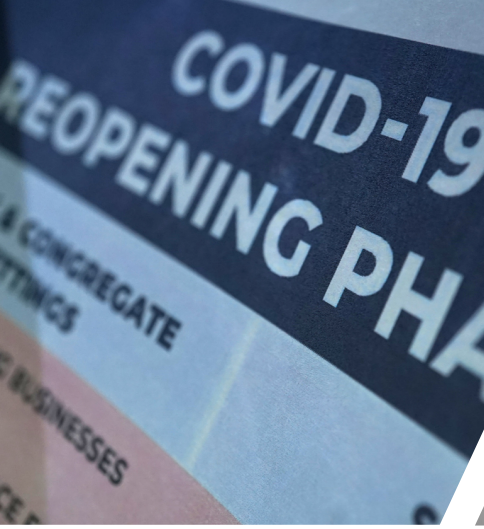

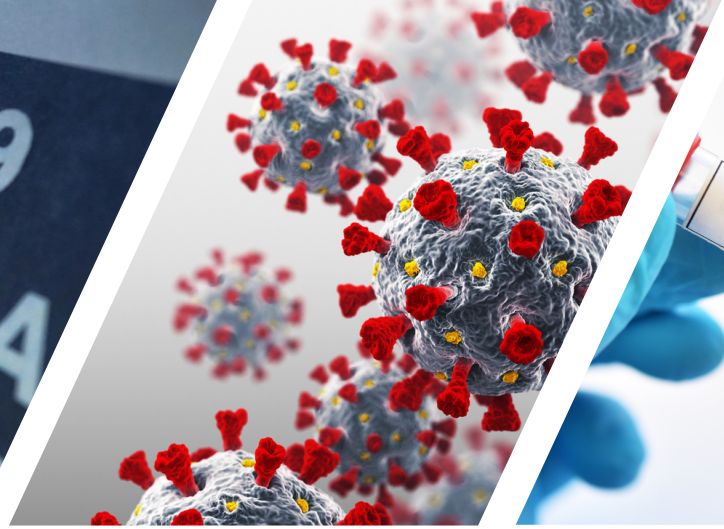

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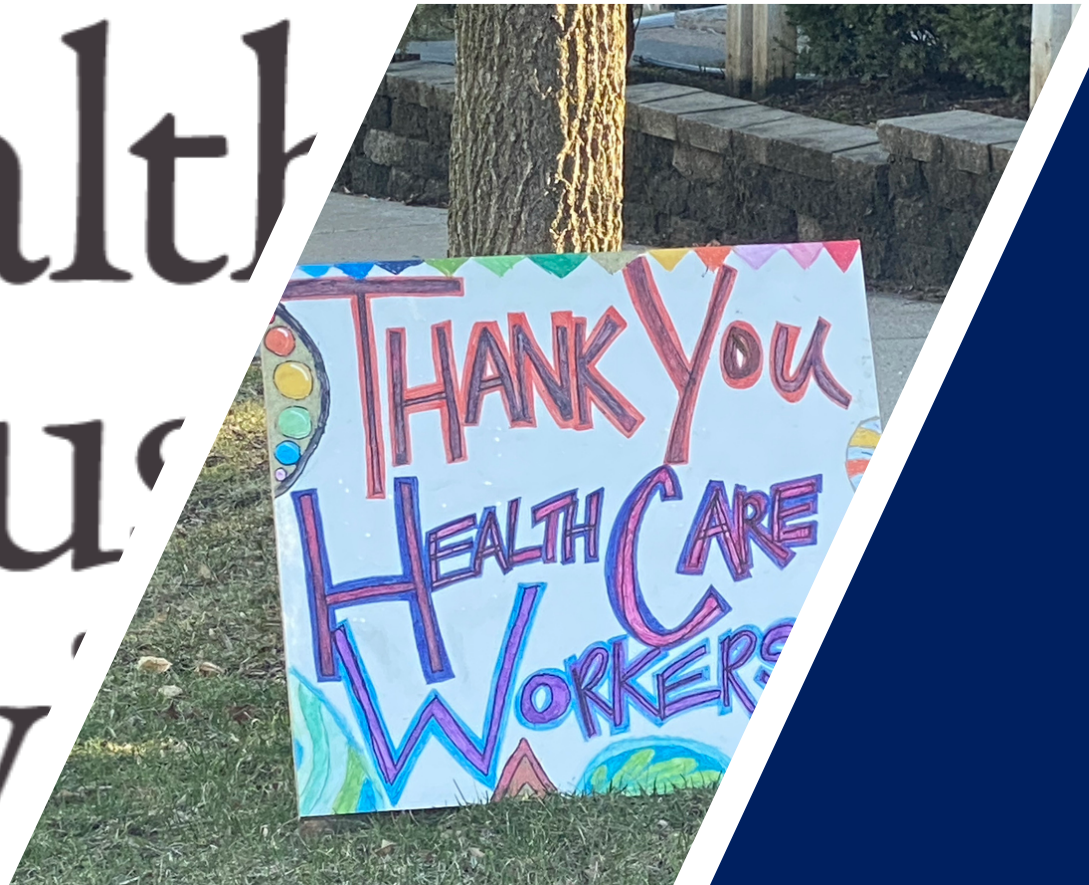


Issue # 246

Saturday, December 26, 2020

COVID-19 Report

Highlights

- **New cases and infection rates may have peaked in the U.S., according to a few independent models**:
  - The Institute for Health Metrics and Evaluation (IHME) suggests that new infections peaked on Christmas Eve. The IHME model extends its forecasts out to April 1, showing infections dropping by 1/3 by February 1 and by 60% by March 1
  - Oliver Wyman estimates that new cases, on a 7-day moving average basis, peaked on December 18
  - Youyang Gu estimates that new infections peaked on December 1 and declined by 6% by December 11; Gu's model estimates that the Reproduction Rate (Rt) declined eighteen consecutive days and has been < 1.0 eight consecutive days. The current rate is lower than it has been since August 30
- **Newly-detected cases reported in the U.S. seemed to have peaked on December 18**, following a period of significant increases
  - California is experiencing a challenge in new cases: for the 7-day period through December 23, **California accounted for 20% of all new cases in the U.S. - more than 3x the number reported in the next highest state, Texas**

- Test volume has stabilized at an average of ~1.5 million per day; this volume had been increasing steadily in prior months
- The test-positive rate also appears to have stabilized in recent days; this rate is higher than it had been in recent months, and remains higher than advised by both the World Health Organization (WHO) and the Centers for Disease Control and Prevention (CDC)
- **The number of Covid-19 patients in the hospital is an ongoing and ever-increasing problem: these patients occupied 37% of all beds over the past 7 days; this is up from 30% at the beginning of December.** The number of these patients that are in the ICU or on a ventilator have similarly increased throughout the month
- The greatest challenge, however, may be the increasing number of deaths with the coronavirus: **Tragically, the average daily deaths is up more than 70% since the beginning of the month**

Health Industry Advisor, llc

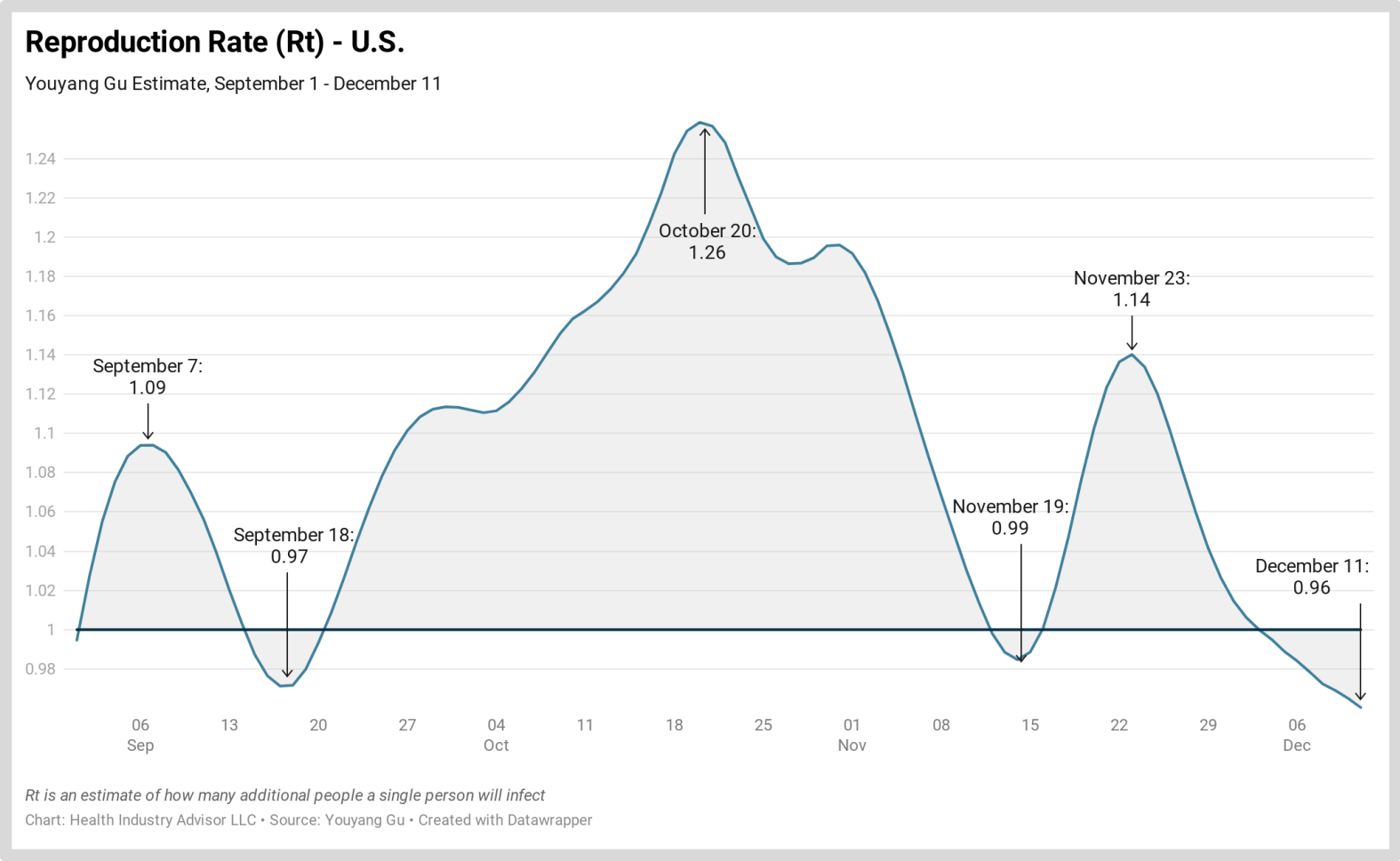
According to Gu's model, the reproduction rate been declined 18 consecutive days . . . And has been below 1.0 for eight consecutive days

This suggests that the virus spread slowed through and since the Thanksgiving holiday

Notes:
- 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

* - Youyang Gu: Covid-19projections.com

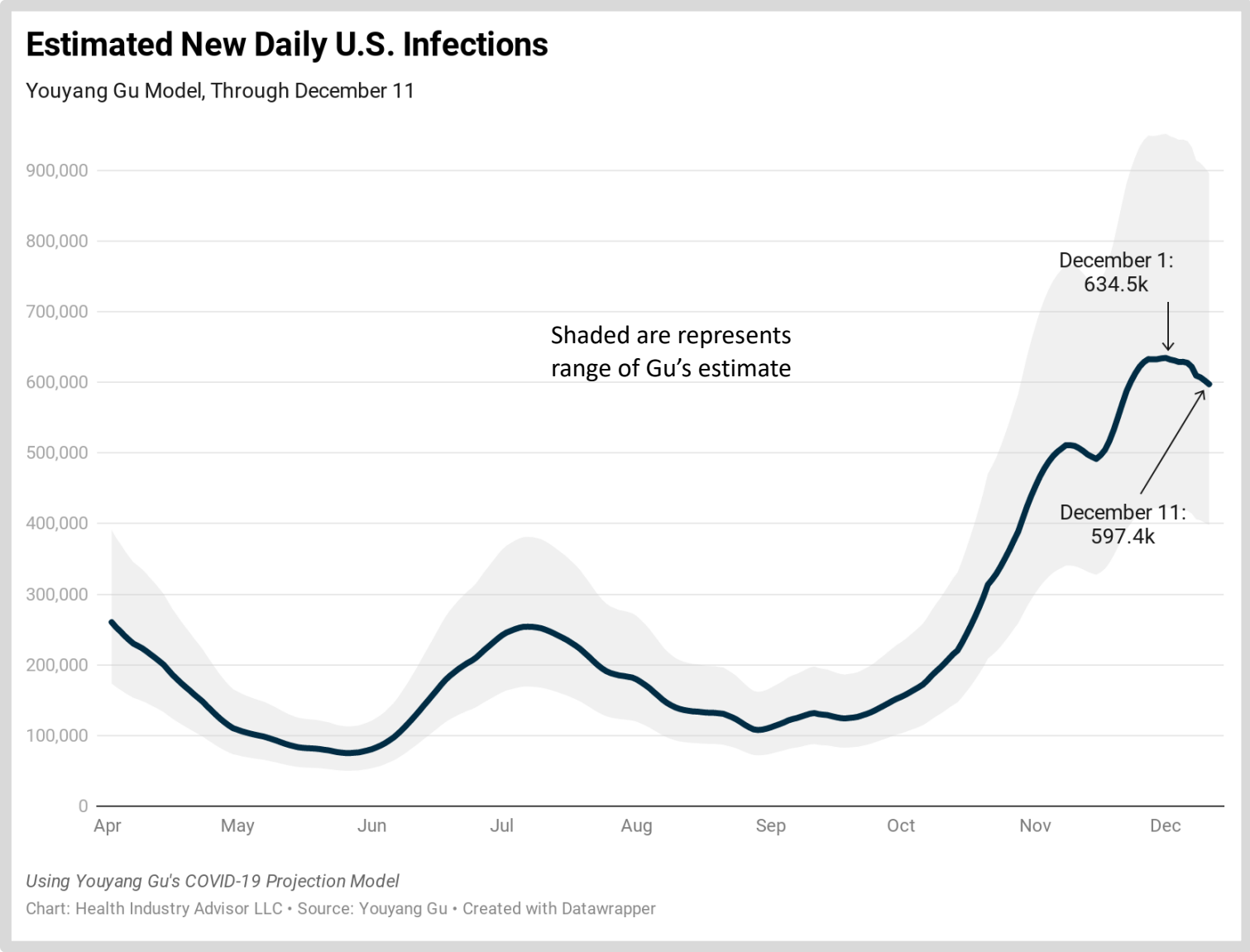


Health Industry Advisor, llc

According to Gu's estimates, new infections in the U.S. peaked on December 1 and have declined ~6% since

Gu estimates that more than 19.5% of the U.S. population has been infected by the SARS-CoV-2 virus (range of 13-29%)

*https://pandemicnavigator.oliverwyman.com/forecast?mode=country&region=United%20States&panel=baseline



Health Industry Advisor, llc

Have new cases or infections peaked in the U.S.?

Estimates from several of the leading modelers suggest they have peaked, although there is variability in when the peak may have occured

Model	Metric	Date of Peak
Youyang Gu	Estimated Infections	December 1
Oliver Wyman	7-Day New Cases	December 18
IHME	Estimated Infections	December 24

Sources (each accessed December 26, 2020):

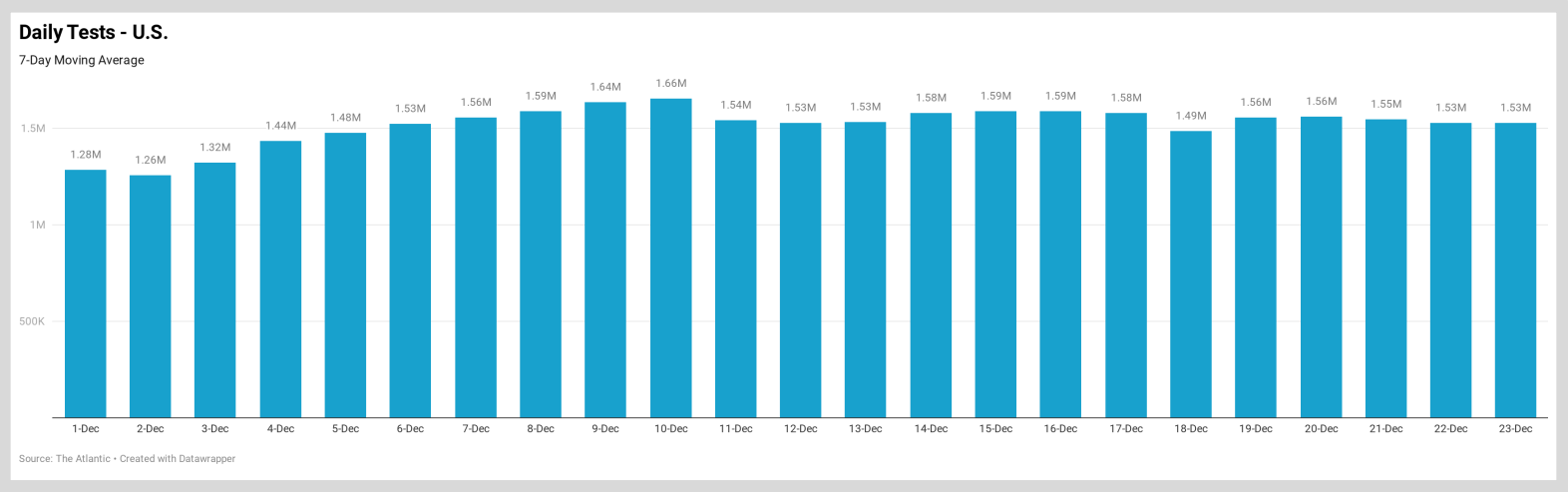
- Youyang Gu: https://covid19-projections.com Last update: December 25, 2020
- Oliver Wyman: https://pandemicnavigator.oliverwyman.com/forecast?mode=country&region=United%20States&panel=baseline Last update: December 23, 2020
- Institute for Health Metrics and Evaluation (IHME): https://covid19.healthdata.org/global?view=total-deaths&tab=trend Last update: December 23, 2020

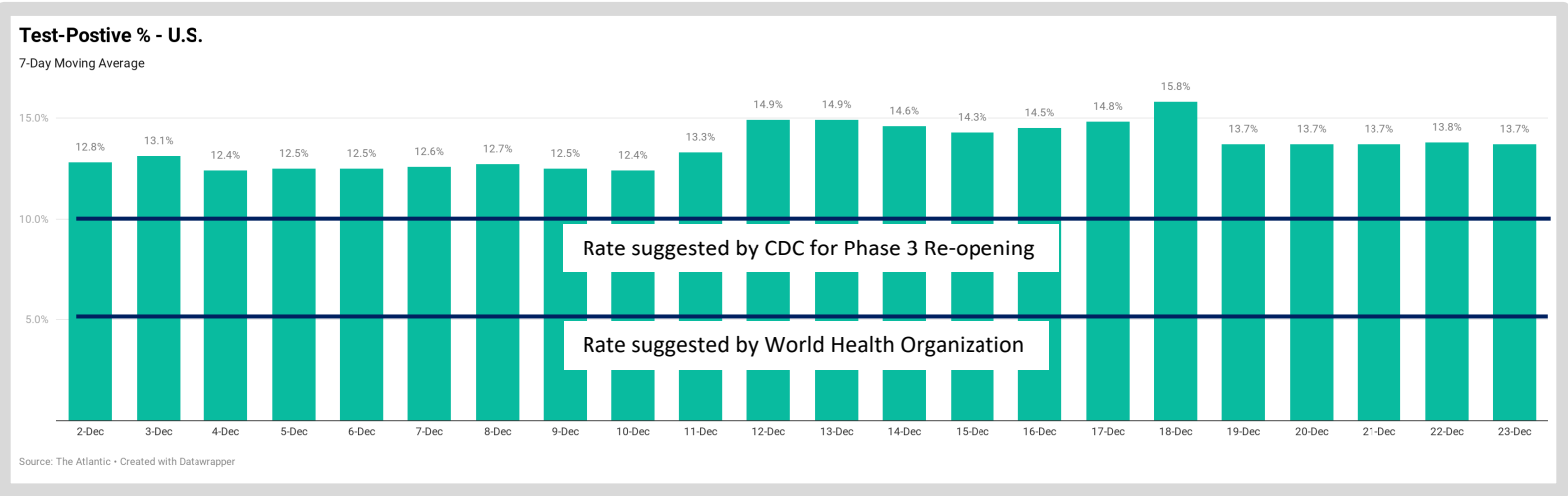
Health Industry Advisor, llc

On average, ~1.5 million tests are conducted in the U.S. each day

This testing rate has been consistent for the past two weeks – following months of ever-increasing test volumes

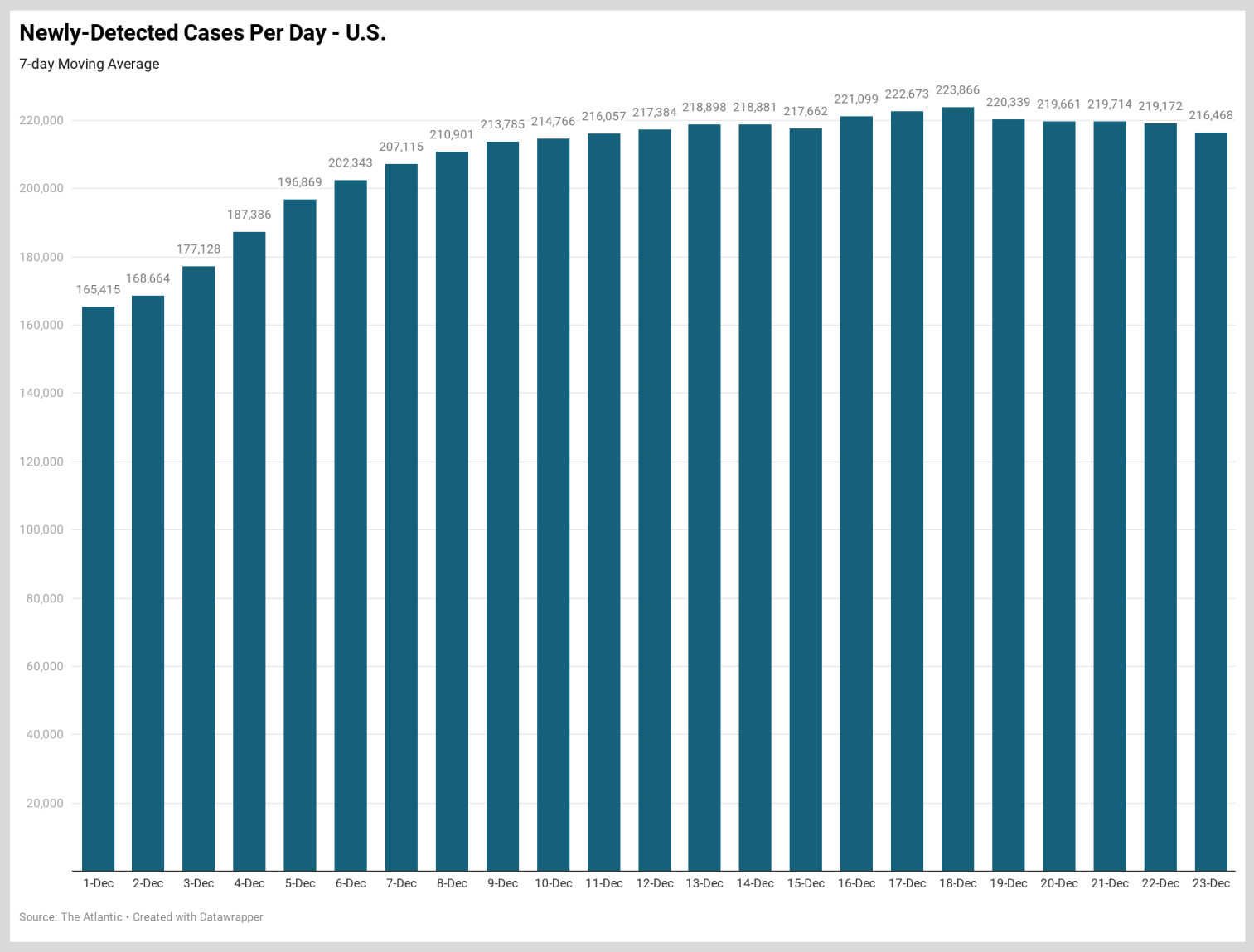
The 7-day average test-positive rate has been relatively stable over the past several days – yet remains higher than it was in prior months





Health Industry Advisor, llc

Newly-detected cases seemed to have peaked on December 18 – this follows a period of significant increases



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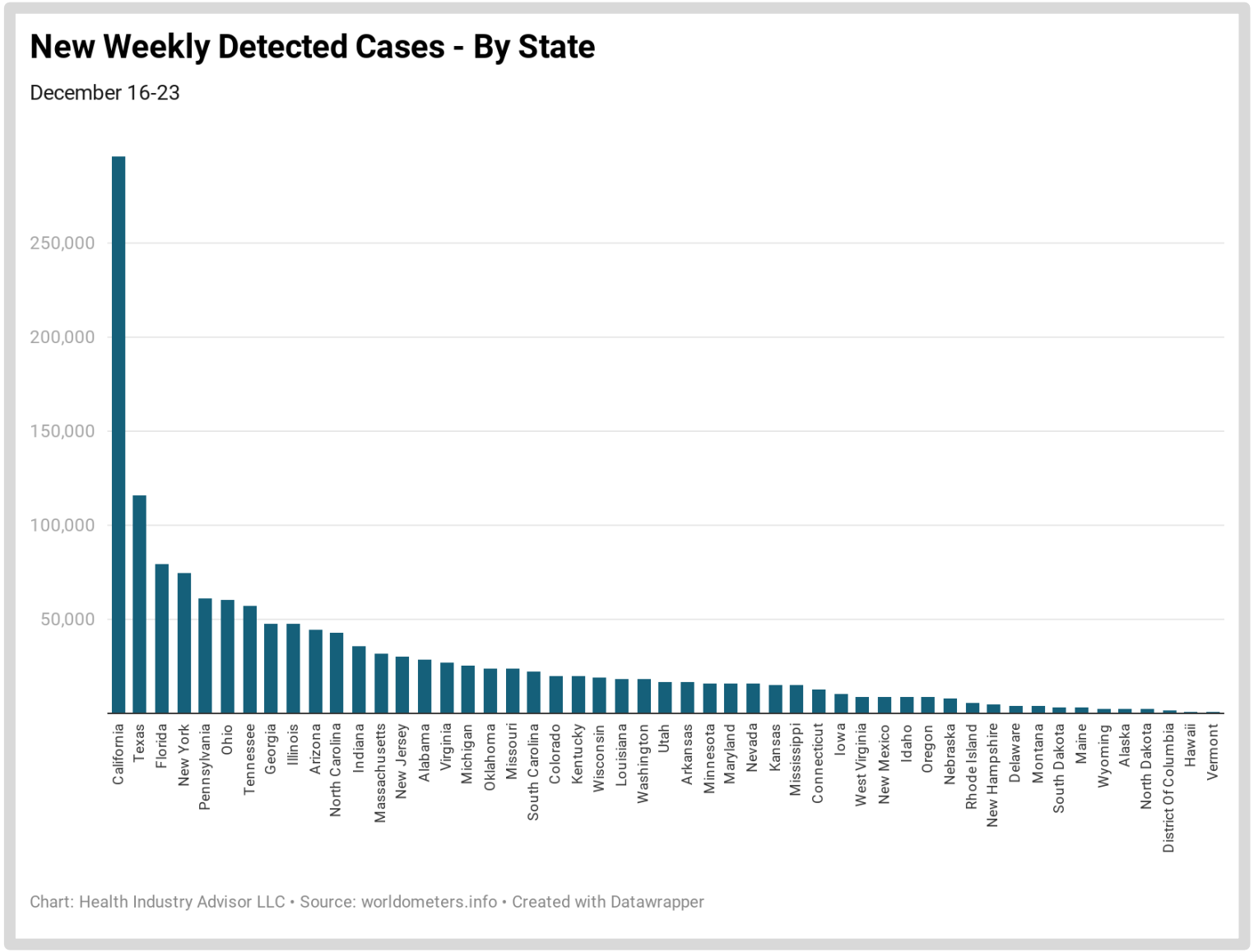
California and Texas continue to report the highest number of newly detected cases

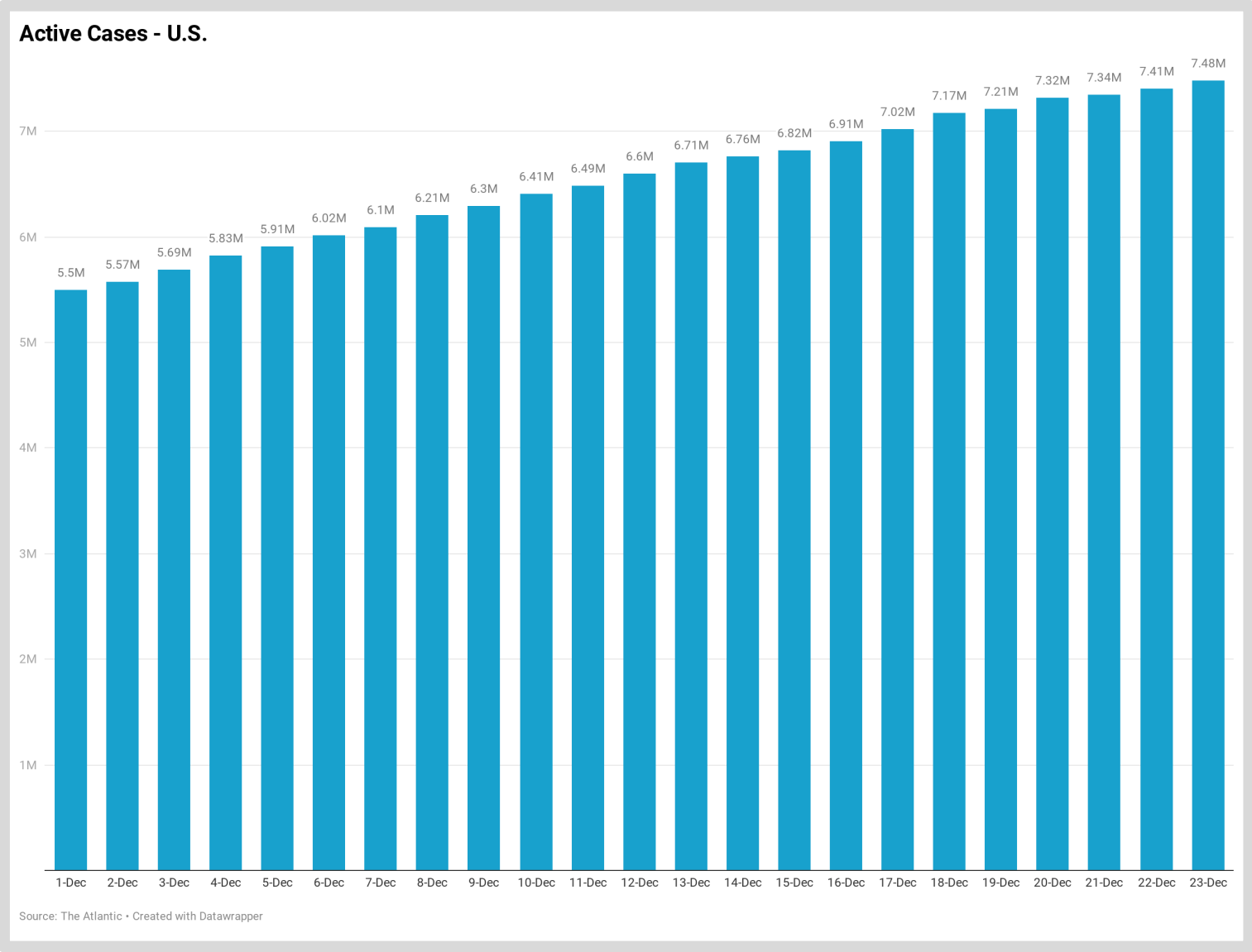
California alone accounted for ~295k of the 1.5M new cases in the U.S. over the past seven days - more than 3x as many as Texas



Health Industry Advisor, llc

There are an estimated 7.5 million people in the U.S. currently recovering from detected Covid-19 infections

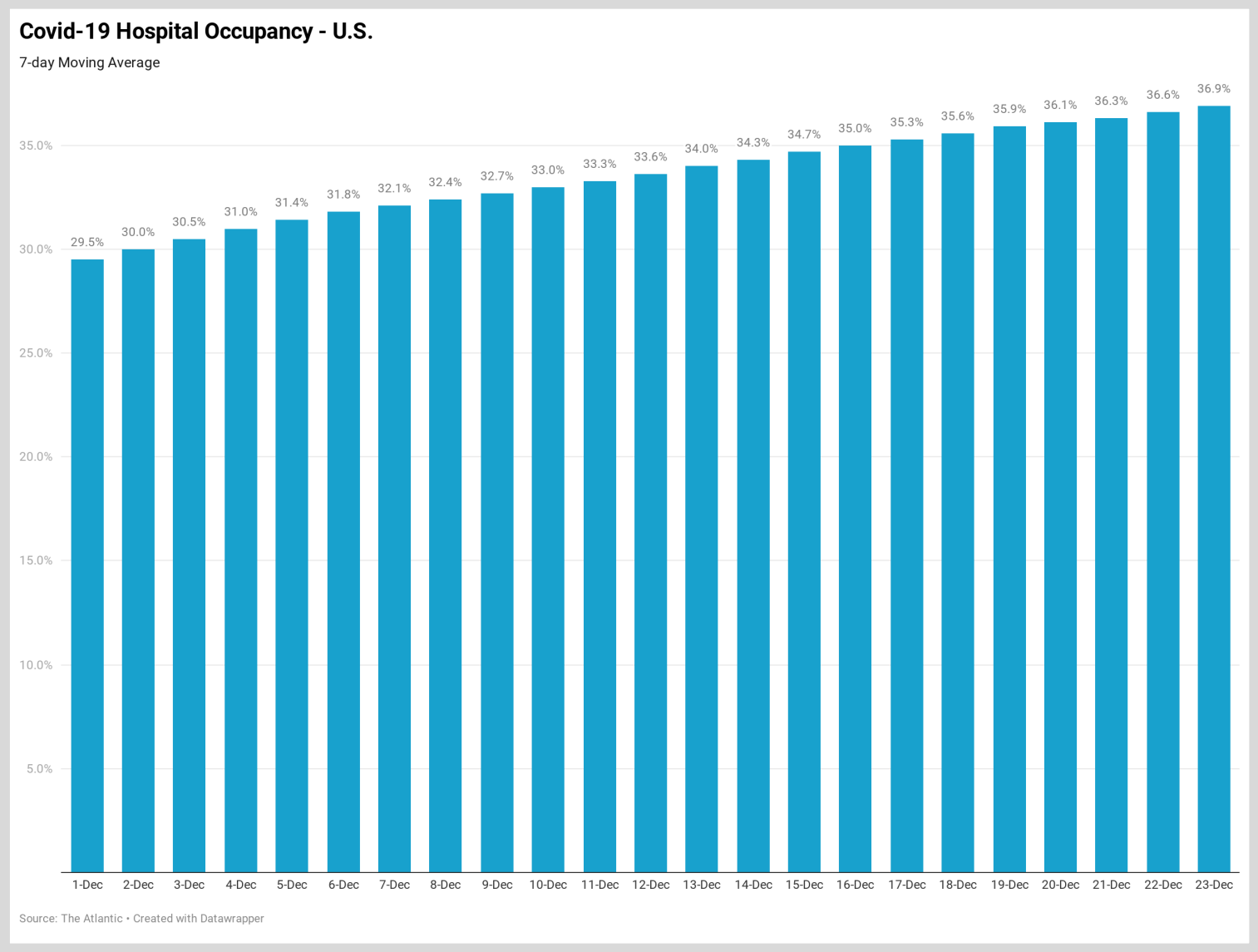
This has increased by ~2 million during December



Health Industry Advisor, llc

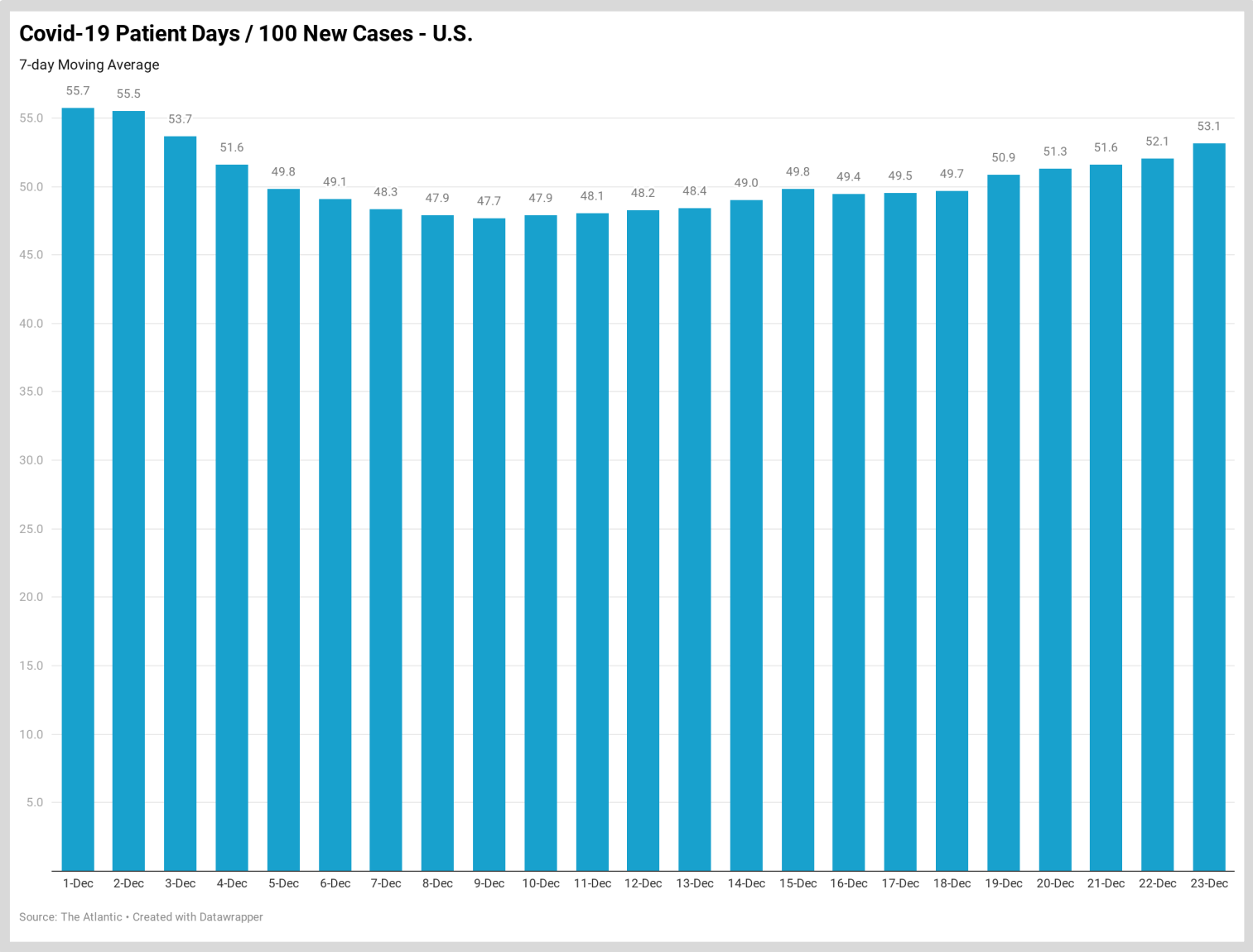
On average, Covid-19 patients occupied ~37% of available inpatient beds in the U.S. last week

This occupancy rate has increased each week since the end of September



Health Industry Advisor, llc

Covid-19 inpatient days per 100 new cases have declined since the beginning of the month – yet have started to trend upward in the past week

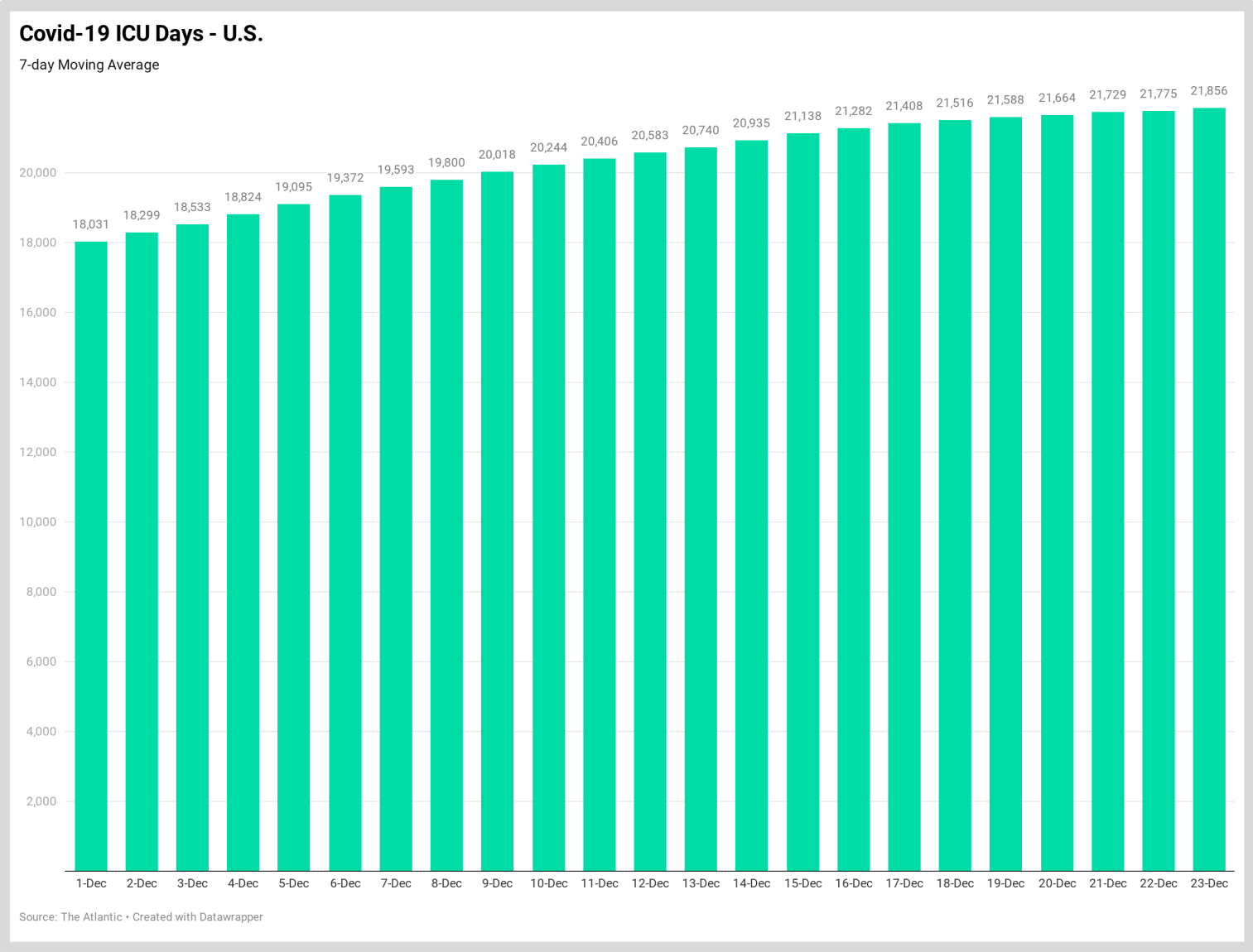


Health Industry Advisor, llc

On average, there were nearly 22k Covid-19 patients in the ICU last week*

Covid-19 ICU census has steadily increased throughout December

* Not all states report these data



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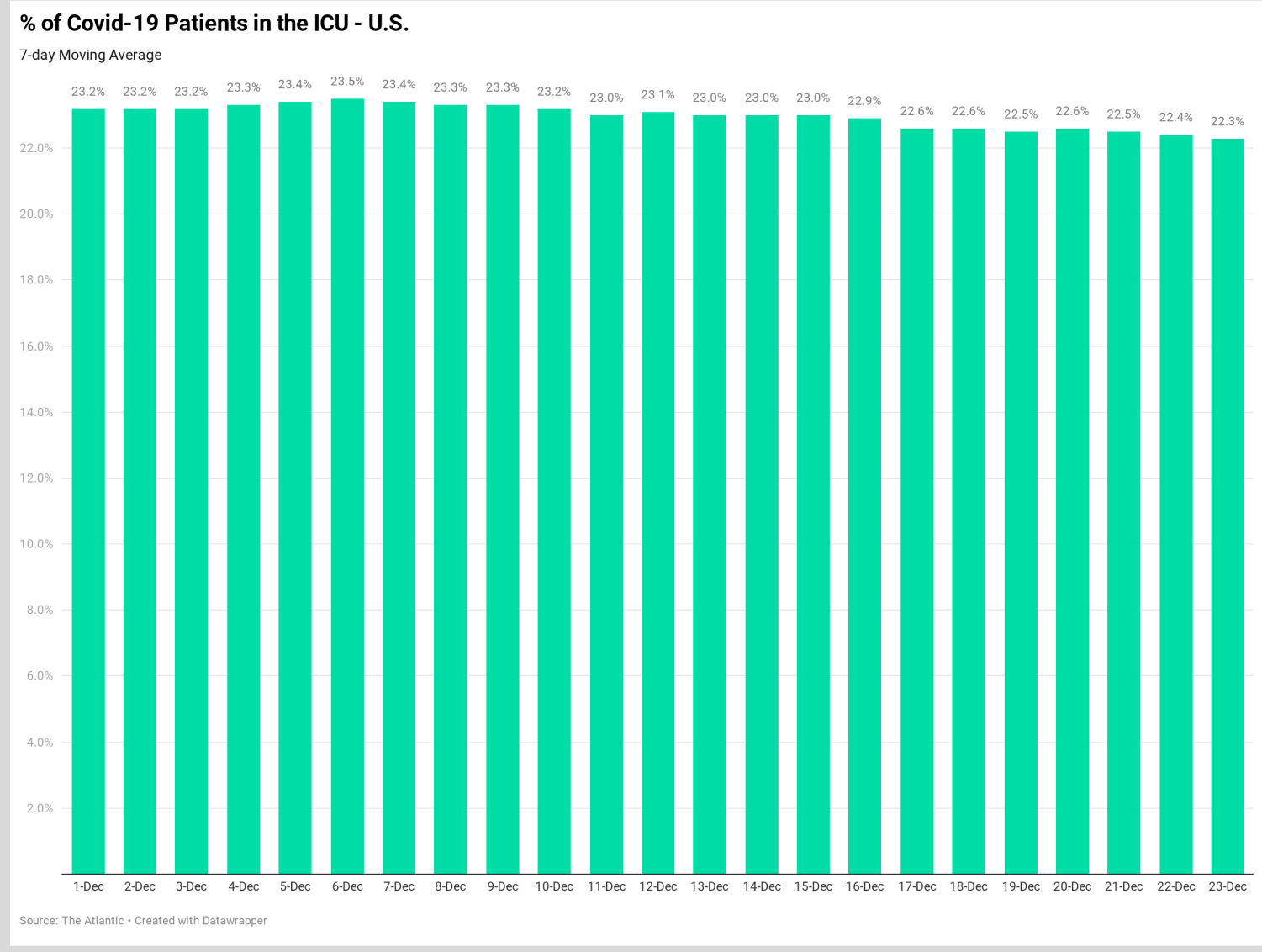
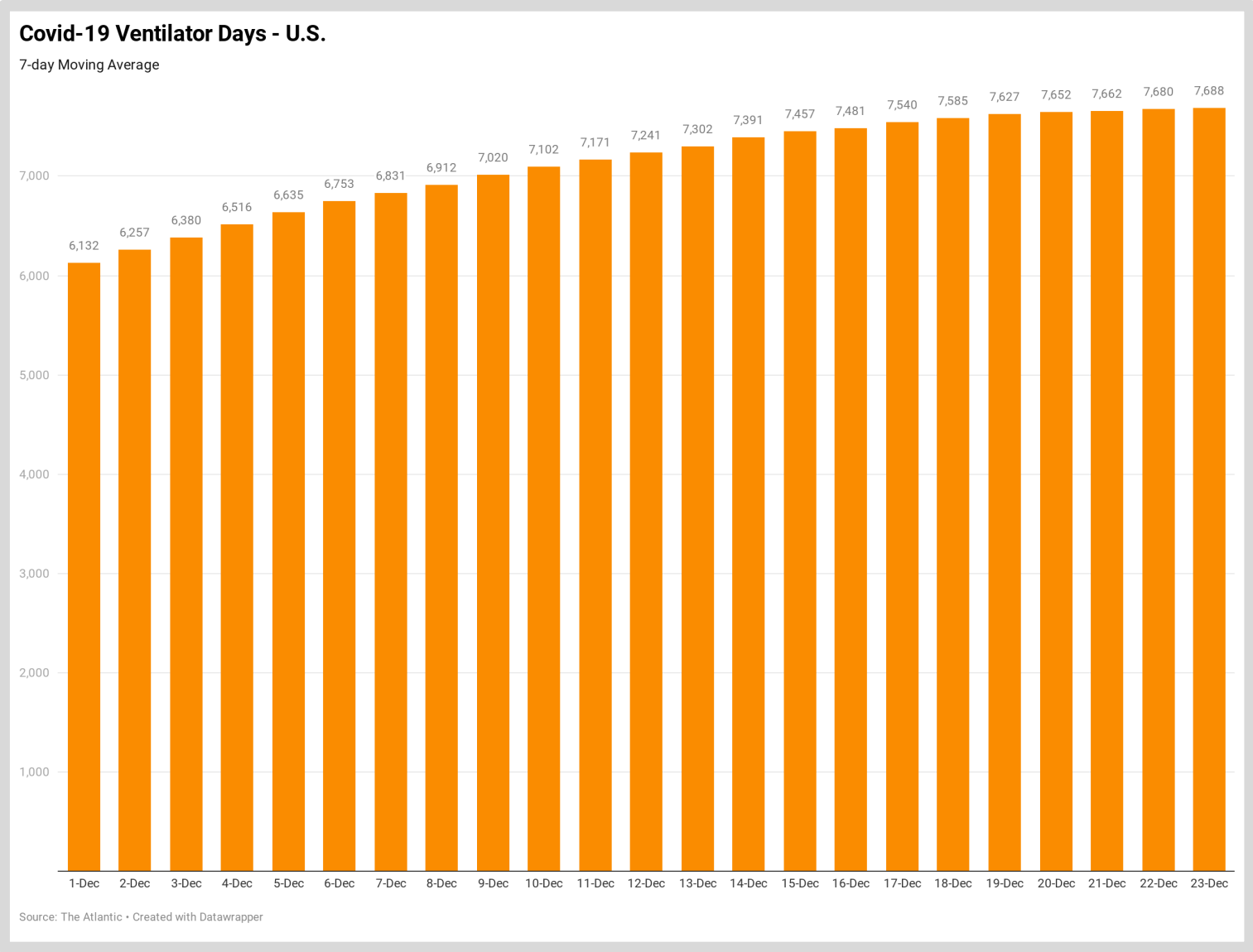
The % of Covid-19 inpatients were in the ICU has eased slightly during December



Health Industry Advisor, llc

On average, there were ~7,700 Covid-19 patients on ventilators last week

This census of COVID-19 patients on ventilators increased throughout December – though the rate of increase appears to be slowing



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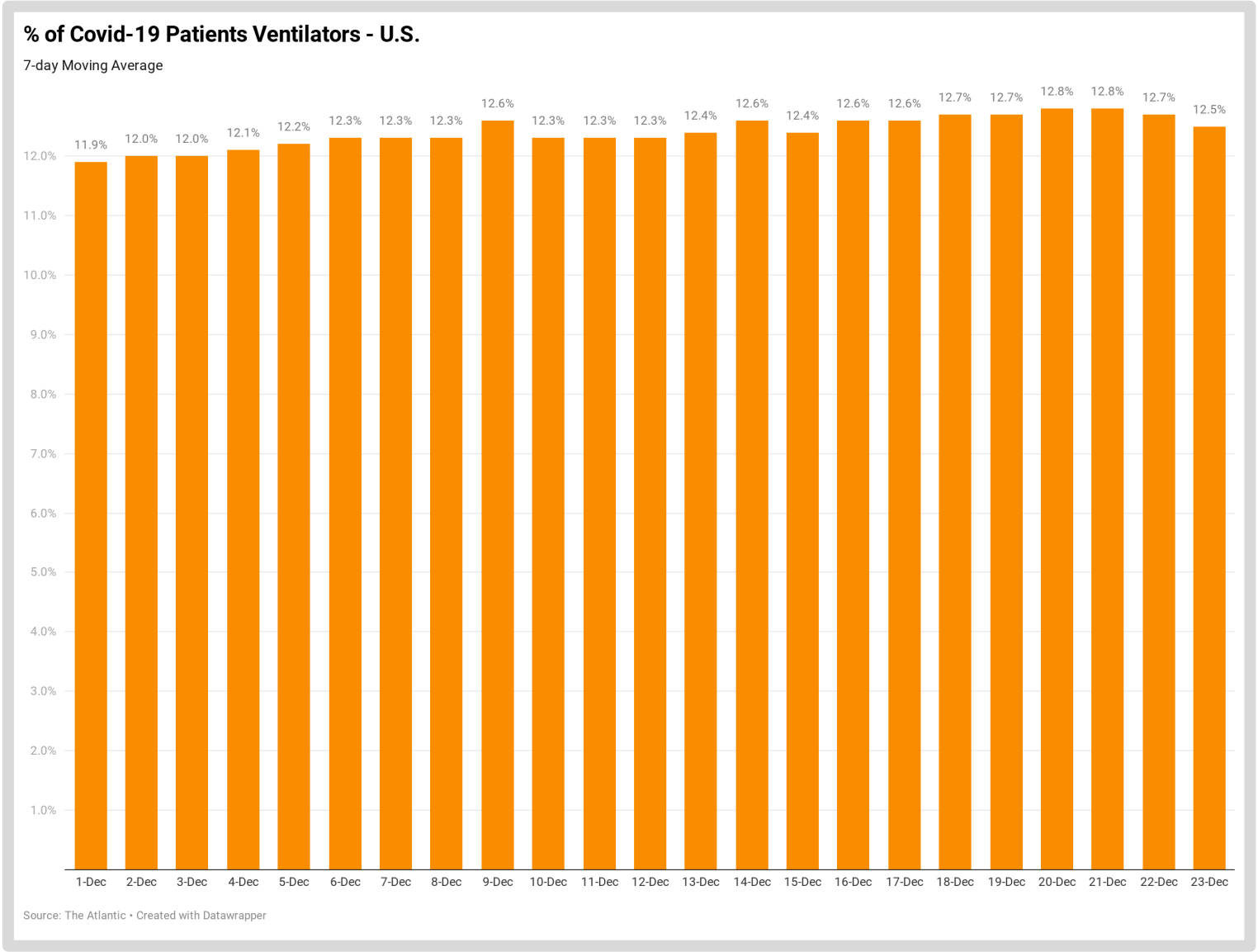
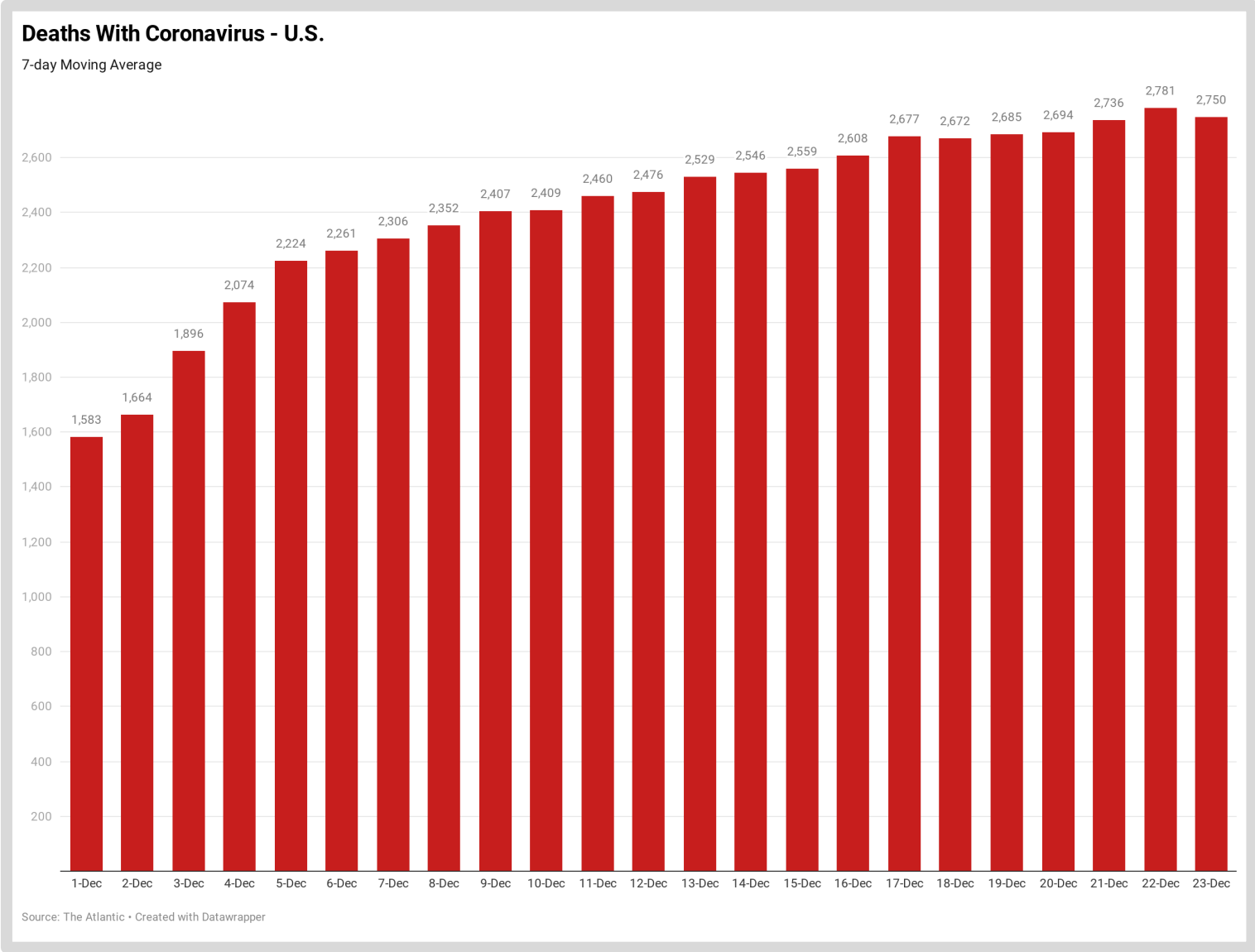
The likelihood of a hospitalized Covid-19 patient would be on a ventilator is slightly higher than it was at the beginning of December



Health Industry Advisor, llc

Tragically, the average number of deaths with the coronavirus is sharply higher than it was at the beginning of December



Health Industry Advisor, llc

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 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
- Oliver Wyman Pandemic Navigator, https://pandemicnavigator.oliverwyman.com/forecast?mode=country&region=United%20States&panel=mortality
- Bloomberg Vaccine Trackers, https://www.bloomberg.com/graphics/covid-vaccine-tracker-global-distribution/?sref=Z0b6TmHW