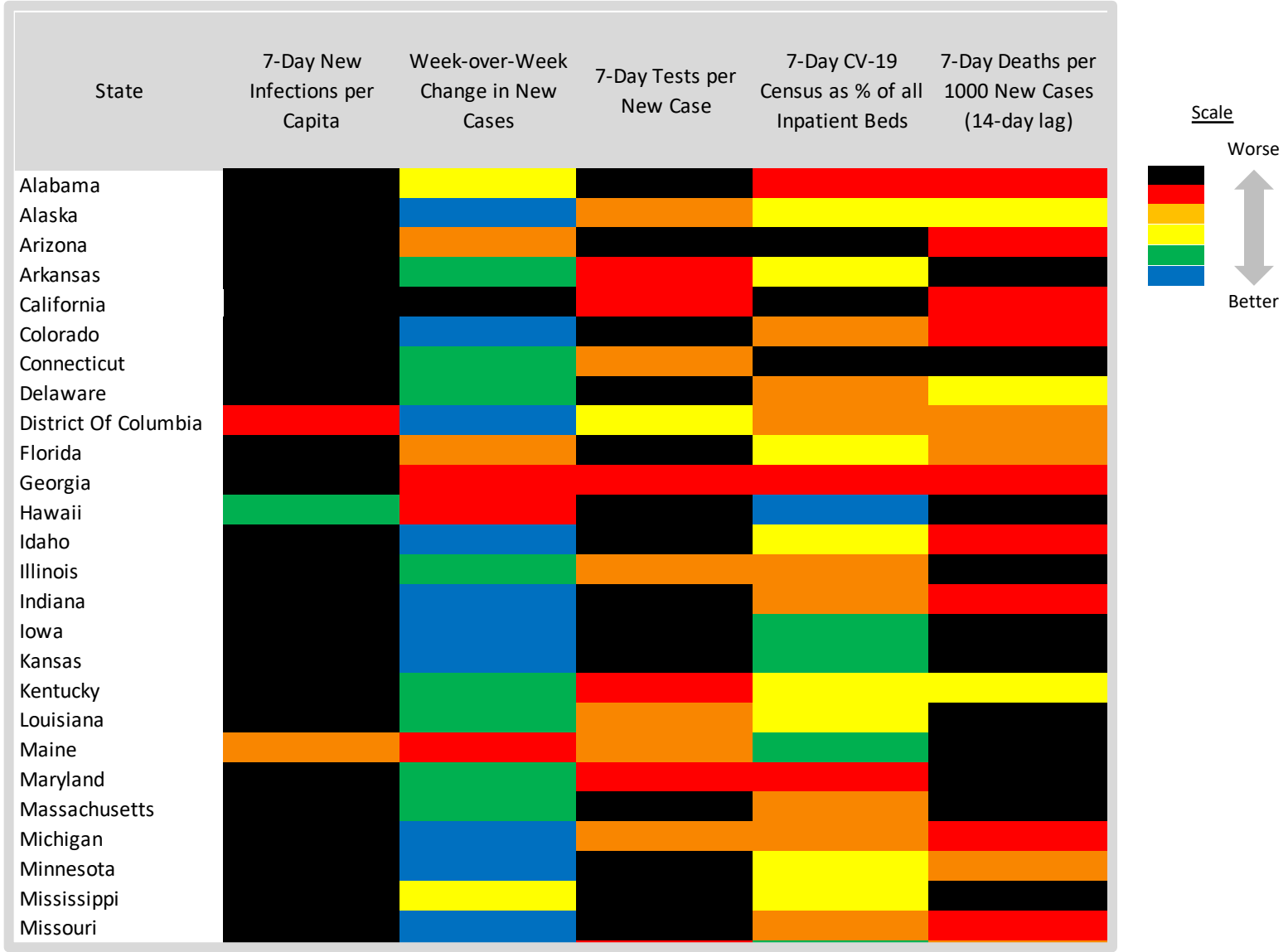
Page 1 of 2

Except for Hawaii, new infection rates are high in every state

The week-over-week change in these rates, however, is an encouraging sign – except in California, Georgia, Hawaii and Maine

Hospital use is of concern in most states, except Hawaii, Indiana, Iowa and Maine

Death rates are high in every state



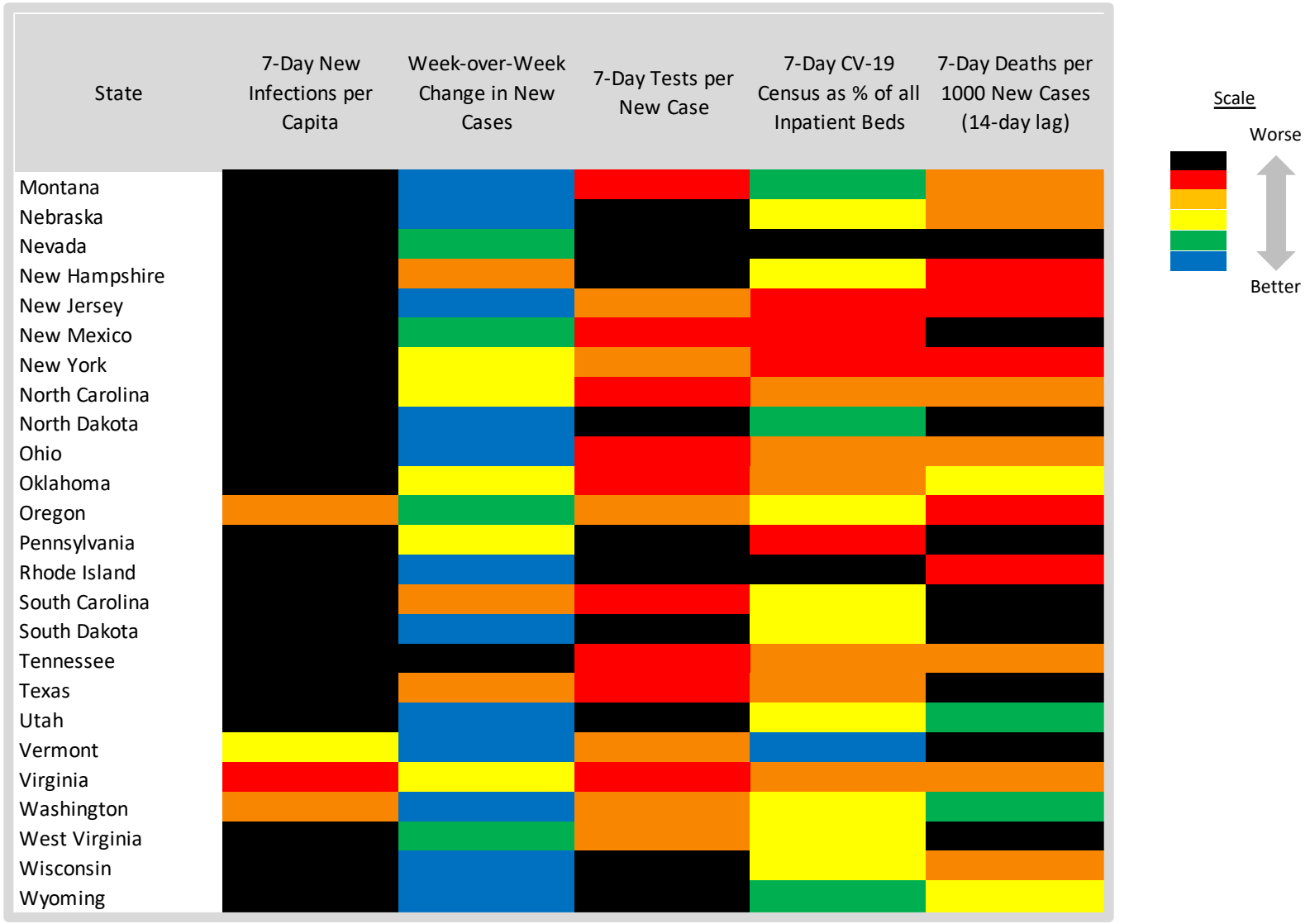
Page 2 of 2:

Except for Vermont, new infection rates are high in every state

The week-over-week change in these rates, however, is an encouraging sign – except in New Hampshire, South Carolina, Tennessee and Texas

Hospital use is of concern in most states, except Montana, North Dakota, Vermont and Wyoming

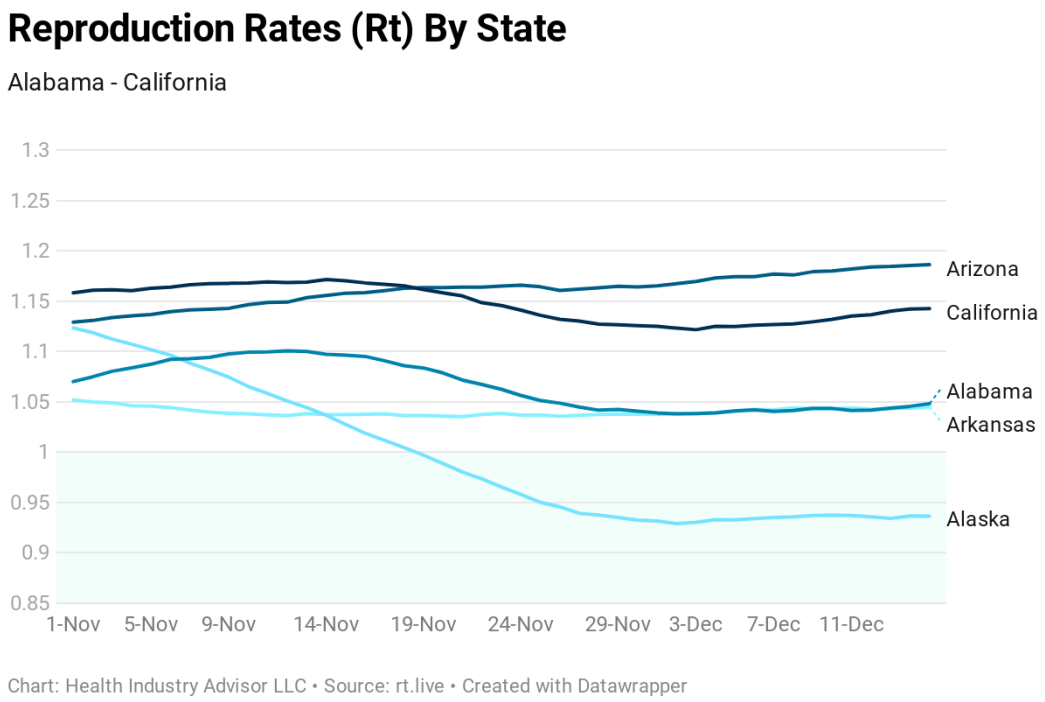
Death rates are high in every state, except Utah and Washington



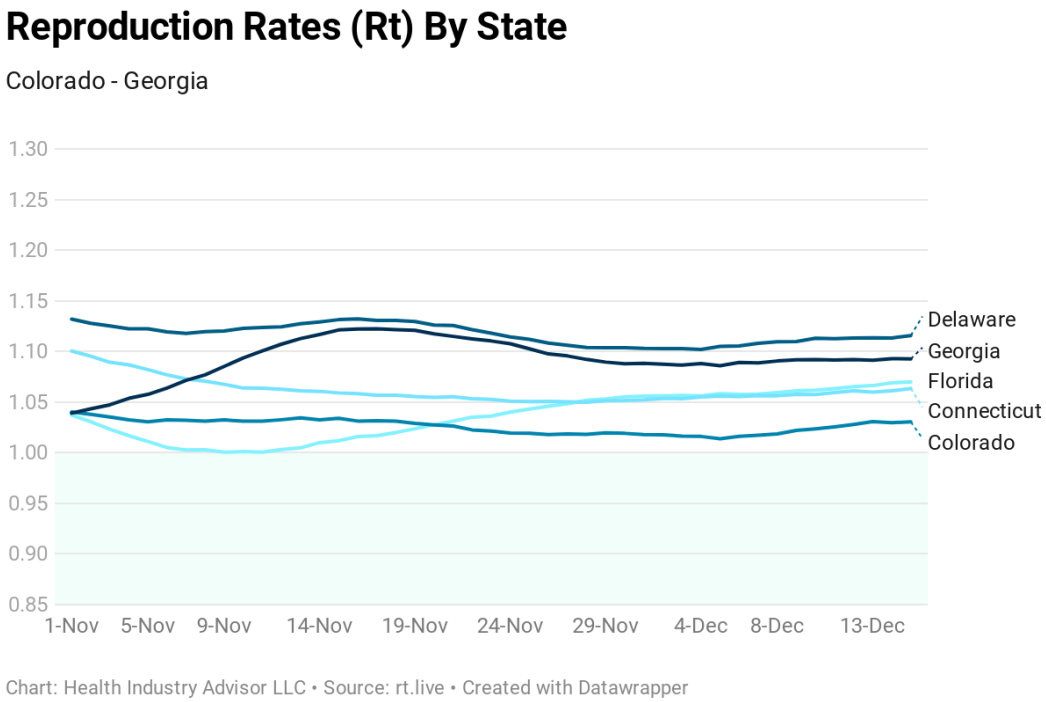
Health Industry Advisor, llc

Reproduction Rates (R_t) are an indication of how fast the virus is spreading. Rates > 1 suggest that spread is increasing; <1, that it is declining
Of these ten states, spread is declining only in Alaska
R_t is increasing in Arizona and California

Alabama - California



Colorado - Georgia



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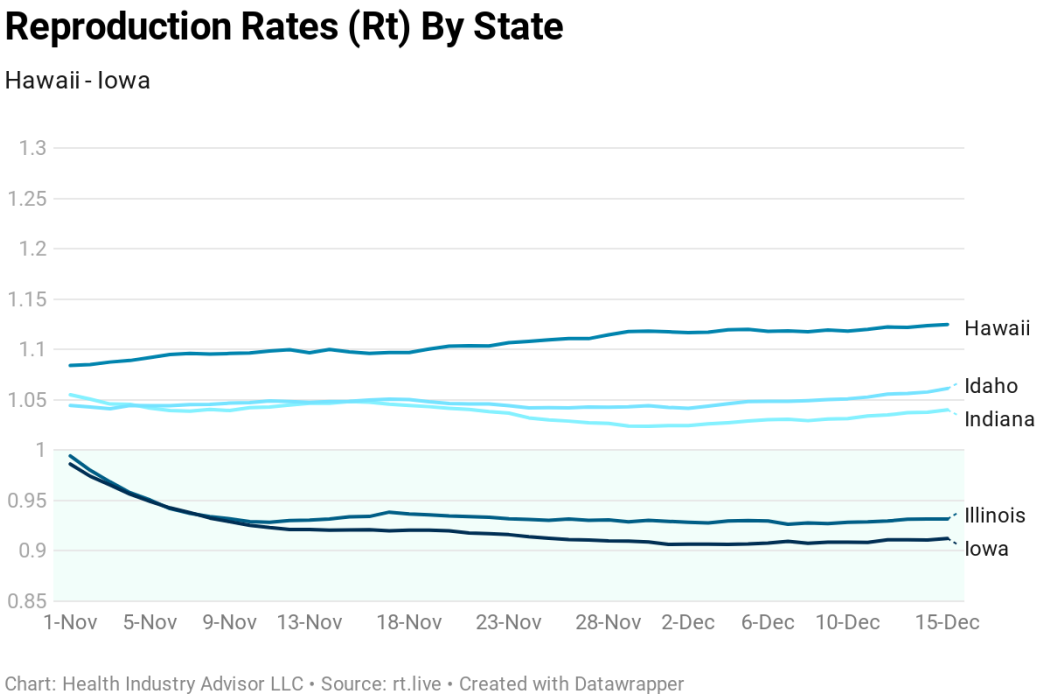
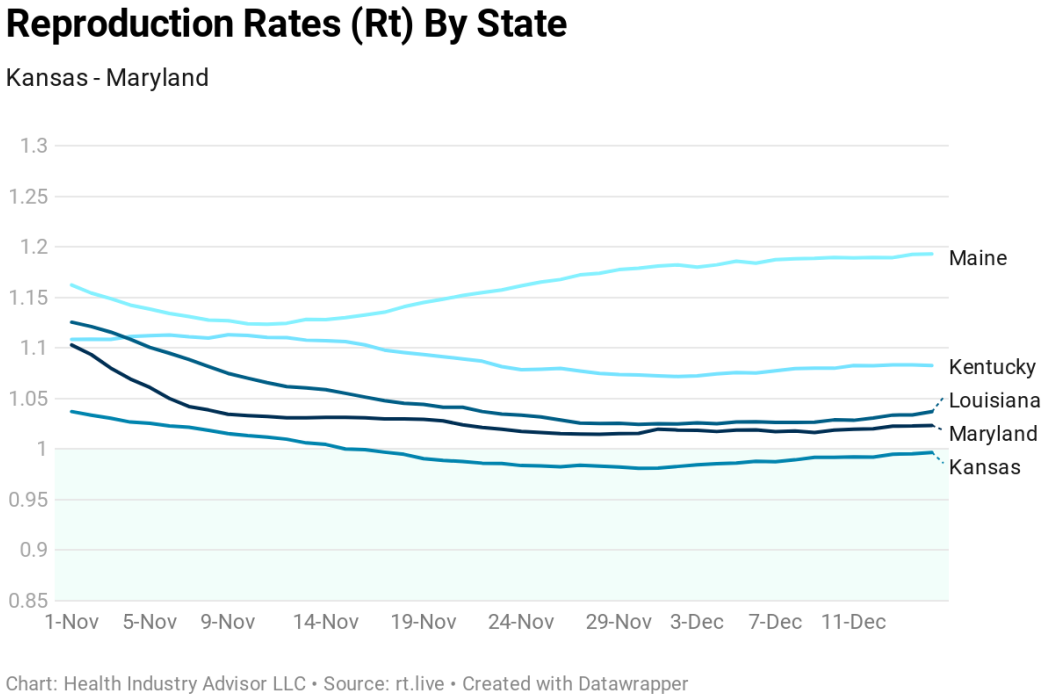
Reproduction Rates (R_t) are an indication of how fast the virus is spreading. Rates > 1 suggest that spread is increasing; <1, that it is declining
Of these ten states, spread is declining only in Illinois and Iowa
R_t is increasing in Hawaii, Kansas and Maine

Hawaii - Iowa

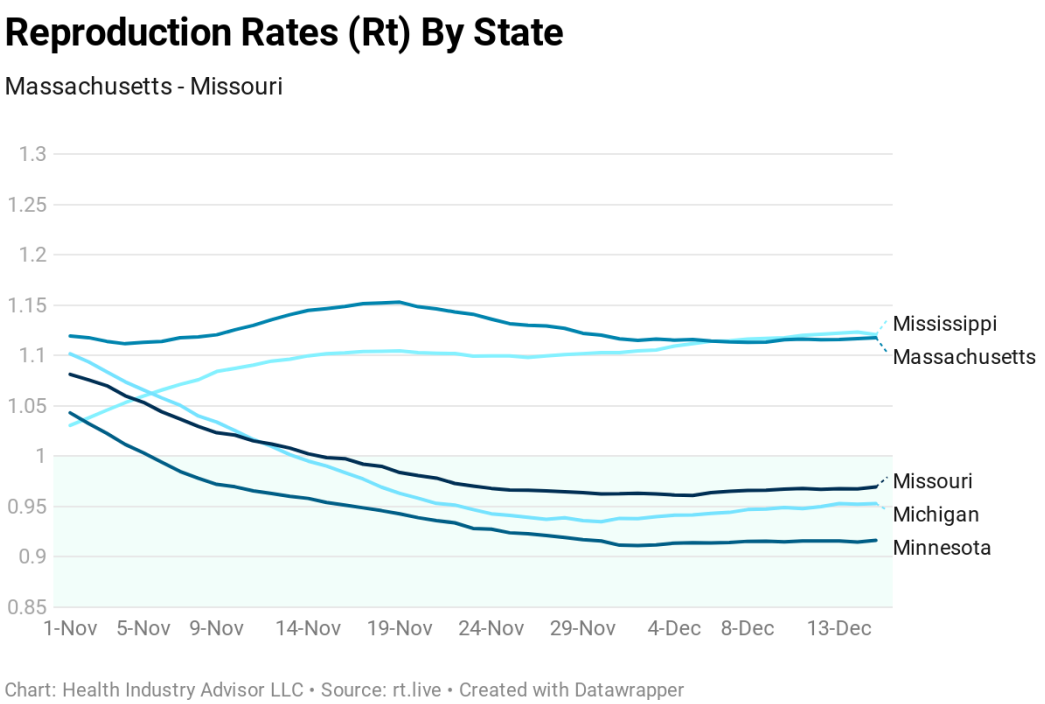


Kansas - Maryland

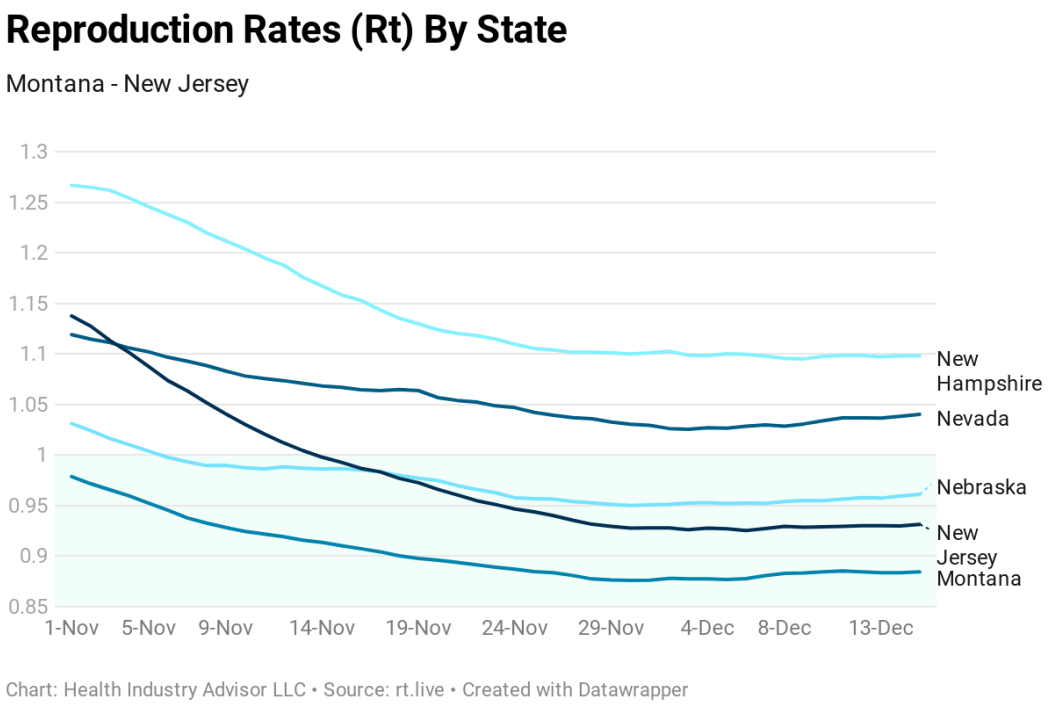


Reproduction Rates (R_t) are an indication of how fast the virus is spreading. Rates > 1 suggest that spread is increasing; <1, that it is declining
Of these ten states, spread is declining in Michigan, Minnesota, Missouri, Montana, Nebraska and New Jersey
R_t is increasing in Massachusetts but, declining or stable in the other nine states

Massachusetts - Missouri



Montana – New Jersey



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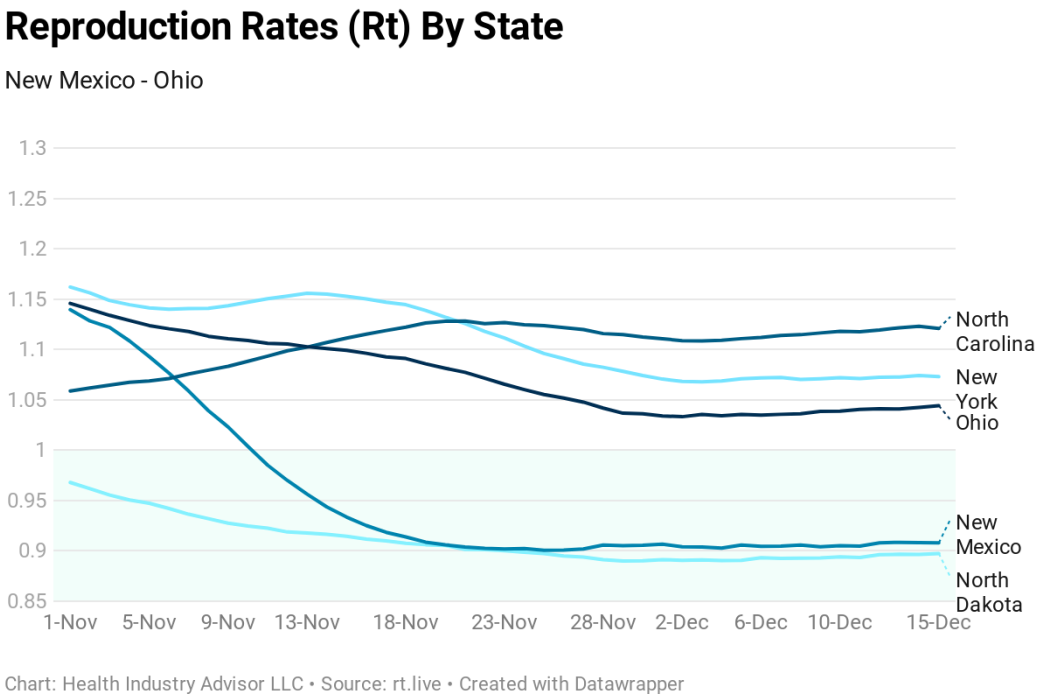
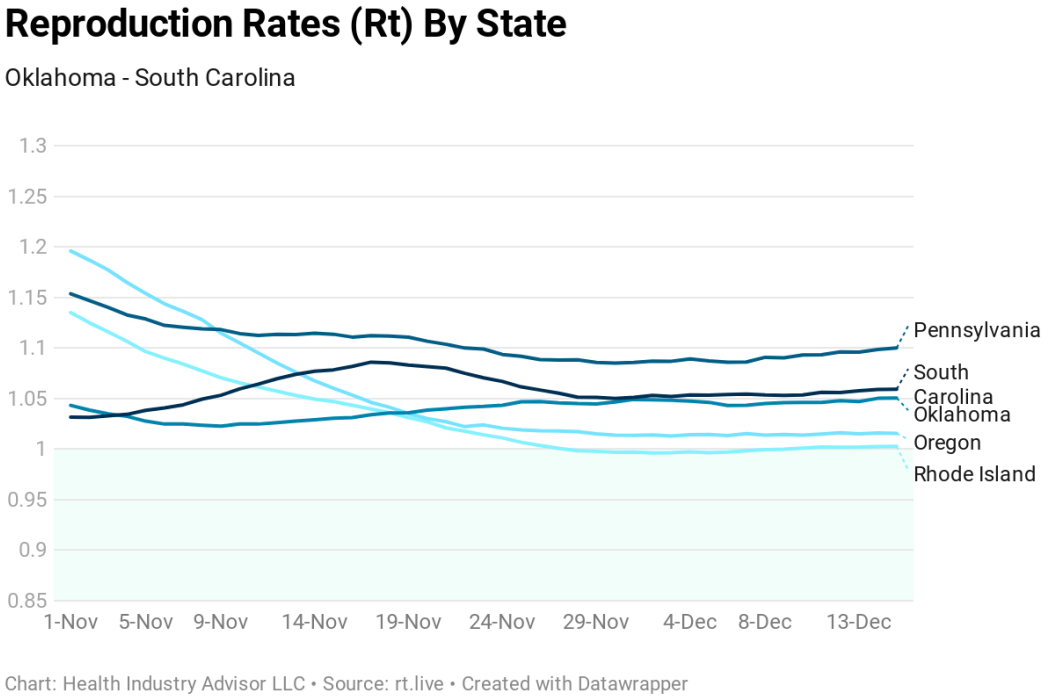
Reproduction Rates (R_t) are an indication of how fast the virus is spreading. Rates > 1 suggest that spread is increasing; <1, that it is declining
Of these ten states, spread is declining only in New Mexico and North Dakota
R_t is declining in New York and Ohio; steady in most of these other states

New Mexico - Ohio



Oklahoma – South Carolina



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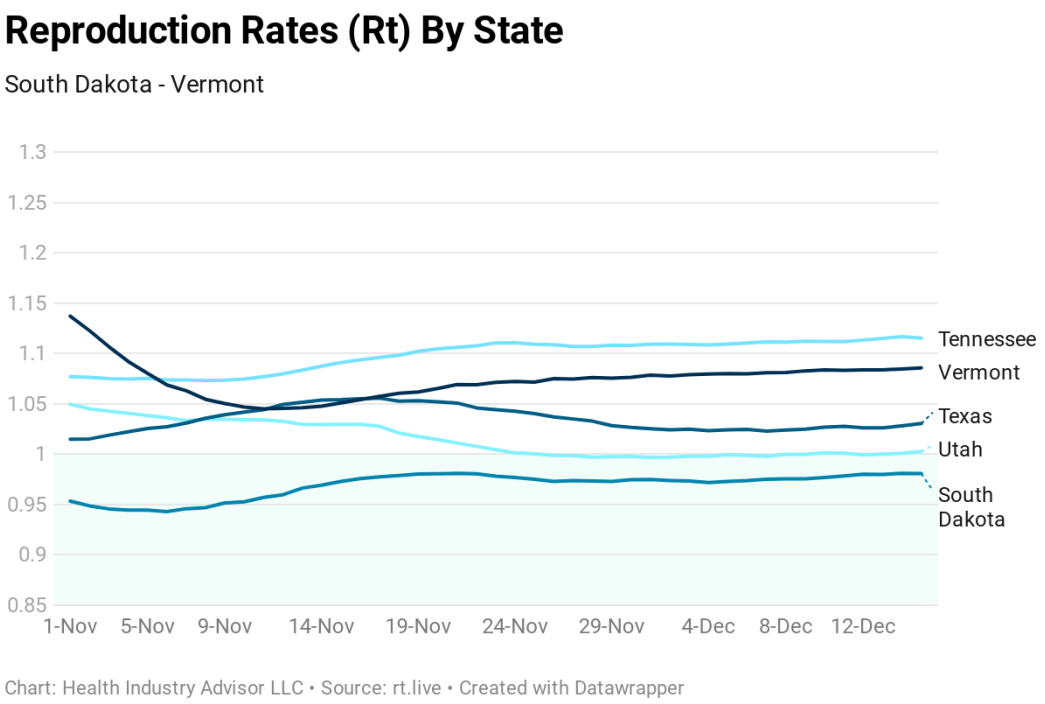
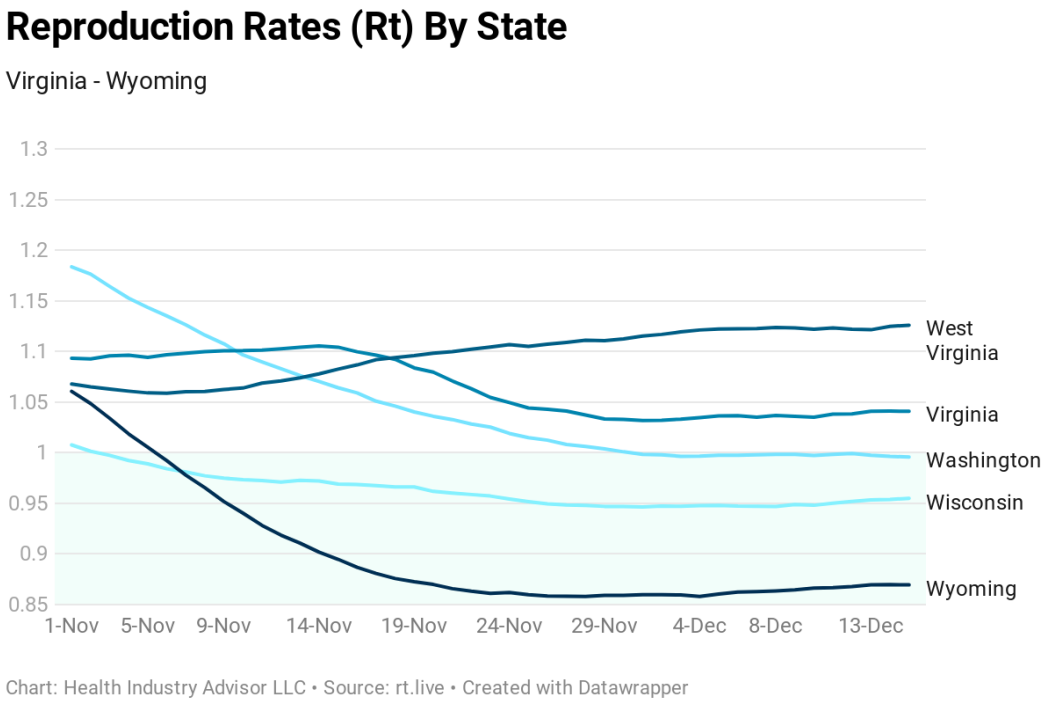
Reproduction Rates (R_t) are an indication of how fast the virus is spreading. Rates > 1 suggest that spread is increasing; <1, that it is declining
Of these ten states, spread is declining South Dakota, Washington, Wisconsin and Wyoming
R_t is increasing in West Virginia but, steady in the other nine states

South Dakota - Vermont



Virginia - Wyoming



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New Infection Rates
Relatively high and increasing rates are of particular concern in Arizona, California, Delaware and Connecticut
The declining rate in Colorado is encouraging

Alabama - California

New Infection Rates / Million

Alabama - California, 7-day Average

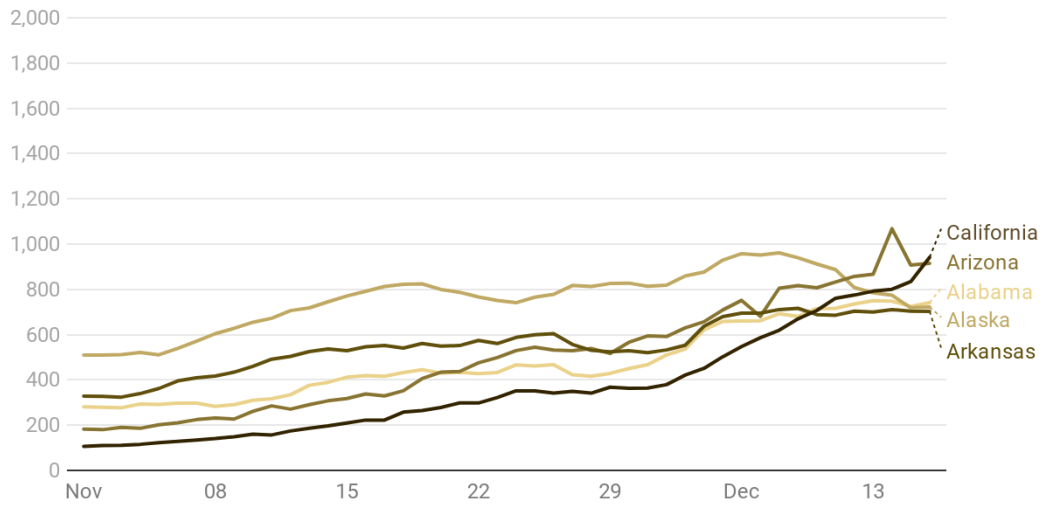

Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

Colorado - Georgia

New Infection Rates / Million

Colorado - Georgia 7-day Average

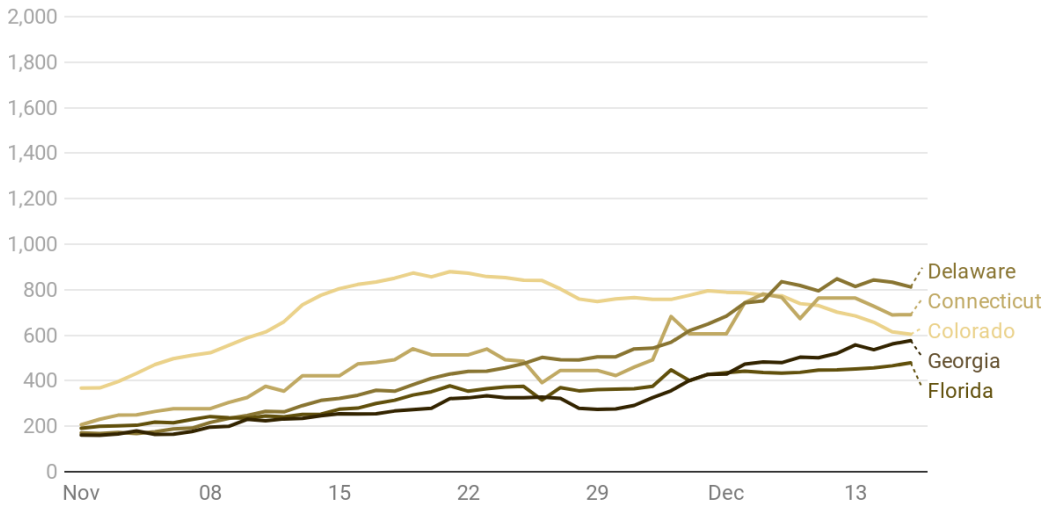

Chart: Health Industry Advisor LLC • Source: worldometers.info • Created with Datawrapper

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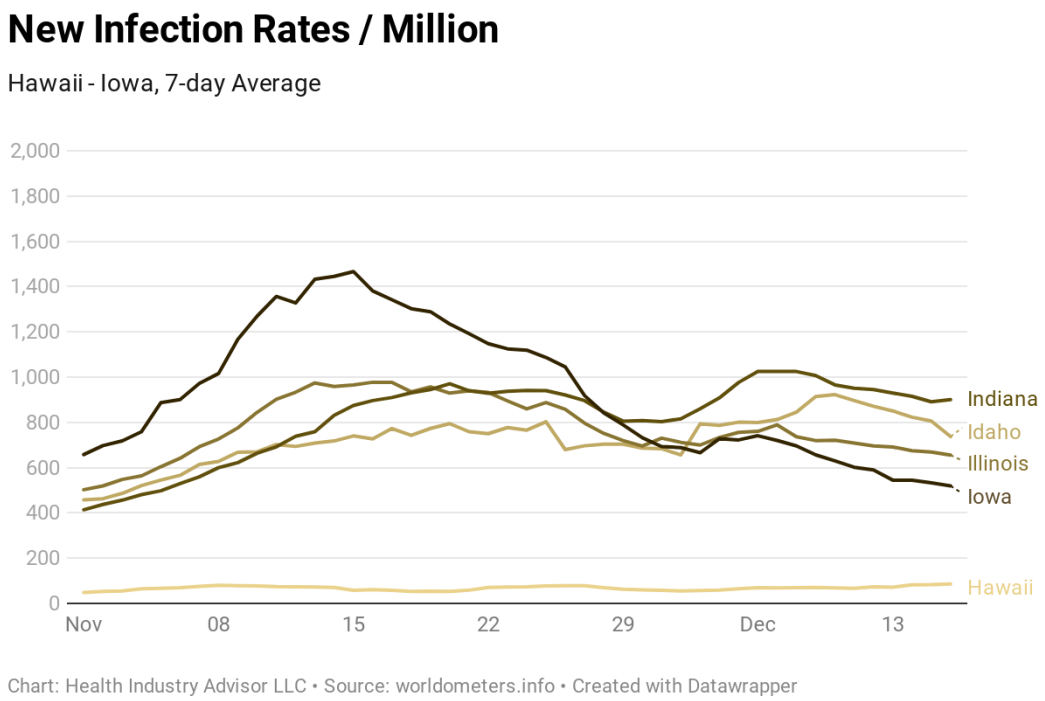
New Infection Rates

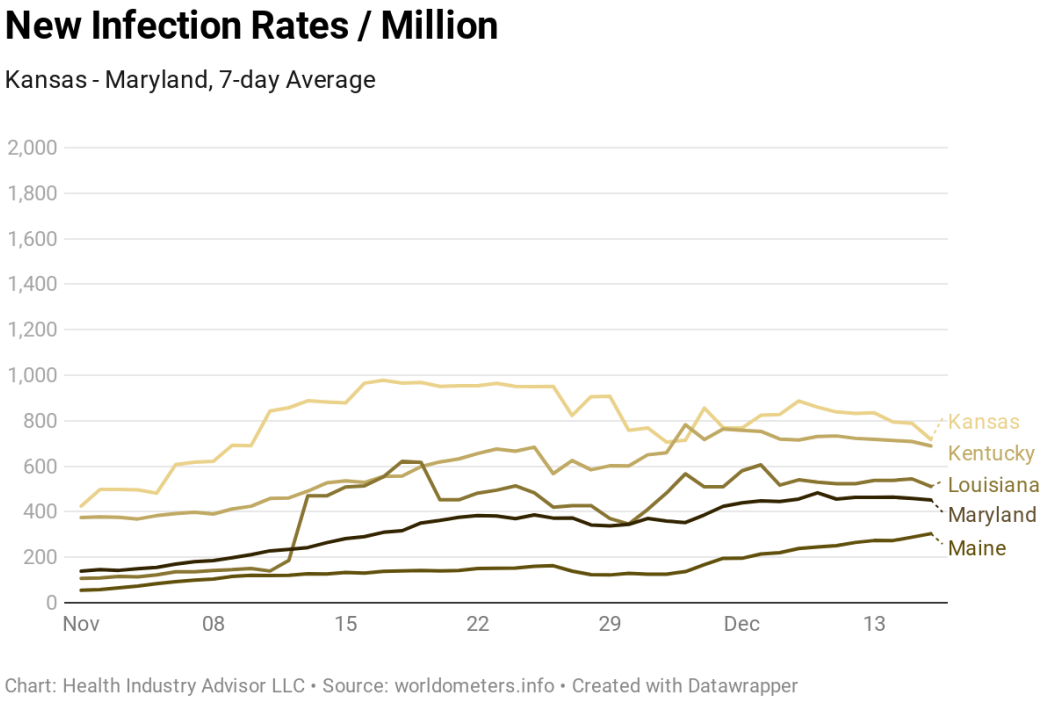
Increasing rates are of concern in Kentucky, Louisiana, Maine and Maryland, despite being relatively low compared to other states

Declining rates in Idaho, Illinois, Indiana and Iowa are encouraging

Hawaii - Iowa



Kansas - Maryland



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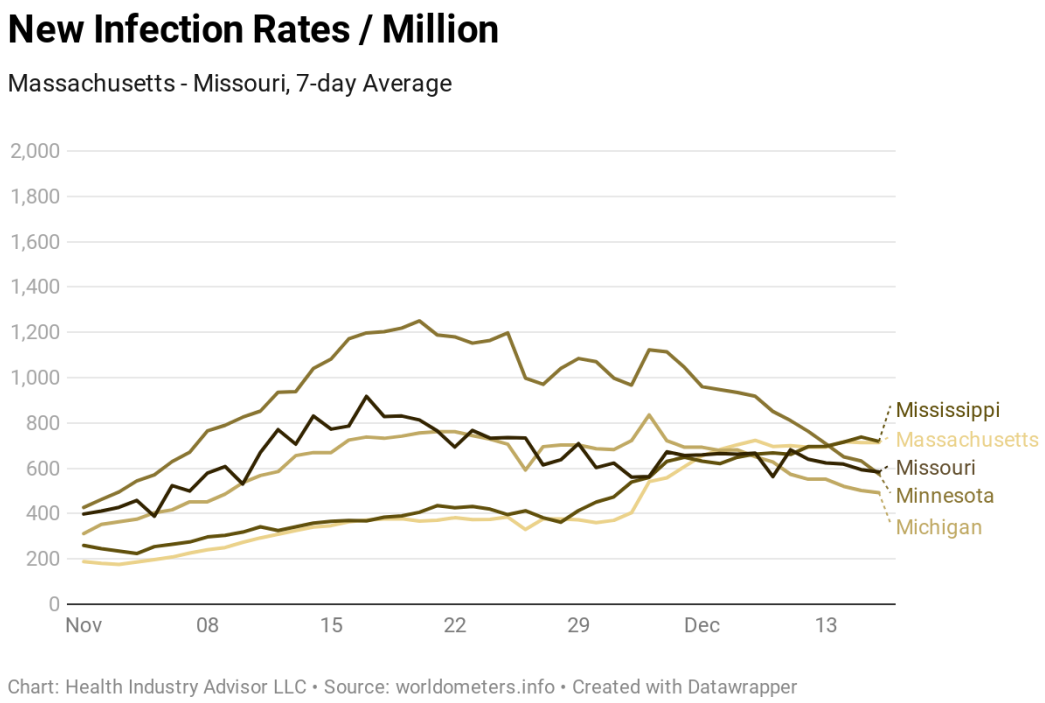
New Infection Rates

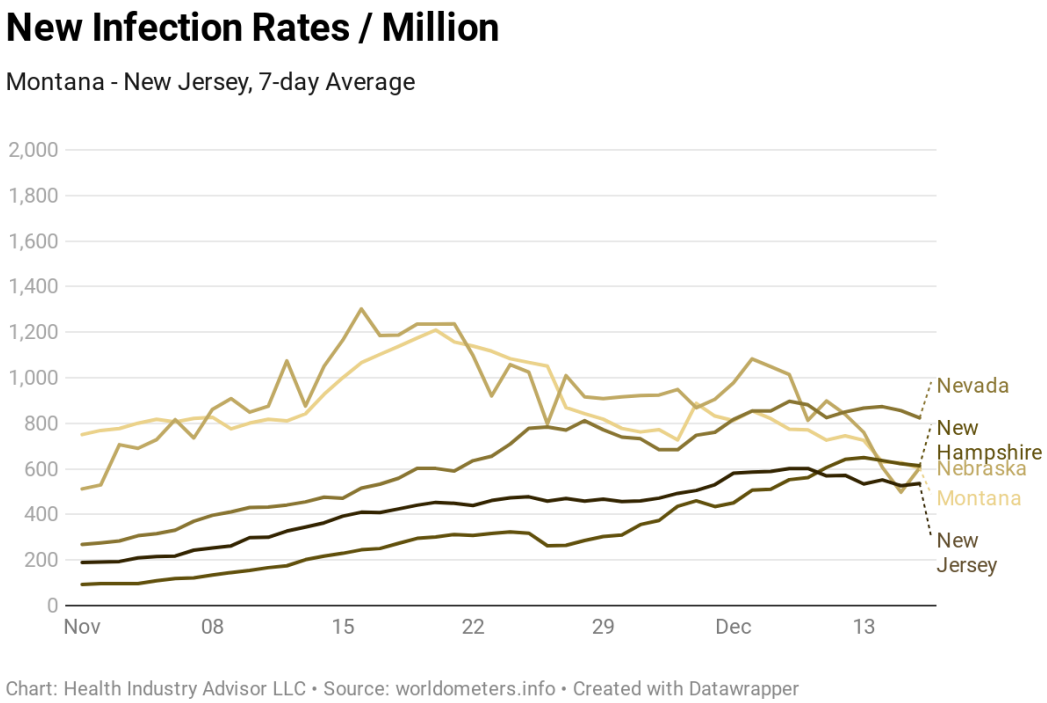
Relatively high and increasing rates are of particular concern in Massachusetts, Mississippi, New Hampshire and Nevada

Declining rates in Michigan, Minnesota and Montana are encouraging

Massachusetts - Missouri



Montana – New Jersey



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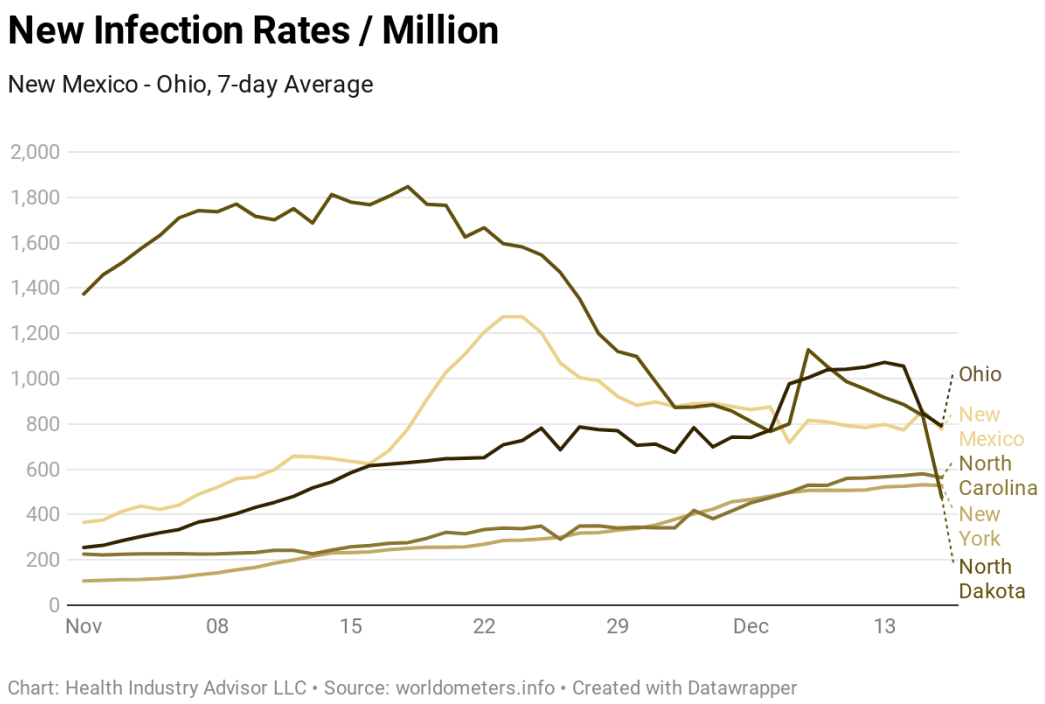
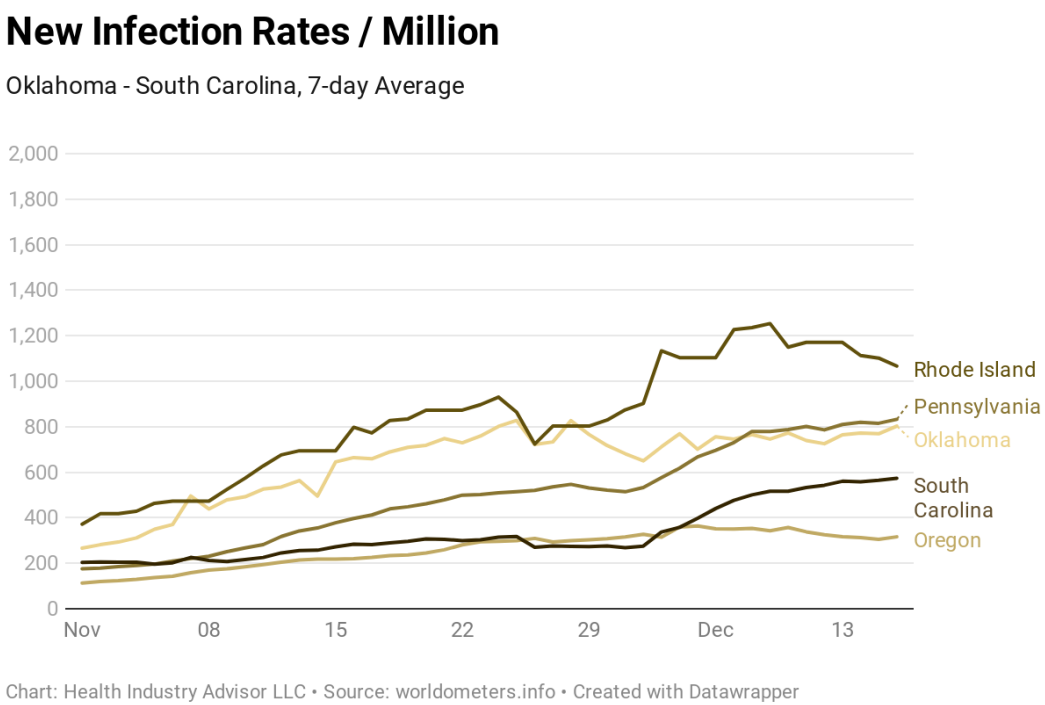
New Infection Rates
Increasing rates are of concern in New Mexico, New York, North Carolina, Oklahoma, Pennsylvania, Rhode Island and South Carolina
Declining rates in North Dakota and Ohio are encouraging

New Mexico - Ohio

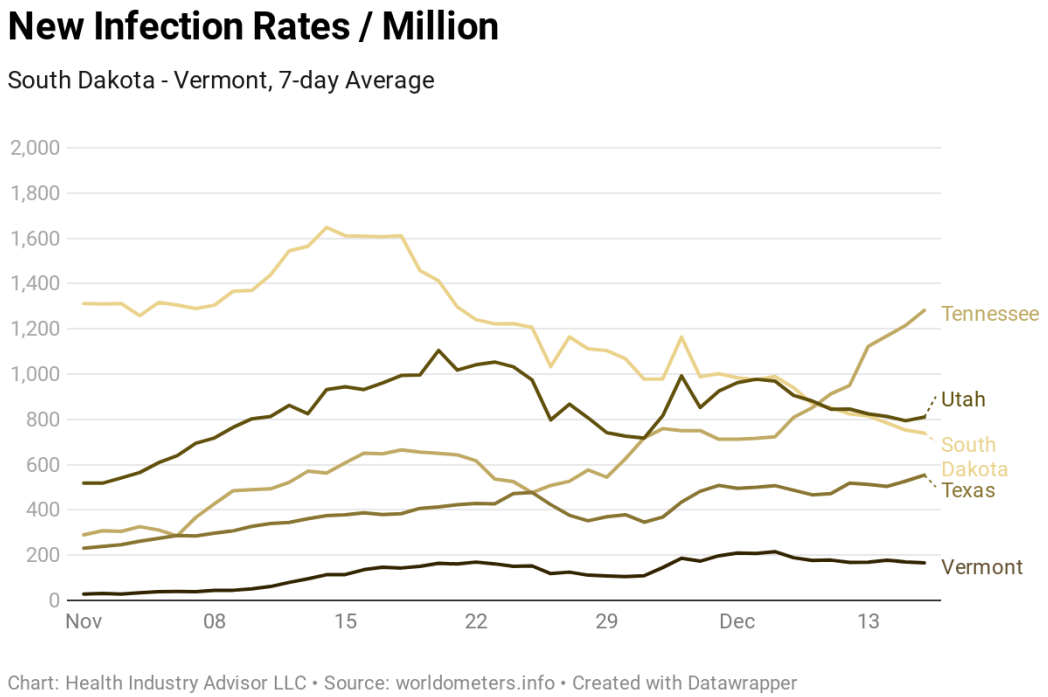


Oklahoma – South Carolina

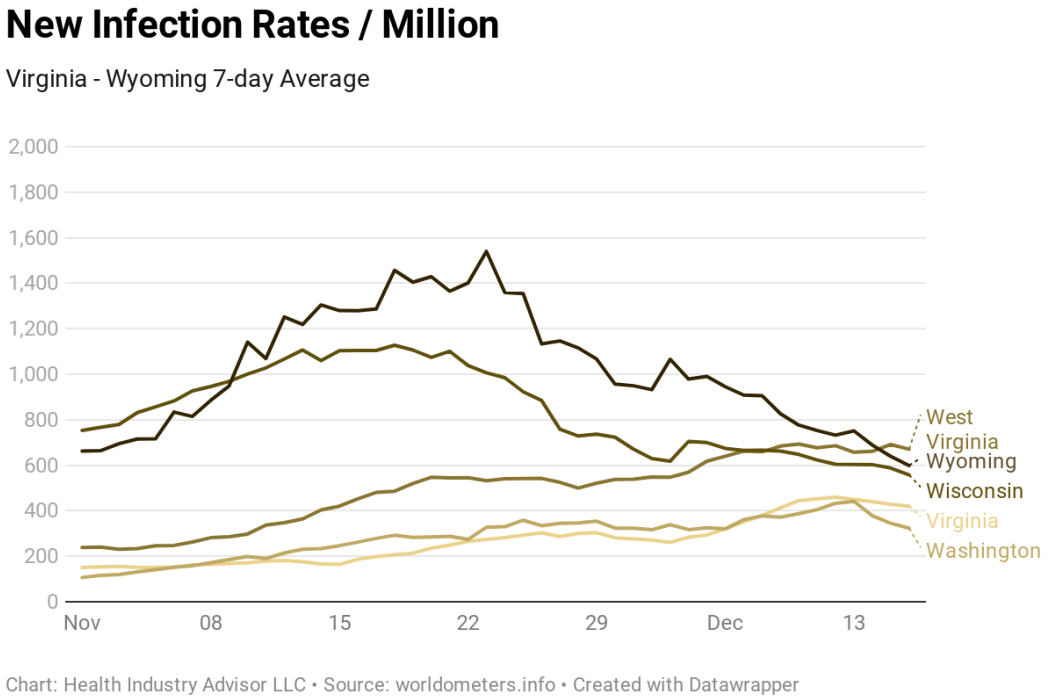


New Infection Rates
The relatively high and increasing rate in Tennessee is of particular concern; as is the high rate in Utah
Declining rate in South Dakota, Wisconsin and Wyoming are encouraging

South Dakota - Vermont



Virginia - Wyoming

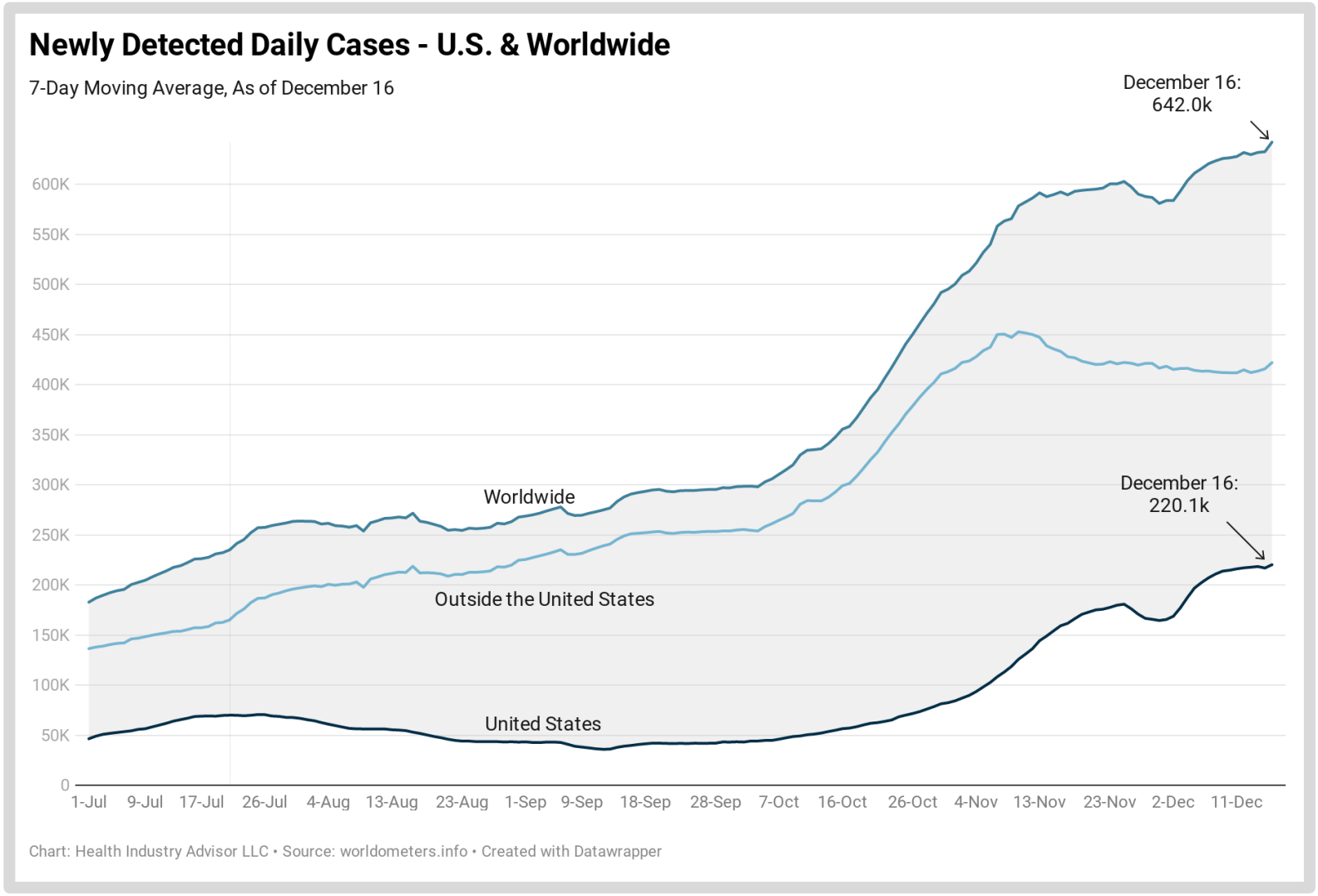


We are averaging ~642k new cases worldwide each day, as of Wednesday

New cases in the United States appear to have leveled-off over the past 5-6 days. These are now averaging ~220k new cases each day

Outside the U.S. newly-detected cases have declined have increased over the past few days

* - 7-day moving average basis



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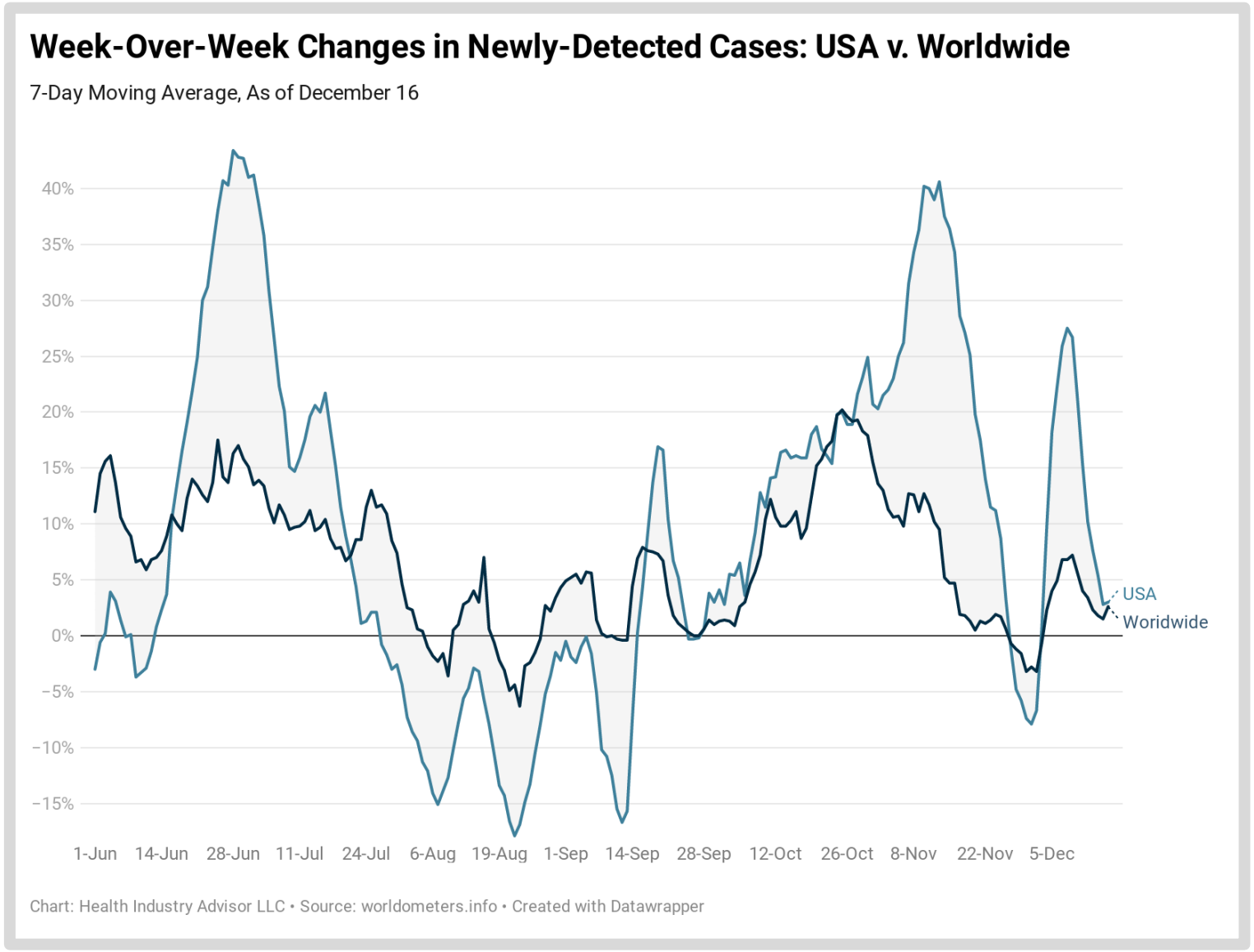
Now that we have washed-out the reporting interruptions caused by the Thanksgiving holiday, week-over-week increases in new cases have been relatively low



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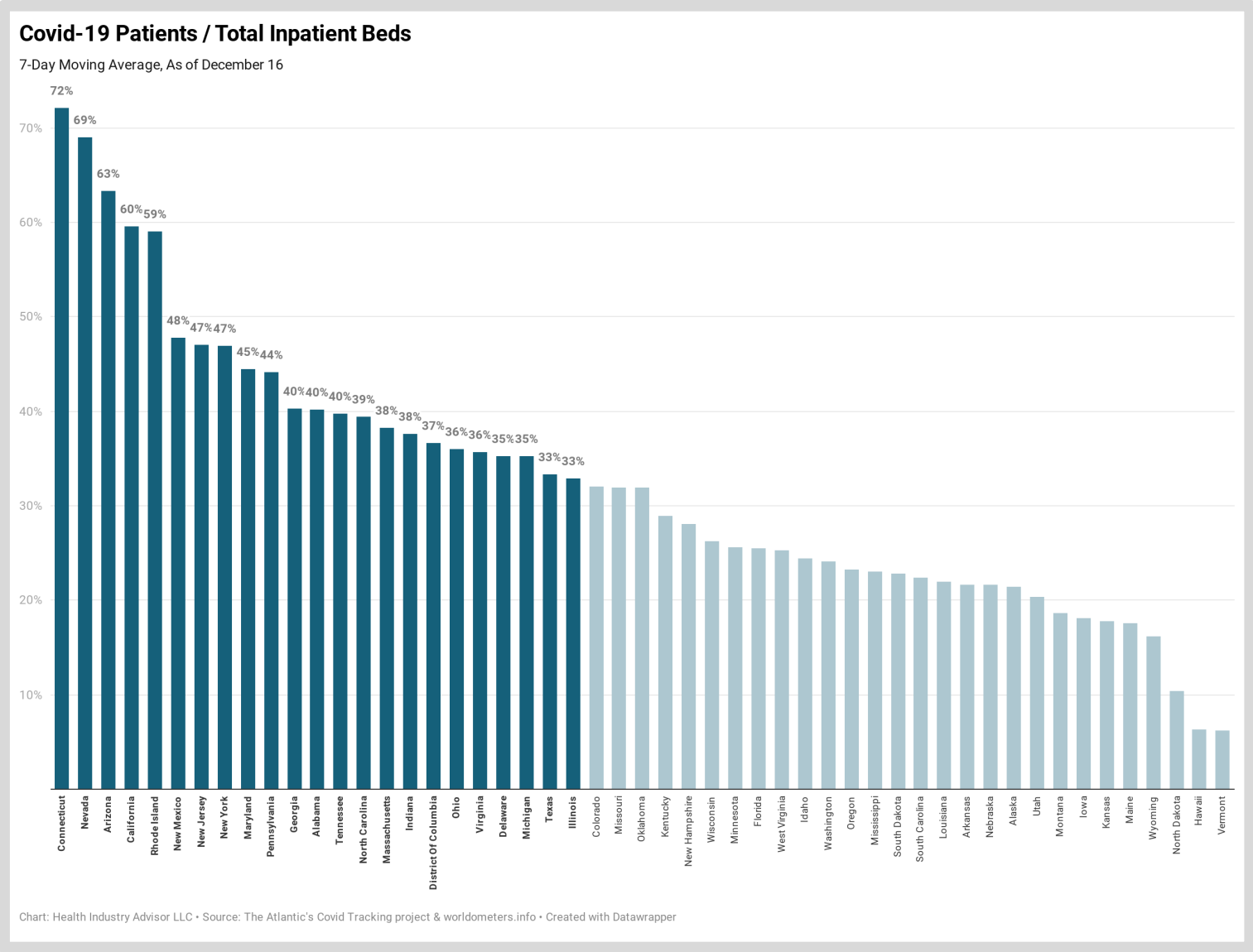
Covid-19 census held steady yesterday, 36% of all inpatient beds

Nevada continues to have the highest occupancy of Covid-19 patients 72%; this rate has dropped, however, from 90% just two days ago

California has seen its Covid-19 occupancy increase from 45% to 60% in the last week



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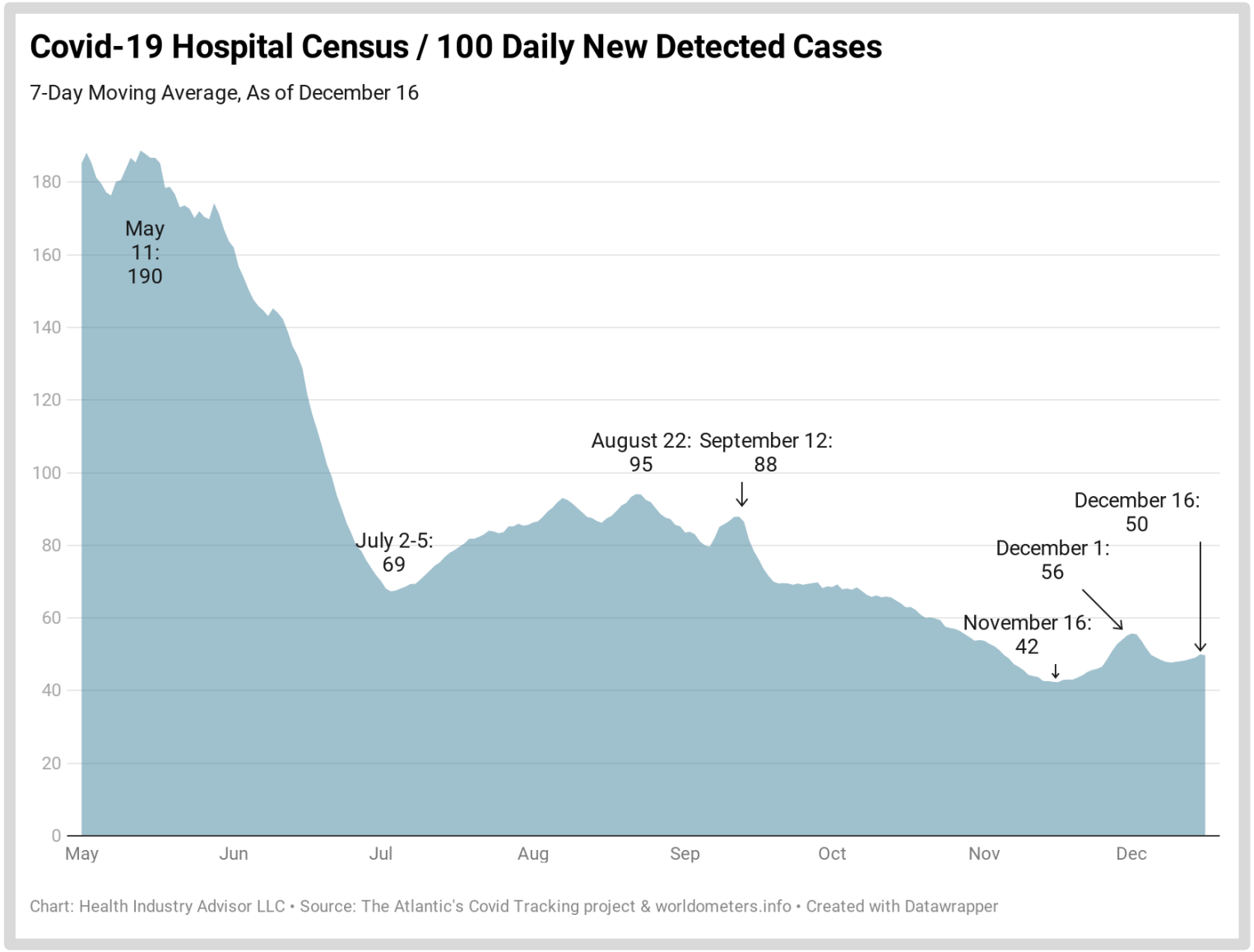
Every two new cases equates to one day in a hospital bed

The average Covid-19 census per 100 new-cases continues to be relatively low, compared to earlier in the pandemic



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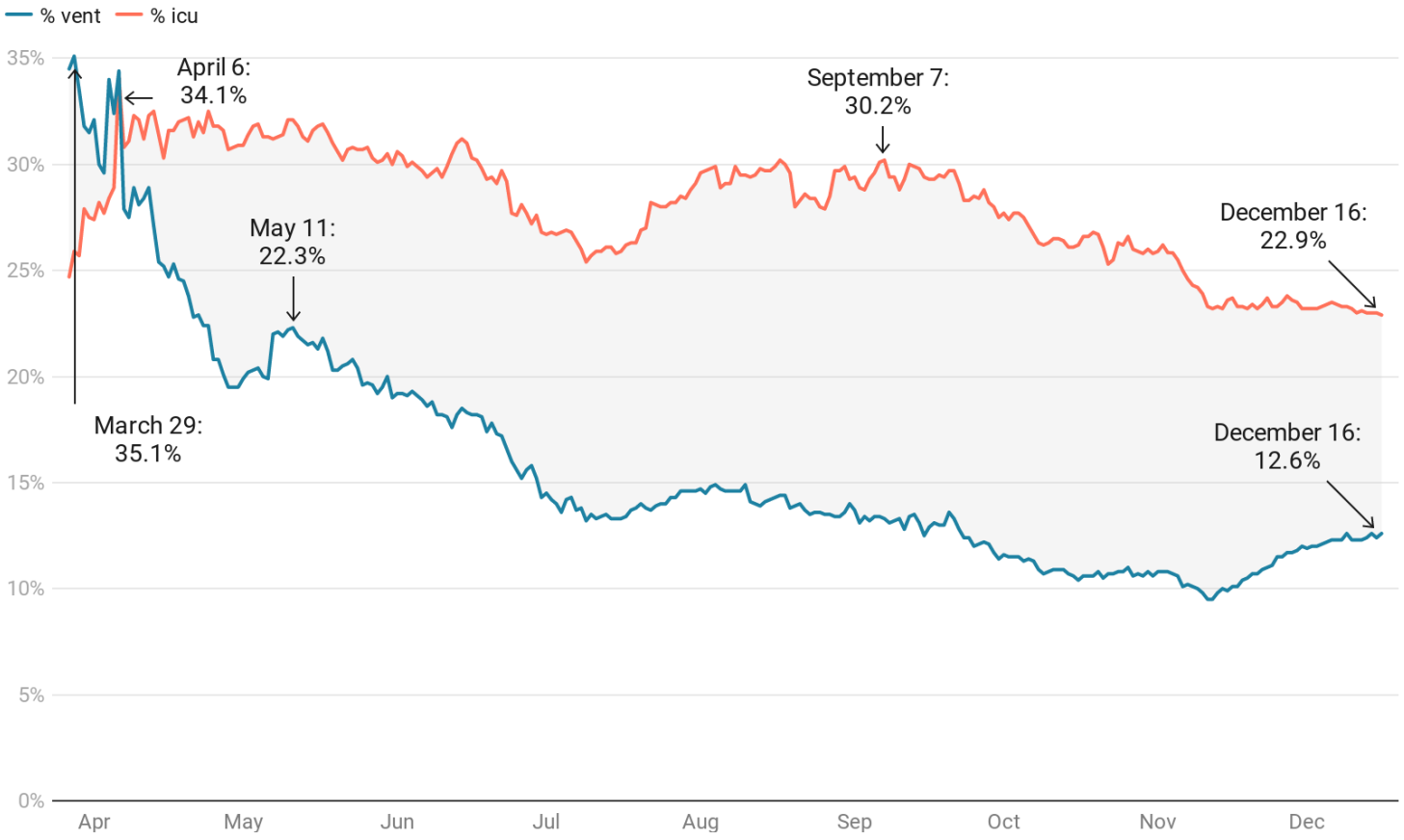
Over the past 4-6 weeks, the likelihood of a Covid-19 inpatient would require ICU care has declined; the likelihood a Covid-19 inpatient would require ventilator care has increased

Severity of Hospitalized Patients

% of patients on ventilators and in the ICU, As of December 16



Health Industry Advisor LLC analysis

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

Health Industry Advisor, llc

The % of ER visits for COVID-19-like illnesses (CLI) seems to have declined sharply since Thanksgiving (as have visits for Pneumonia; visits for shortness-of-beath have increased)

The rate of influenza visits remains low given where we are in the flu season

% of ER Visits For Covid-19-Like Illnesses (CLI); Influenza-Like Illnesses (ILI); Shortness-of-Breath (SoB) and Pneumonia

As of December 13

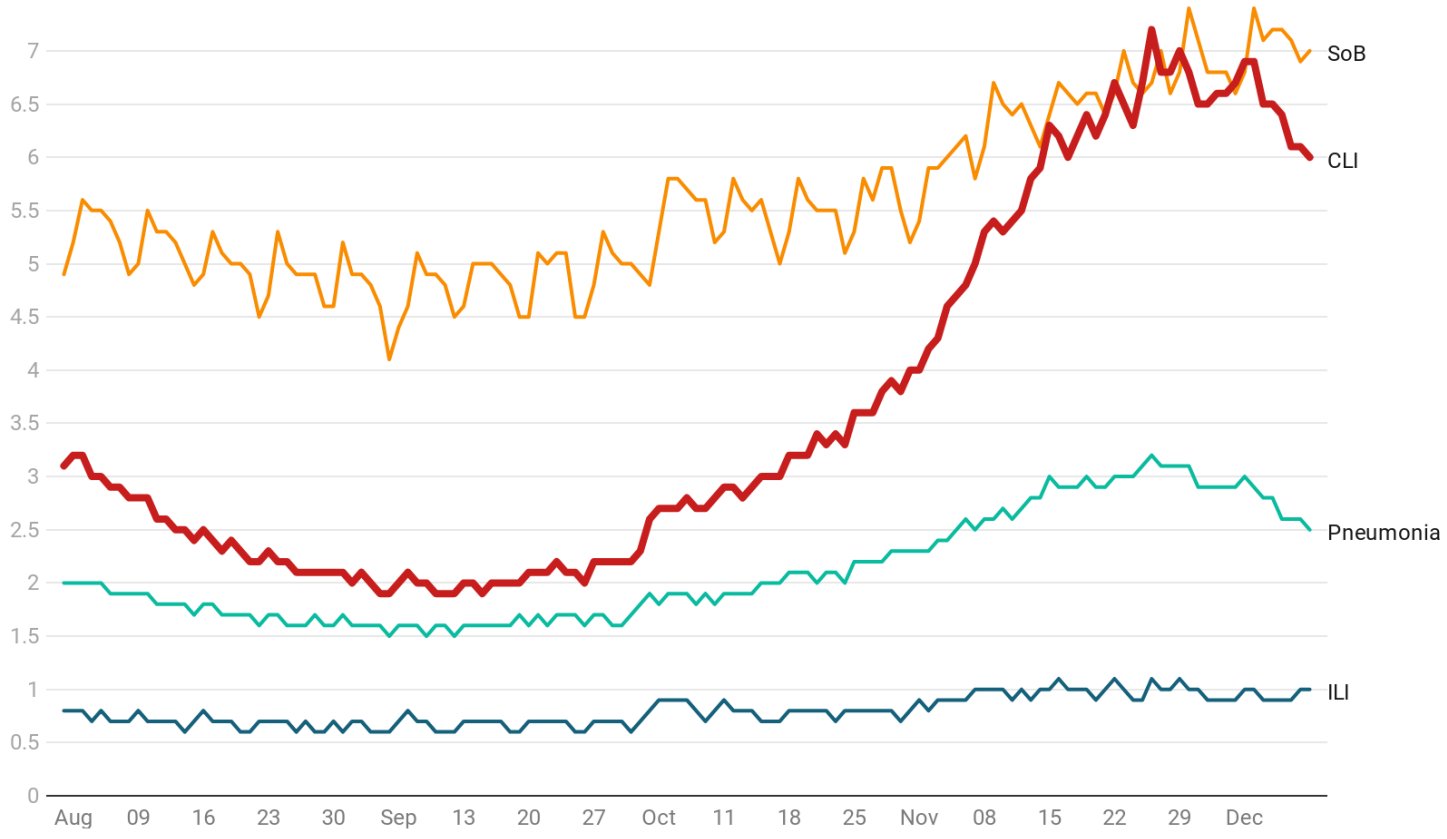
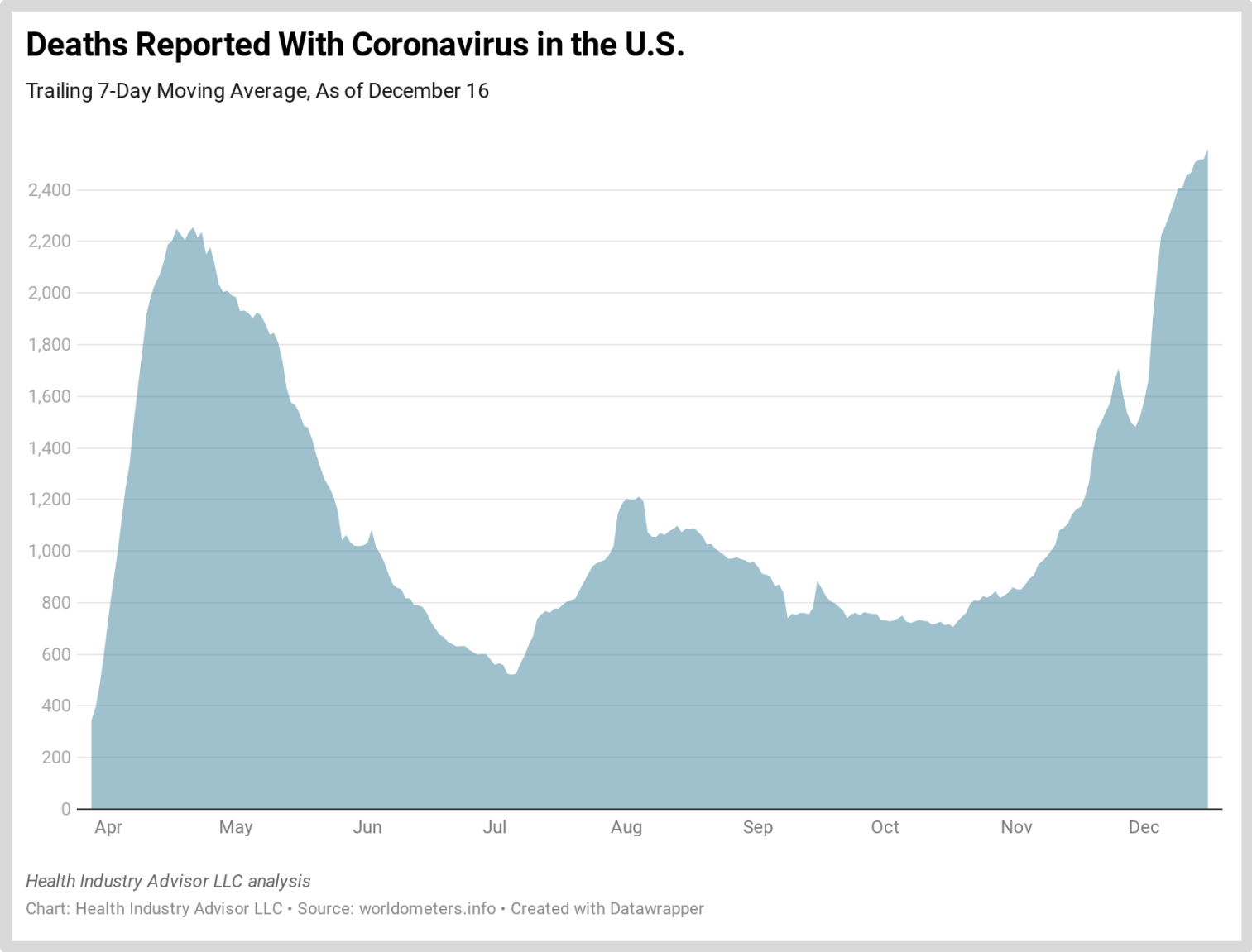


Chart: Health Industry Advisor LLC • Source: CDC • Created with Datawrapper

Health Industry Advisor, llc

The 7-day average deaths have been increasing since Thanksgiving . . . And are higher than at any point during the pandemic

The current 7-day rate is ~2,560 deaths per day; yesterday alone, there were 3,556 deaths reporting with coronavirus in the U.S. – the most of any day since the pandemic began



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State-By-State Comparisons

As of December 16

State	Cases per 1M Population	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	62.3k	856	2,188	33.9%	742	3	40%	9%	21
Alaska	56.1k	246	13,004	5.6%	722	18	21%	-23%	10
Arizona	59k	1,035	2,838	32.2%	915	3	63%	12%	22
Arkansas	63.5k	1,019	5,072	16.0%	703	7	22%	-2%	41
California	43.4k	554	7,620	11.9%	941	8	60%	41%	20
Colorado	51.5k	722	2,159	28.0%	605	4	32%	-22%	23
Connecticut	44.3k	1,544	10,680	6.5%	691	15	72%	-10%	27
Delaware	49.2k	855	3,331	24.4%	812	4	35%	-3%	11
District Of Columbia	36.3k	1,020	9,287	3.8%	354	26	37%	-13%	15
Florida	53.8k	941	2,263	20.7%	479	5	26%	10%	20
Georgia	52.8k	963	3,226	13.4%	576	6	40%	20%	22
Hawaii	13.8k	196	91	100.0%	86	1	6%	22%	28
Idaho	70k	687	1,690	47.7%	737	2	24%	-19%	25
Illinois	68.7k	1,245	7,756	8.5%	656	12	33%	-9%	29
Indiana	65.5k	1,055	2,307	39.0%	900	3	38%	-11%	22
Iowa	82.7k	1,063	1,073	35.3%	519	2	18%	-21%	34
Kansas	67.5k	773	2,070	35.0%	718	3	18%	-19%	32
Kentucky	51.6k	506	4,915	14.0%	689	7	29%	-4%	11

State-By-State Comparisons

As of December 16

State	Cases per 1M Population	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	59.3k	1,491	5,646	9.1%	511	11	22%	-5%	37
Maine	12.9k	199	6,054	5.0%	304	20	18%	27%	29
Maryland	40k	872	2,773	16.3%	452	6	45%	-1%	30
Massachusetts	43.8k	1,657	3,339	21.4%	713	5	38%	-1%	30
Michigan	48.3k	1,160	5,260	9.4%	492	11	35%	-24%	24
Minnesota	68.5k	822	2,550	22.5%	575	4	26%	-37%	16
Mississippi	62.4k	1,443	3,280	21.9%	719	5	23%	9%	33
Missouri	61.4k	840	1,377	37.5%	584	2	32%	-12%	24
Montana	69.8k	782	4,891	12.3%	603	8	19%	-22%	18
Nebraska	78.6k	749	1,739	35.1%	604	3	22%	-40%	18
Nevada	63k	861	2,070	39.8%	824	3	69%	-8%	27
New Hampshire	24.6k	460	2,454	25.0%	614	4	28%	11%	25
New Jersey	47.9k	2,041	7,352	7.3%	536	14	47%	-11%	24
New Mexico	59.3k	977	6,551	11.9%	777	8	48%	-5%	25
New York	43.4k	1,848	10,084	5.2%	528	19	47%	4%	21
North Carolina	43.1k	570	5,175	10.9%	563	9	39%	6%	18

State-By-State Comparisons

As of December 16

State	Cases per 1M Population	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	116.4k	1,568	1,213	39.2%	476	3	10%	-58%	30
Ohio	50k	665	4,849	16.3%	790	6	36%	-21%	15
Oklahoma	62k	538	4,511	17.8%	803	6	32%	8%	14
Oregon	23.1k	299	5,913	5.3%	316	19	23%	-8%	22
Pennsylvania	41.1k	1,033	2,092	39.5%	832	3	44%	7%	40
Rhode Island	71.9k	1,501	3,462	30.8%	1,067	3	59%	-15%	24
South Carolina	50.5k	932	5,408	10.6%	574	9	22%	11%	29
South Dakota	104.7k	1,469	1,799	41.1%	740	2	23%	-21%	35
Tennessee	70.9k	829	7,339	17.5%	1,282	6	40%	59%	19
Texas	53.1k	867	4,387	26.5%	554	8	33%	14%	32
Utah	75.1k	342	2,550	31.7%	810	3	20%	-11%	9
Vermont	9.6k	168	2,186	7.6%	166	13	6%	-12%	55
Virginia	34.2k	528	3,563	11.8%	420	8	36%	2%	20
Washington	28.1k	409	4,026	8.3%	323	12	24%	-13%	6
West Virginia	37.4k	581	7,241	9.3%	670	11	25%	-2%	29
Wisconsin	76.4k	721	1,879	33.9%	558	3	26%	-16%	17
Wyoming	69.6k	567	1,756	34.1%	599	3	16%	-28%	11

Table: Health Industry Advisor LLC • Created with Datawrapper

Data 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, 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
- COVID-19 Projections Using Machine Learning, https://covid19-projections.com
- Oliver Wyman Pandemic Navigator, https://pandemicnavigator.oliverwyman.com/forecast?mode=country&region=United%20States&panel=mortality