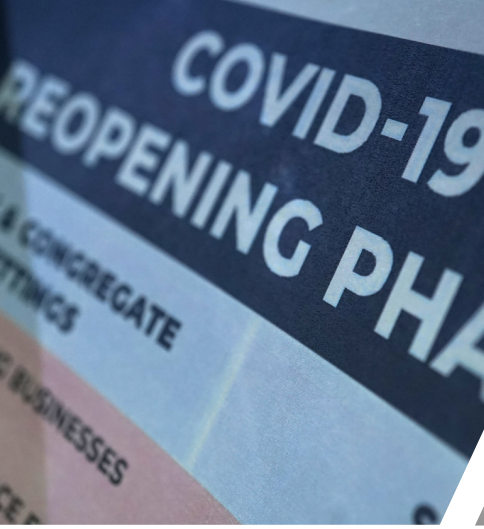

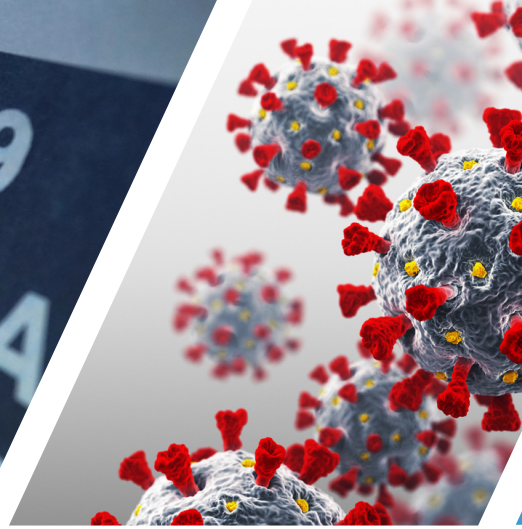

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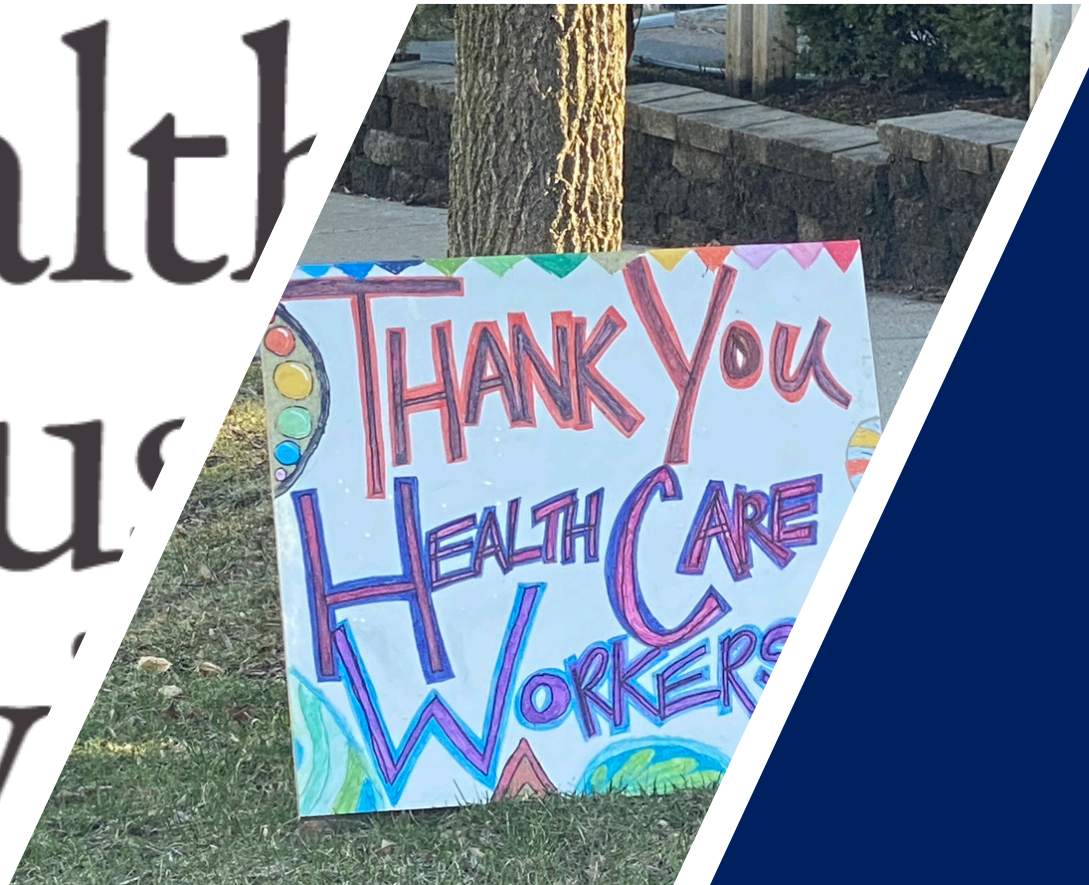

Issue # 182

Friday, October 9, 2020

COVID-19 Report

Highlights

- **We update our review of new infection rates in metro areas home to selected major universities:**
  - **Tuscaloosa, Alabama, home to the University of Alabama, experienced a dramatic decline in new daily infections per capita over the past week**
  - Douglas and Pottawatomoe Counties (KS) and Dane County (WI), home to the University of Kansas, Kansas State University and the University of Wisconsin respectively, also experienced significant declines week-over-week in this rate
  - McLennan County (TX), home to Baylor University experienced a significant increase week-over-week in this rate
  - Centre County (PA) and Lubbock County (TX), home to Penn State University and Texas Tech University respectively, experienced the highest 7-day new infection rate per capita, through yesterday
  - Tompkins County (NY) and Kanawha County (WV), homes to Cornell and West Virginia University respectively, experienced the lowest 7-day new infection rate per capita, through yesterday
  - Earlier this week, **Brown University assistant professor of medicine, Andrew Bostom, shared an analysis of infection rates on 50 major university campuses. During the period from August to October 5, Bostom reported:**
    - **~70,000 infections**
    - **3 hospitalizations**
    - **0 deaths**
- Deaths with a SARS-CoV-2 infection in the United States:
  - **The case death rate in the United States has fallen since May. This measure of deaths-to-reported SARS-CoV-2 infections, now stands at 2.78%**
  - As widely reported by the CDC and others, actual infections are far greater than reported cases. **Based on estimated infections, Youyang Gu estimates an infection fatality rate of 0.29%, for infections as of September 6**
  - **Although the 7-day average deaths per day is up slightly each of the past two days (by 4 and 1 death per day), average reported deaths are lower than for July 10-October 6**
- **New cases and the infection rate continued to rise**
  - There were more new cases yesterday than on any Thursday since August 6
  - **On a week-over-week basis, new cases were up 11.7%**
  - **On a same-day, prior-week basis, new cases have increased on six consecutive days and twenty of the past 26 days**
  - The seven states with the highest current new daily infection rates are Idaho, Missouri, **Montana, North Dakota, South Dakota, Utah and Wisconsin; these states are at or near the highest infection rates they have experienced since the pandemic began**
  - Conversely, **six of the ten states that experienced the highest infection rates per capita during the pandemic - Arizona, Florida, Louisiana, Mississippi, New Jersey and New York - are now experiencing significantly lower infection rates**
- **SARS-CoV-2 infections are placing increased demands on healthcare resources but, overall far below peak levels:**
  - **Inpatient census of Covid-19 patients has now increased on a same-day, prior-week bases for fifteen consecutive days; this had declined on the preceding fifty-eight consecutive days**
  - **Inpatient census has increased an average of 283 patients per day over the past fifteen days; it had declined an average of 467 patients per day during the fifty-eight preceding days**
  - ICU census of Covid-19 patients has increased four consecutive days, on a same-day-prior week basis
  - Covid-19 patients on ventilators have increased three consecutive days, on a same-day, prior week basis

Metro Areas Home to Major Universities:

Of the 33 major areas in our sample, 24 are experiencing infection rates* higher the the national average

Areas home to Penn State University and Texas Tech University had the highest infection rates last week; Areas home to Cornell and West Virginia University had the lowest

* 7-day average

Metro Areas With Major Universities: New Daily Infections / 1M Population

7-Day Average, As of October 8

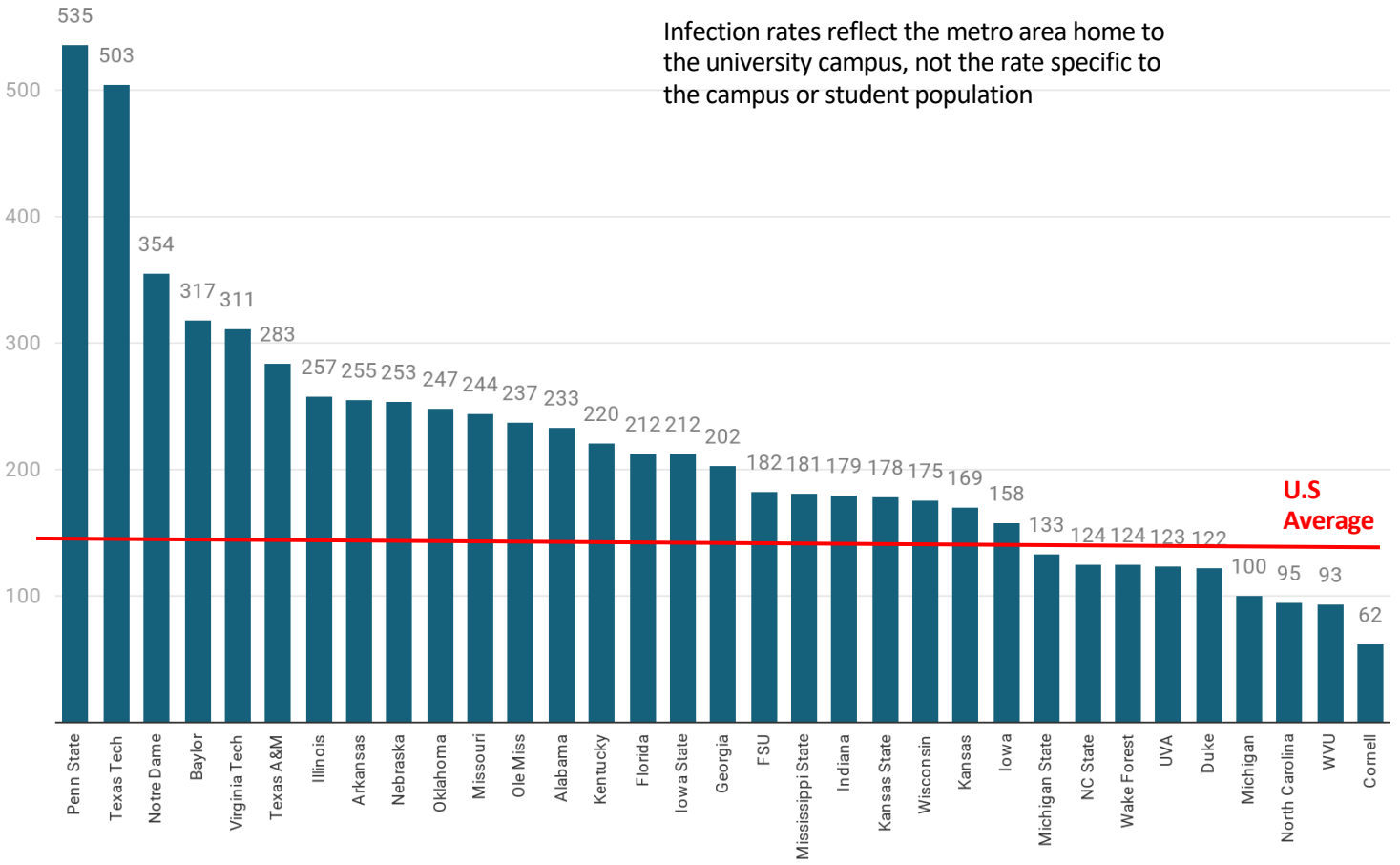

Chart: Health Industry Advisor LLC • Created with Datawrapper

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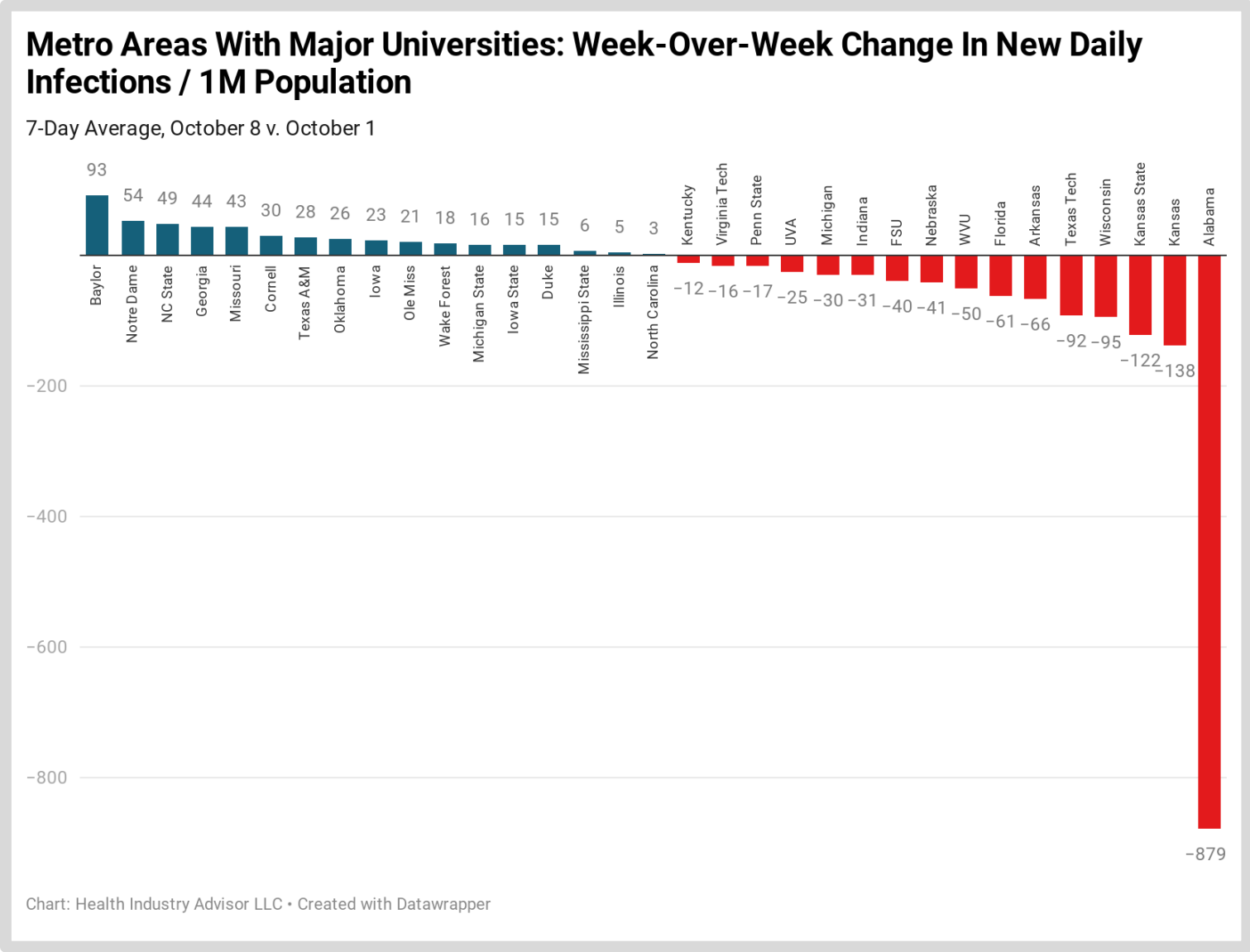
Metro Areas Home to Major Universities:

The metro area home to the University of Alabama experienced a dramatic decline in 7-day new daily infections per capita compared to one week ago

Metro areas home to the University of Kansas, Kansas State University, the University of Wisconsin and Texas Tech University experienced significant declines in this rate; The metro area home to Baylor University experienced a significant increase

* 7-day average



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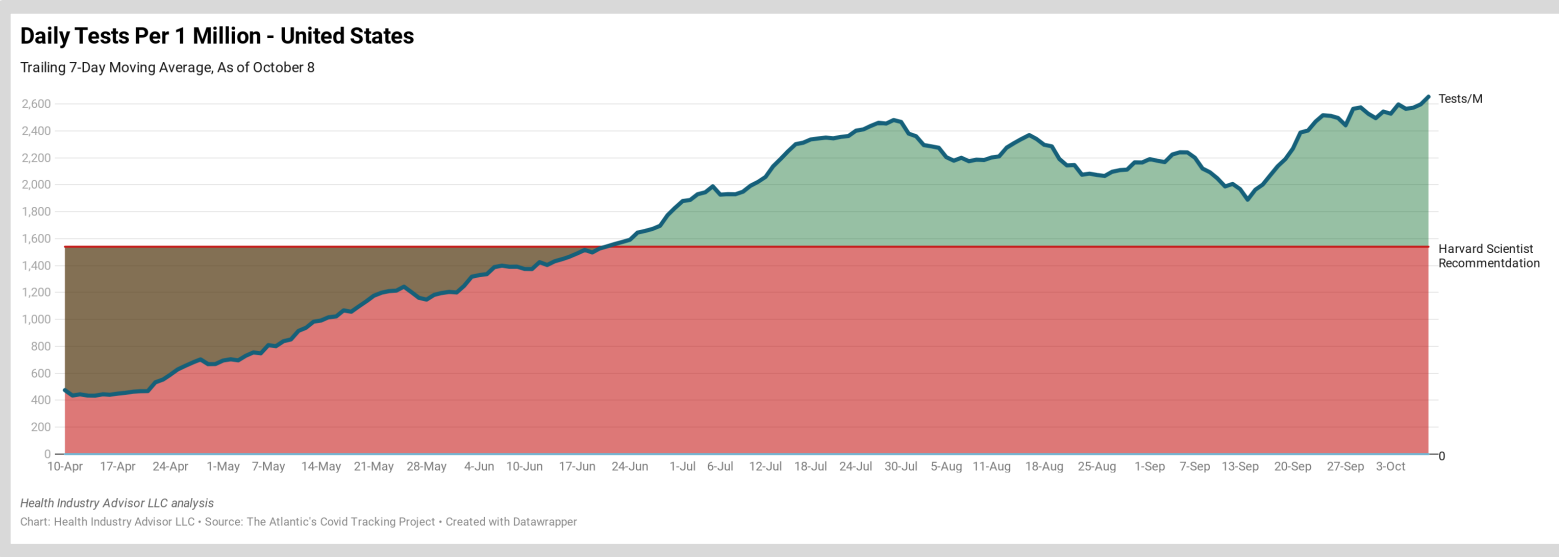
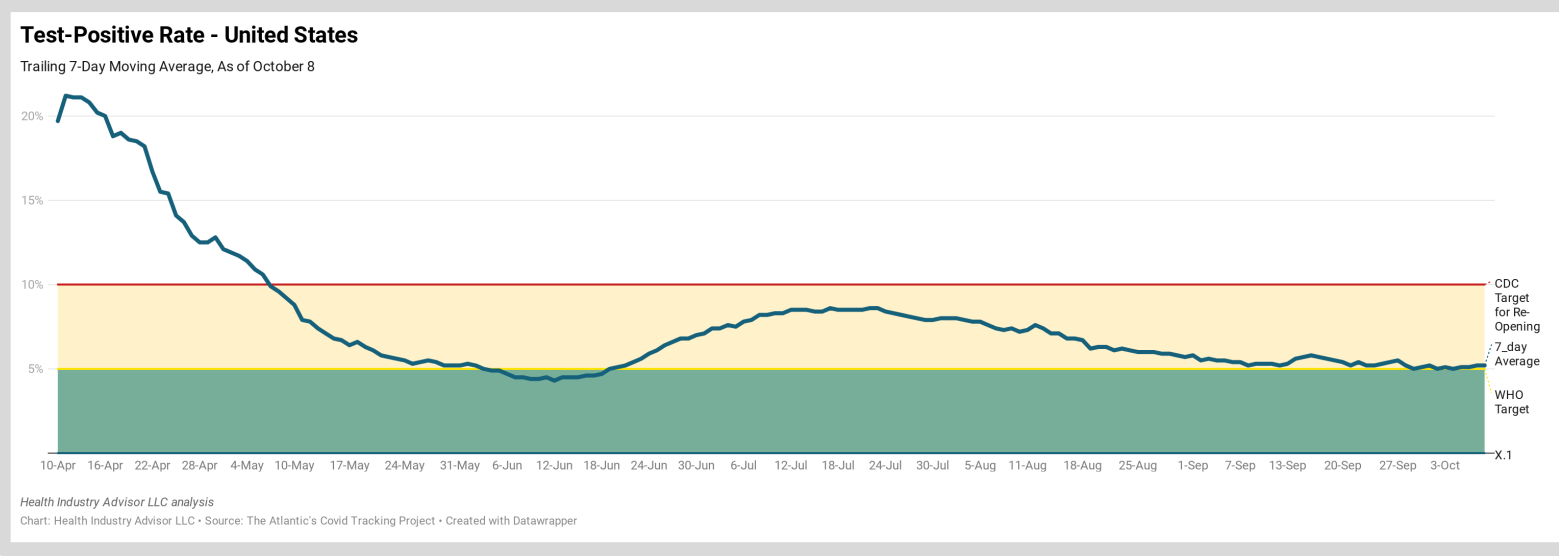
The 7-day average testing volume as of yesterday was the highest ever recorded

The 7-day test-positive rate is just outside the “green” zone – just above WHO target yet, well-below the CDC target for Phase 3 re-opening





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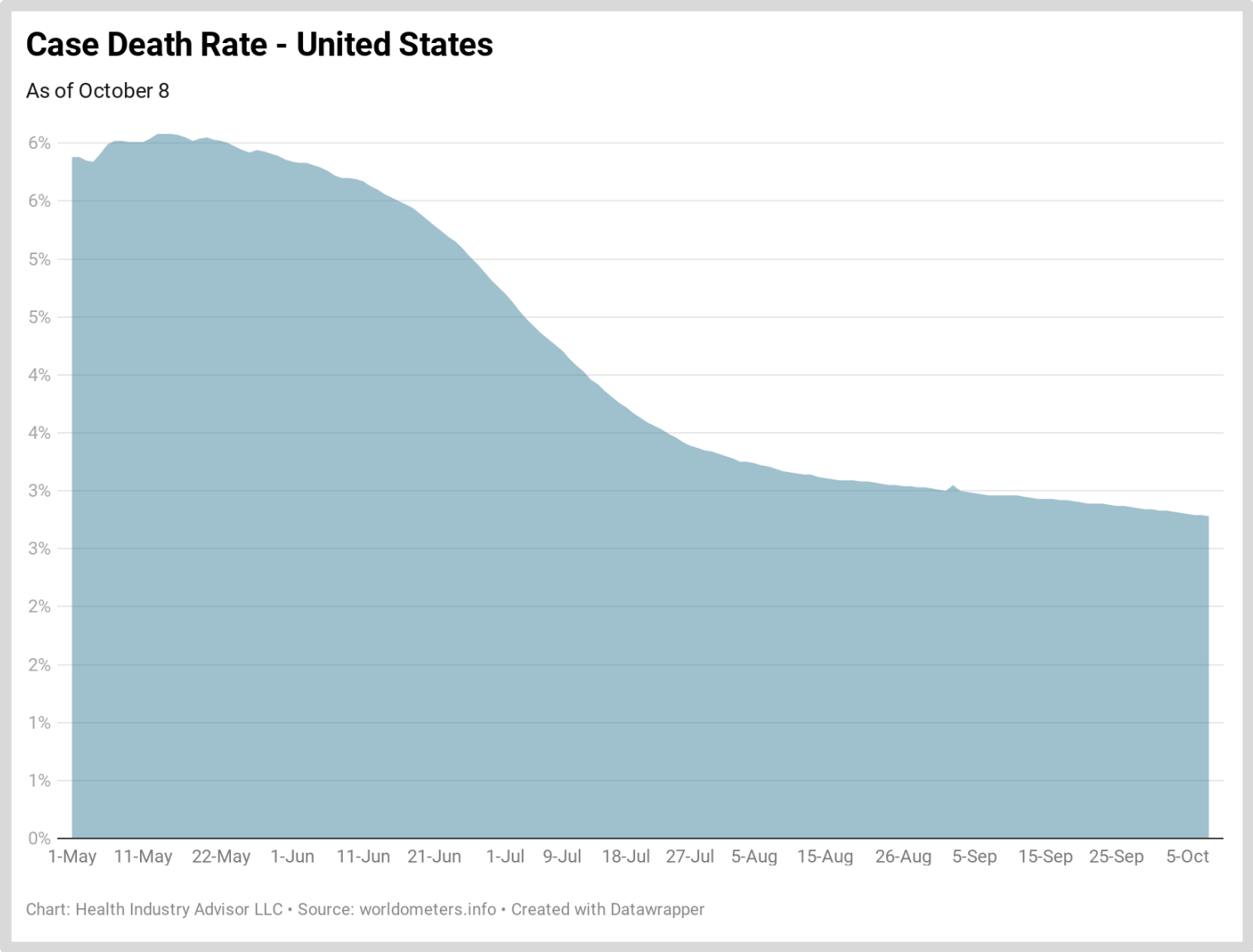
The case death rate, which is based on reported Covid-19 cases, has declined throughout the pandemic. As of yesterday, this rate was 2.78%



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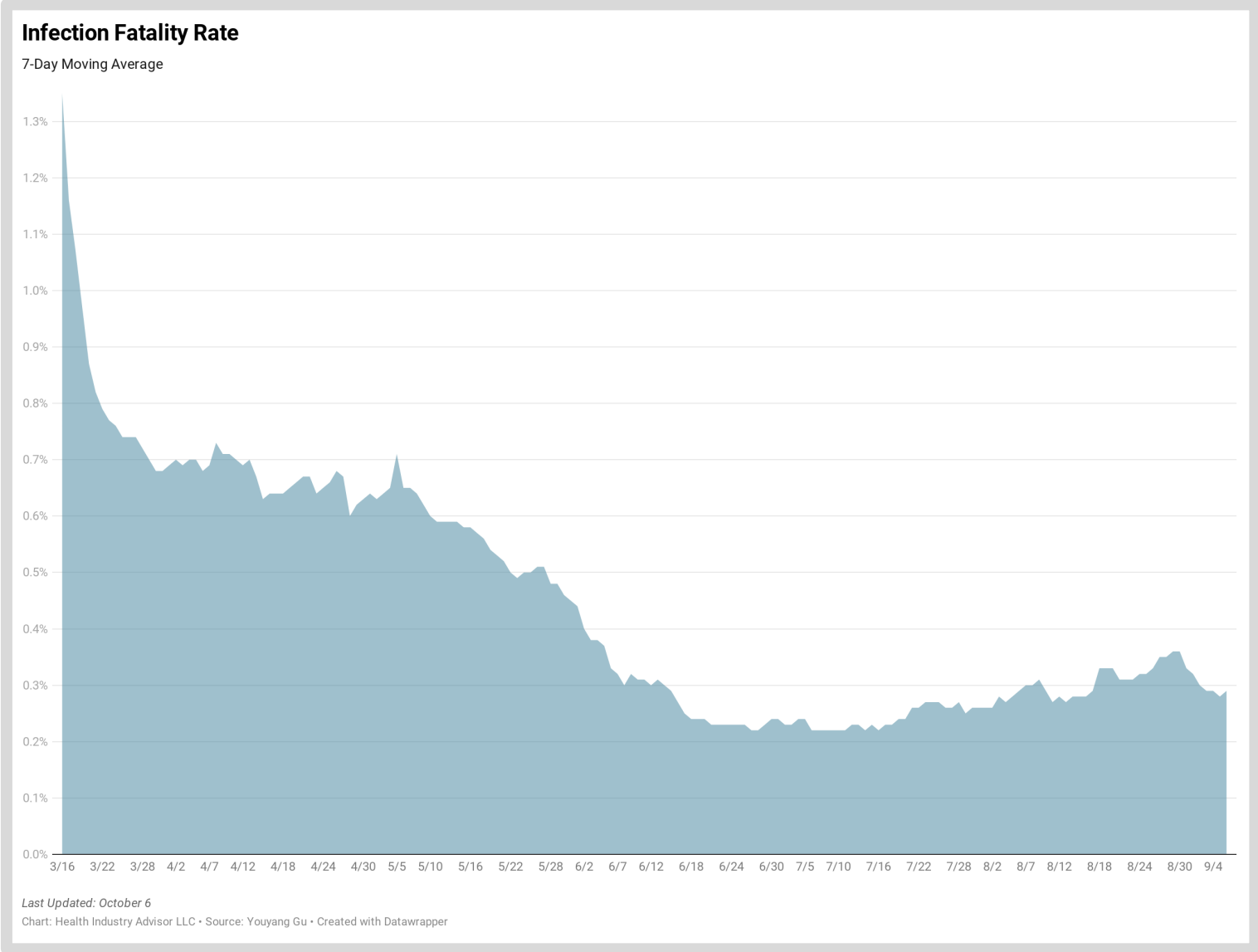
Since actual infections are significantly greater than reported cases, the case death rate overstates the actual fatality rate from SARS-CoV-2 infections

To address this, Youyang Gu* uses a machine-learning model to estimates true infections and the implied infection fatality rate (IIFR)

Gu pegged the 7-day moving average IIFR at 0.29%, as of early September (his latest estimate of this rate)

Source: COVID-19 Projections Using Machine Learning



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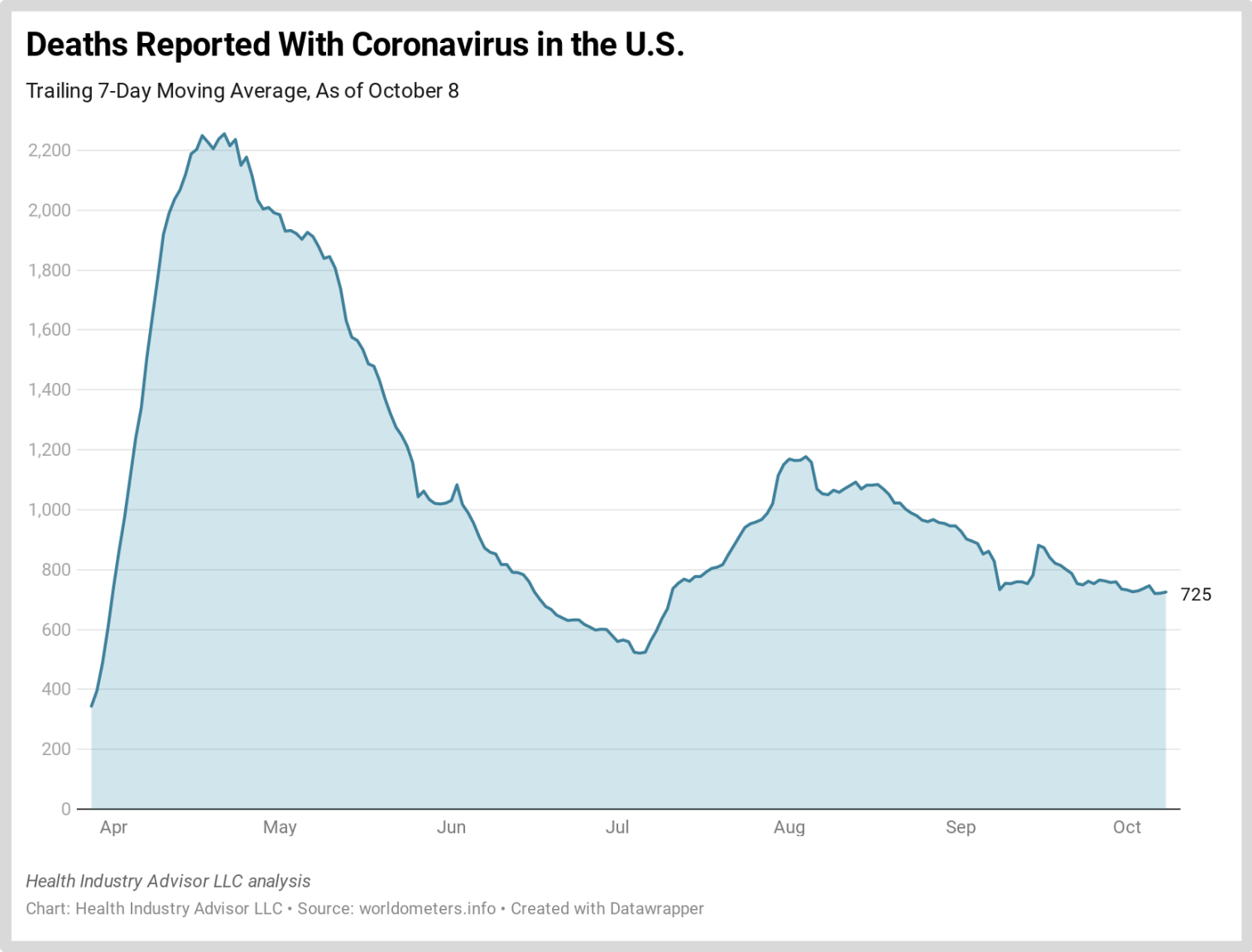
The 7-day average deaths per day increased by 4 yesterday, after increasing by 1 the prior day

Despite this increase, average daily deaths remain lower than any period from the July 10 – October 6



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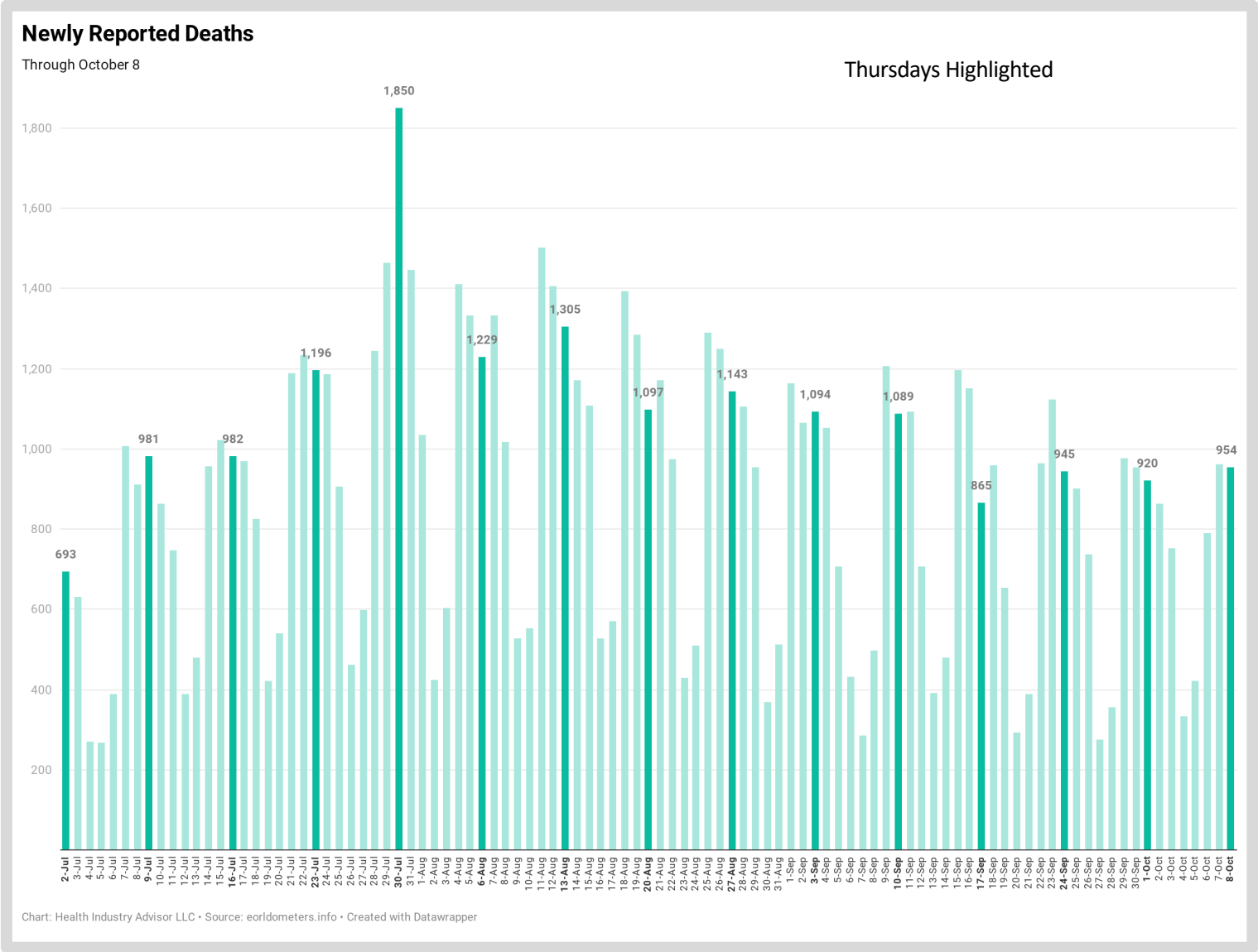
There were slightly more more deaths reported yesterday on the past two Thursdays, as well as more than on the Thursday following Labor Day

Nevertheless, there were fewer deaths reported yesterday any previous Thursday since July 9



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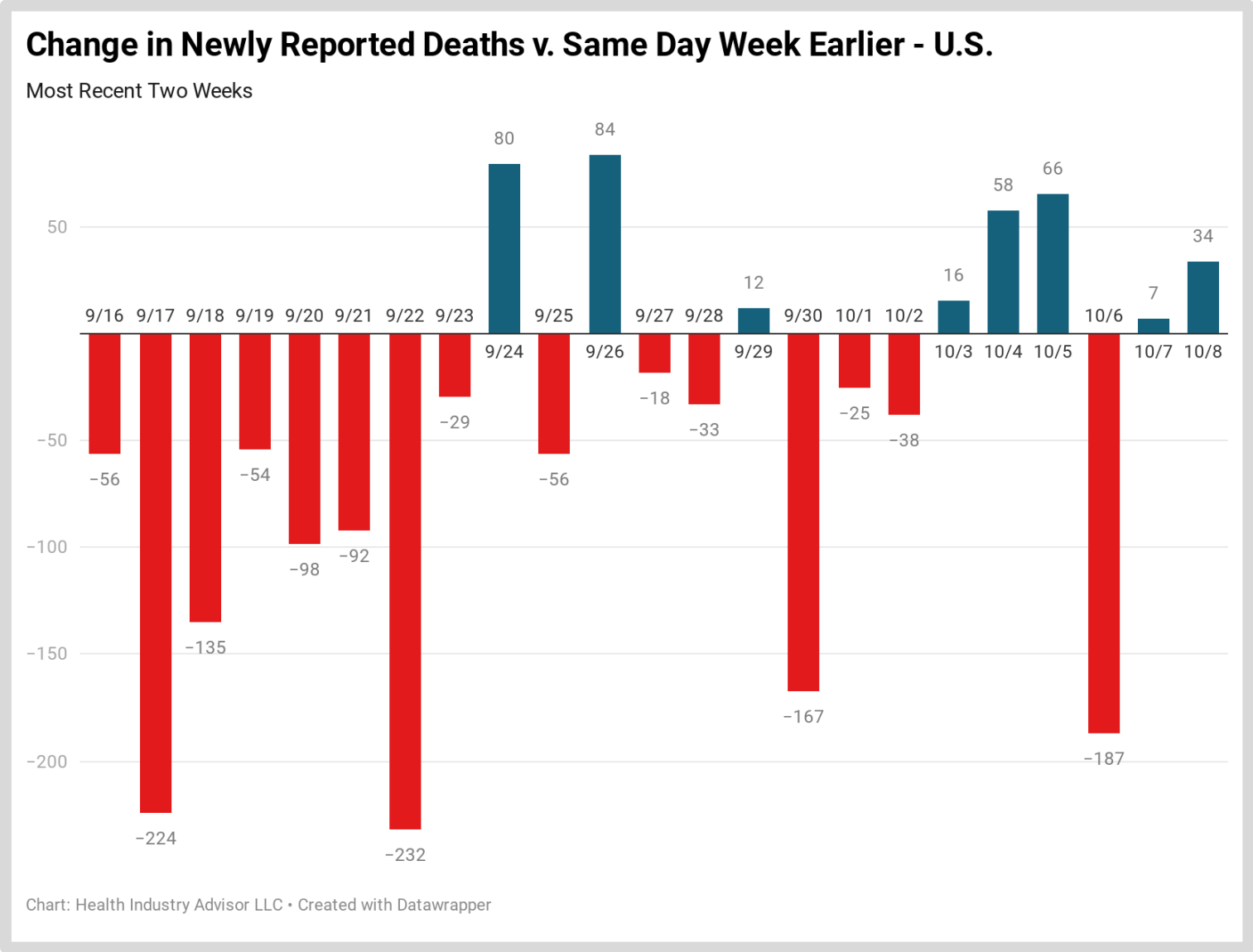
Newly reported deaths, on a same-day, prior-week basis, increased on past two days

Overall trend, however, remains negative:
- fifteen of past twenty-three days show fewer new deaths than same-day, prior week
- amplitude of declines were greater than for increases



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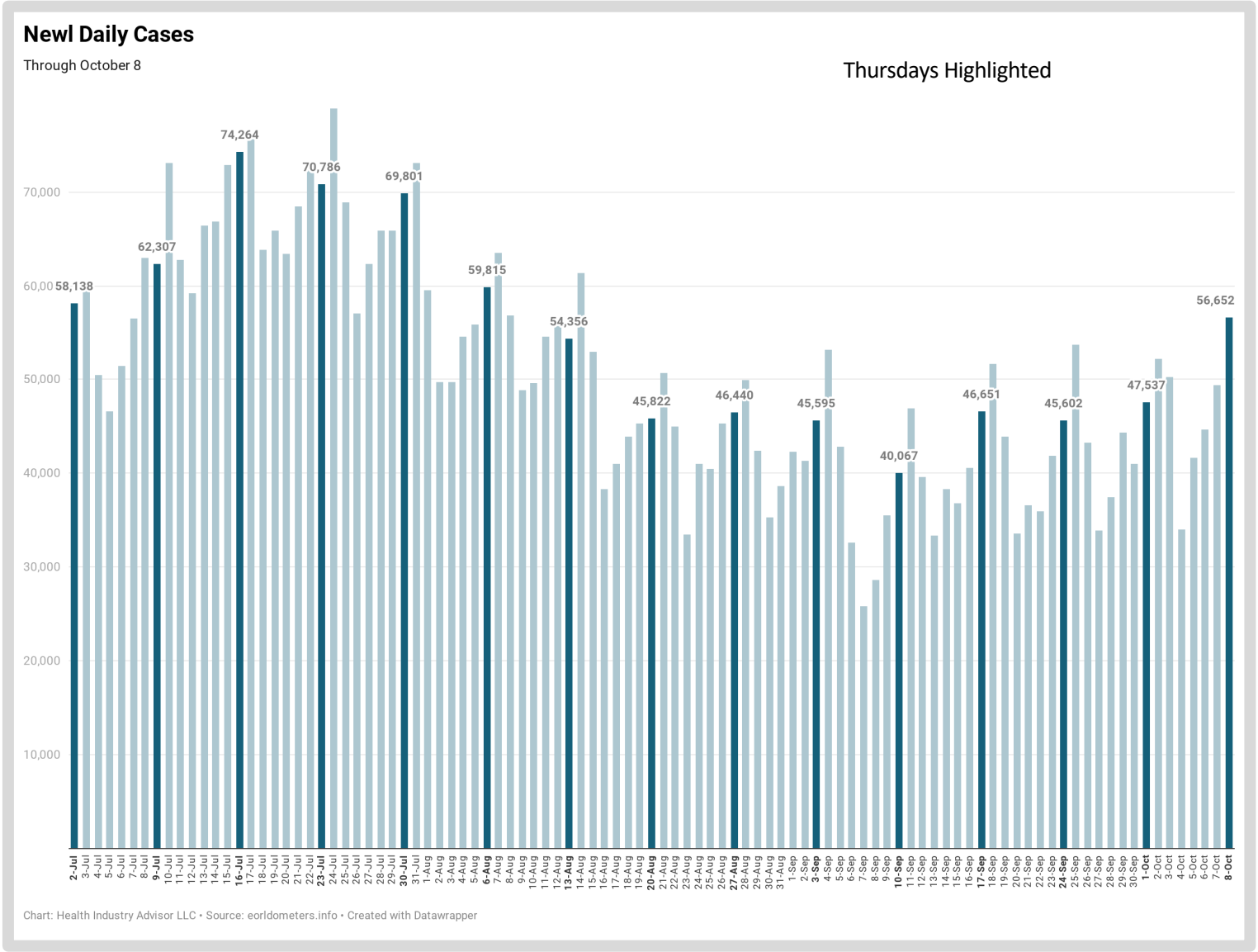
New cases on Thursdays were the most recorded on a Thursday since August 6



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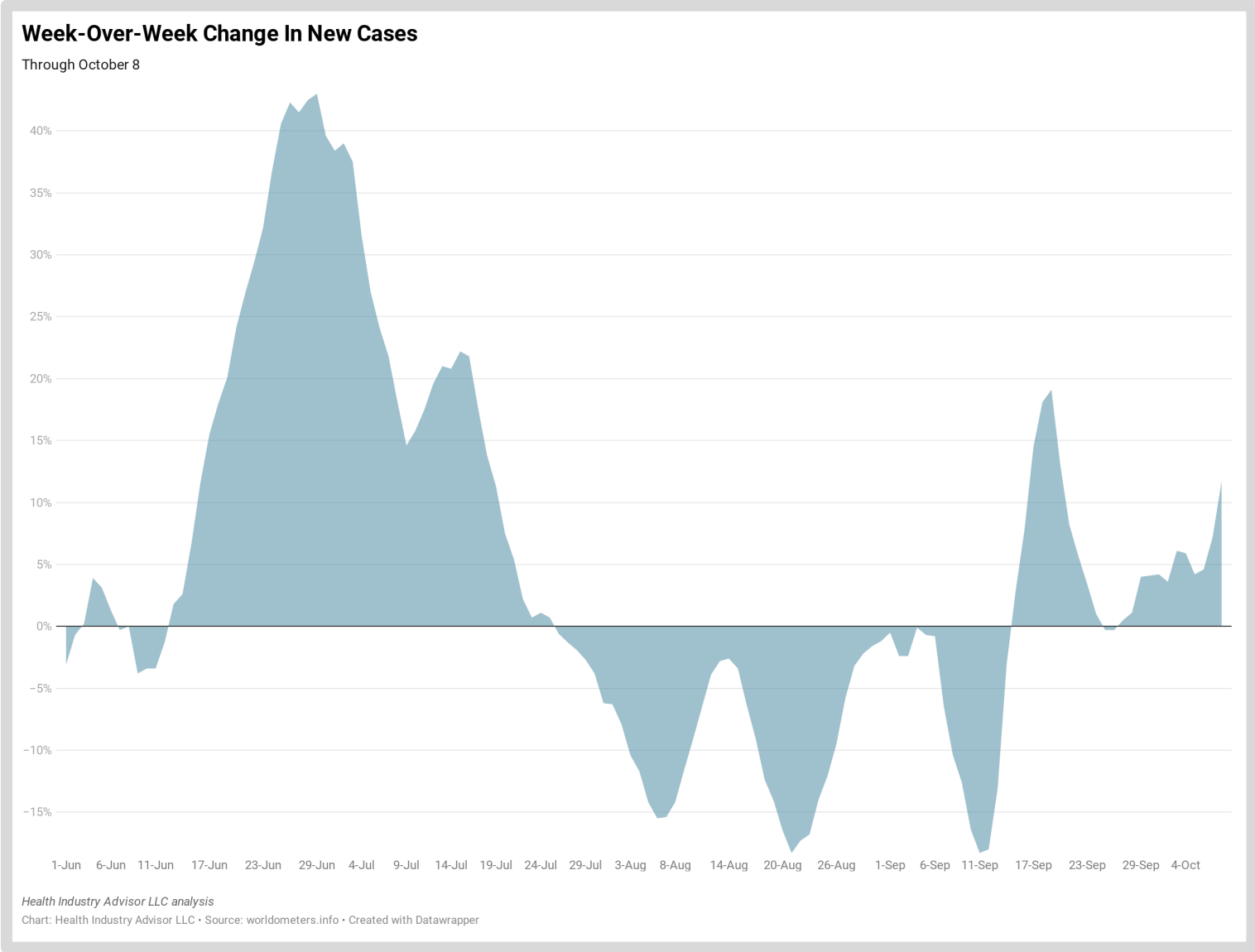
Following a seven-week period of decline, new cases began increasing on a week-over-week basis on September 15

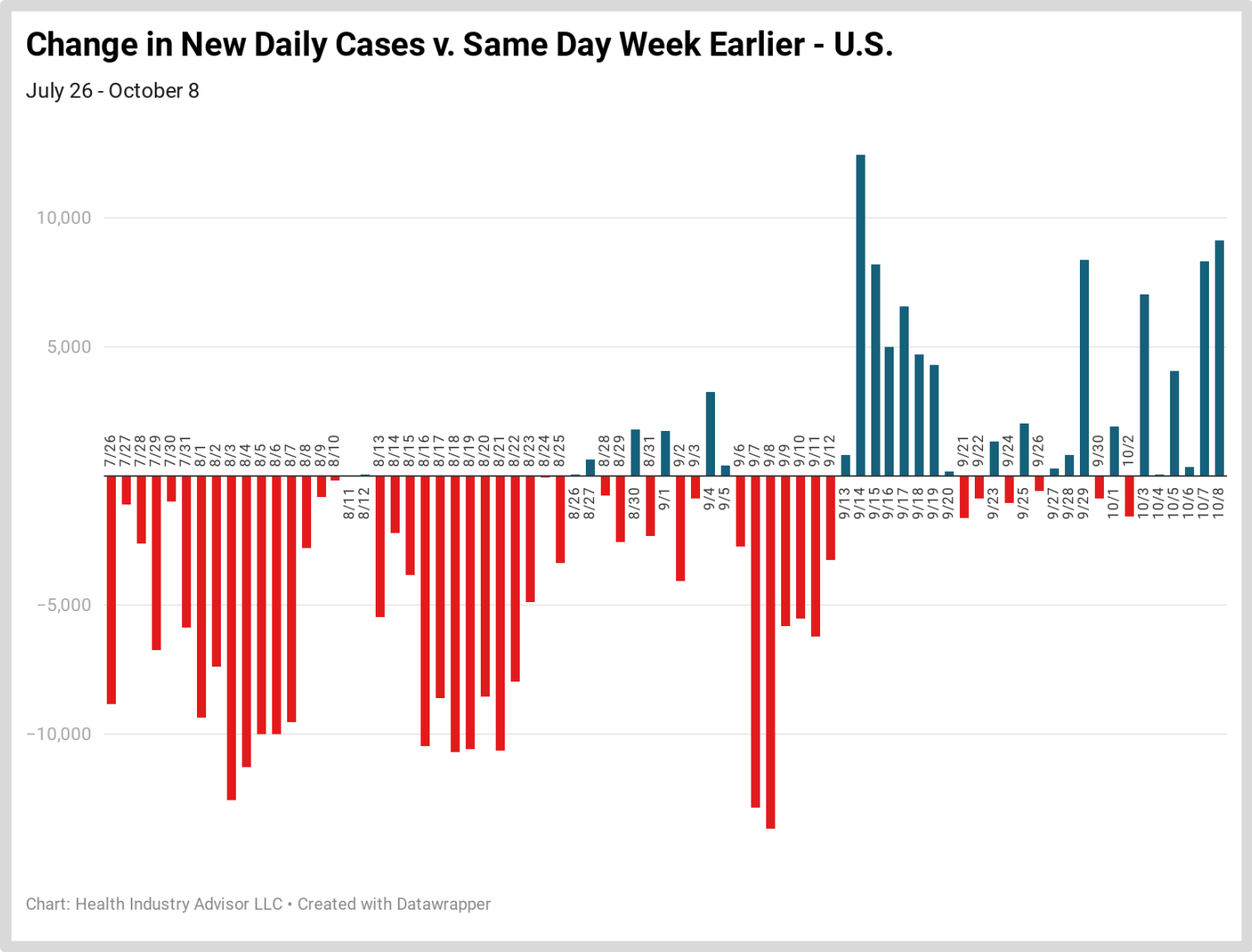
Yesterday, this rate was up 11.7% on a week-over-week basis



A clear shift from declining to increasing infections:

New cases have been higher than for the same-day, previous week on six consecutive days

This measure has increased on twenty of twenty-six days since September 13; it had declined on thirty-five of forty days from July 26 – September 12



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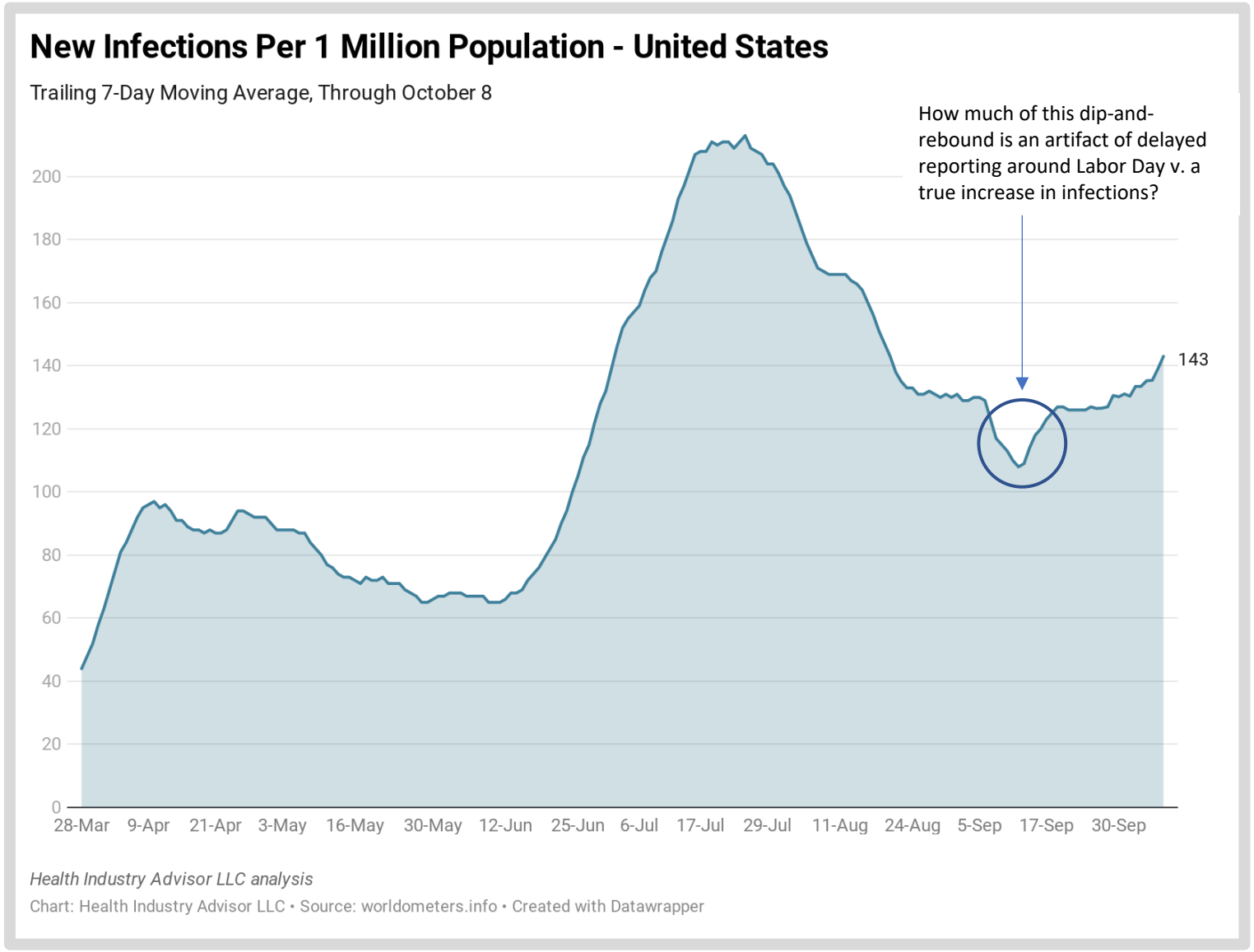
The rate of new infections per capita* in the U.S. Is now trending upward

This rate is now back to where it was on August 20

* - 7-day moving average basis

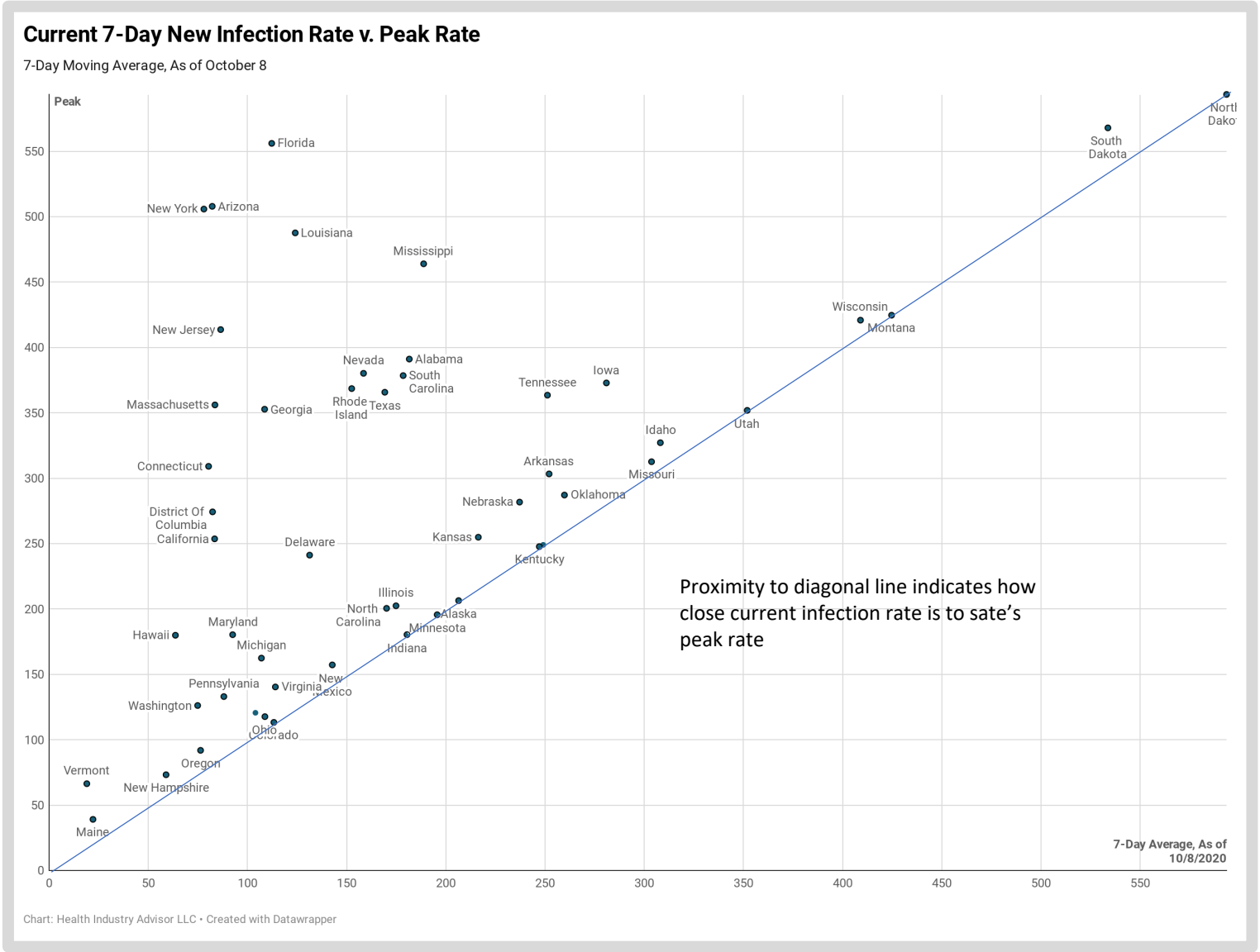


The seven states with the highest new infection rates over the past seven days also are at or near the highest rates experienced to-date - North Dakota, South Dakota, Montana, Wisconsin, Utah, Idaho and Missouri

These seven states also are among the thirteen states with the highest peak infection rates to-date

The six other states with the highest peak rates – Florida, New York, Arizona, Louisiana, Mississippi and New Jersey, however, are experiencing infection rates considerably below their peak

* - 7-day moving average basis



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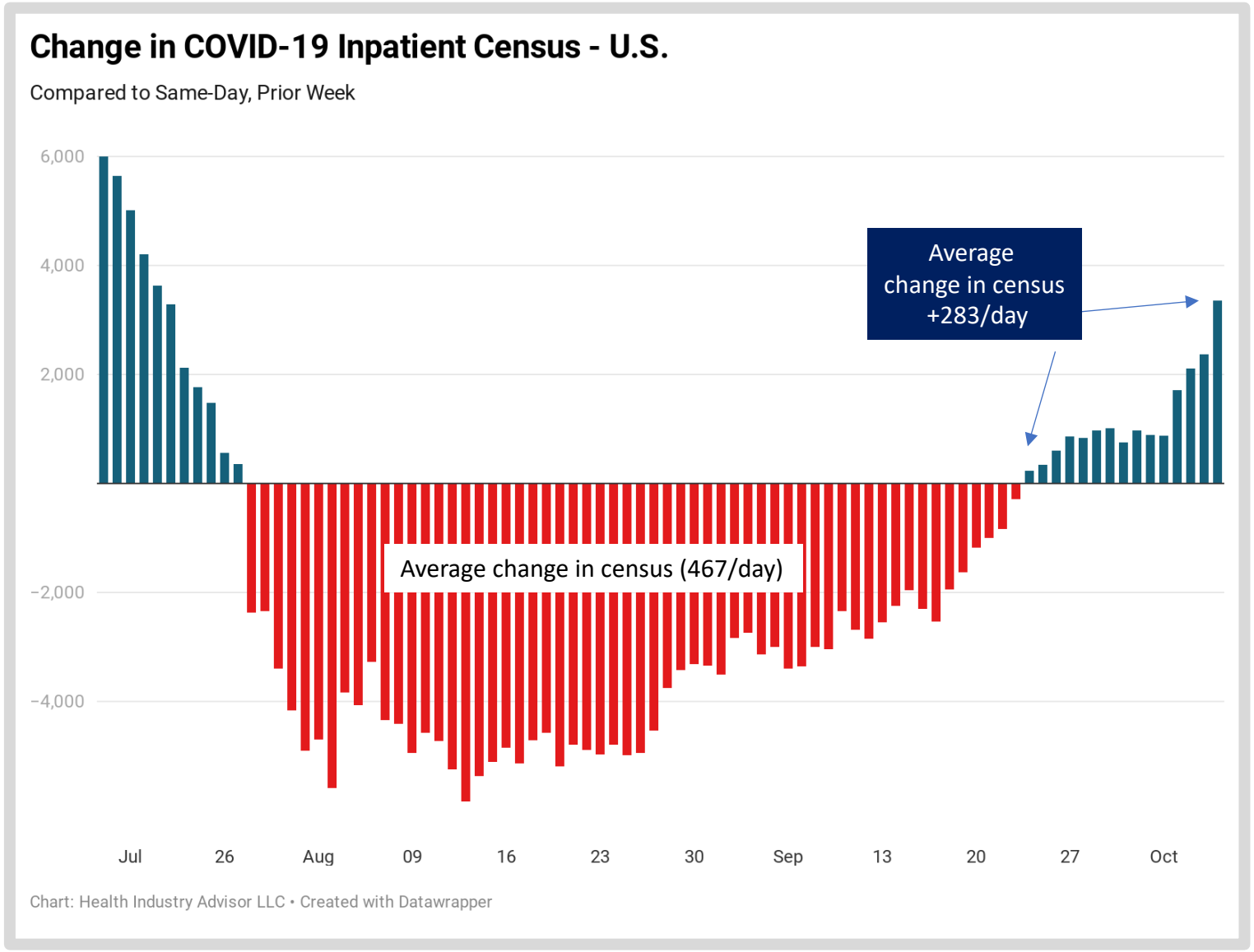
Inpatient COVID-19 census has increased on a same-day, prior week basis for fifteen consecutive days; it had previously declined on 58 consecutive days

Fortunately, the increases have averaged less than the increases: The average daily census increased over the past fourteen days by 283 patients/day; the average daily census declined during the preceding fifty-eight days by 467/day



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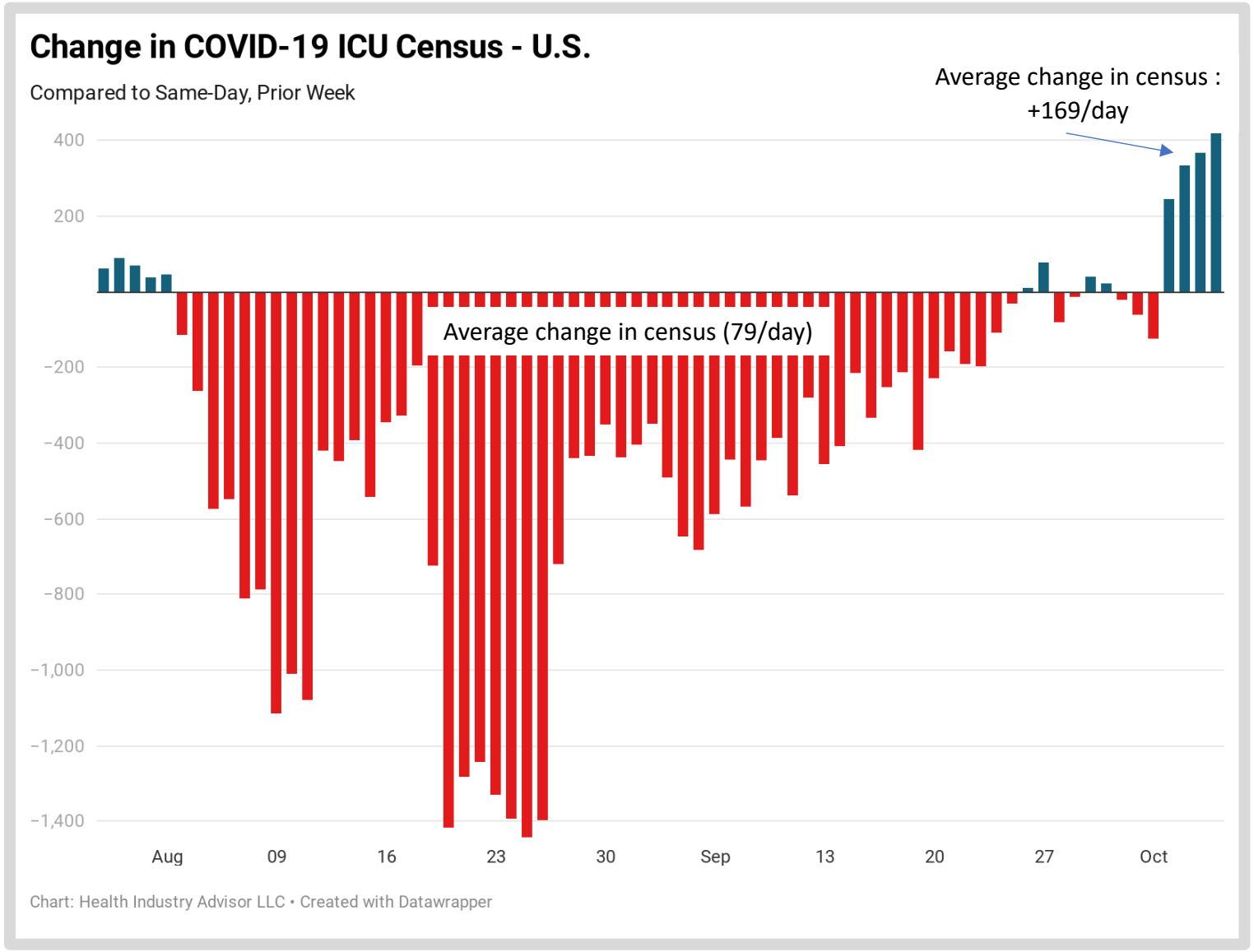
ICU census of COVID-19 patients increased for the fourth consecutive day yesterday, on a same-day, prior week basis

This countered a decline in this rate on fifty-four consecutive days (August 3 – September 25) and fifty-nine of sixty-three days (through October 4)

Yesterday's ICU census was ~1/3 lower than it was on August 3



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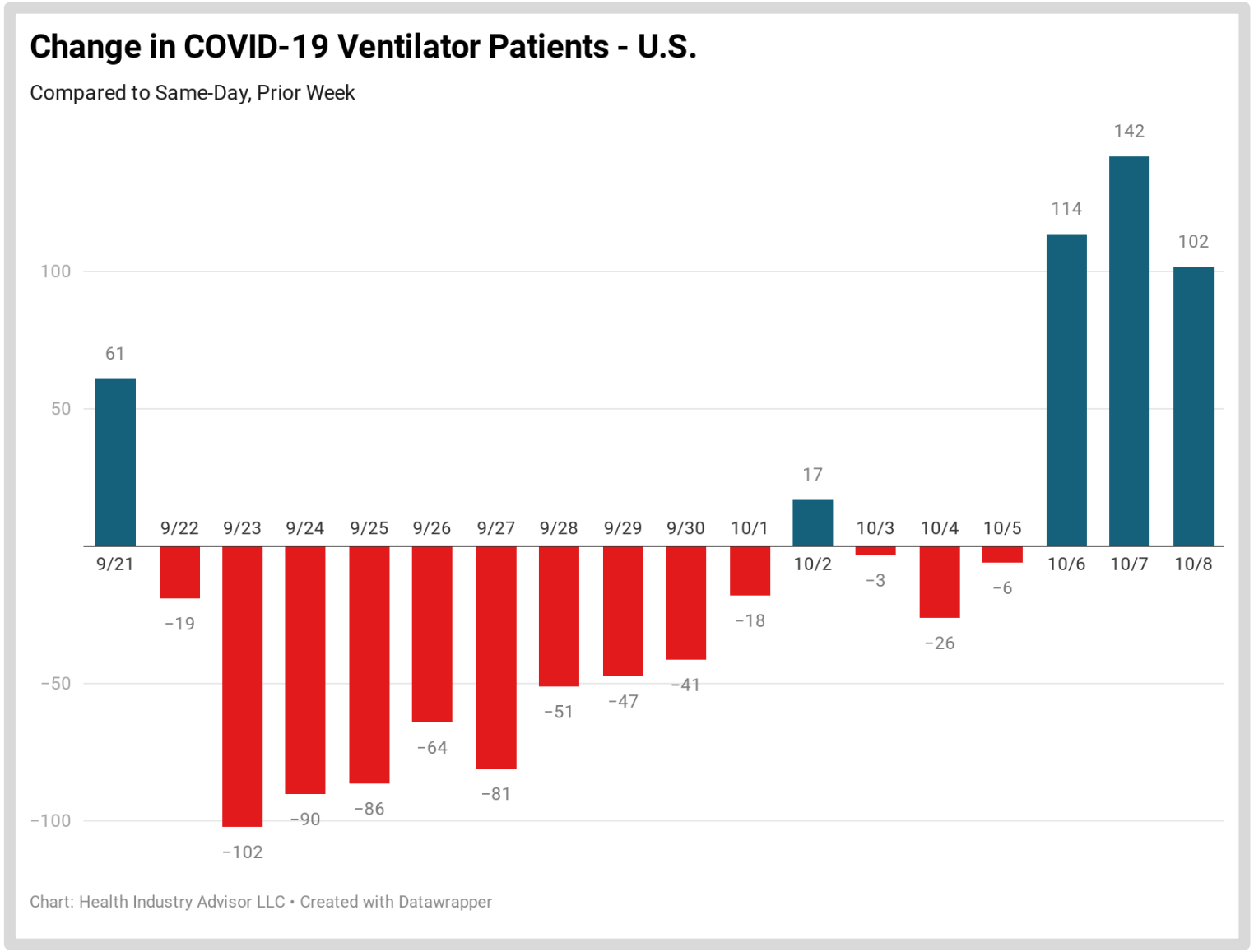
Covid-19 patients on ventilators increased on a same-day, prior week basis on three consecutive days



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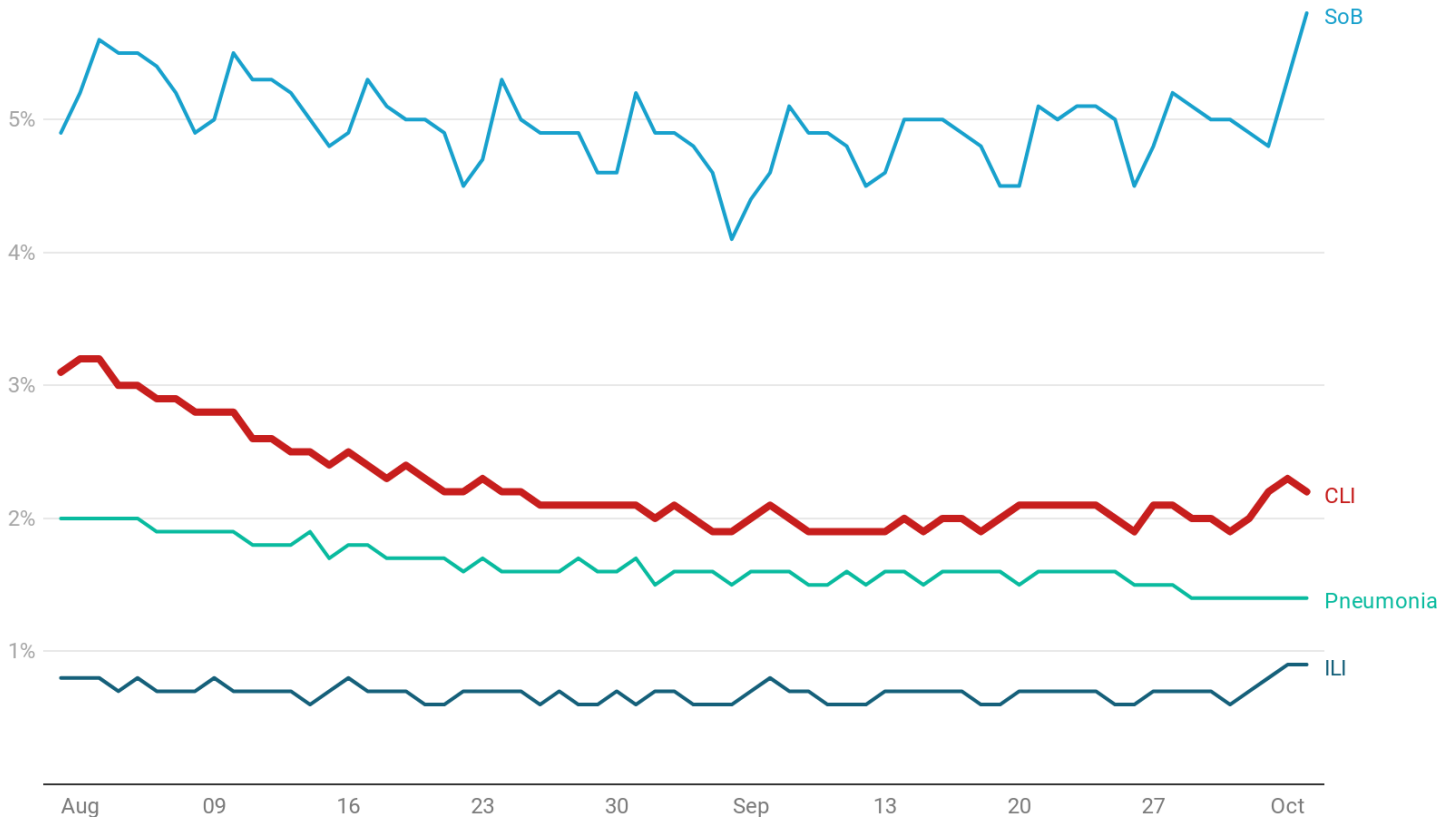
The % of ER visits for COVID-19-like illnesses (CLI) declined on Monday, after increasing the preceding four days; it remains less than ½ of the rate in mid-July

Flu season is not in evidence yet, based on influenza-like illness (ILI) visits to the ER

% of Emergency Department Visits for COVID-Like Illness (CLI), Influenza-Like Illness (ILI), Pneumonia & Shortness-of-Breath (SoB)

As of October 5



Health Industry Advisor LLC analysis

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

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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