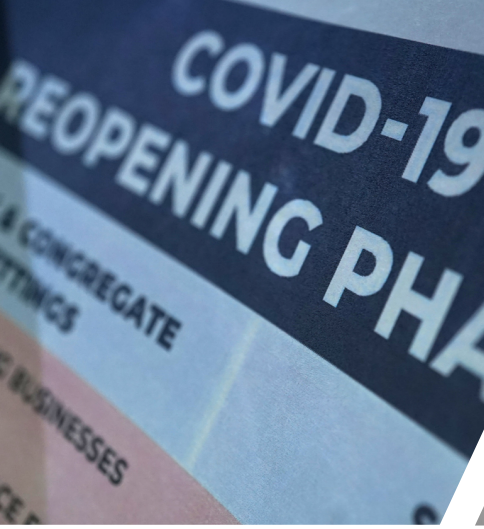

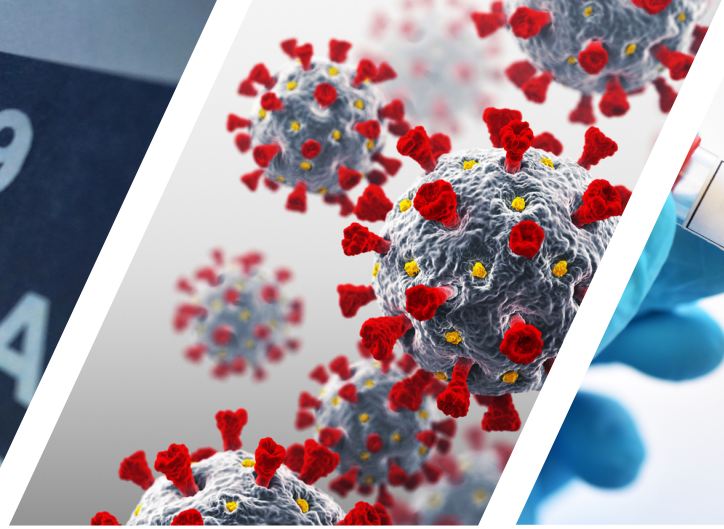

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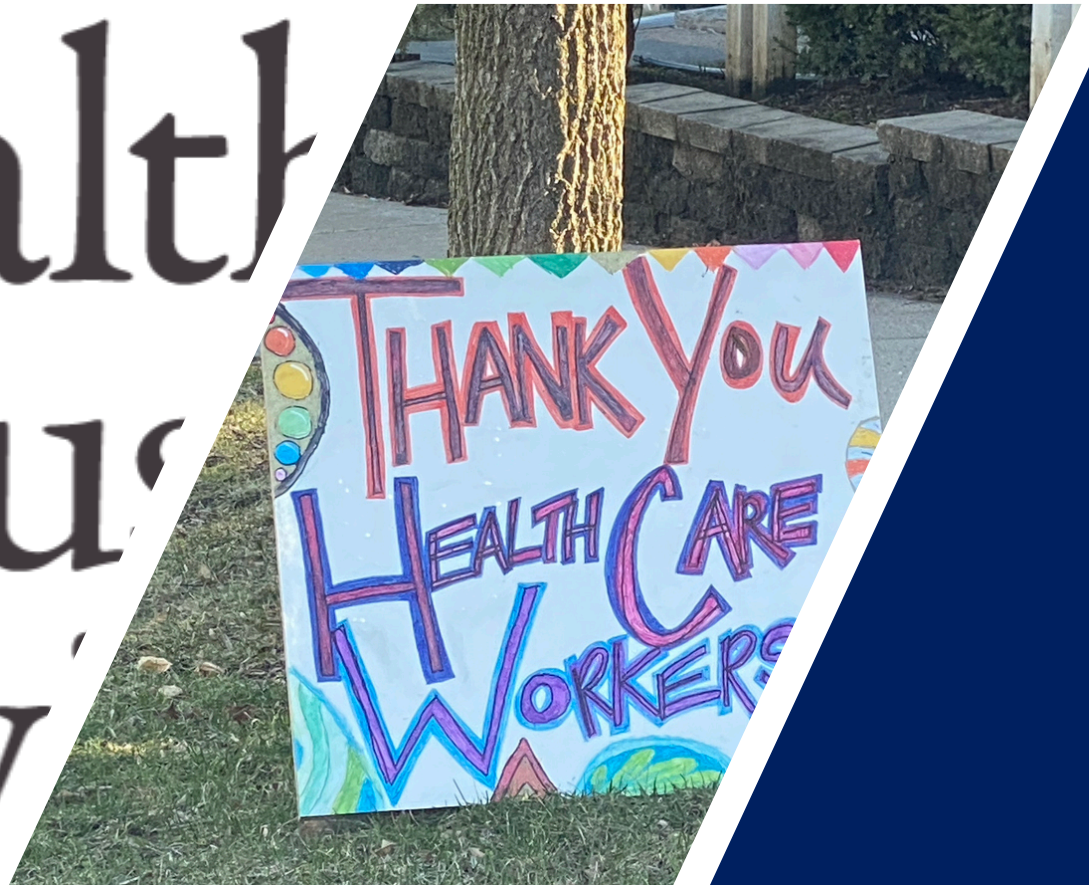


Issue # 236

Monday, December 14, 2020

COVID-19 Report

Highlights

- **The number of newly-detected cases of Covid-19 continue to increase in the United States. What is surprising is that the rate of new case growth appears to be easing**, rather than increasing as expected due to the social interaction around the Thanksgiving holiday:
  - **The Reproduction Rate (Rt) - that is, the number of people that one infected person is presumed to infect - declined from the Monday of Thanksgiving week through that weekend** (per Youyang Gu's Covid19 projection model; since his model backtracks two weeks from deaths to produce these estimates, November 29 is the latest available date of these data)
  - **The rate of increase in newly-detected cases per capita has been slowing for the past several days, rather than increasing as expected (were the surge taking effect)**
  - The current trend in the rate of increase in newly-detected cases per capita is dropping below the trend line in-place pre-Thanksgiving (i.e., case growth is slowing, not increasing)
- Another surprising insight from the infection trends in the U.S. - **we seem to be experiencing a relative moderating of these infection rates among the states:**
  - **Those states that had been experiencing the highest rates of new cases per capita pre-Thanksgiving are now showing significantly lower rates**
  - **Several states that had experienced relatively low rates pre-Thanksgiving have experienced higher rates of late. Notable among these states are California and New York**
  - **On balance, the highest rates are lower now than they were pre-Thanksgiving**
- Covid-19 inpatient occupancy continues to increase each day
  - **As of yesterday, 34% of all inpatient beds in the U.S. are occupied by Covid-19 patients - slightly higher than the preceding days**
  - **Nevada and Arizona, California, Connecticut, Nevada and Rhode Island continue to be of the greatest concern, given the high and increasing rates in these states in particular**
  - Encouragingly, eighteen states saw their Covid-19 occupancy rates decline week-over-week and five others saw these rates hold steady
- Deaths with the coronavirus continue to increase day-over-day . . . and will likely continue to do so until weeks after cases begin to decline
  - **The 7-day average deaths have increased daily since Thanksgiving**
  - This rate is the highest it has been at any time during the pandemic

Did Thanksgiving lead to a surge in infections in the U.S.?

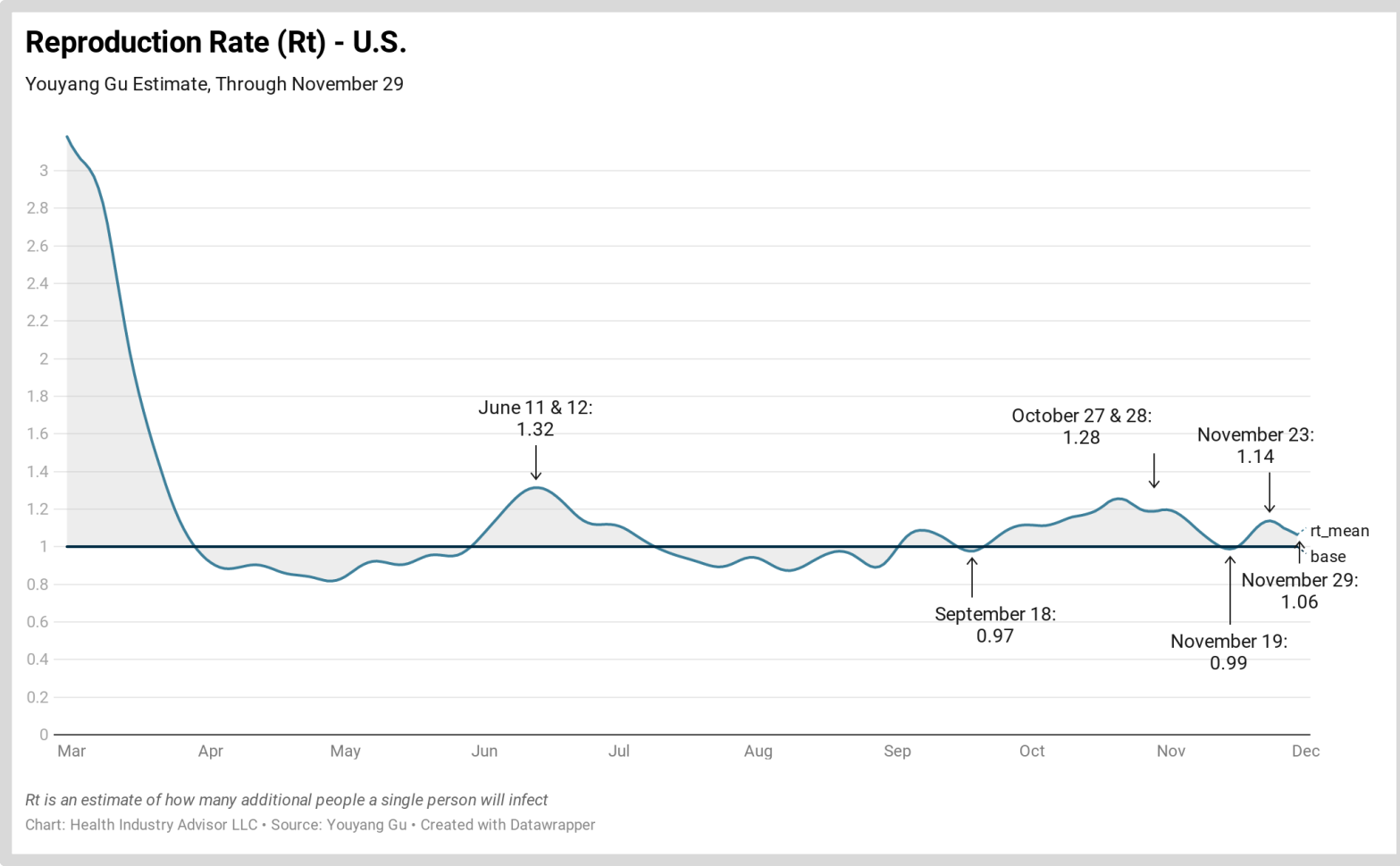
Perhaps not . . . based on Gu's* estimates of the reproduction rate (Rt)

Gu uses deaths to estimate actual infections and the reproduction rate (R_t), using a machine learning model

Gu backdates two weeks from the death date to estimate when an infection likely occurred

Using this model, the reproduction rate rose from November 19 to November 23, then declined through Thanksgiving weekend

* - Youyang Gu: Covid-19projections.com



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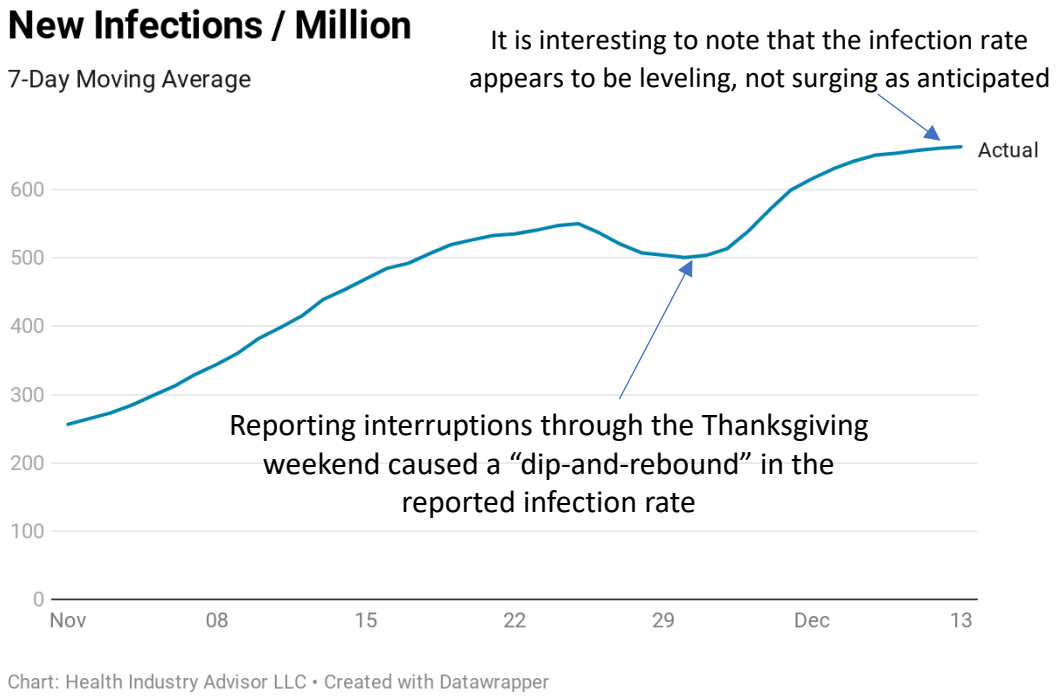
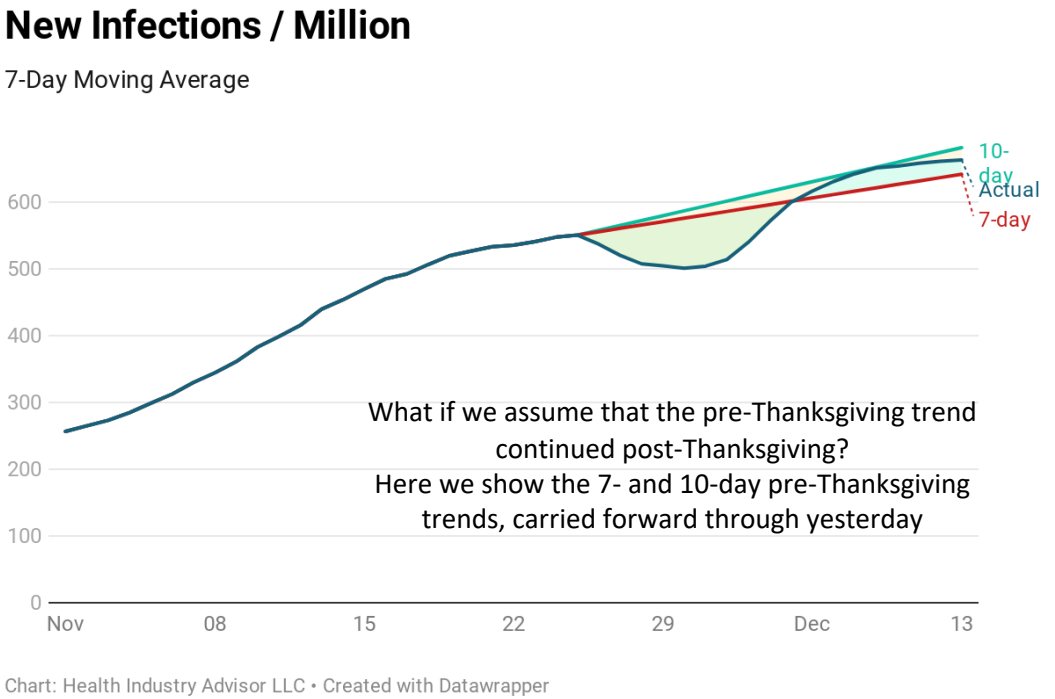
What impact on infection rates have we observed since Thanksgiving?
Sorting through the "noise" caused by reporting interruptions during Thanksgiving weekend, it appears that the post-Thanksgiving trend is returning to the 7-day pre-Thanksgiving trend (and, below the 10-day pre-Thanksgiving trend)





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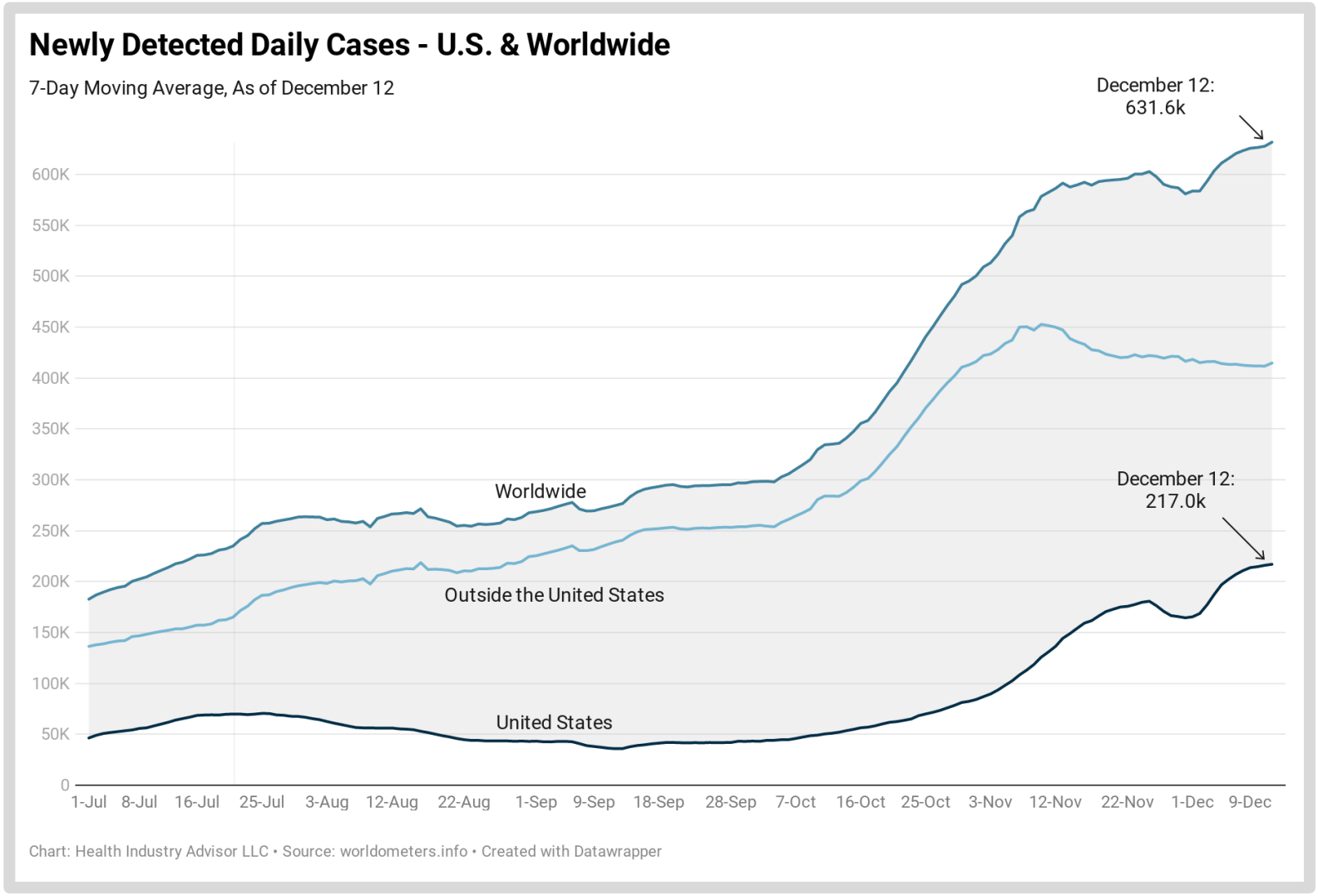
We are averaging ~632k new cases worldwide each day, as of Sunday

The United States is now averaging 217k new cases each day

Outside the U.S. newly-detected cases have been declining since November 10

* - 7-day moving average basis



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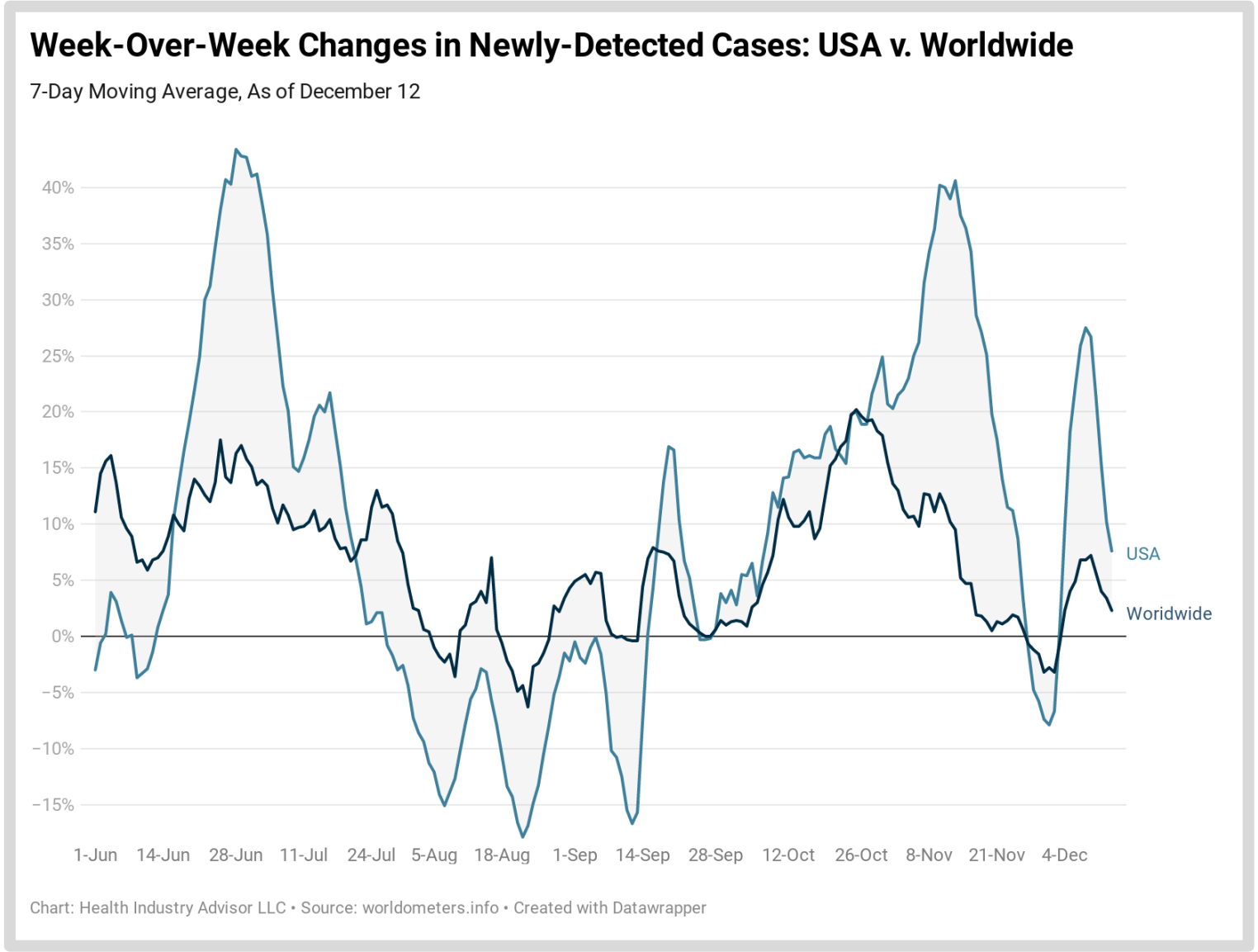
Reporting interruptions around the Thanksgiving holiday caused the week-over-week change in new cases to first go negative during the Thanksgiving week; increase sharply the following week; and now sharply decline, then spike

These recent trends are largely due to reporting intrruption, rather than changes in infection rates



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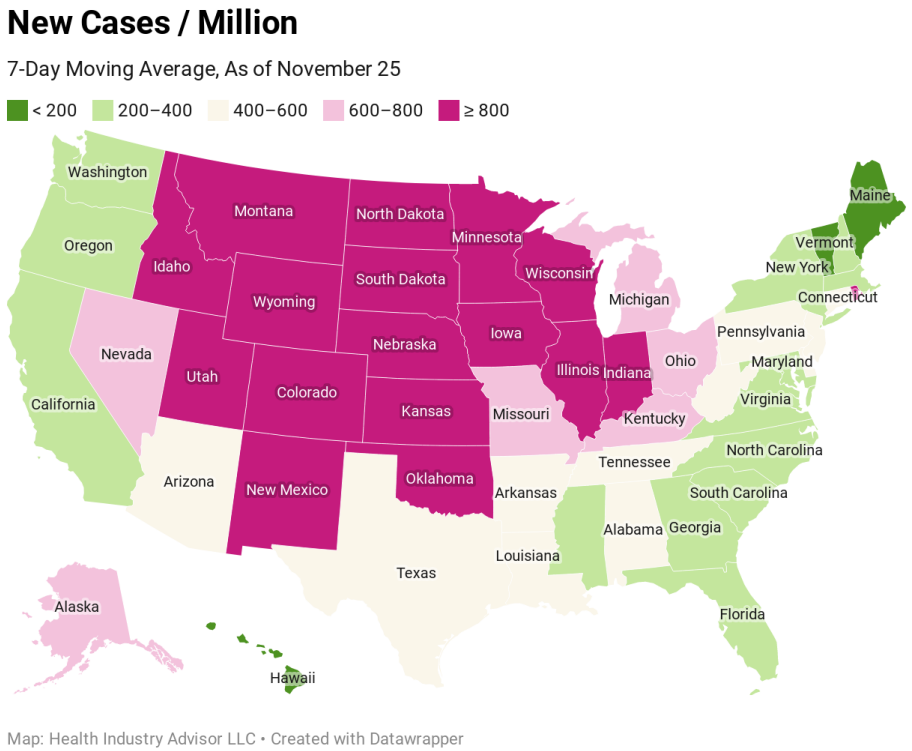
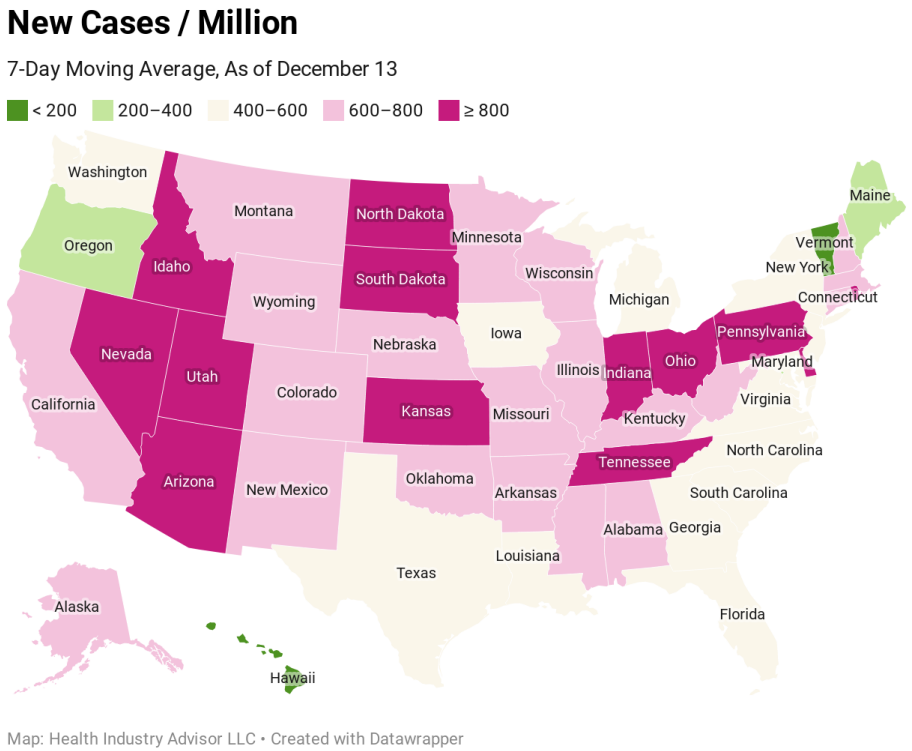
As of yesterday, we are in a relatively more-tempered situation than we were going into the Thanksgiving holiday

Notably, states that were doing relatively well going into the holiday - particularly California and New York – are faring much worse
However, the states that were “on-fire” going into the holiday are doing better

As of November 25



As of December 13



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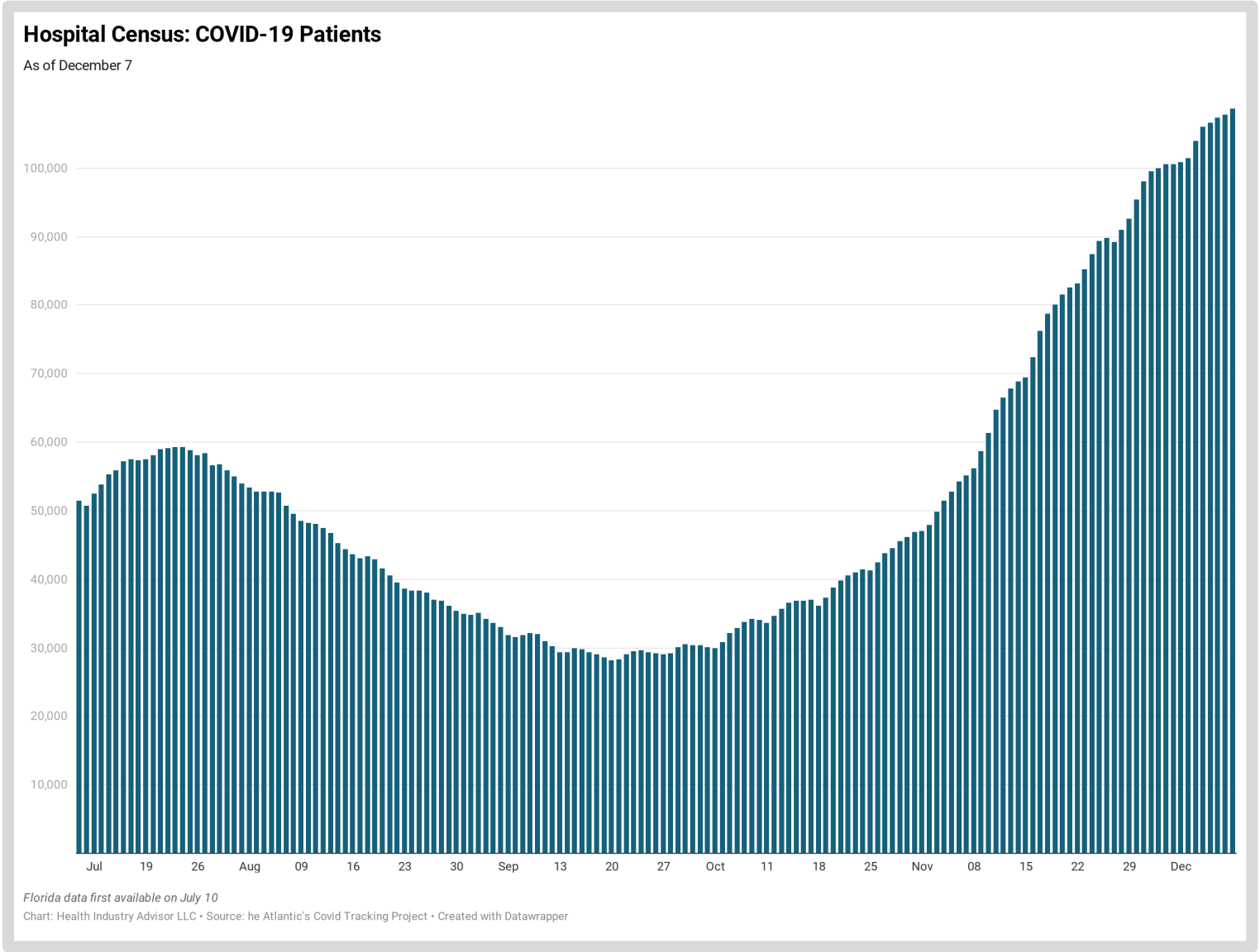
There were nearly 110,000 Covid-19 patients in U.S. hospitals yesterday



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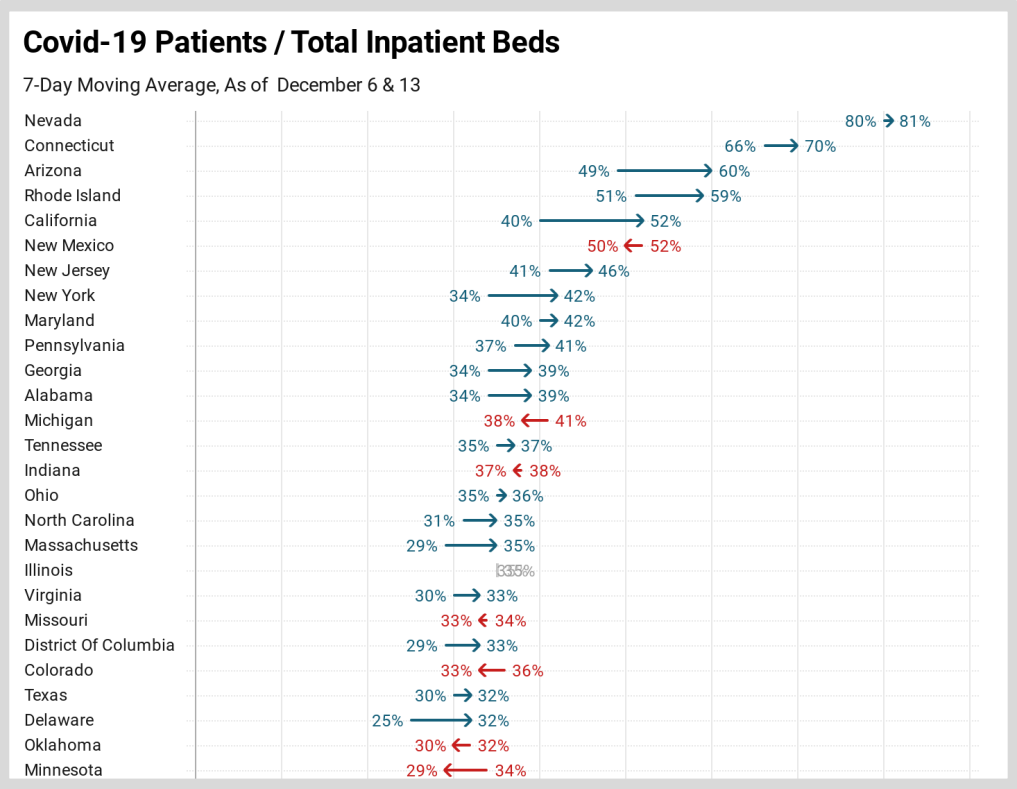
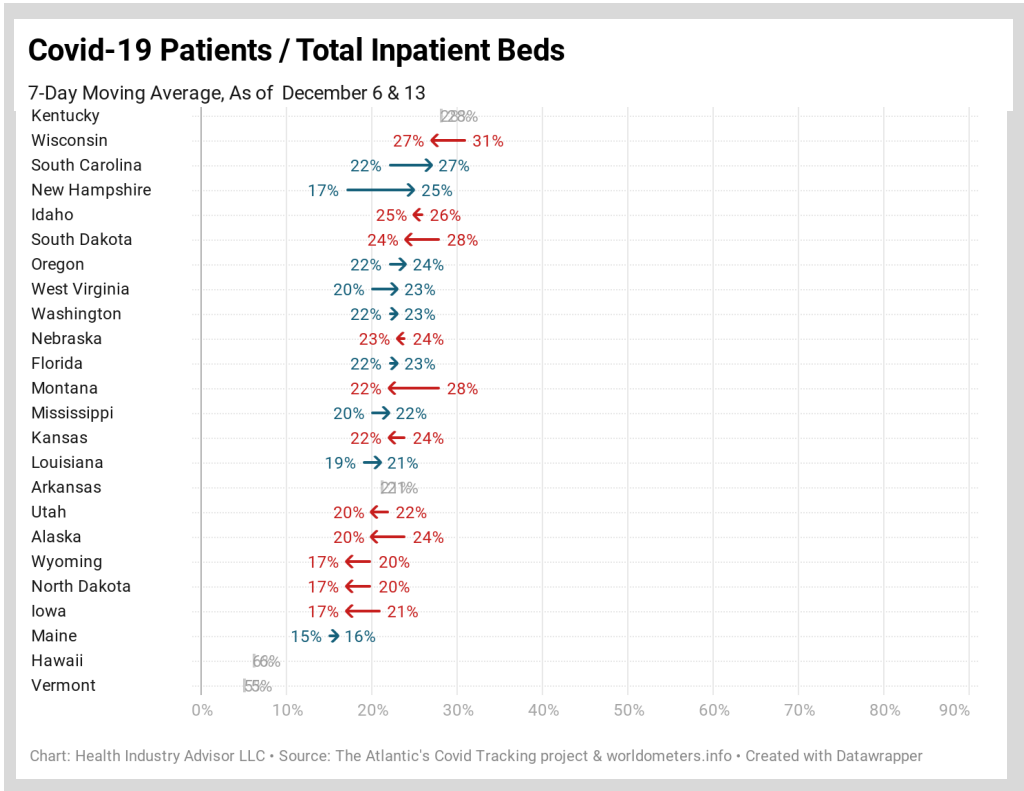
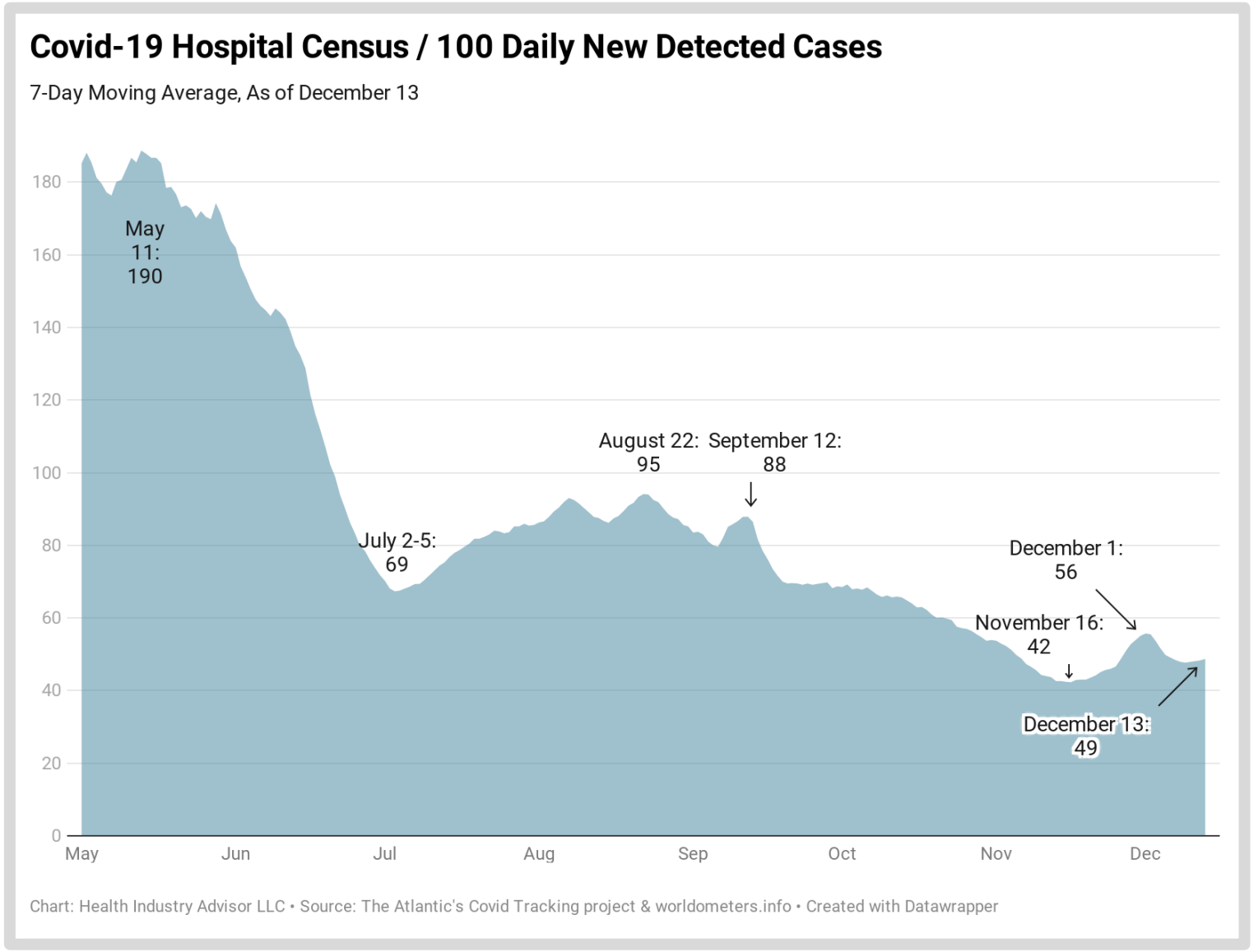
Increasing Covid-19 census continues to strain available healthcare resources: In Nevada, Covid-19 patients occupy 81% of all inpatient beds In Connecticut, these patients occupy 70% of beds
This census has increased in the past week in most states – exceptions include Alaska, Colorado, Idaho, Indiana, Iowa, Michigan, Minnesota, Montana, Nebraska, Oklahoma, New Mexico, North Dakota, South Dakota, Utah, Wisconsin and Wyoming





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



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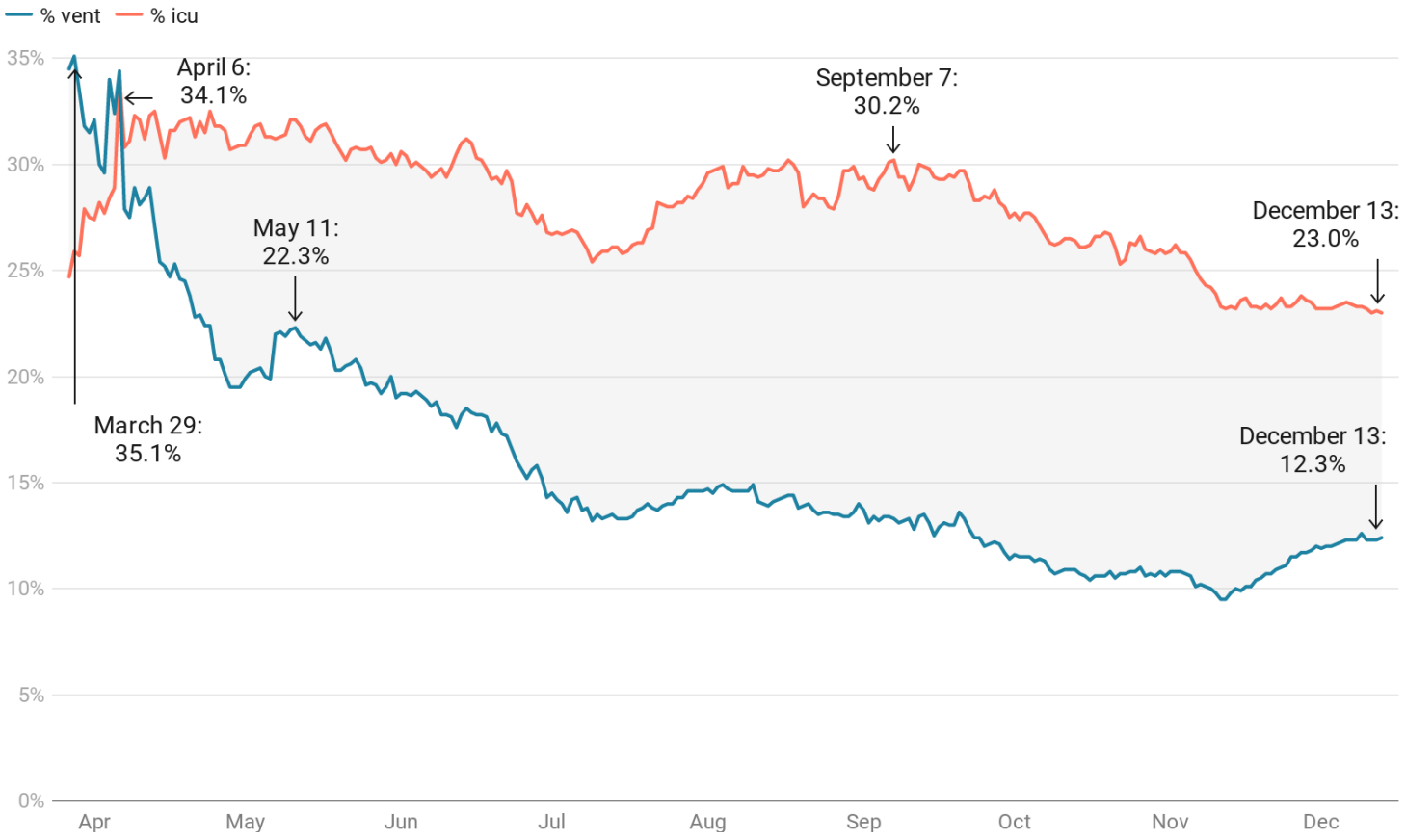
The likelihood of a hospitalized Covid-19 patient would require ICU care has been lower throughout November and into December than at any time during the pandemic

The likelihood of a hospitalized Covid-19 patients would be on a ventilator trended up for several weeks before stabilizing the past week

Severity of Hospitalized Patients

% of patients on ventilators and in the ICU, As of December 13



Health Industry Advisor LLC analysis

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

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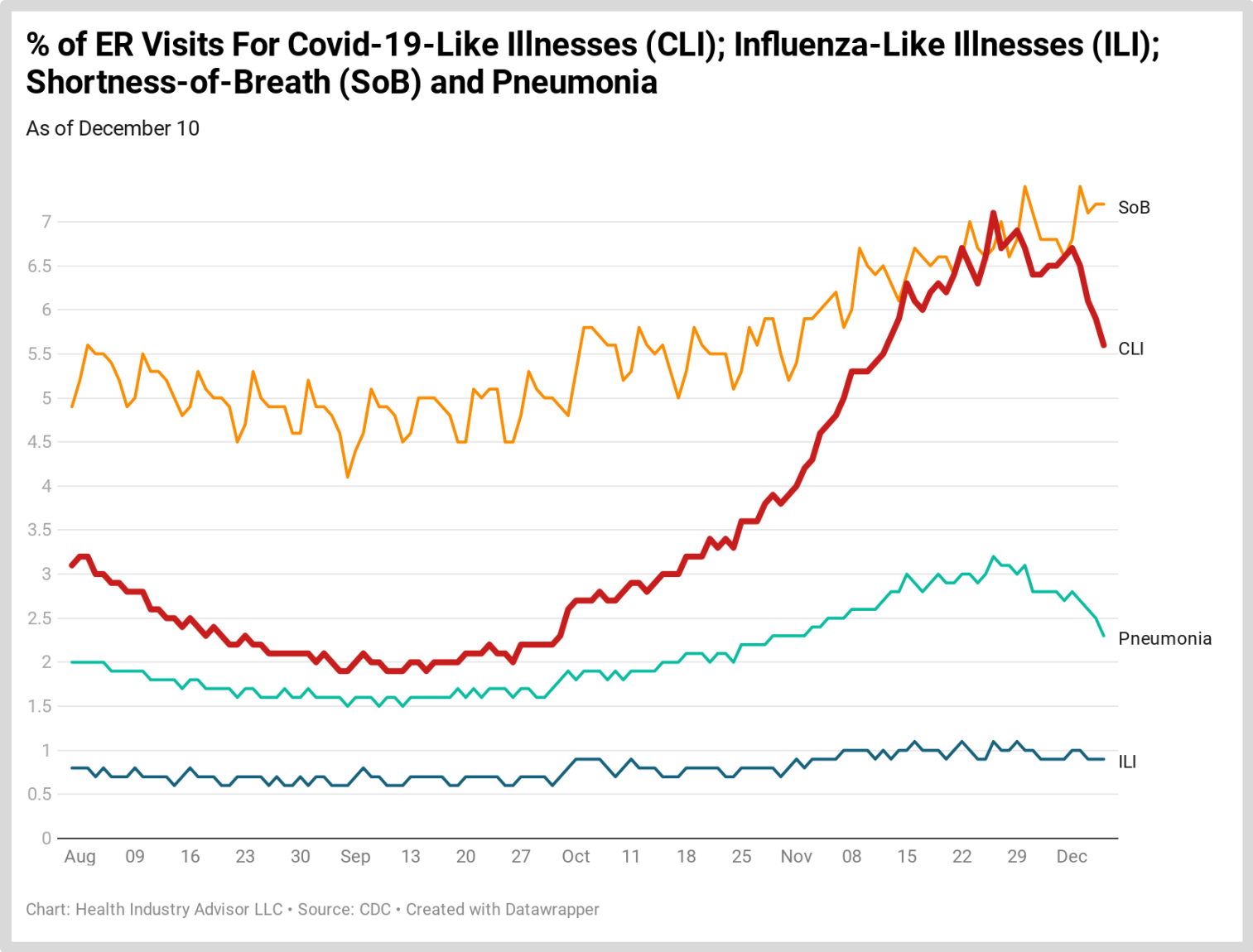
The % of ER visits for COVID-19-like illnesses (CLI) seems to have waned since Thanksgiving (as have visits for Pneumonia; visits for shortness-of-beath have increased)

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



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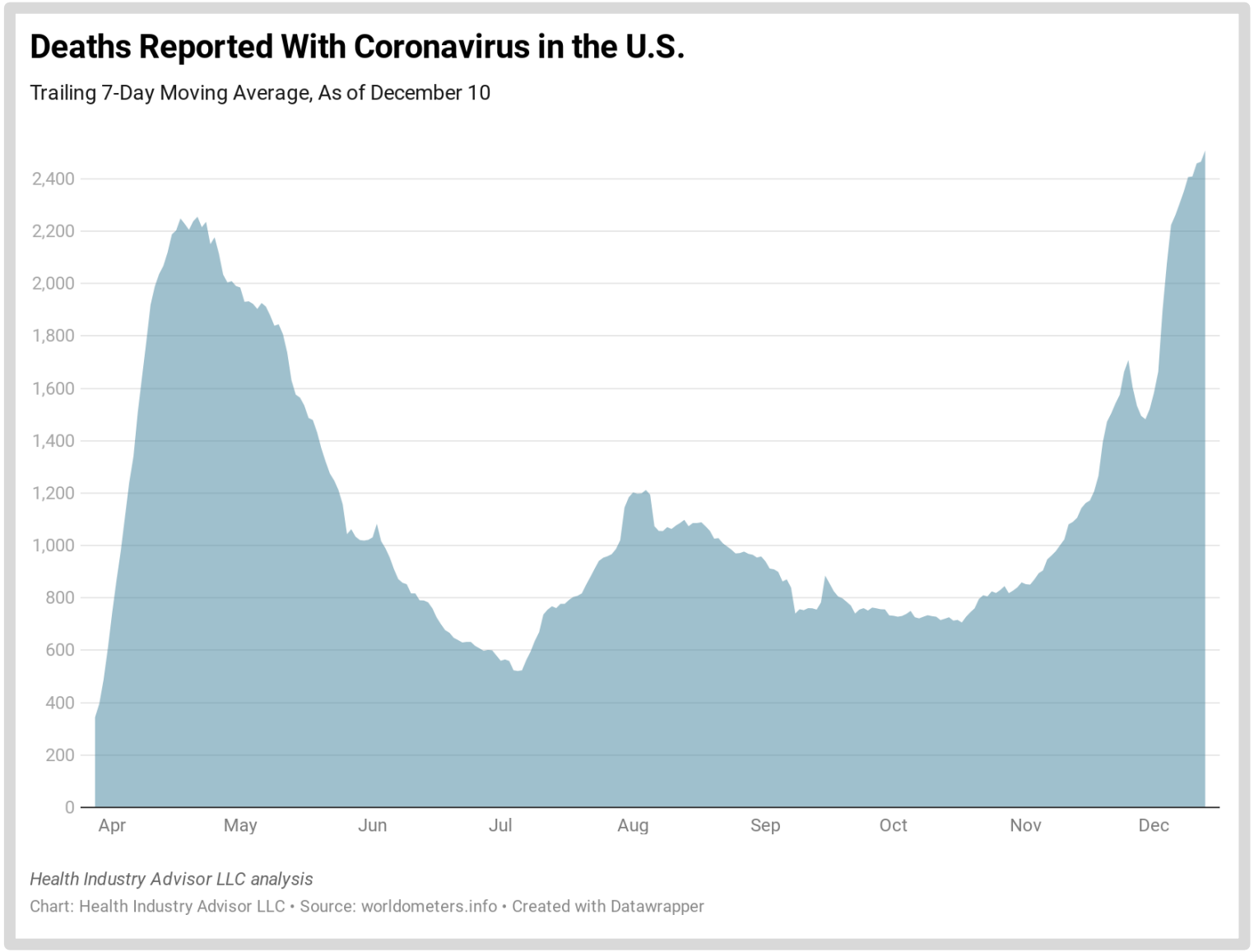
The 7-day average deaths have been increasing since Thanksgiving . . . And are higher than at any point during the pandemic



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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