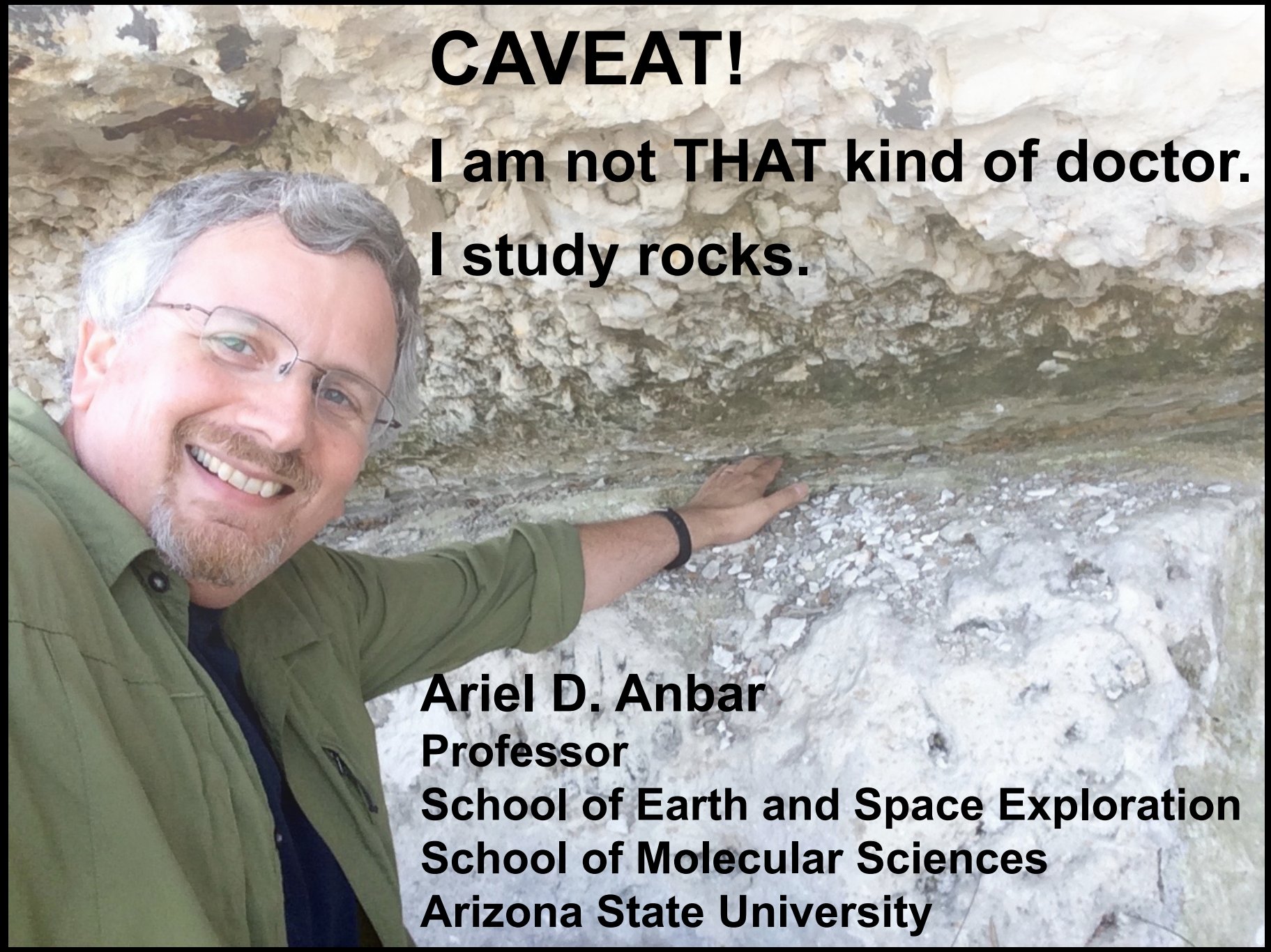
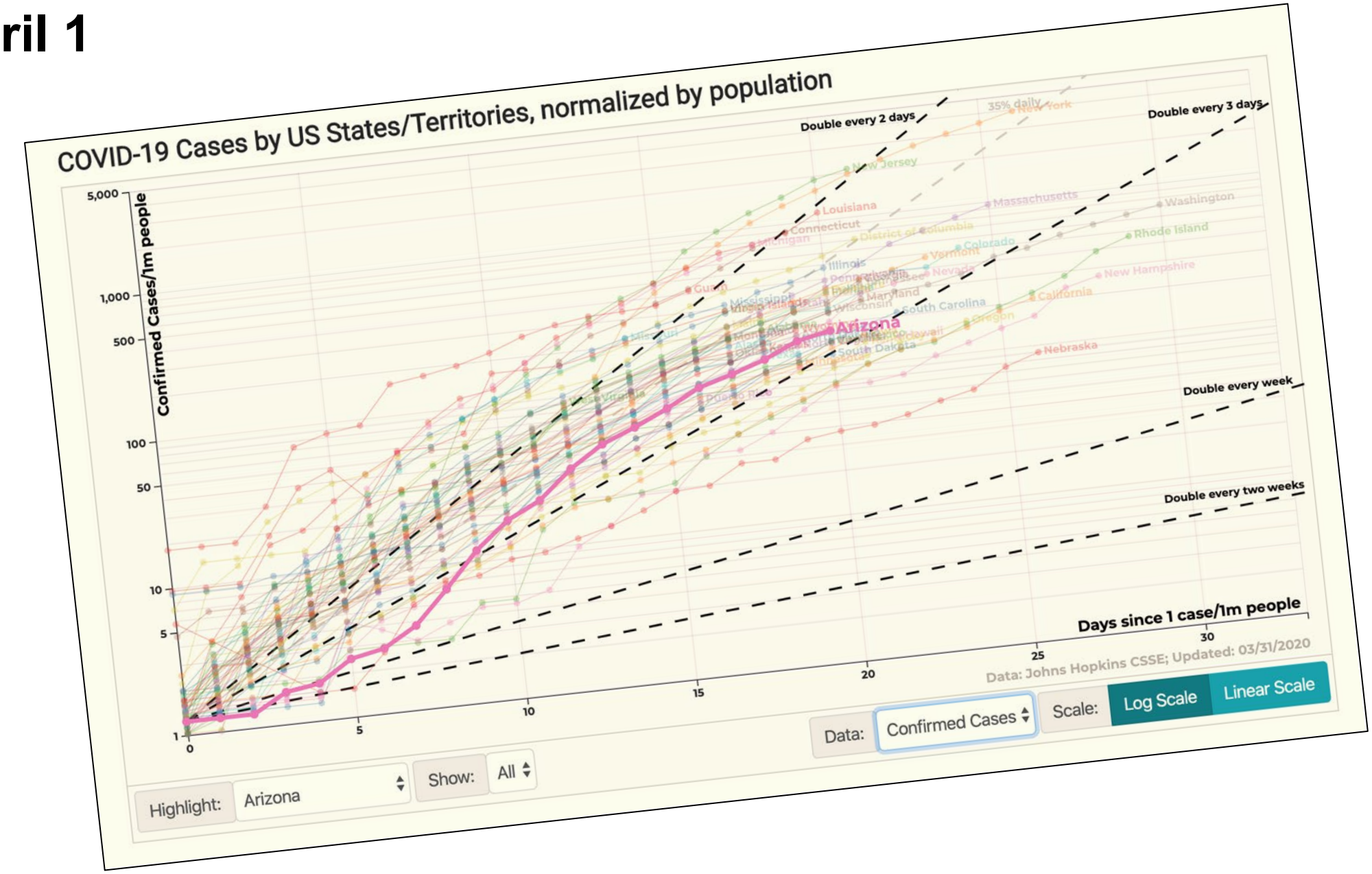
The COVID-19 Crisis

Update September 24, 2020

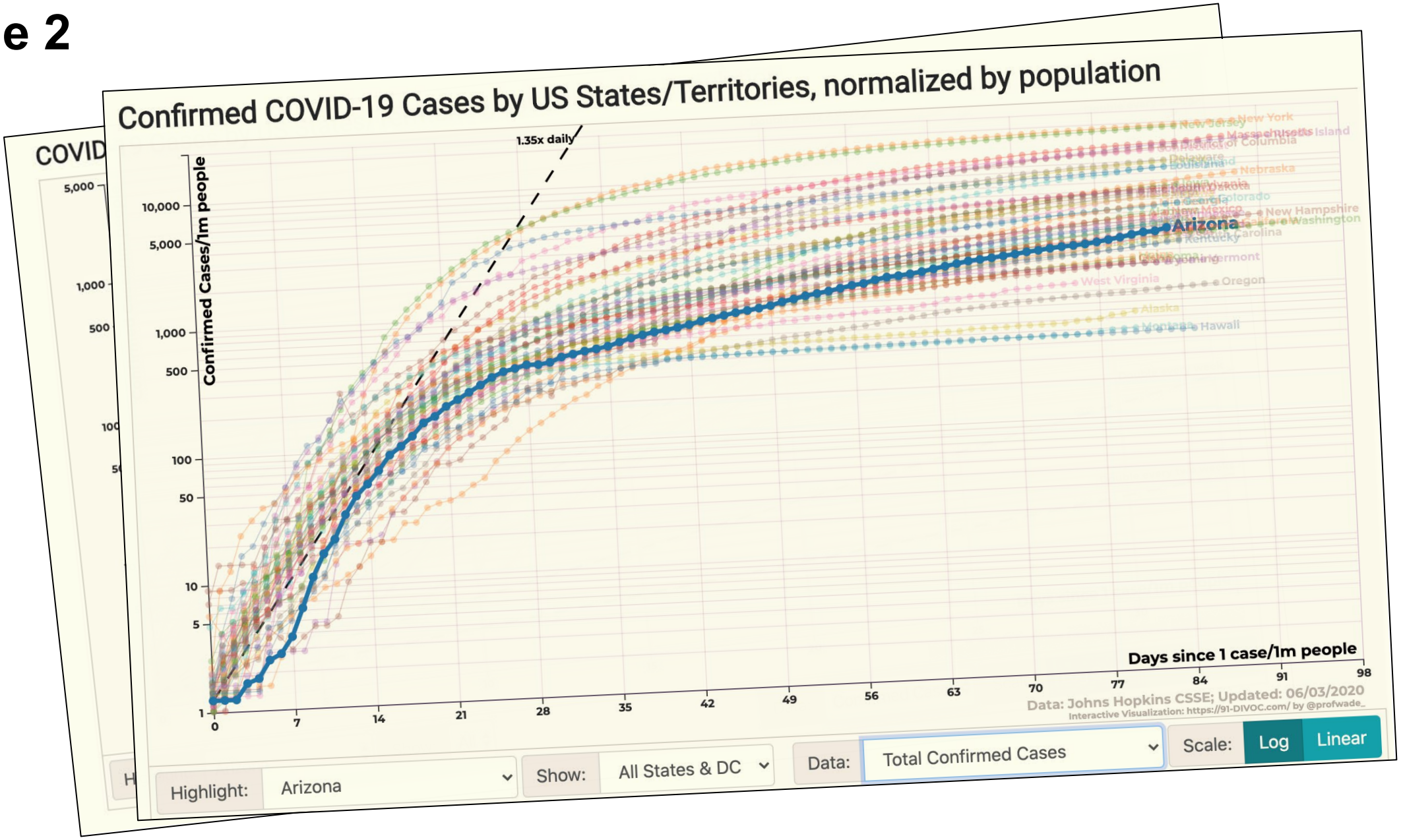

CAVEAT!
I am not THAT kind of doctor.
I study rocks.
Ariel D. Anbar
Professor
School of Earth and Space Exploration
School of Molecular Sciences
Arizona State University

April 1



http://91-divoc.com/pages/covid-visualization/

June 2



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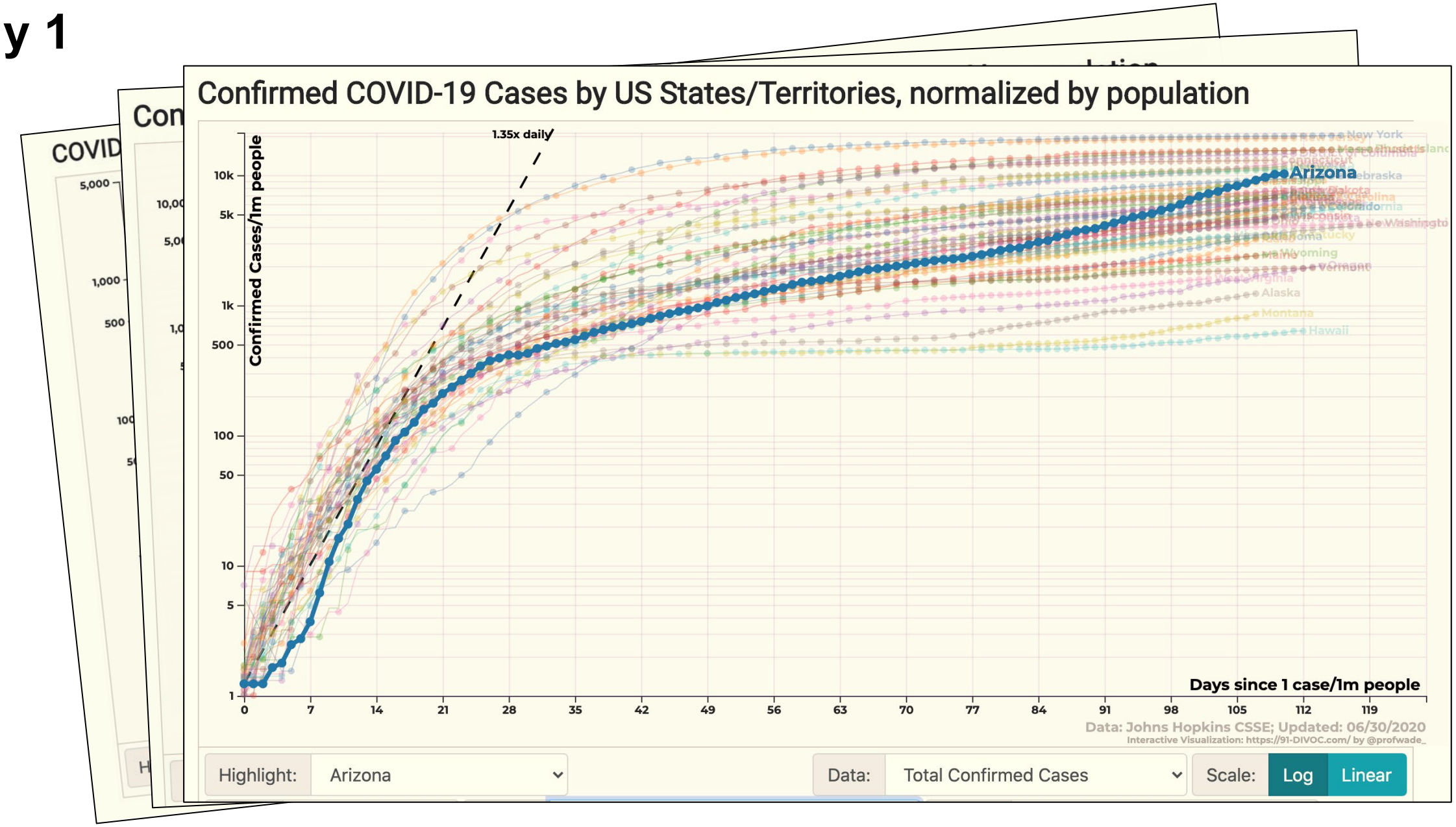
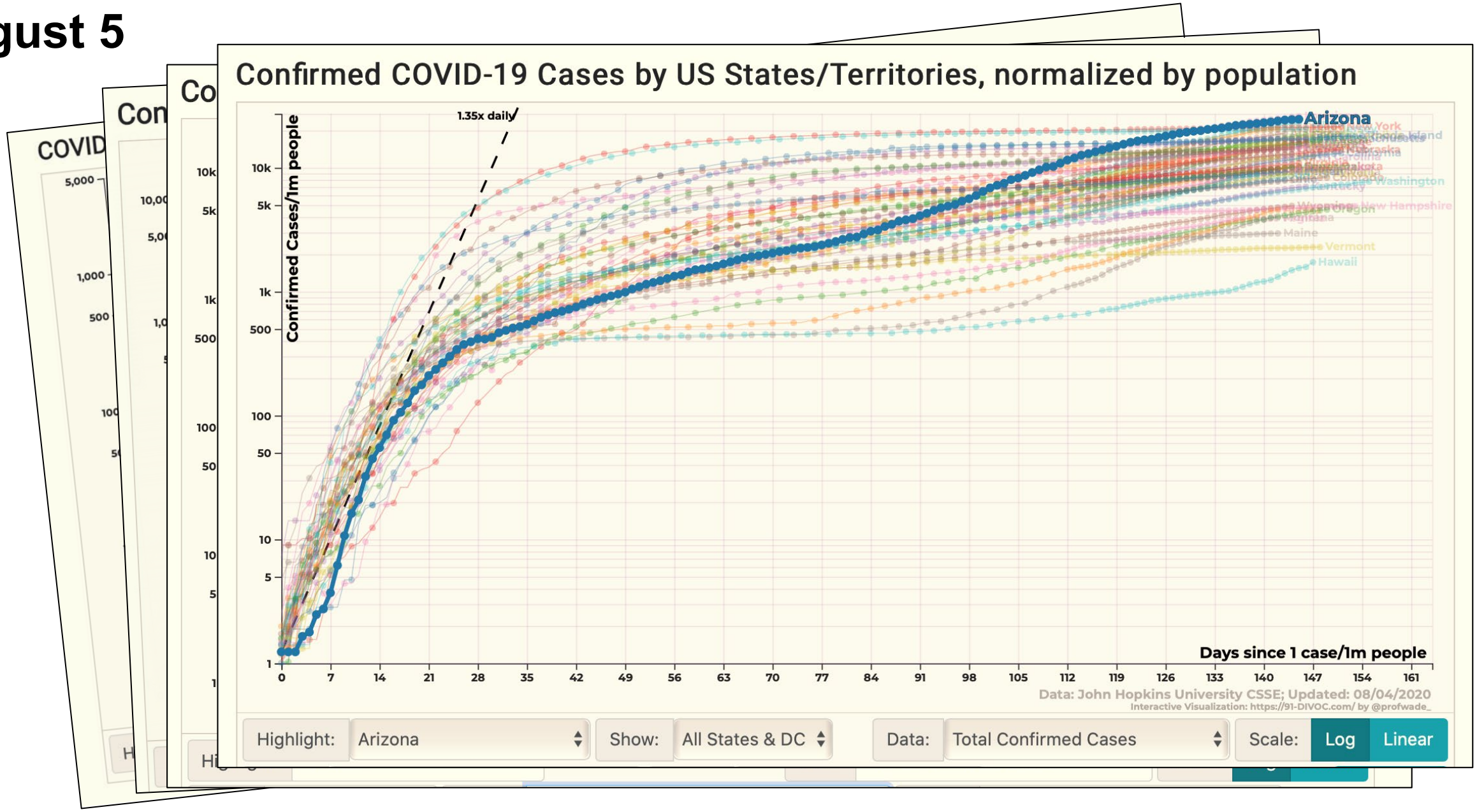
July 1



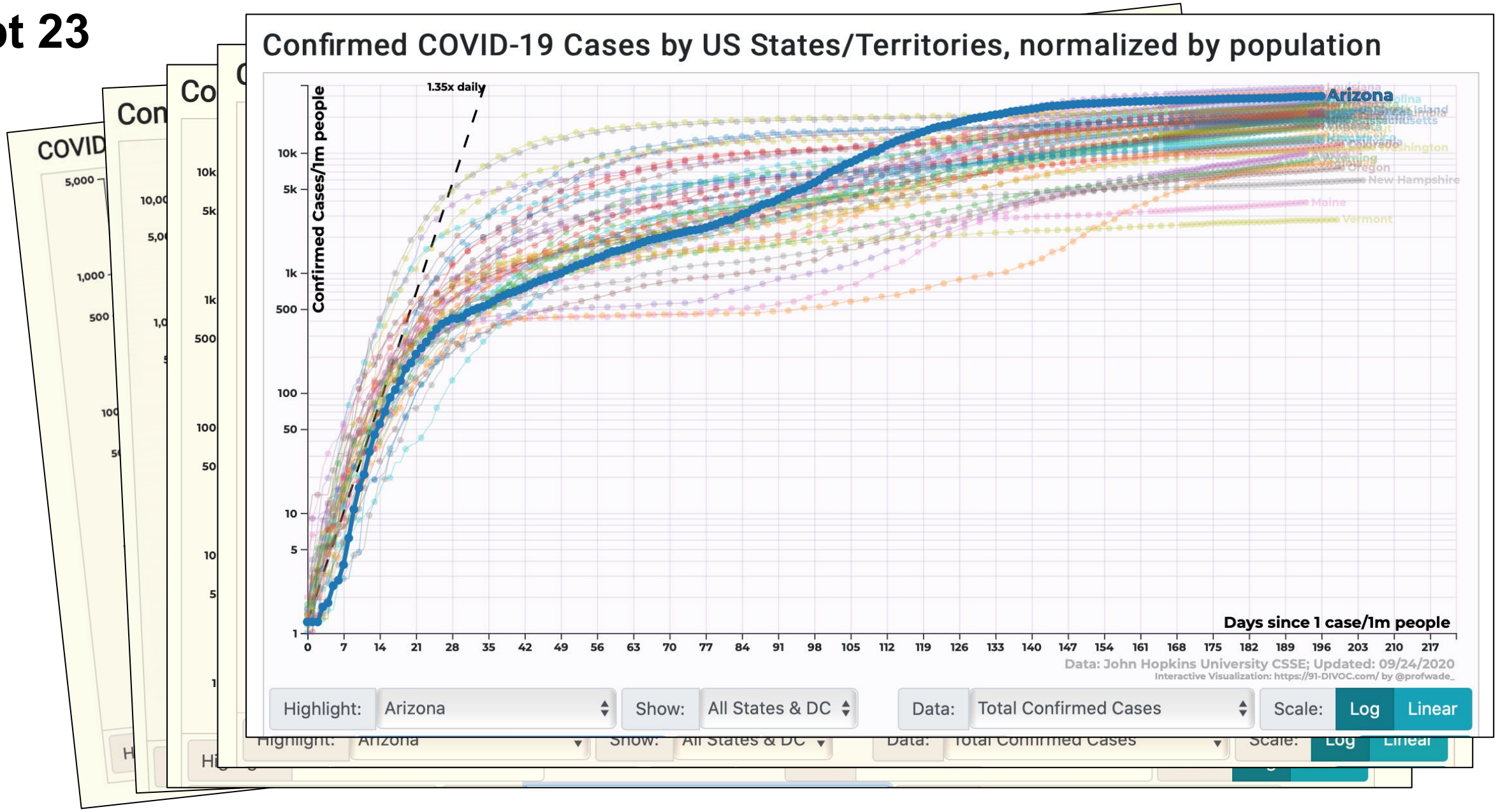
http://91-divoc.com/pages/covid-visualization/

August 5



http://91-divoc.com/pages/covid-visualization/

Sept 23



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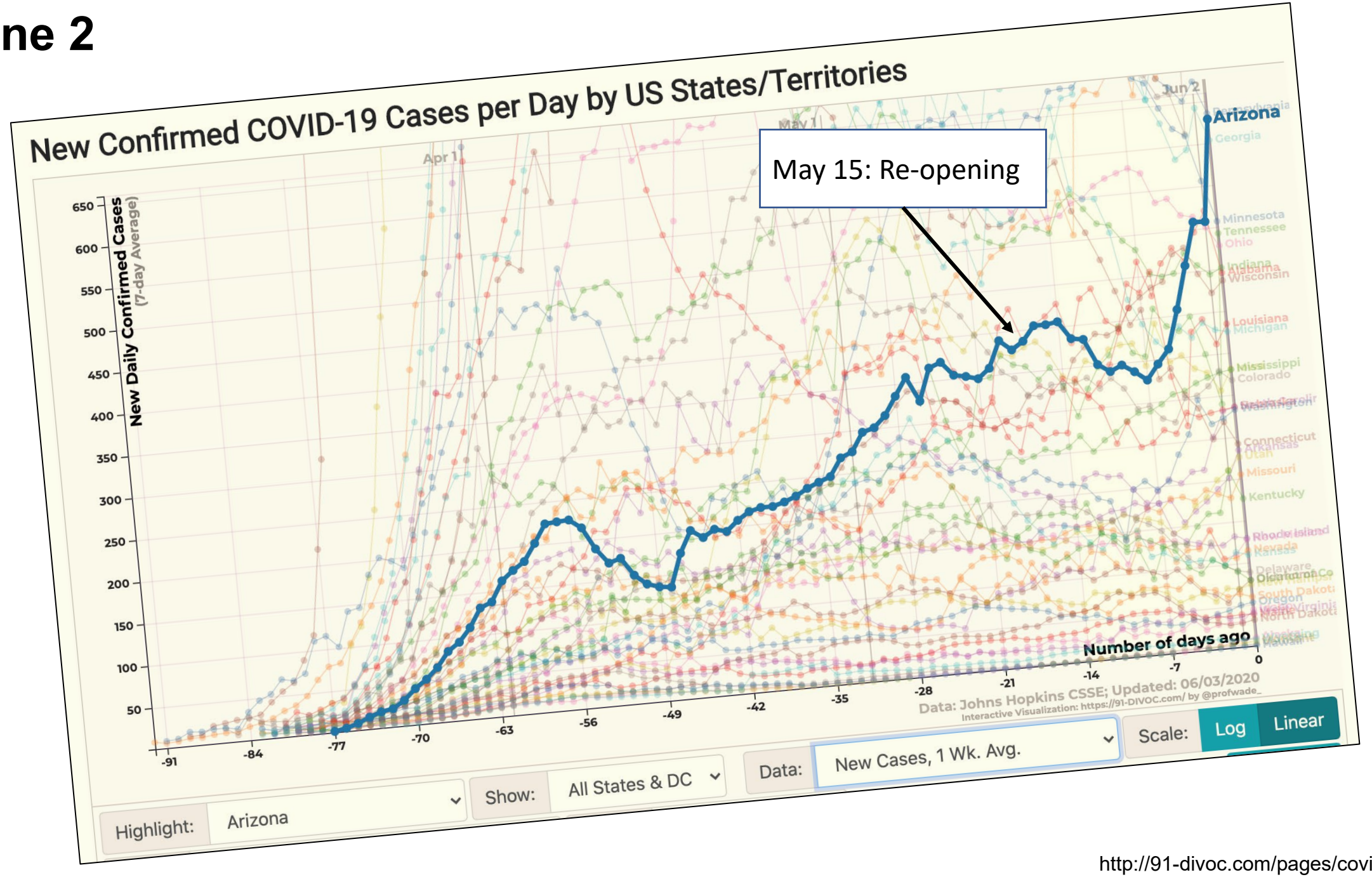
June 2



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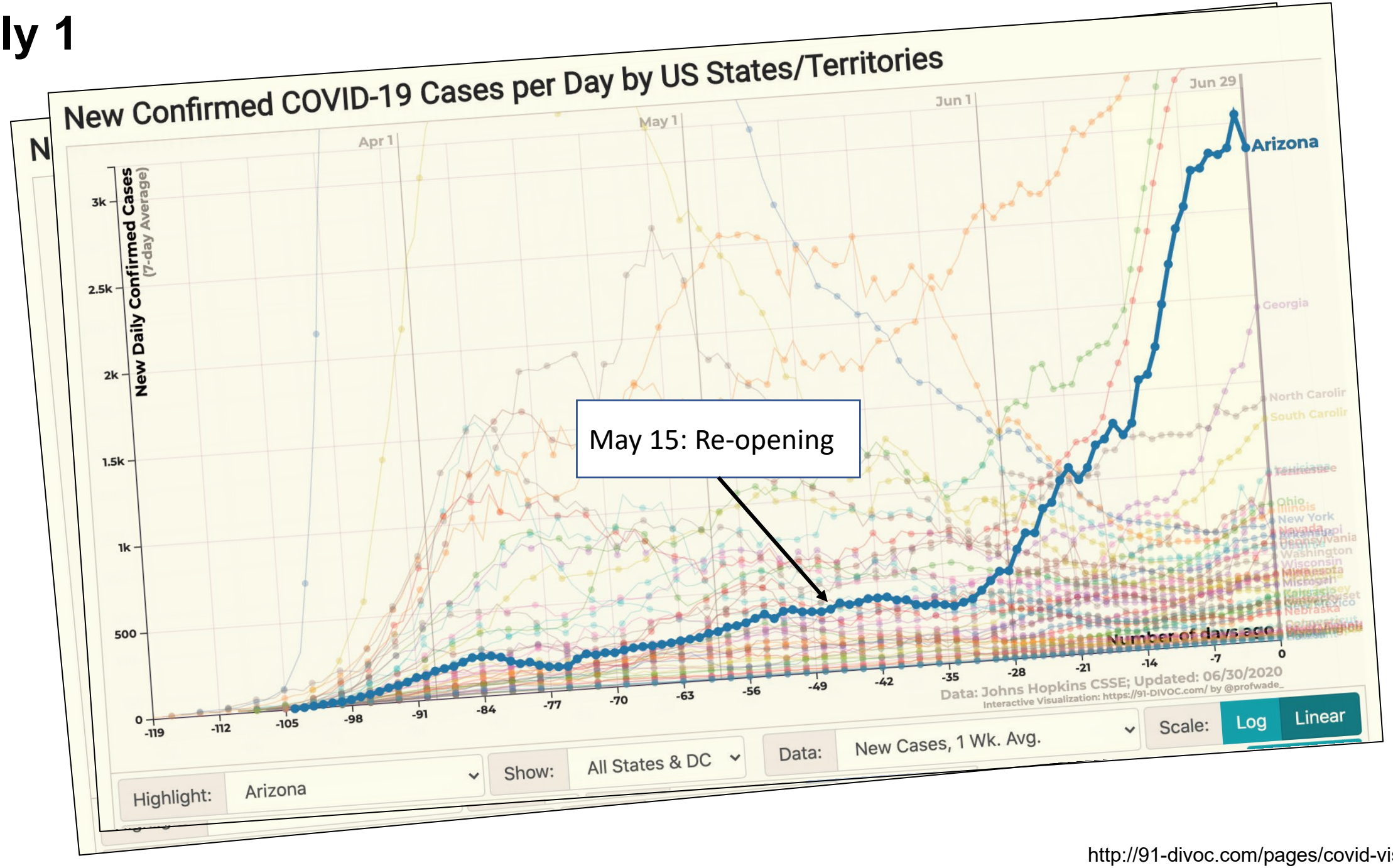
July 1



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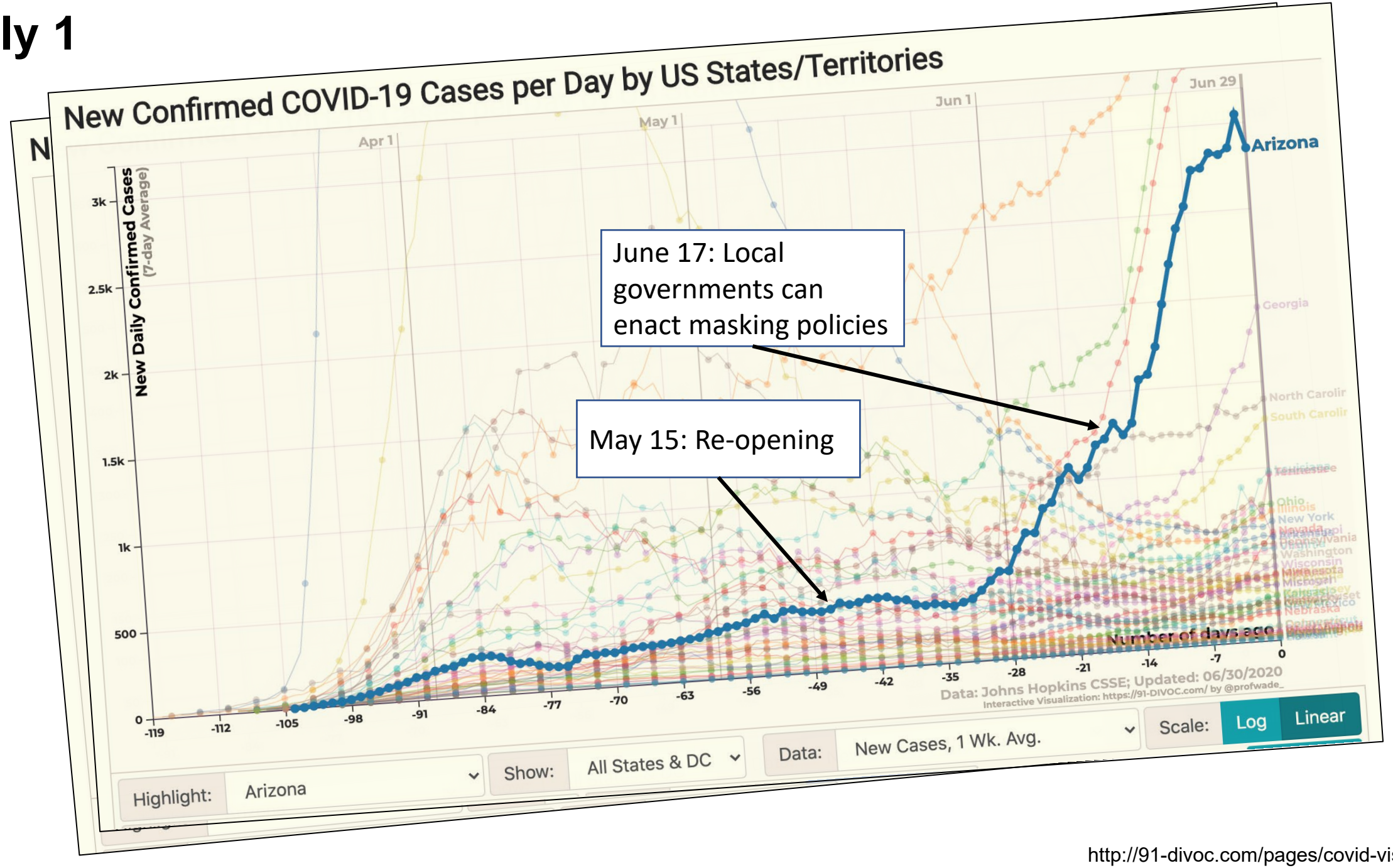
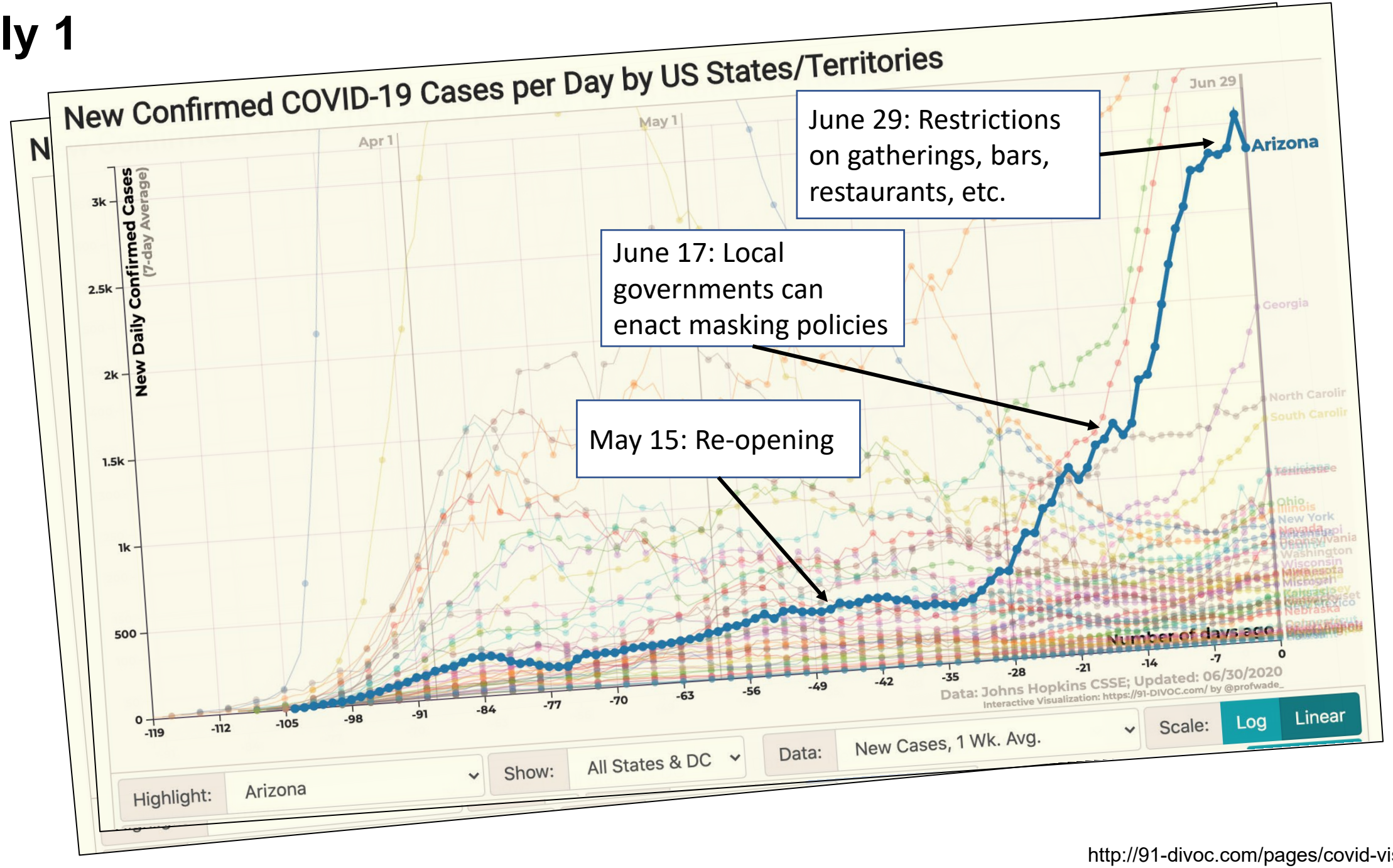
July 1



http://91-divoc.com/pages/covid-visualization/

July 1



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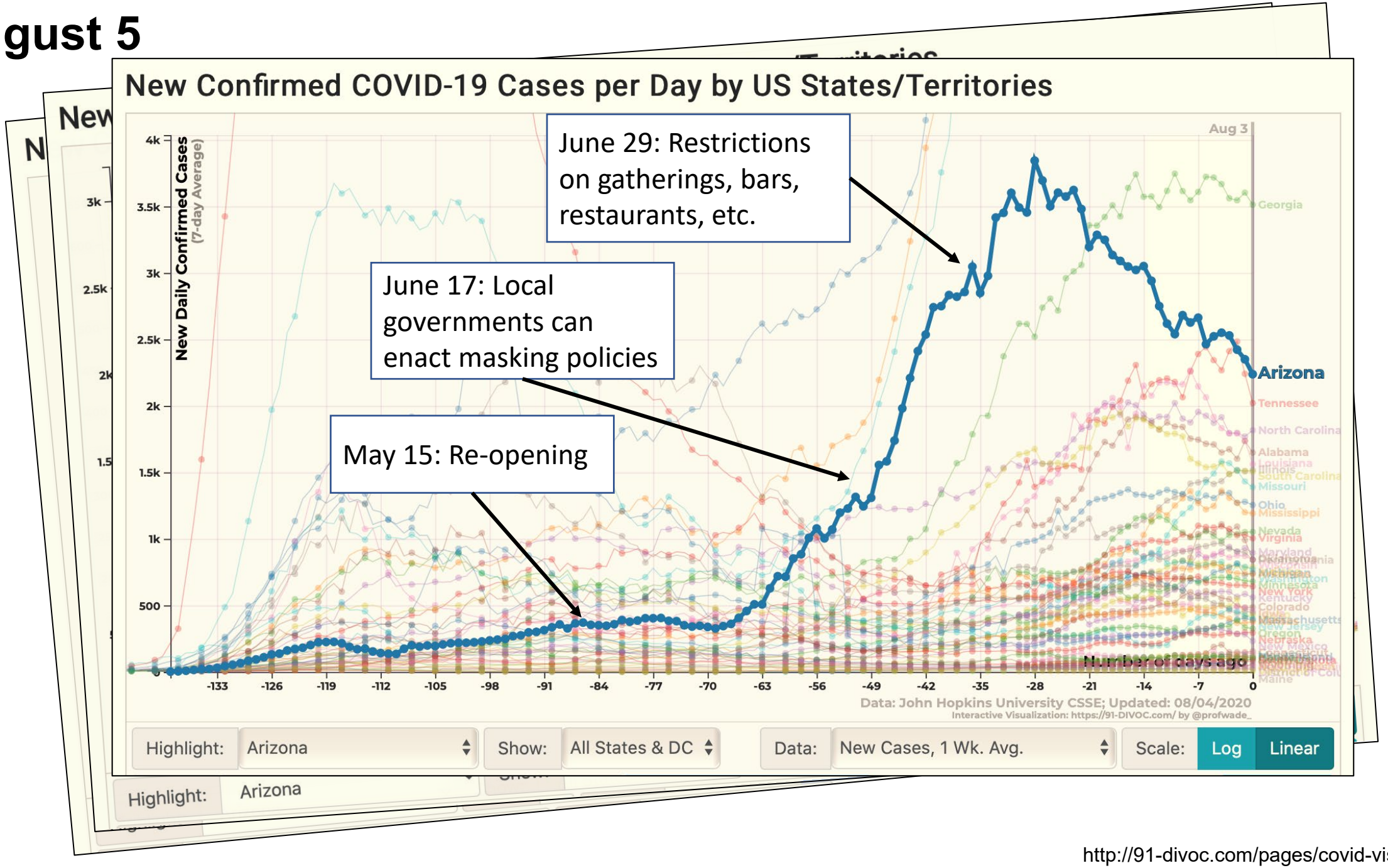
August 5



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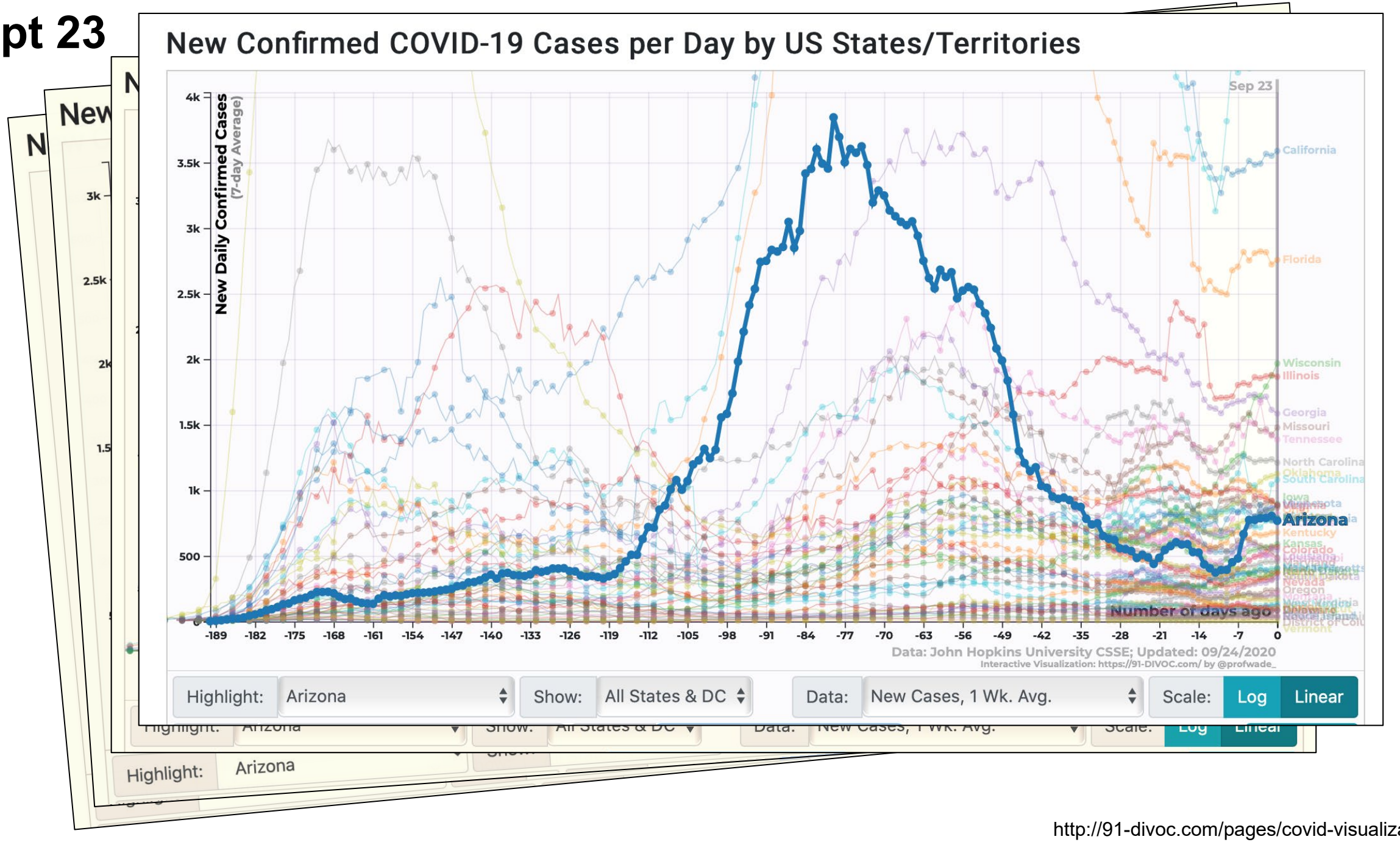
Sept 23



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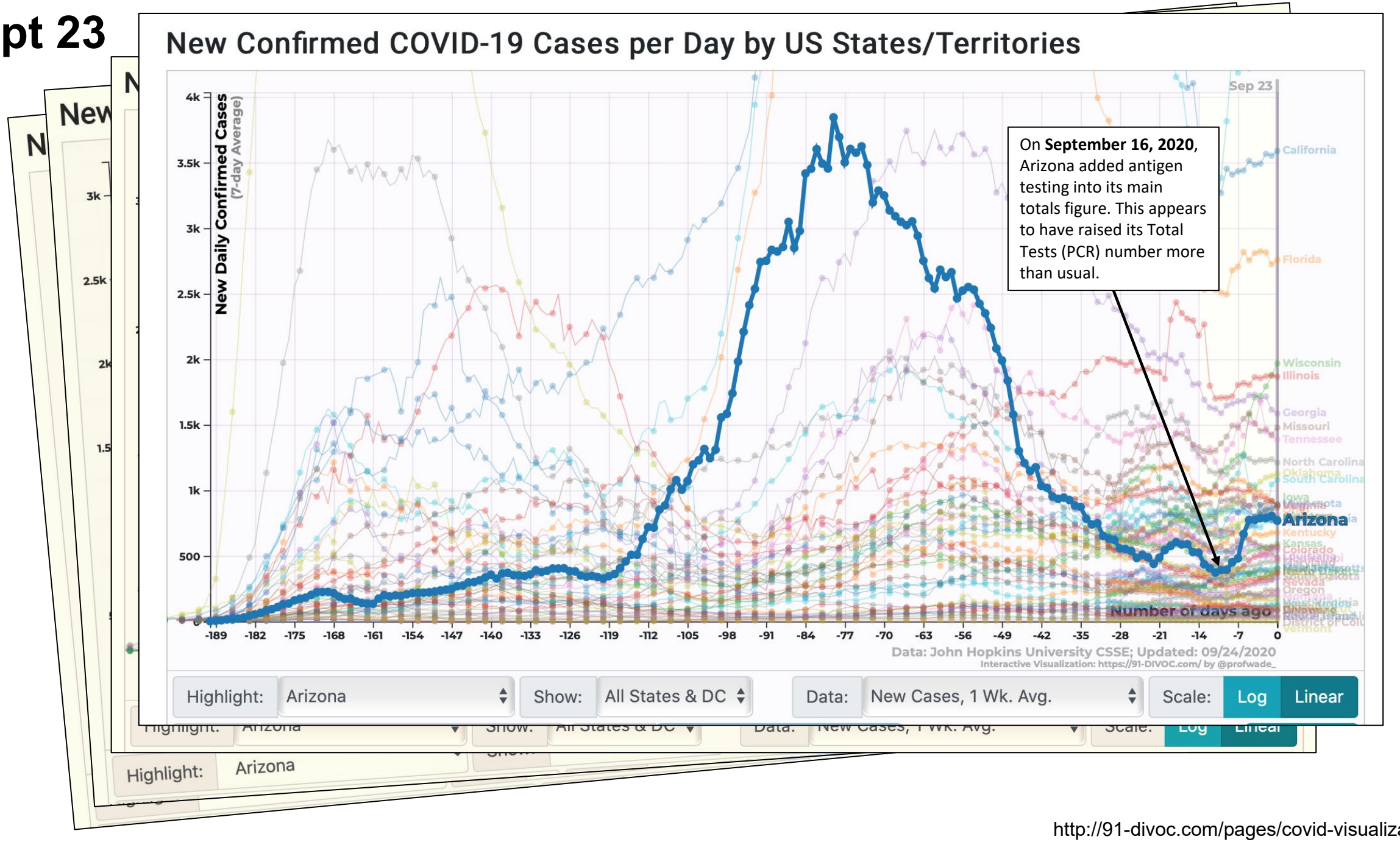
Sept 23

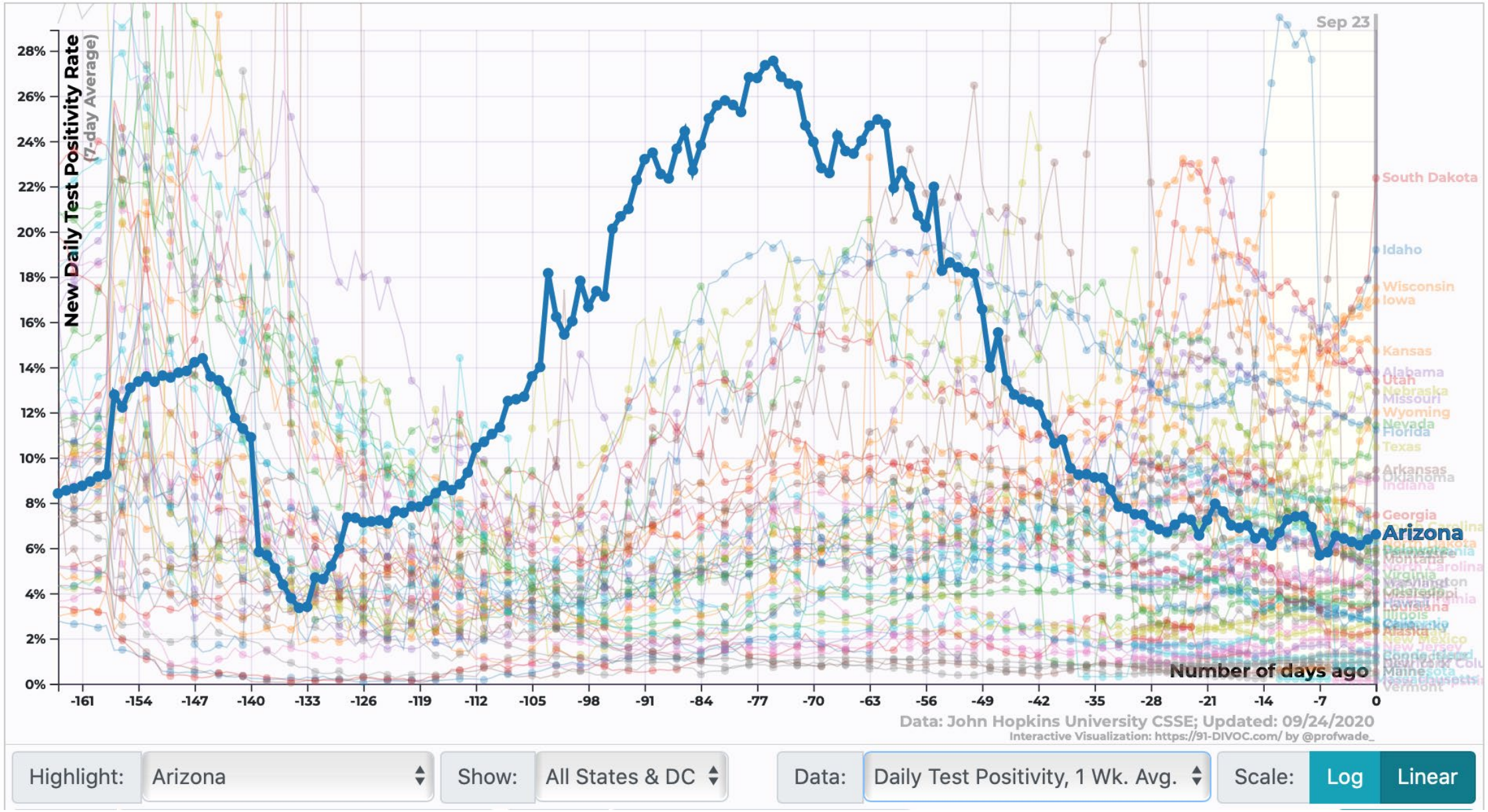


http://91-divoc.com/pages/covid-visualization/

New COVID-19 Tests Performed per Day by US States/Territories

http://91-divoc.com/pages/covid-visualization/

Daily COVID-19 Test Positivity Rate by US States/Territories

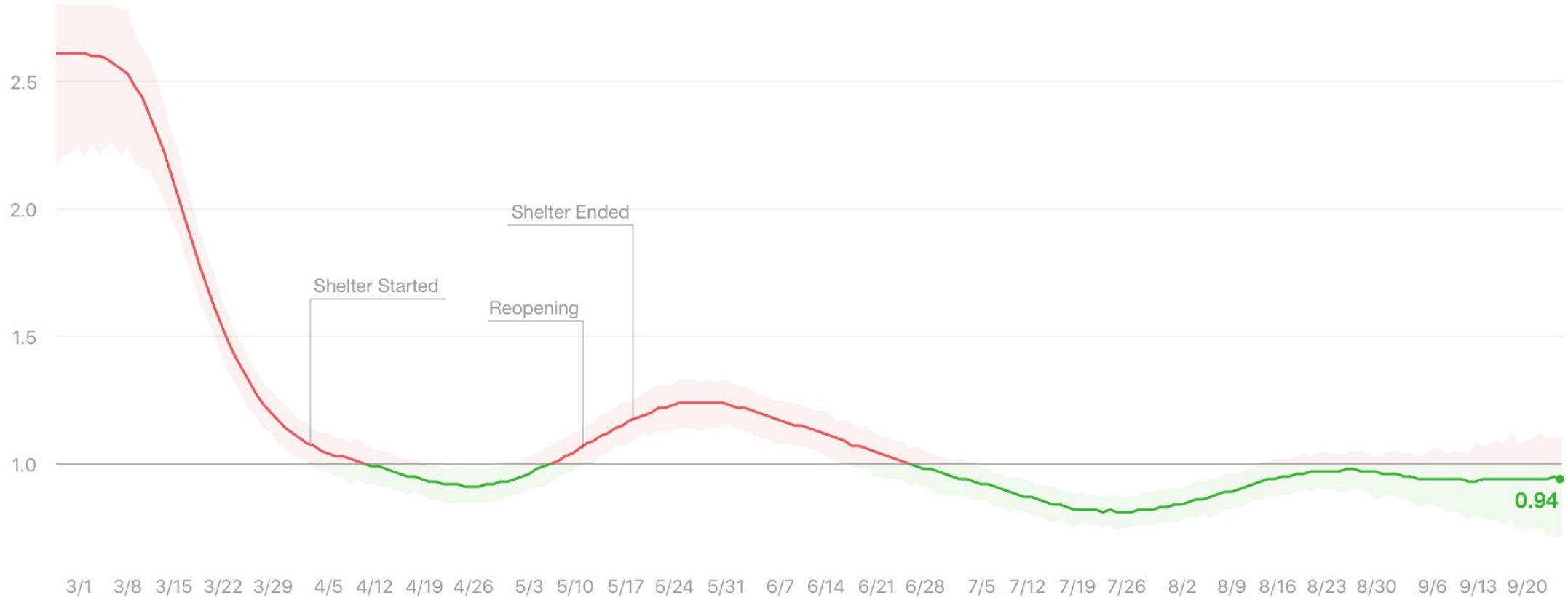


http://91-divoc.com/pages/covid-visualization/

Current R_t	Cases	Tests
0.94	214,844	1,400,625

Effective Reproduction Rate · R_t

R_t is the average number of people who become infected by an infectious person. If it's above 1.0, COVID-19 will spread quickly. If it's below 1.0, infections will slow. Learn More.



https://rt.live/us/AZ

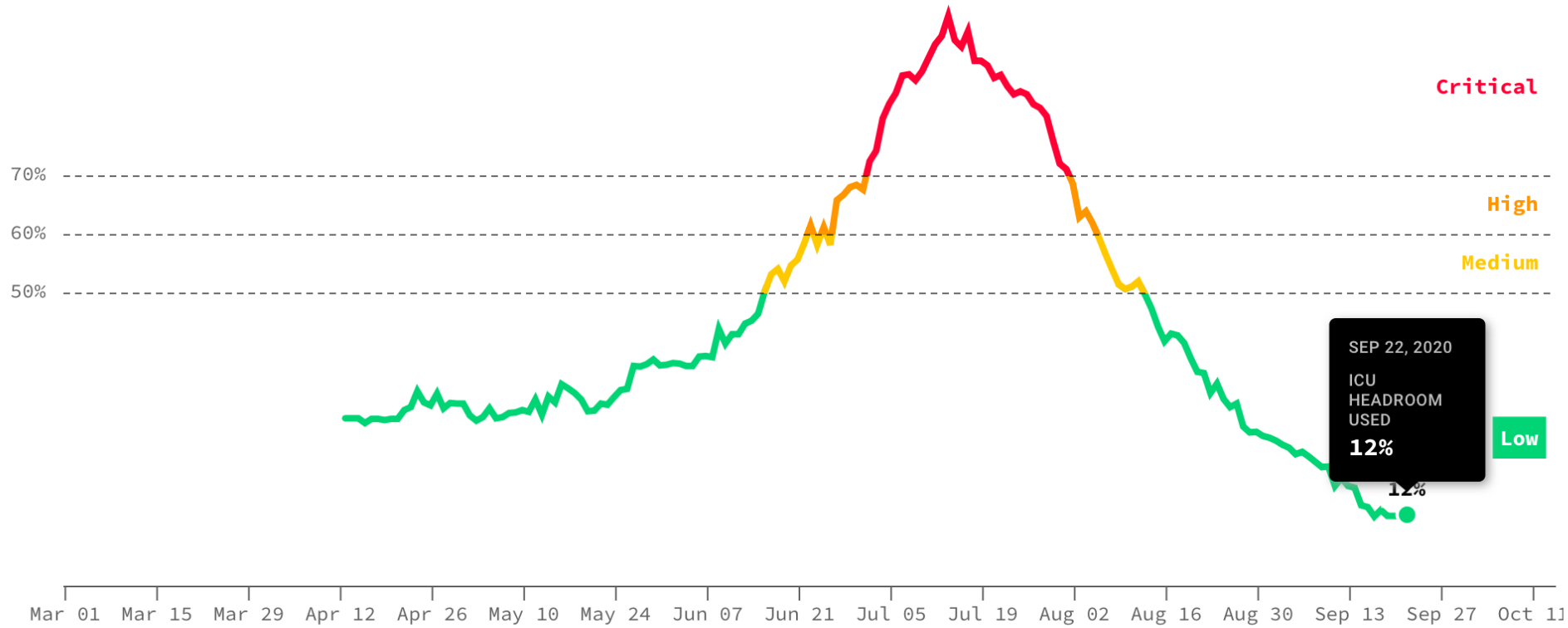
ICU headroom used

Beta

ARIZONA

Save Share

Arizona has about 1,657 ICU beds. Based on best available data, we estimate that 40% (660) are currently occupied by non-COVID patients. Of the 997 ICU beds remaining, 122 are needed by COVID cases, or 12% of available beds. This suggests there is likely enough capacity to absorb a wave of new COVID infections.

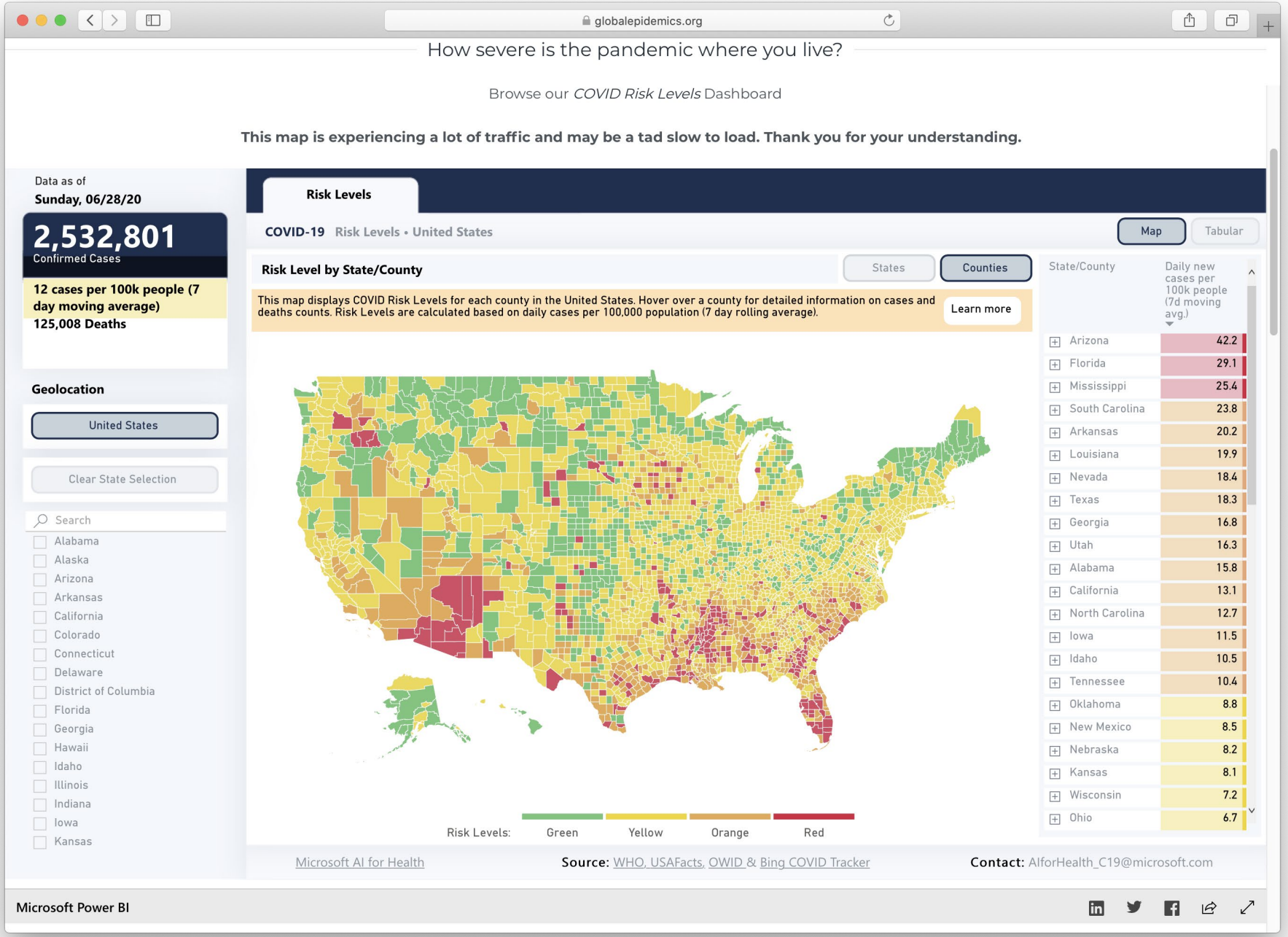


Last updated 9/23/2020. Resolve to Save Lives, a pandemic think tank, recommends that hospitals maintain enough ICU capacity to double the number of COVID patients hospitalized. Learn more about our methodology and our data sources.

http://covidactnow.org/us/az

July 1:

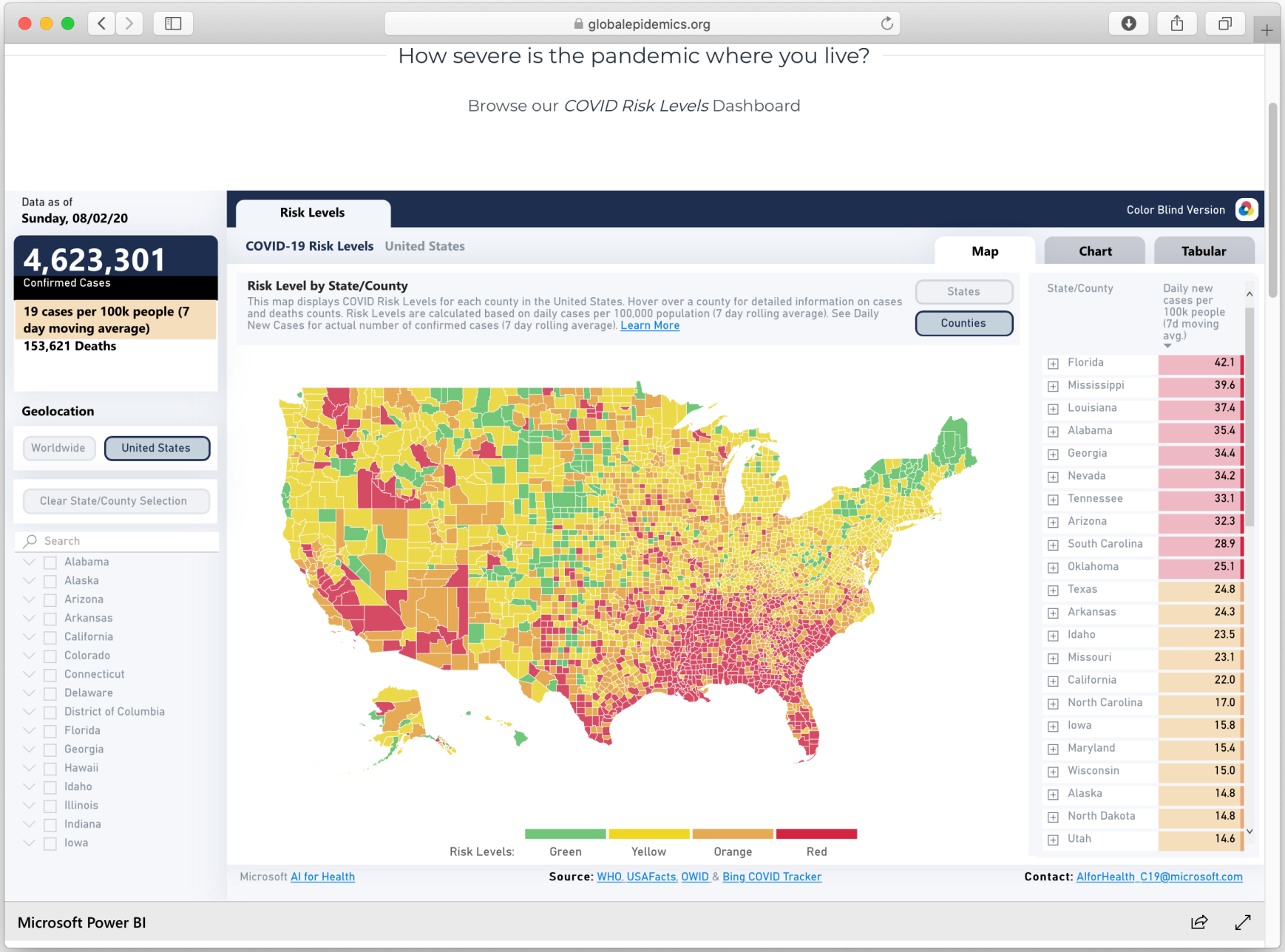
Arizona is #1 (but not for innovation)



https://globalepidemics.org/key-metrics-for-covid-suppression/

August 5:

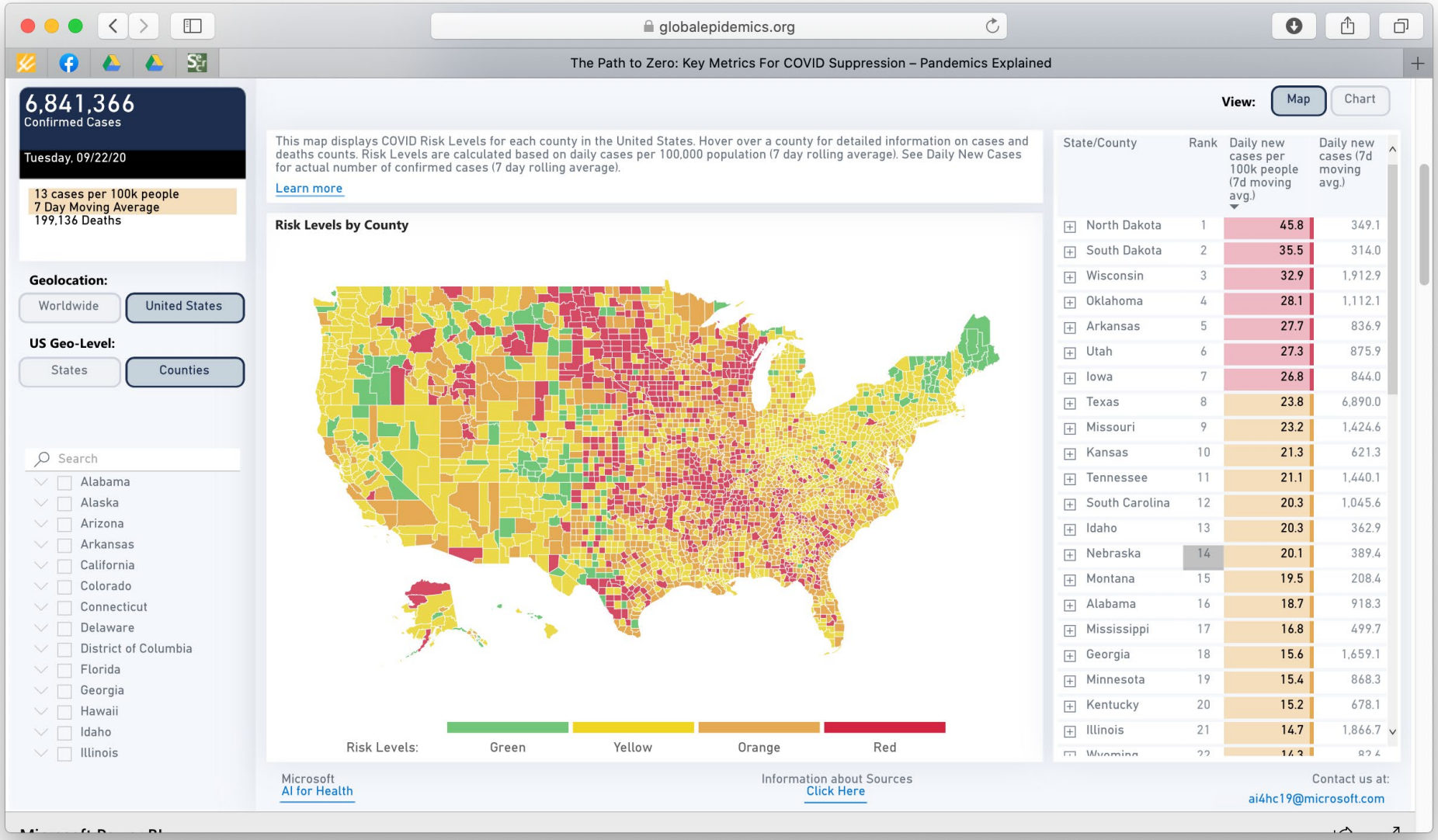
Arizona is #8



https://globalepidemics.org/key-metrics-for-covid-suppression/

Sep. 23:

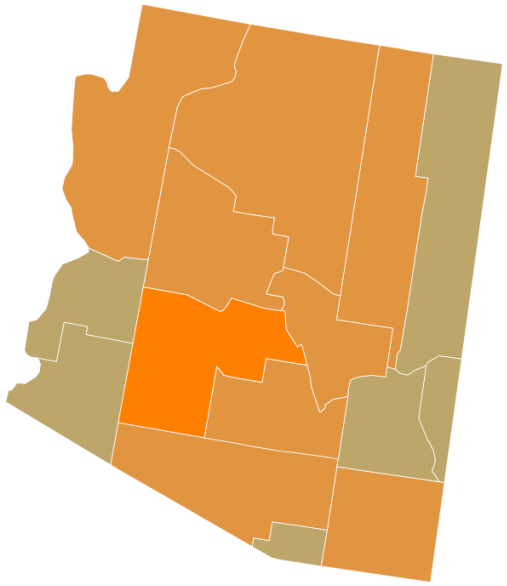
Arizona is #28



https://globalepidemics.org/key-metrics-for-covid-suppression/

MY MASK PROTECTS YOU, AND
YOUR MASK PROTECTS ME.

Last updated human mobility data: Sep 23, 2020, 7:14:14 AM
Last updated COVID-19 cases: Sep 22, 2020, 10:11:47 AM
For more details on data accuracy please refer to our methodology section.
Explore this report in Tableau
unacast-covid-scoreboard@1.1.0-89e65c7



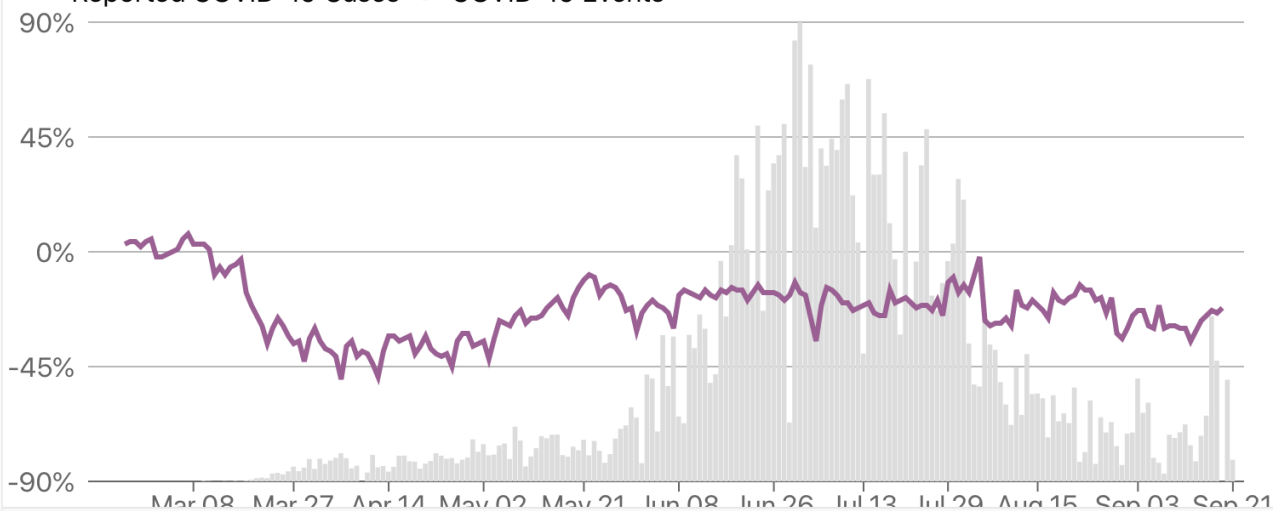
Share This View

Change in Average Mobility (Based on Distance Traveled)

Change in Non-Essential Visits

Difference in Encounter Density

Reported COVID-19 Cases • COVID-19 Events



https://www.unacast.com/covid19/social-distancing-scoreboard

SARS-CoV-2 is Likely Airborne
(as we've been saying)

The New York Times

PLAY THE CROSSWORD Account

Yes, the Coronavirus Is in the Air

Transmission through aerosols matters — and probably a lot more than we've been able to prove yet.

By Linsey C. Marr
Dr. Marr is a professor of engineering.

July 30, 2020

A sneeze. And what it spreads. Just how much does the new coronavirus circulate in the tiny airborne aerosols we spew out simply by breathing? Bettmann, via Getty Images Plus

https://www.nytimes.com/2020/07/30/opinion/coronavirus-aerosols.html

nature

NEWS FEATURE · 08 JULY 2020

UPDATE 23 JULY 2020

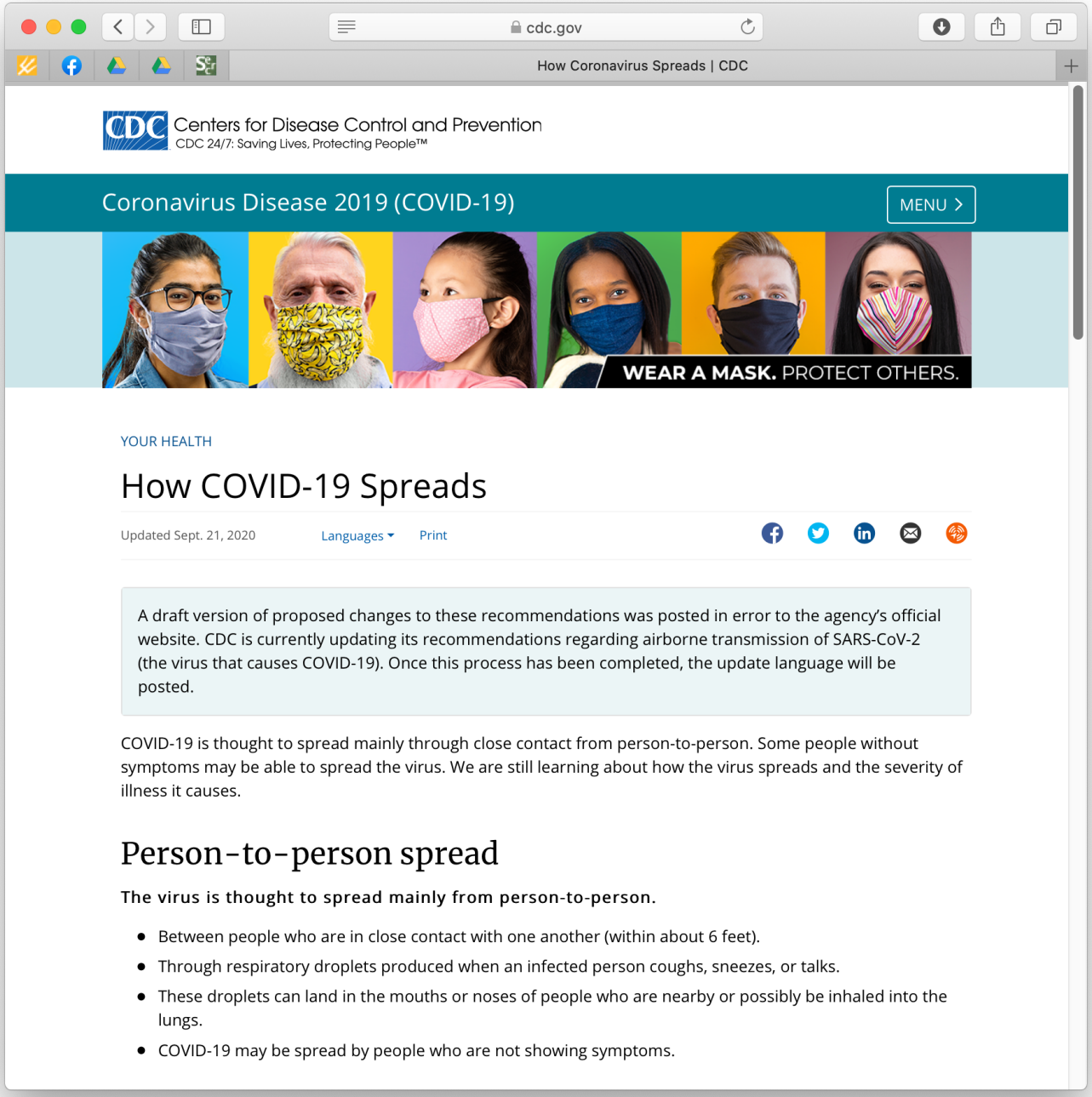
Mounting evidence suggests coronavirus is airborne — but health advice has not caught up

Governments are starting to change policies amid concerns that tiny droplets can carry SARS-CoV-2. And after months of denying the importance of this, the World Health Organization is reconsidering its stance.

Dyani Lewis

PDF version

https://www.nature.com/articles/d41586-020-02058-1



Sept. 20

CNN

Updated CDC guidance acknowledges coronavirus can spread through the air

Sept. 21

Los Angeles Times

CDC acknowledges risk of coronavirus aerosols in new guidelines, then reverses course

The Washington Post

CDC reverses statement on airborne transmission of coronavirus, says draft accidentally published

FOX NEWS .com

CDC deletes coronavirus airborne transmission guidance, says update was 'draft version'

"The dominant route of transmission of SARS-CoV-2 is respiratory."

"Direct contact and fomite transmission are presumed but are likely only an unusual mode of transmission."

"Growing evidence indicates that infectious virus can be found in aerosols and in exhaled breath samples and it is likely that under certain circumstances, including during aerosol-generating procedures, while singing, or in indoor environments with poor ventilation, the virus may be transmitted at a distance through aerosols."

"Nevertheless, there is abundant evidence that proximity is a key determinant of transmission risk… That proximity so clearly increases risk for infection suggests that classic droplet transmission is more important than aerosol transmission."

"The accumulated evidence suggests that most transmission is respiratory, with virus suspended either on droplets or, less commonly, on aerosols. "

Where are we headed?

nature reviews immunology

Comment | Published: 09 September 2020

COVID-19 herd immunity: where are we?

Arnaud Fontanet & Simon Cauchemez

Nature Reviews Immunology **20**, 583–584(2020) | Cite this article

84k Accesses | **1900** Altmetric | Metrics

Herd immunity is a key concept for epidemic control. It states that only a proportion of a population needs to be immune (through overcoming natural infection or through vaccination) to an infectious agent for it to stop generating large outbreaks. A key question in the current COVID-19 pandemic is how and when herd immunity can be achieved and at what cost.

https://www.nature.com/articles/s41577-020-00451-5

"Assuming an optimistic herd immunity threshold of 50%, for countries such as France and the USA, this would translate into 100,000–450,000 and 500,000–2,100,000 deaths, respectively…"

In the US we are now at 200,000 deaths

"An effective vaccine presents the safest way to reach herd immunity. "

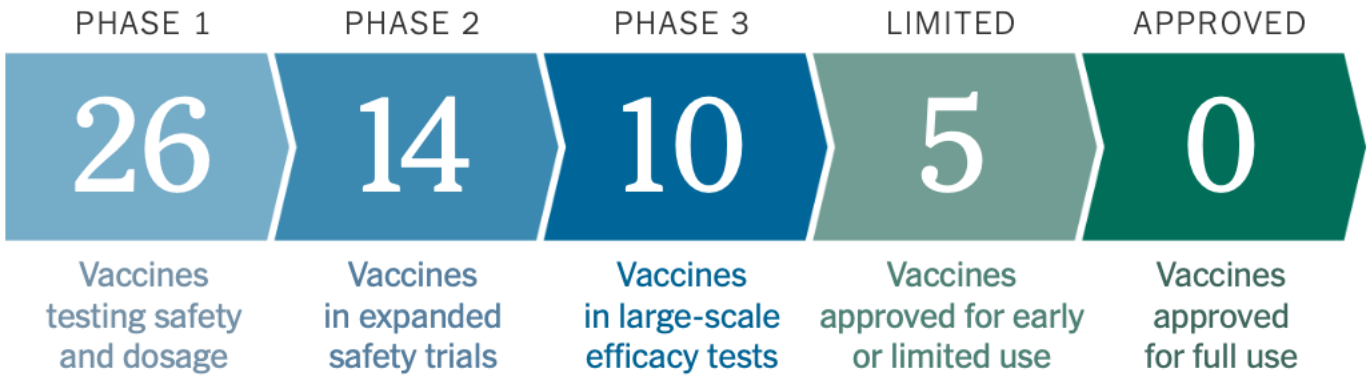
"For countries in the Northern hemisphere, the coming autumn and winter seasons will be challenging with the likely intensification of viral circulation."

"At this stage, only non-pharmaceutical interventions, such as social distancing, patient isolation, face masks and hand hygiene, have proven effective in controlling the circulation of the virus and should therefore be strictly enforced."

The New York Times

Coronavirus Vaccine Tracker

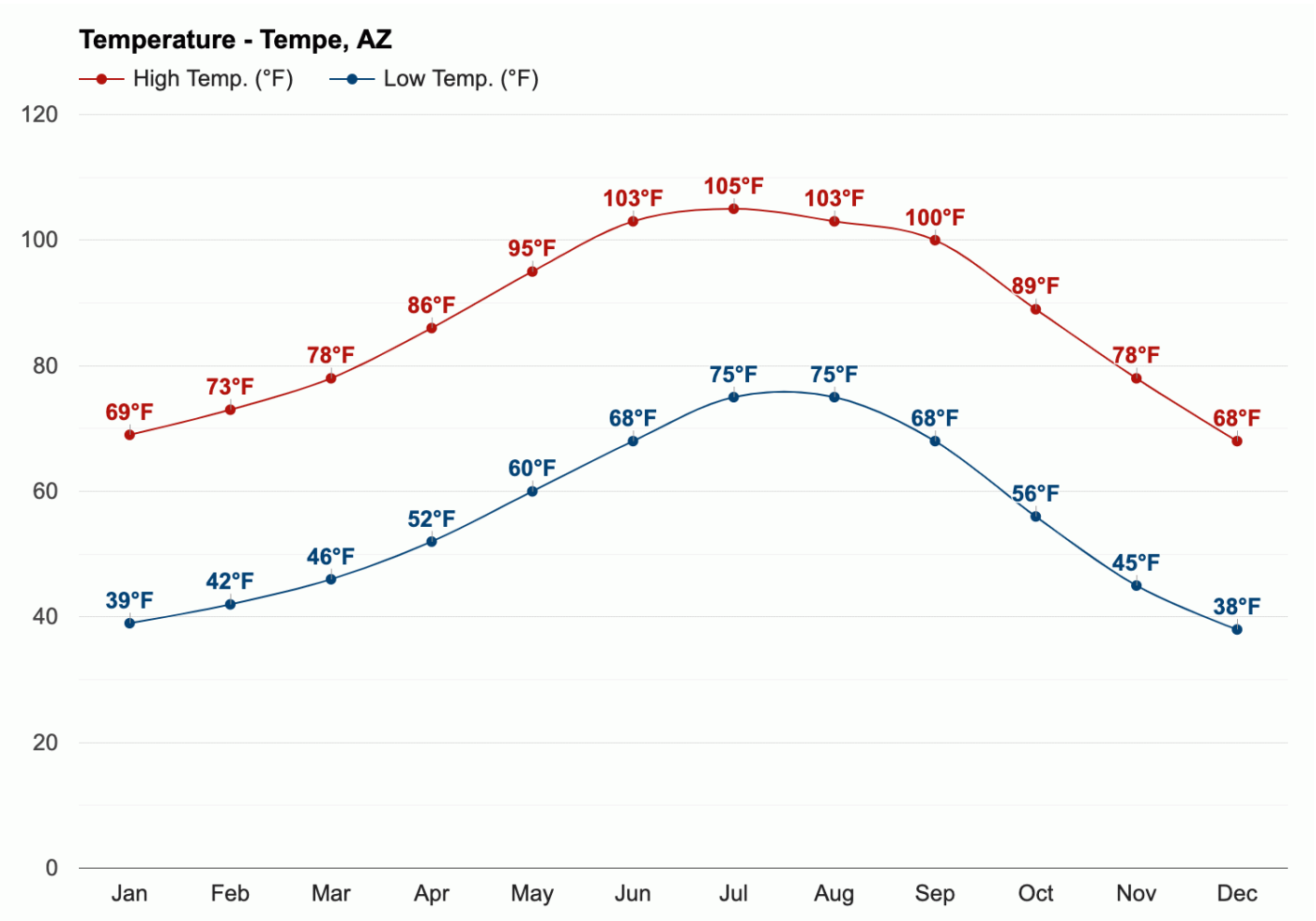
By Jonathan Corum, Sui-Lee Wee and Carl Zimmer Updated September 23, 2020



Vaccines typically require years of research and testing before reaching the clinic, but scientists are racing to produce a safe and effective coronavirus vaccine by next year. Researchers are testing **40 vaccines** in clinical trials on humans, and at least 92 preclinical vaccines are under active investigation in animals.

https://www.nytimes.com/interactive/2020/science/coronavirus-vaccine-tracker.html

Arizona’s Winter Weapon: Ventilation!



Comment | Published: 07 July 2020

Pre-existing immunity to SARS-CoV-2: the knowns and unknowns

Alessandro Sette & Shane Crotty

Nature Reviews Immunology **20**, 457–458(2020) | Cite this article

T cell reactivity against SARS-CoV-2 was observed in unexposed people; however, the source and clinical relevance of the reactivity remains unknown. It is speculated that this reflects T cell memory to circulating 'common cold' coronaviruses. It will be important to define specificities of these T cells and assess their association with COVID-19 disease severity and vaccine responses.

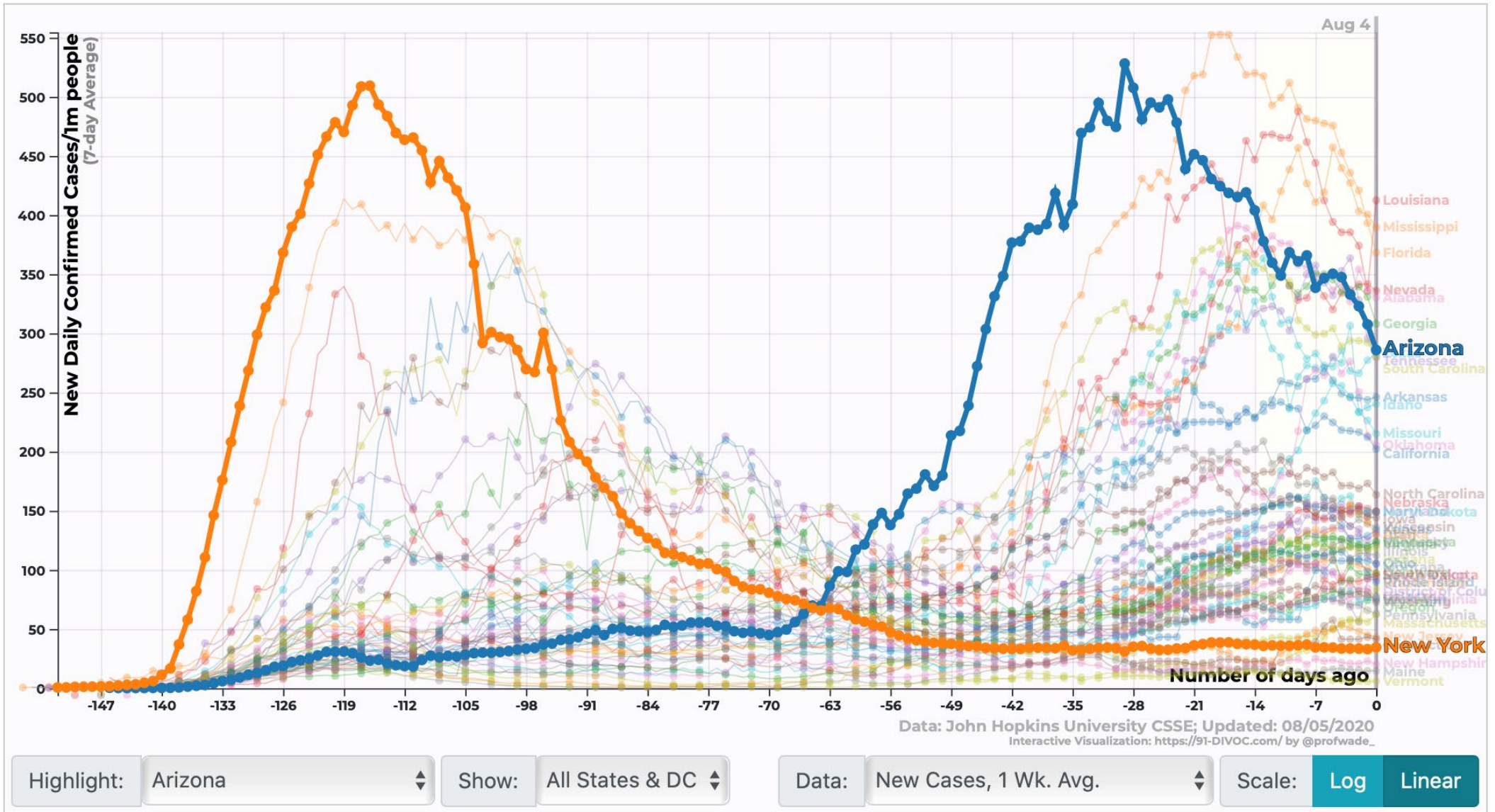
https://www.nature.com/articles/s41577-020-0389-z

If true, some possible implications:

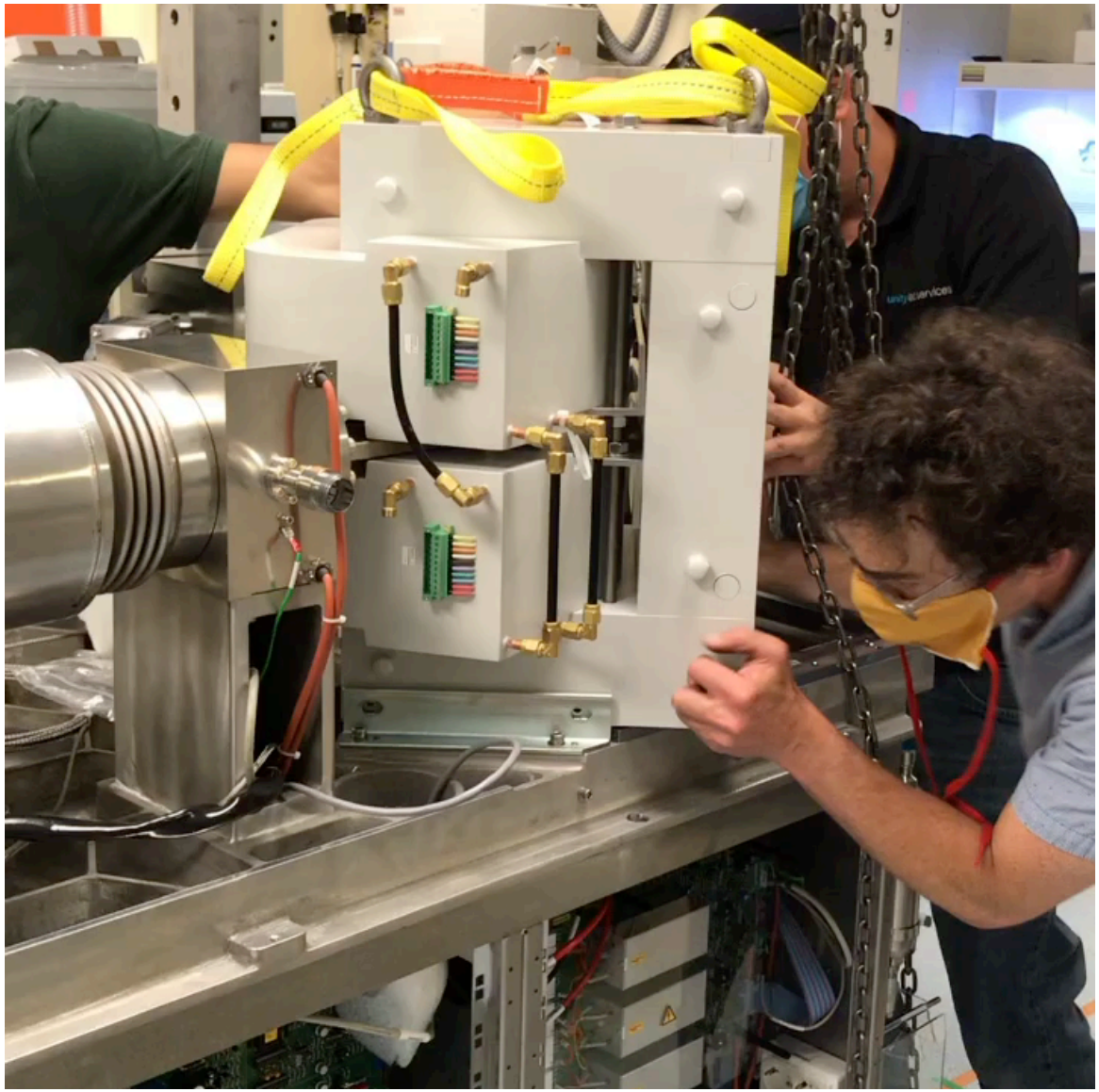
- May explain diverse disease outcomes
- Good news for vaccine development
- Closer to "herd immunity"?

https://triz-journal.com/glass-half-full-and-half-empty/

New Confirmed COVID-19 Cases per Day by US States/Territories, normalized by population



SESE Community Conversation: 24 September 2020



President's 25-point plan

- On September 2, President Crow outlined 25 actions that "will be undertaken with the goal of enhancing diversity, growth and opportunity for Black undergraduate and graduate students, faculty and staff, while also expanding our academic offerings, community services and collaborative relationships to the benefit of all underrepresented groups and individuals at ASU."
- https://president.asu.edu/statements/asus-commitment-to-black-students-faculty-and-staff

News/Communications: On campus presence

- Up to ~30% occupancy allowed in SESE buildings; if you are on campus:
  - Mandatory COVID-19 safety training.
  - Face coverings are REQUIRED at all times on campus.
- Rapid and easy saliva testing (24-48 hr turnaround time) has been implemented; random testing of the ASU population.
- Daily health check implemented.
- ASU COVID-19 case updates provided at :

https://eoss.asu.edu/health/announcements/coronavirus/management

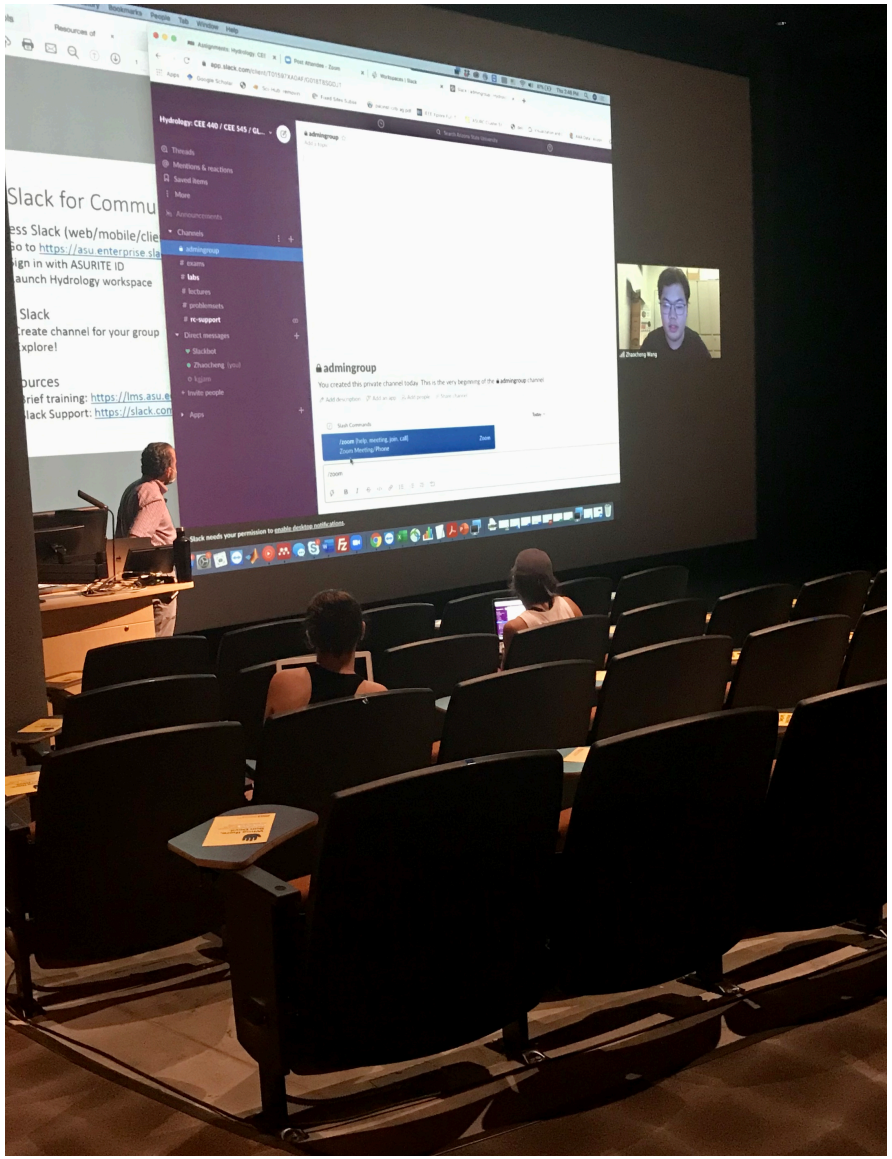
<u>As of September 21</u>: Cumulative number of positive tests since August 1, 2020

•Students: 1,670

•Faculty and staff: 31

News/Communications: Research and Other Ops

- Re-opening protocols implemented for a significant fraction of SESE research operations.
- HQ staff and SESE Leadership are back on campus on a staggered schedule.
  - Staff representing BO-HR-RA-AP will be in office Tuesdays-Thursdays from 8 AM to 2 PM
  - Reception and mail service on Mondays and Fridays.
  - Access is key card only in certain parts of SESE buildings.
- SESE HQ in ISTB4 is staffed as above, SESE HQ in PSF is not staffed. Both are accessible via key card/key access.



News/Communications: Teaching

- Most classes are being taught in ASU Sync mode (synchronous teaching via Zoom, allowing students to join remotely or in-person for limited numbers).
- In practical terms, a small subset of our courses have an in-person component this semester.
- Looking ahead, planning for Spring 2021 is underway; similar to this Fall, most of our courses will be taught in Sync mode.

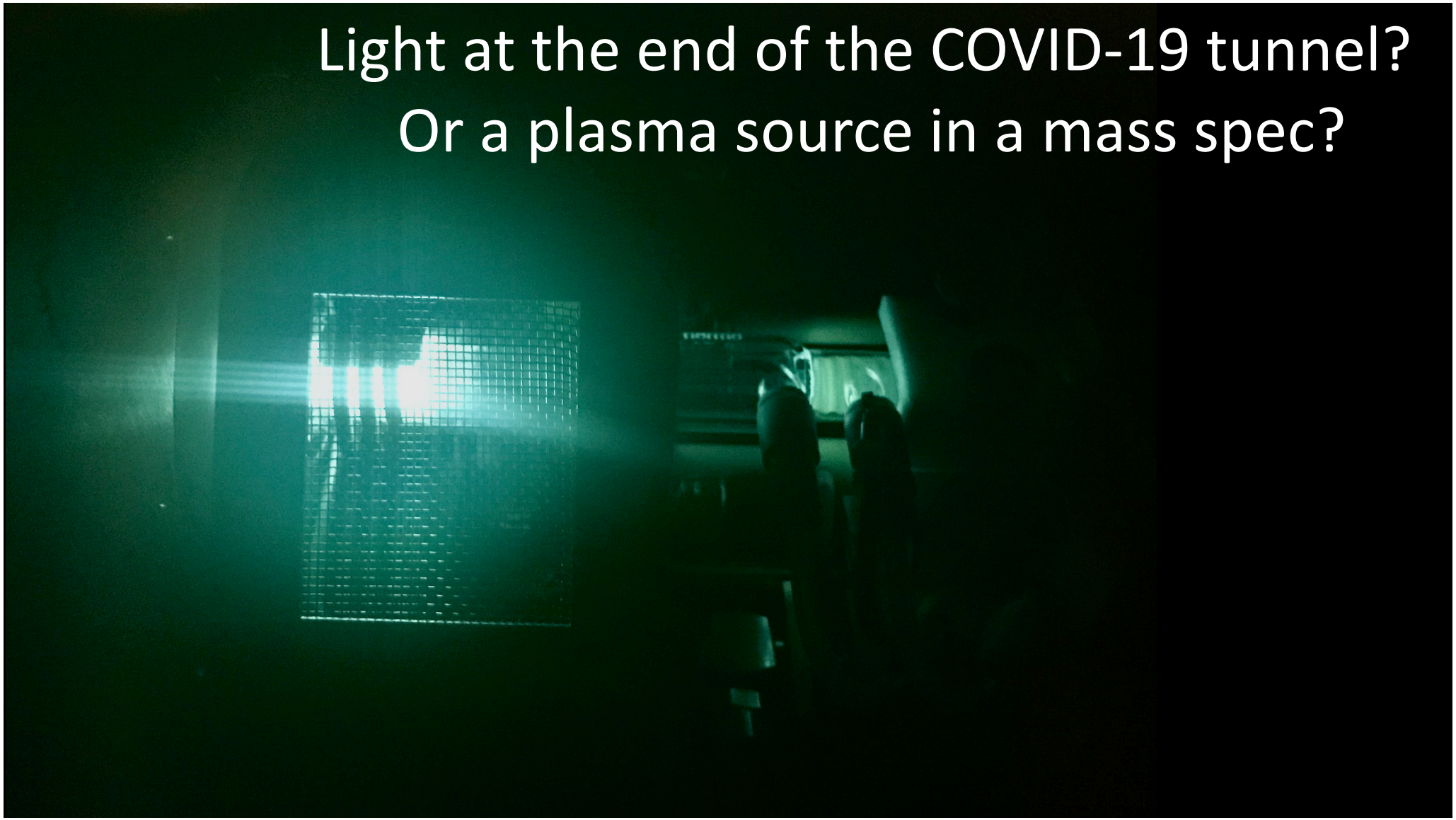
News/Communications: Budget & Finances

- We are past the 21st day of the Fall semester, so financial picture for the university is somewhat clearer.
- Overall total enrollment for Fall 2020 at ASU is up.
  - Overall enrollment in SESE courses (6526, as of the 21st day of the semester) is down by ~4% relative to this time last year.
  - We successfully launched our fully online BS degree in Astronomical and Planetary Sciences. 95 students signed up – represents ~20% increase in our undergrad majors!
- No furloughs or salary cuts are anticipated at the current time, but also no merit increases.
- We implemented a significant and permanent cut (~$300K) to our total annual budget.

News/Communications: Fall Activities

Fall 2020 activities **open to ALL in the SESE Community**:

- SESE Community Conversations (Noon-1 PM on Oct 29 & Nov 19)
- SESE Colloquium (Wednesdays, 3:30-4:30 PM, weekly)
- Virtual Tea (Thursdays, 3:00-4:00 PM, weekly)
- Engineering Coffee (Fridays, 2:30-3:30 PM, weekly)
- Open listening sessions with SESE leadership (weekly, 9-10 AM Tuesdays)
- One-on-one office hours with the director (weekly, 3-5 PM Thursdays) – sign up for 30 min slots on weekly basis
- Open office hours with AD Inclusive Community (3-4 PM Thursdays)


Light at the end of the COVID-19 tunnel?
Or a plasma source in a mass spec?