



## COVID-19 UPDATE: Daily cases still surging and set to exceed 200,000 before Thanksgiving. China recovery led by Epicenter stocks

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### STRATEGY: China market post-pandemic leadership? Epicenter

We thought it would be helpful to take a look at the China markets YTD. After all, the first cases of COVID-19 were in China. And China has managed to largely vanquish the disease (albeit extremely strict lockdowns, nothing that any other region followed suit). And since the pandemic's start, take a look below. Feb 19, 2020 was the S&P 500 peak, so it is a good measurement point:

- China equity market is up 30% since Feb 19, 2020, a massive, massive rally
- Epicenter sectors accounted for half of the market cap increase
- Epicenter outperformed Technology
- Defensives actually posted the strongest return at 58%

| <i>Aggregate Market Cap (\$Trillion)</i> |               |               |              |            |
|--|---------------|---------------|--------------|------------|
|  | 2/19/20       | 11/10/20      | Delta        | % Chg      |
| <b>China+HK</b>                          | <b>\$14.4</b> | <b>\$18.7</b> | <b>\$4.3</b> | <b>30%</b> |
| Epicenter                                | 8.5           | 10.4          | 1.9          | 22%        |
| Technology                               | 2.3           | 2.7           | 0.4          | 17%        |
| Defensives                               | 3.6           | 5.6           | 2.0          | 58%        |

Source: Factset and Fundstrat

### *If China is a roadmap, S&P 500 might rally >20% in 2021 with leadership from Epicenter...*

I was surprised by the extent of the China market rally. 30% gains since February and with half of the market cap gains from Epicenter groups (Cyclicals). Granted, there are differences between the regions, sector composition, etc. So it is not necessarily comparable. But if the US follows China:

- will S&P 500 rally another 24% in 2021? Maybe
- US epicenter has lost \$1 trillion in market cap since Feb 2020
- If we see a comparable Epicenter rally, this implies ~30% gain for Epicenter in 2021

At a minimum, this puts some context and credibility to the epicenter rally seen over the past few days.

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|-----------------------------------|---------------|---------------|--------------|------------|
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| Epicenter                         | 8.5           | 10.4          | 1.9          | 22%        |
| Technology                        | 2.3           | 2.7           | 0.4          | 17%        |
| Defensives                        | 3.6           | 5.6           | 2.0          | 58%        |
| <b>United States</b>              | <b>\$38.3</b> | <b>\$40.8</b> | <b>\$2.5</b> | <b>6%</b>  |
| Epicenter                         | 16.9          | 15.9          | (1.0)        | (6%)       |
| Technology                        | 9.5           | 11.7          | 2.3          | 24%        |
| Defensives                        | 12.0          | 13.2          | 1.2          | 10%        |

Source: Factset and Fundstrat

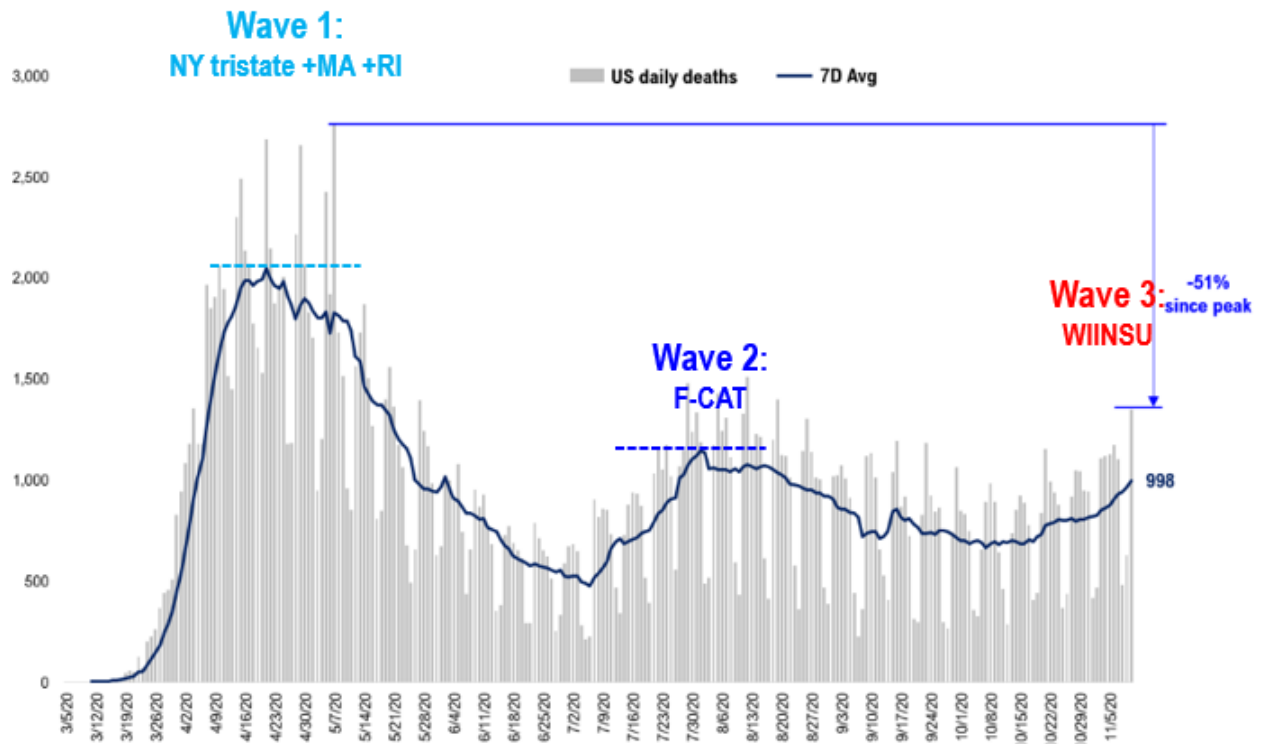
**Daily COVID-19 cases are accelerating and we could see >200,000 cases within a few weeks...**

Daily COVID-19 cases are setting new highs every day in the past few days. The latest figure is 129,675, and up >40,000 vs 7D ago. At this pace, we will see >200,000 cases before Thanksgiving. Wave 3 is gaining momentum. But the surge in cases has some glimpses of mitigation:

- Signs of peaking in the 6 states with the fastest growth, WI, IL, ID, ND, SD, UT, or WIINSU. 4 of the states seem to see daily cases rolling over (see below)
- Daily deaths are rising but the steepness is far lower than implied by the surge in cases
- But Miami is seeing a resurgence
- Wave 3 is still unfolding

There is a new peer-reviewed and comprehensive study, discussed in Point #3, looking at the sources of infections in the US. This is based upon cellphone mobility for 98 million users. The takeaway?

- Restaurants are, by a country mile, the largest source of spread in the US
- The authors recommend limiting dining capacity

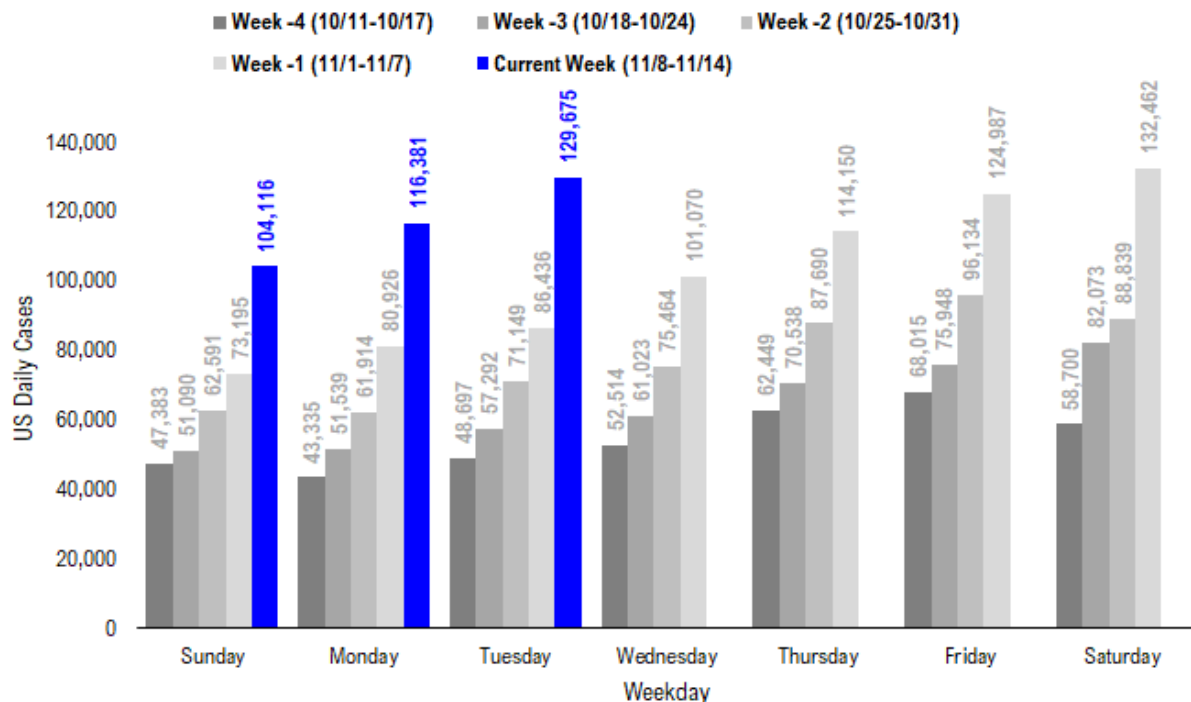


Source: COVID-19 Tracking Project and Fundstrat

**POINT 1: Daily cases 129,675, +43,239 vs 7D ago -- on pace to hit 200,000 by mid-Nov**

The latest COVID-19 daily cases came in at 129,675, up +43,239 vs 7D ago. Wave 3 is gaining momentum, so we are not really near a peak in daily cases

- the spread of cases across the US is widening
- the fastest spread remains in the wave 3 states, in particular, WI, IL, ID, ND, SD, UT, or WIINSU.
- but other states are seeing higher cases and dominating the top 10 are essentially all previously "unscathed" states
- we all should be cognizant that cooler weather is making spread faster, perhaps due to weaker immune systems or "indoor" time.



Source: COVID-19 Tracking Project and Fundstrat

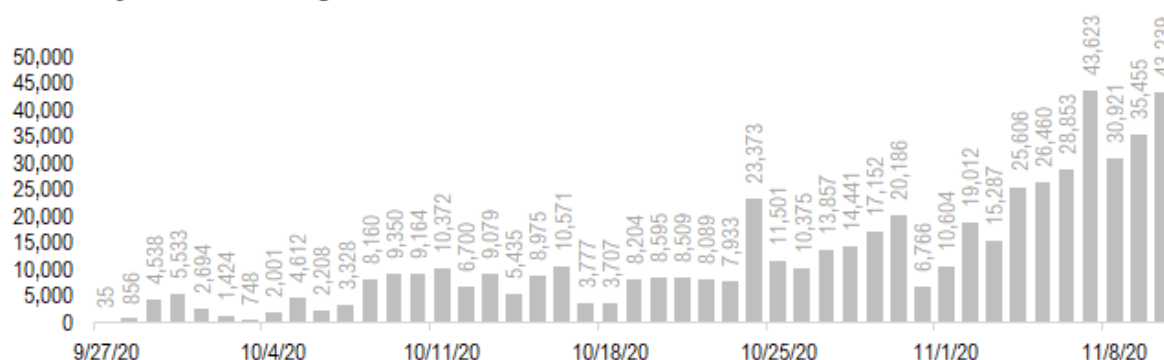
**7D delta is now running at >40,000, which means we could be at 200,000 cases in two weeks**

Again, the daily change vs 7D ago, in our view, is the leading indicator as it is what influences the 7D moving average.

- Daily cases are rising vs 7D ago,
- It is rising at >40,000 7D delta

At this pace, we could see daily cases rise to >200,000 within two weeks. So wave 3 is clearly gaining momentum.

**US daily new cases rolling 7D delta**



Source: COVID-19 Tracking and Fundstrat

**6 states with largest 7D delta in daily cases**

|              |                       |                |
|--------------|-----------------------|----------------|
| Illinois     | 12,623 vs 6,516 (-7D) | +6,107         |
| Texas        | 10,865 vs 7,215       | +3,650         |
| Michigan     | 6,473 vs 3,106        | +3,367         |
| Ohio         | 6,508 vs 4,229        | +2,279         |
| Missouri     | 4,256 vs 2,238        | +2,018         |
| New Jersey   | 3,777 vs 1,828        | +1,949         |
| <b>Total</b> |                       | <b>+19,370</b> |

**5 states with largest 7D delta in daily cases**

|                     |                    |             |
|---------------------|--------------------|-------------|
| North Dakota        | 884 vs 1,172 (-7D) | -288        |
| Florida             | 4,353 vs 4,637     | -284        |
| Puerto Rico         | 207 vs 345         | -138        |
| Hawaii              | 78 vs 87           | -9          |
| U.S. Virgin Islands | 5 vs 7             | -2          |
| <b>Total</b>        |                    | <b>-710</b> |

Source: COVID-19 Tracking and Fundstrat

## Daily Case Increases (by State) (11/10)

% total new cases (state cases/ total US cases)

% total US pop (state population/ total US population)

|                             | Sorted  |                  |         |          |           |
|-----------------------------|---------|------------------|---------|----------|-----------|
|                             | 7D Ago  | Last 3-day Trend |         |          |           |
|                             | 11/3/20 | 11/8/20          | 11/9/20 | 11/10/20 | vs 7D ago |
| United States               | 86,436  | 104,116          | 116,381 | 129,675  | +43,239   |
| <b>States:</b>              |         |                  |         |          |           |
| 1 Illinois                  | 6,516   | 10,009           | 10,573  | 12,623   | <-higher  |
| 2 Texas                     | 7,215   | 5,404            | 3,816   | 10,865   | <-higher  |
| 3 Wisconsin                 | 5,771   | 4,280            | 4,360   | 7,073    | <-higher  |
| 4 Ohio                      | 4,229   | 4,541            | 4,706   | 6,508    | <-higher  |
| 5 Michigan                  | 3,106   | 0                | 9,010   | 6,473    | <-higher  |
| 6 California                | 4,044   | 7,682            | 7,212   | 5,367    | <-higher  |
| 7 Minnesota                 | 3,476   | 5,908            | 3,926   | 4,893    | <-higher  |
| 8 Indiana                   | 2,881   | 4,652            | 4,135   | 4,829    | <-higher  |
| 9 Pennsylvania              | 2,875   | 2,909            | 3,402   | 4,361    | <-higher  |
| 10 Florida                  | 4,637   | 6,820            | 3,924   | 4,353    |           |
| 11 Missouri                 | 2,238   | 4,131            | 3,244   | 4,256    | <-higher  |
| 12 New York                 | 2,321   | 3,428            | 3,144   | 3,965    | <-higher  |
| 13 Colorado                 | 2,562   | 3,017            | 3,553   | 3,890    | <-higher  |
| 14 New Jersey               | 1,828   | 2,013            | 2,058   | 3,777    | <-higher  |
| 15 Arizona                  | 1,679   | 1,880            | 435     | 3,434    | <-higher  |
| 16 Iowa                     | 1,092   | 3,313            | 4,381   | 2,734    | <-higher  |
| 17 North Carolina           | 2,349   | 2,094            | 1,521   | 2,582    |           |
| 18 Utah                     | 1,669   | 2,386            | 2,247   | 2,517    | <-higher  |
| 19 Massachusetts            | 1,036   | 1,823            | 1,328   | 2,154    | <-higher  |
| 20 Kentucky                 | 1,709   | 1,177            | 1,729   | 2,079    | <-higher  |
| 21 Tennessee                | 1,770   | 3,636            | 5,919   | 1,979    |           |
| 22 Georgia                  | 1,668   | 1,253            | 1,103   | 1,873    |           |
| 23 Alabama                  | 1,037   | 1,205            | 1,170   | 1,710    | <-higher  |
| 24 Oklahoma                 | 1,331   | 0                | 2,197   | 1,702    | <-higher  |
| 25 Nebraska                 | 954     | 1,702            | 1,574   | 1,582    | <-higher  |
| 26 Connecticut              | 985     | 0                | 3,338   | 1,524    | <-higher  |
| 27 Washington               | 657     | 1,320            | 1,239   | 1,441    | <-higher  |
| 28 Virginia                 | 1,261   | 1,302            | 1,302   | 1,435    |           |
| 29 South Carolina           | 1,007   | 855              | 601     | 1,347    | <-higher  |
| 30 Maryland                 | 771     | 1,081            | 1,375   | 1,338    | <-higher  |
| 31 Nevada                   | 911     | 1,276            | 960     | 1,322    | <-higher  |
| 32 Louisiana                | 1,150   | 1,251            | 380     | 1,307    |           |
| 33 New Mexico               | 1,136   | 1,210            | 1,408   | 1,258    |           |
| 34 Wyoming                  | 452     | 713              | 700     | 1,232    | <-higher  |
| 35 Idaho                    | 1,179   | 649              | 1,266   | 1,201    |           |
| 36 Montana                  | 907     | 731              | 374     | 1,098    | <-higher  |
| 37 South Dakota             | 1,004   | 1,428            | 907     | 1,023    |           |
| 38 Arkansas                 | 520     | 916              | 829     | 975      | <-higher  |
| 39 Mississippi              | 644     | 804              | 516     | 933      | <-higher  |
| 40 North Dakota             | 1,172   | 1,101            | 1,153   | 884      |           |
| 41 Rhode Island             | 423     | 568              | 266     | 789      | <-higher  |
| 42 Oregon                   | 482     | 861              | 707     | 754      | <-higher  |
| 43 Alaska                   | 388     | 518              | 471     | 525      | <-higher  |
| 44 West Virginia            | 358     | 662              | 401     | 511      | <-higher  |
| 45 New Hampshire            | 128     | 247              | 211     | 220      | <-higher  |
| 46 Puerto Rico              | 345     | 509              | 475     | 207      |           |
| 47 Delaware                 | 115     | 345              | 305     | 204      | <-higher  |
| 48 Guam                     | 119     | 120              | 240     | 181      | <-higher  |
| 49 Maine                    | 127     | 90               | 195     | 172      | <-higher  |
| 50 District of Columbia     | 86      | 110              | 86      | 86       |           |
| 51 Hawaii                   | 87      | 128              | 63      | 78       |           |
| 52 Vermont                  | 22      | 43               | 24      | 46       | <-higher  |
| 53 U.S. Virgin Islands      | 7       | 15               | 0       | 5        |           |
| 54 Northern Mariana Islands | 0       | 0                | 2       | 0        |           |
| 55 Kansas                   | 0       | 0                | 5,920   | 0        |           |
| 56 American Samoa           | 0       | 0                | 0       | 0        |           |

Source: COVID-19 Tracking and Fundstrat

**POINT 2: Wave 3: WIINSU county-level cases could be peaking in some states**

We have been looking at different ways to give the best context to Wave 3. Up until now, Wave 3 for COVID-19 differs from Wave 1 and wave 2 for several reasons:

- it is spreading across states previously unscathed in wave 1 and wave 2
- it is more geographically disperse but mostly in the Mountains region
- 6 states are seeing the fastest spread, WI, IL, ID, ND, SD, UT, or WIINSU
- Unlike Wave 1 and wave 2, states caught up in wave 3 are largely laissez-faire, without any policy intervention

*New:*

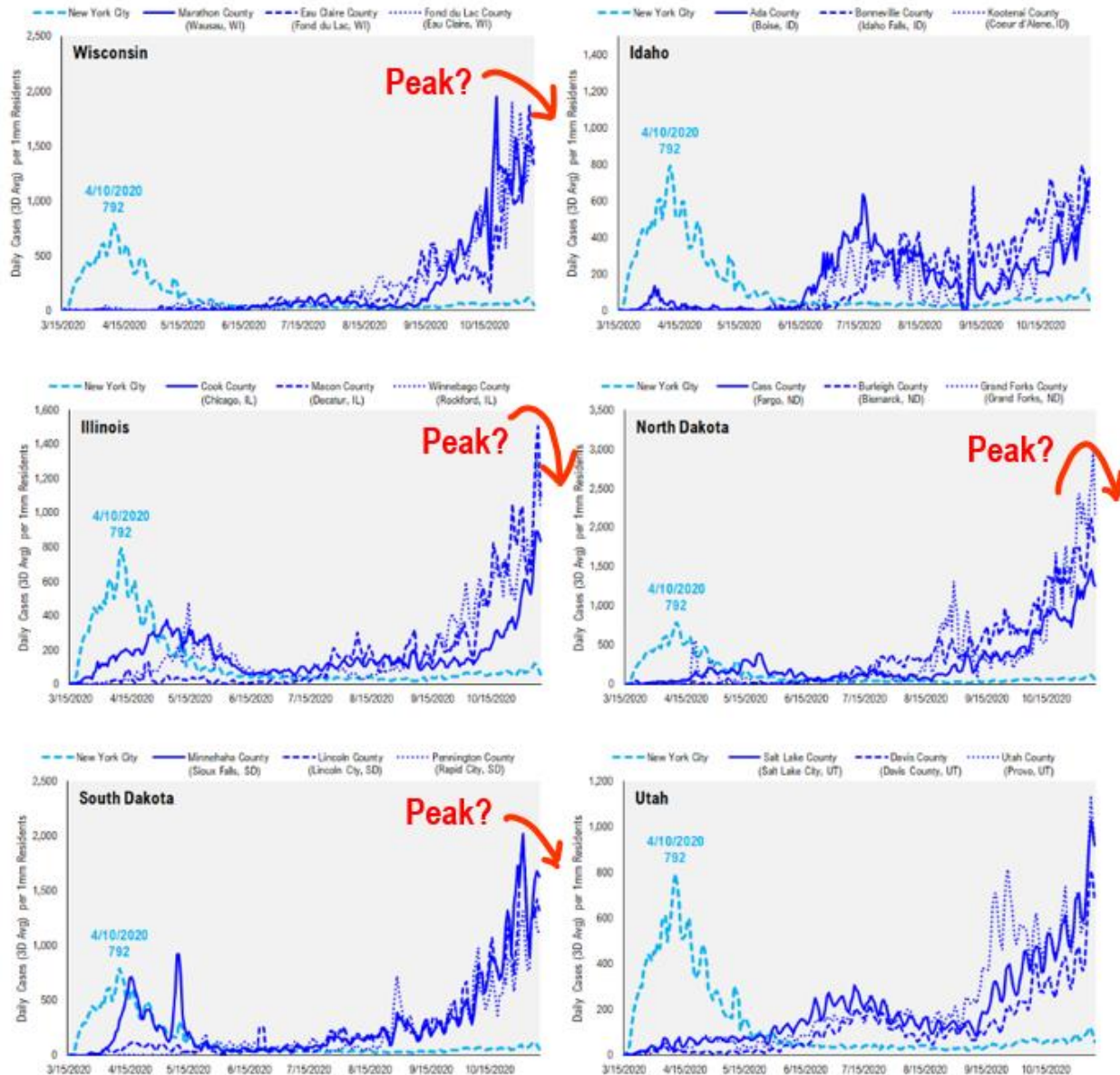
- Daily cases per 1mm for wave 1 (NY tristate) and wave 2 (F-CAT) are identical for the first time

***4 of 6 states in WIINSU seem to be seeing a potential rollover of daily cases...***

The most rapid spread of cases in the US is taking place in roughly 22 states, but concentrated in 6 states -- WI, IL, ID, ND, SD and UT, or WIINSU. The rapid case growth in these areas surpasses that of NYC during its worst periods.

- of these, 4 states seem to be showing a potential peak/rollover of daily cases
- the states are WI, IL, ND and SD





Source: Johns Hopkins and Fundstrat

We have discussed how these 6 states are now the template for wave 3. Thus, if we see a peak in daily cases here, we can get a sense of how COVID-19 spread occurs in the rest of the US. Our base case, relying on data from forecasters such as IHME, is that wave 3 would not peak until mid-February 2021.

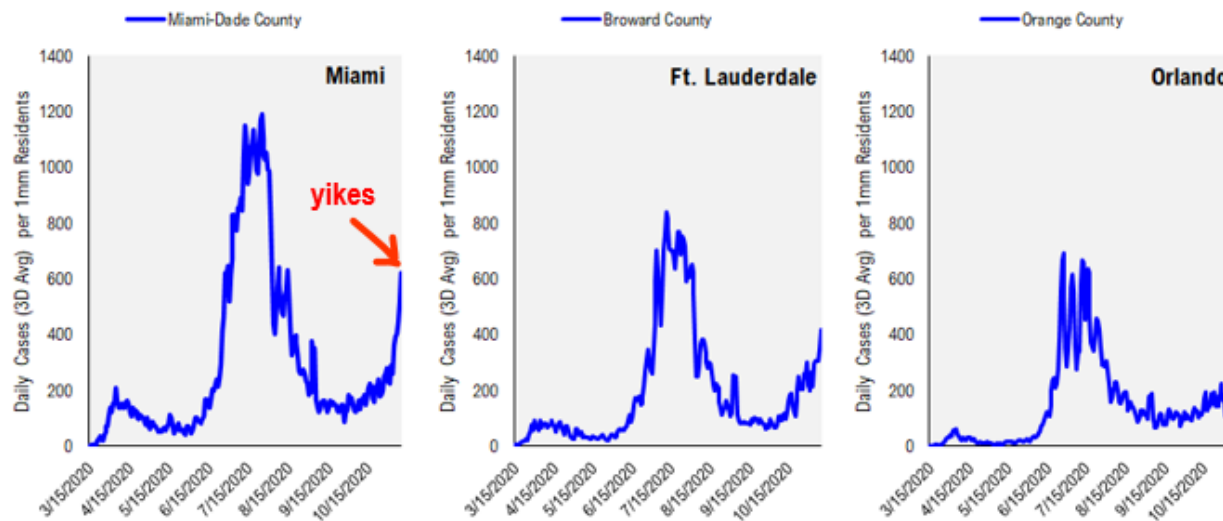


***Daily case surge in Miami is not very encouraging however...***

Below is the updated county-level case data for 3 large areas in Florida. These daily cases are scaled to "daily cases per 1mm residents"

- Miami is reporting 600 daily cases per 1mm which is a huge jump since September
- Ft Lauderdale and Orlando seem to be seeing a more muted wave 3

Miami's daily cases are nearly 3X the US level and a reminder that COVID-19 is surging across many parts of the US. I think the wisest thing for any of us is to be vigilant.



Source: Johns Hopkins and Fundstrat

### POINT 3: New study shows restaurants + gyms are primary source COVID-19 spread

A new study, published today in Nature.com (and peer-reviewed) used anonymous data to track sources of COVID-19 spread. There are multiple authors for this study (Serina Chang, Emma Pierson, Pang Wei Koh, Jaline Gerardin, Beth Redbird, David Grusky & Jure Leskovec) and looked at the mobility of 98 million individuals across several major cities. We first saw reference to this study in the below Washington Post article.

- the study is unique because of the vast scale of the mobility data used, 98 million and matching this with infection data

The Washington Post

Democracy Dies in Darkness

Coronavirus

Latest news

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FAQ

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Coronavi

Health

These venues are high-risk areas for spreading the coronavirus, model suggests



Gyms are one venue where researchers predicted the coronavirus could spread outside the home. (iStock)

By **Ben Guarino** and **Joel Achenbach**

November 10, 2020 at 6:15 p.m. EST

<https://www.washingtonpost.com/health/2020/11/10/coronavirus-restaurants-gyms-hotels-risk/>

The report itself is 28 pages (link --> [Study here](#)) and we have included some charts and observations below. The authors tracked user movements hourly and built a predictive model of infection, based on their locations. These locations fell into roughly 20 groups and in 10 metro areas.

Their model has only three free parameters:

- (1) transmission rates at points of interest (POIs),
- (2) transmission rates at Census Block Group, or geographic areas (CBGs), and
- (3) the initial proportion of exposed individuals

All three parameters remain constant over time.

## Article

# Mobility network models of COVID-19 explain inequities and inform reopening

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The COVID-19 pandemic dramatically changed human mobility patterns, necessitating epidemiological models which capture the effects of changes in mobility on virus spread<sup>1</sup>. We introduce a metapopulation SEIR model that integrates fine-grained, dynamic mobility networks to simulate the spread of SARS-CoV-2 in 10 of the largest US metropolitan statistical areas. Derived from cell phone data, our mobility networks map the hourly movements of 98 million people from neighborhoods (census block groups, or CBGs) to points of interest (POIs) such as restaurants and religious establishments, connecting 57k CBGs to 553k POIs with 5.4 billion hourly edges. We show that by integrating these networks, a relatively simple SEIR model can accurately fit the real case trajectory, despite substantial changes in population behavior over time. Our model predicts that a small minority of “superspreader” POIs account for a large majority of infections and that restricting maximum occupancy at each POI is more effective than uniformly reducing mobility. Our model also correctly predicts higher infection rates among disadvantaged racial and socioeconomic groups<sup>2–4</sup> solely from differences in mobility: we find that disadvantaged groups have not been able to reduce mobility as sharply, and that the POIs they visit are more crowded and therefore higher-risk. By capturing who is infected at which locations, our model supports detailed analyses that can inform more effective and equitable policy responses to COVID-19.

In response to the COVID-19 crisis, stay-at-home orders were enacted in many countries to reduce contact between individuals and slow the spread of the virus<sup>1</sup>. Since then, public officials have continued to deliberate over when to reopen, which places are safe to return to, and how much activity to allow<sup>2</sup>. Answering these questions requires epidemiological models that can capture the effects of changes in mobility on virus spread. In particular, findings of COVID-19 “super-spreader” events<sup>3–5</sup> motivate models that can reflect the heterogeneous risks of visiting different locations, while well-reported disparities in infection rates<sup>6–9</sup> require models that can explain the disproportionate impact of the virus on disadvantaged groups.

To address these needs, we construct fine-grained dynamic mobility networks from cell phone geolocation data, and use these networks to model the spread of SARS-CoV-2 within 10 of the largest metropolitan statistical areas (referred to below as metro areas) in the United States. These networks map the hourly movements of 98 million people from census block groups (CBGs), which are geographical units that typically contain 600–3,000 people, to specific points of interest (POIs). As shown in Table S1, POIs are non-residential locations that people visit such as restaurants, grocery stores, and religious establishments. On top of each network, we overlay a metapopulation SEIR model that tracks the infection trajectories of each CBG as well as the POIs at which these infections are likely to have occurred. This builds upon prior

work that models disease spread using aggregate<sup>10–12</sup>, historical<sup>13–22</sup>, or synthetic mobility data<sup>23–25</sup>; separately, other work has analyzed mobility data in the context of COVID-19, but without an underlying model of disease spread<sup>26–30</sup>.

Combining our epidemiological model with these mobility networks allows us to not only accurately fit observed case counts, but also to conduct detailed analyses that can inform more effective and equitable policy responses to COVID-19. By capturing information about individual POIs (e.g., hourly number of visitors, median visit duration), our model can estimate the impacts of specific reopening strategies, such as only reopening certain POI categories or restricting maximum occupancy at each POI. By modeling movement from CBGs, our model can identify at-risk populations and correctly predict, solely from mobility patterns, that disadvantaged racial and socioeconomic groups face higher rates of infection. Our model thus enables analysis of urgent health disparities; we use it to illuminate two mobility-related mechanisms driving these disparities and to evaluate the disparate impact of reopening on disadvantaged groups.

## Mobility network model

We use data from SafeGraph, a company that aggregates anonymized location data from mobile applications, to study mobility patterns from

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Source: nature.com <https://www.nature.com/articles/s41586-020-2923-3>

Their conclusion is that a few venues are responsible for the majority of infections. In their words, "superspreader" POIs account for the large majority of infections:

- Restaurants
- Gyms

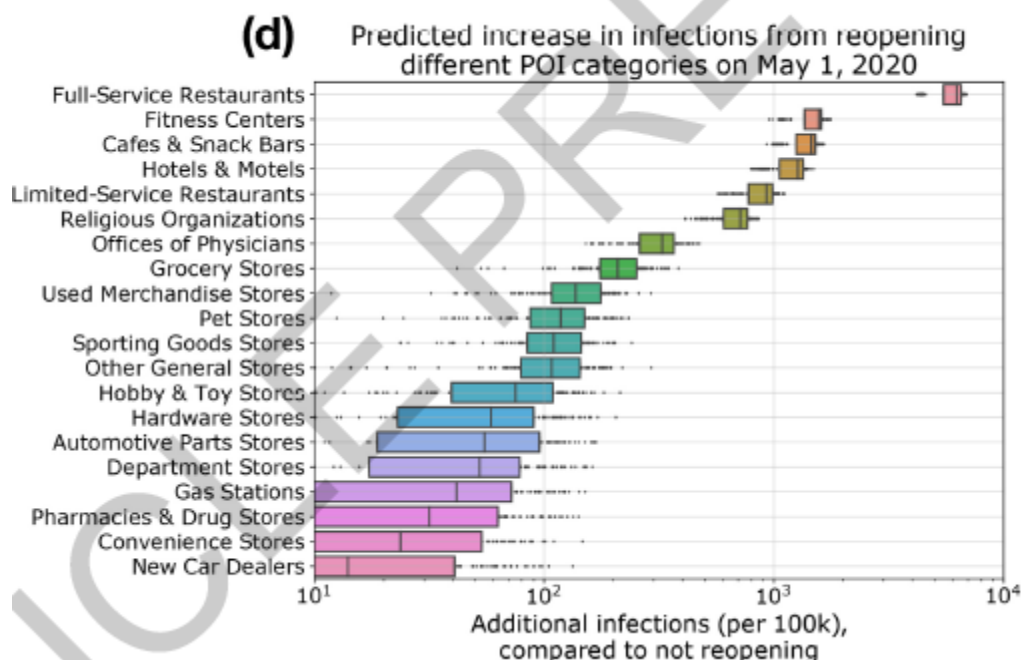
In other words, of the 20 or so types of venues tracked, this is the source of the vast majority of infections. They also found that lower-income CBGs or areas, had less ability to reduce mobility, which accounted for the surge in cases.

population behavior over time. Our model predicts that a small minority of "superspreader" POIs account for a large majority of infections and that restricting maximum occupancy at each POI is more effective than uniformly reducing mobility. Our model also correctly predicts higher infection rates among disadvantaged racial and socioeconomic groups<sup>2-8</sup> solely from differences in mobility: we find that disadvantaged groups have not been able to reduce mobility as sharply, and that the POIs they visit are more crowded and therefore higher-risk. By capturing who is

Source: nature.com <https://www.nature.com/articles/s41586-020-2923-3>

This is their model of estimated impacts of various venues. The x-axis scale is log-scale, so each increment is 10X. As shown, topping the list are:

- Full-service restaurants at 10X more likely source of infections versus any other place
- a close second is fitness centers
- FYI, apparently new car dealers are the safest place to spend time

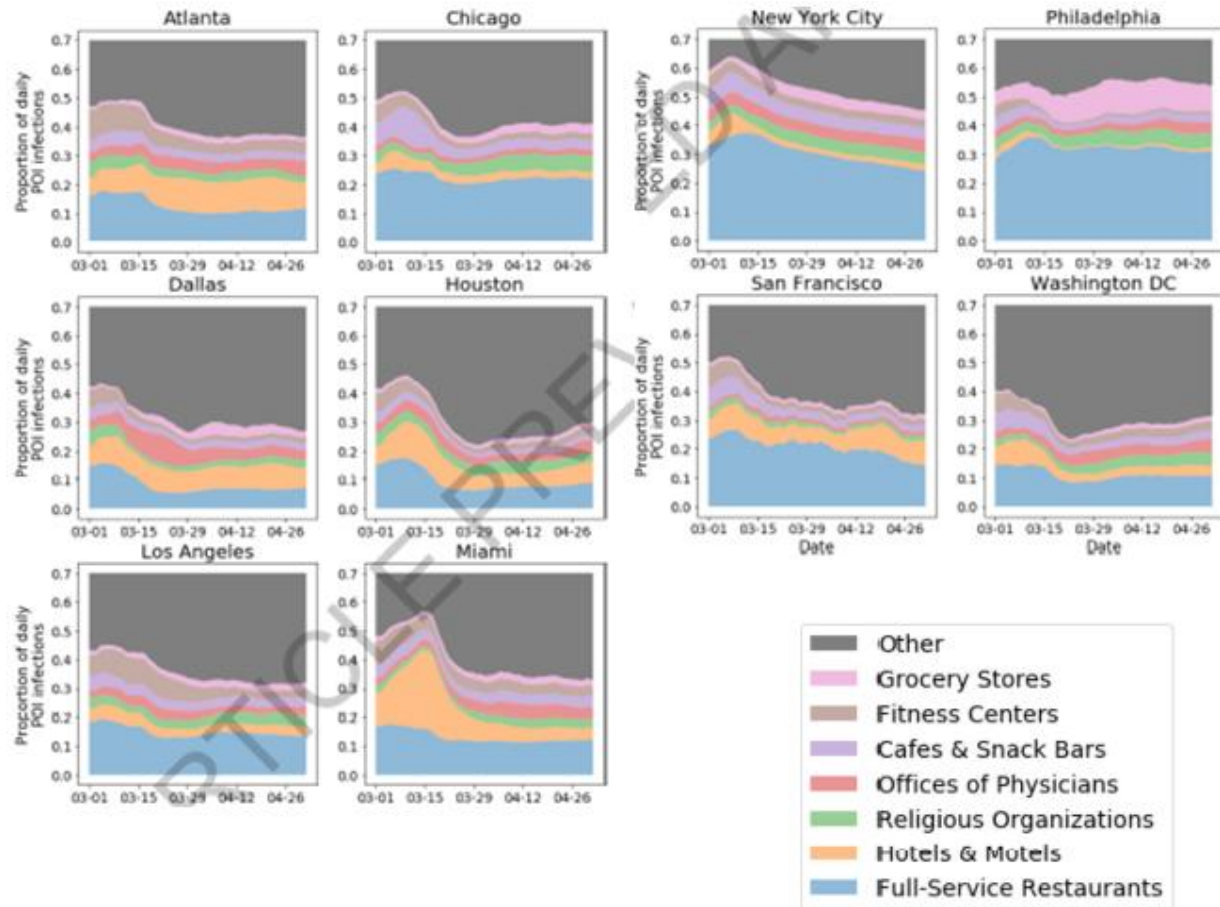


Source: nature.com <https://www.nature.com/articles/s41586-020-2923-3>



And when looking at metro areas, we can see how large the impacts of restaurants are to spread. The blue shaded areas are restaurants.

- the takeaway from the study is not "close restaurants" but rather to limit capacity
- in their view, the best tool is limiting capacity
- look at the massive impact in NYC and Philadelphia from restaurants



Source: nature.com <https://www.nature.com/articles/s41586-020-2923-3>

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