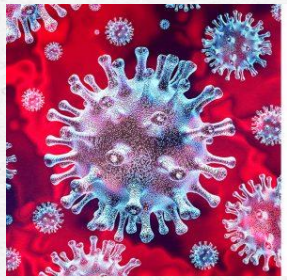
Vaccination Workshop: January 8, 2021

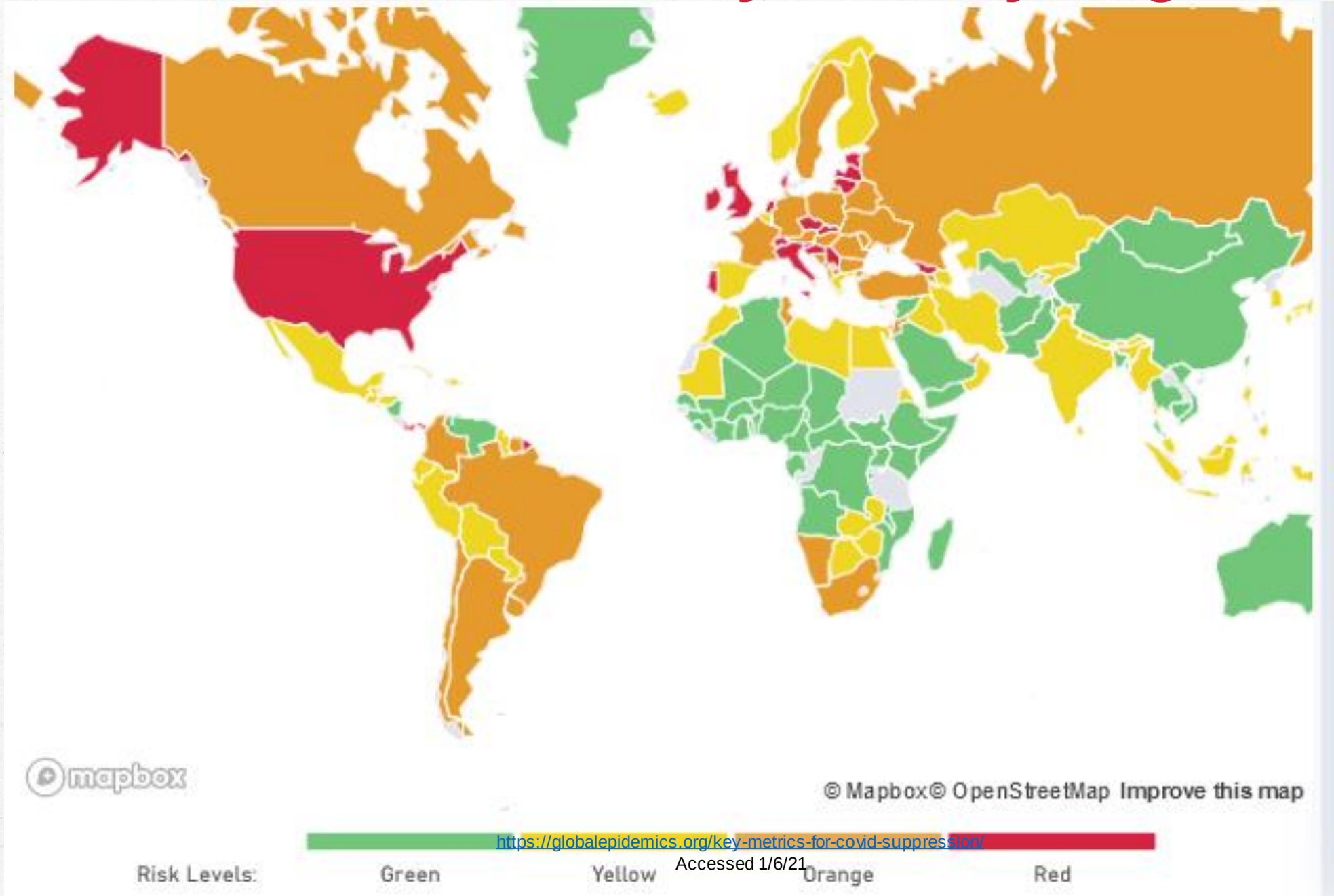
RUTGERS
BIOMEDICAL AND HEALTH SCIENCES

SARS-COV-2/COVID-19

- A strain of severe acute respiratory syndrome-related coronavirus
- Named SARS-COV-2 in February 2020; WHO named the disease COVID-19
- Identified in late 2019, epidemic by February, 2020, and declared pandemic by WHO on March 11, 2020
- All ages are susceptible to infection, mostly via aerosolized particles, median age of infection ~50
- 405 therapeutic drugs in development, some treatments have shown some benefit
- Vaccination is anticipated to be the most effective strategy for prevention and control

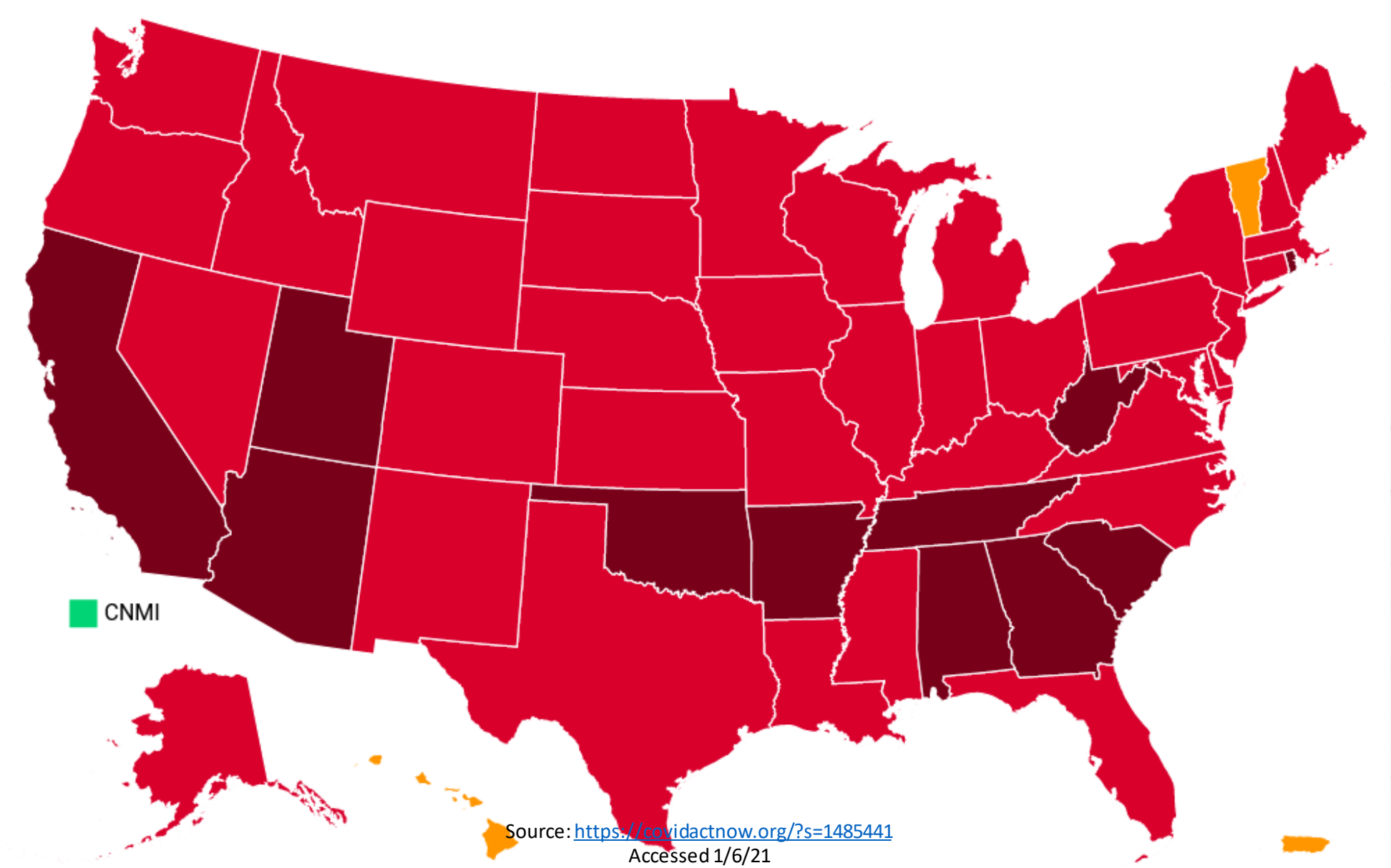


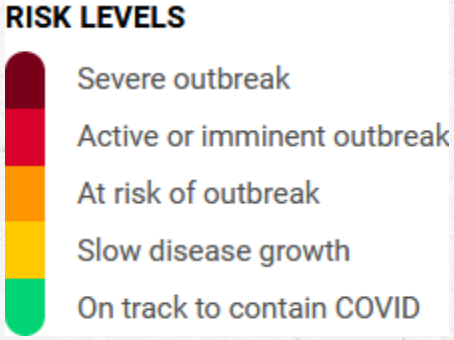
COVID-19 Risk Levels By Country/Region

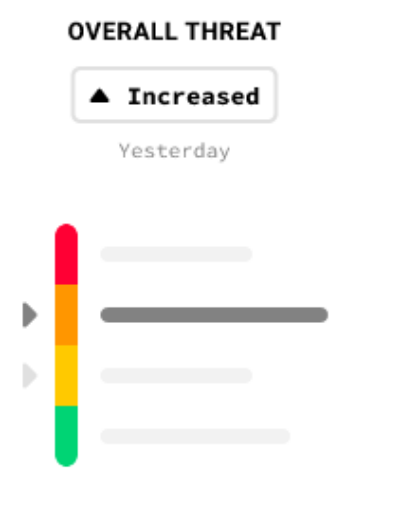


https://globalepidemics.org/key-metrics-for-covid-suppression/
Accessed 1/6/21

US COVID-19 Risk Levels – United States

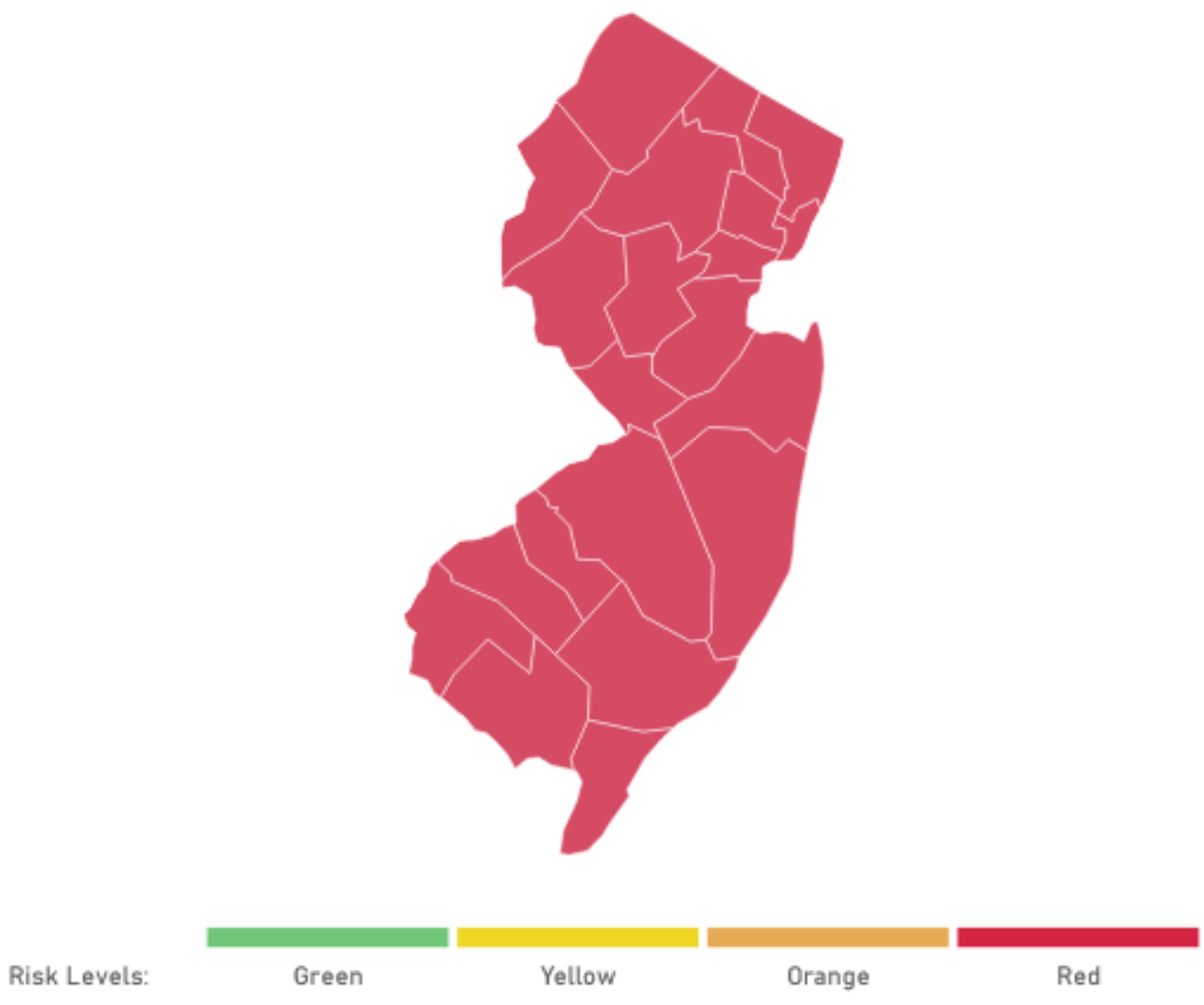






Source: https://covidactnow.org/?s=1485441
Accessed 1/6/21

COVID-19 Risk Levels By County/New Jersey



- United States ranks 11th in highest COVID risk worldwide
- NJ ranks 2th of 50 States
- NJ has 130.7 daily new cases per 100,000 people or 11,606 per day (7-day moving averages)

https://globalepidemics.org/key-metrics-for-covid-suppression/
Accessed 1/6/21

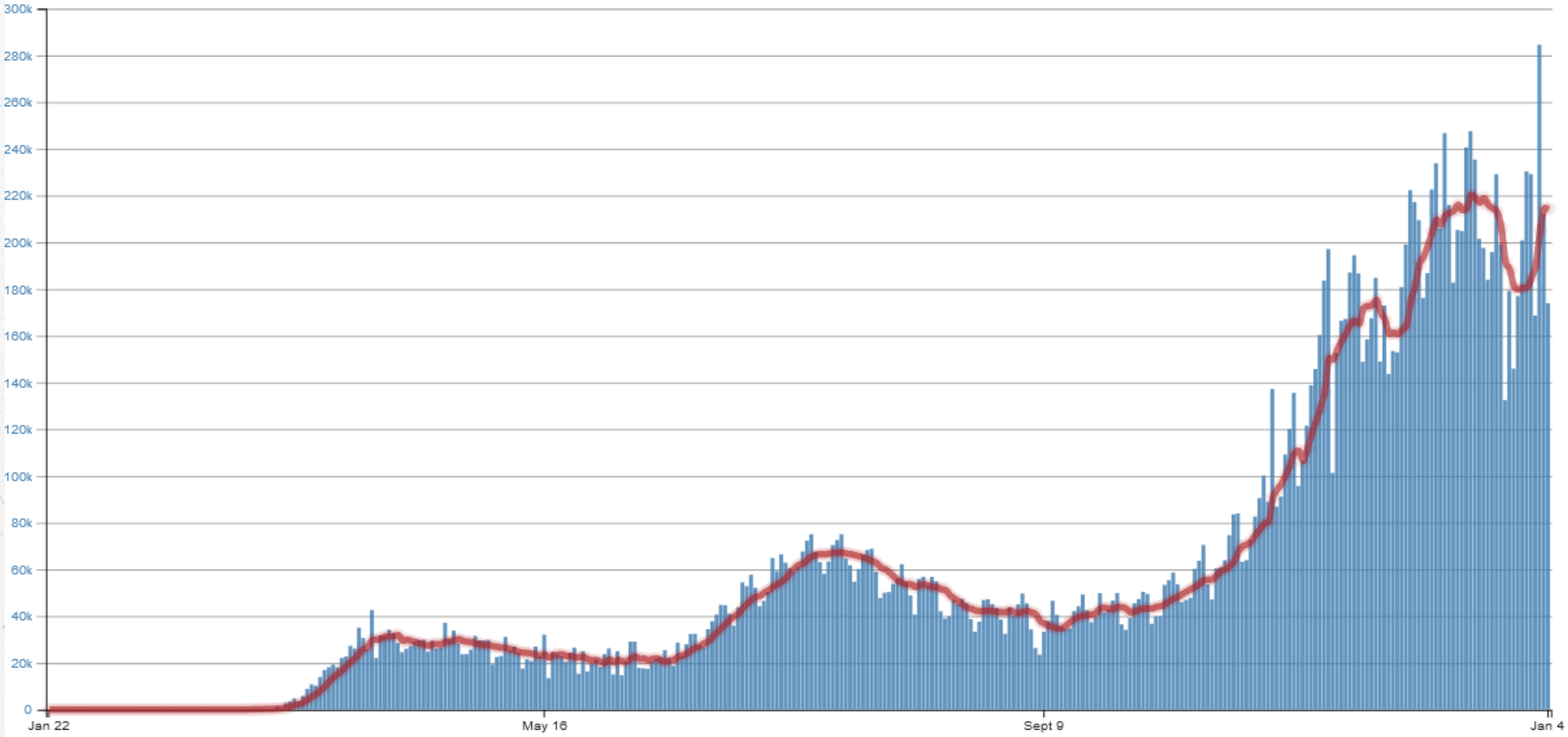
COVID-19 Case Numbers – Global and Local

As of January 7, 2020

- Cumulative confirmed cases worldwide: 86,601,539
- Cumulative US confirmed cases: 21,069,442
- Cumulative NJ confirmed cases: 499,636
- Cumulative NJ confirmed deaths: 17,361
- Current NJ hospitalizations: 3,744
  - Currently on ventilators: 456
  - Intensive-critical care: 668
- NJ Statewide COVID-19 positivity 11.22% (as of 12/30)
- Rt = 0.94 (rate of transmission)

https://coronavirus.jhu.edu/map.html
https://maps.arcgis.com/apps/opsdashboard/index.html#/b422cfa3f7264002b05041da448ae5dc
https://www.nj.gov/health/cd/topics/covid2019_dashboard.shtml
(accessed 1/6/21)

Daily Trends: COVID-19 Cases in the US Reported to CDC



https://covid.cdc.gov/covid-data-tracker/#trends_dailytrendscases
(accessed 1/6/20)

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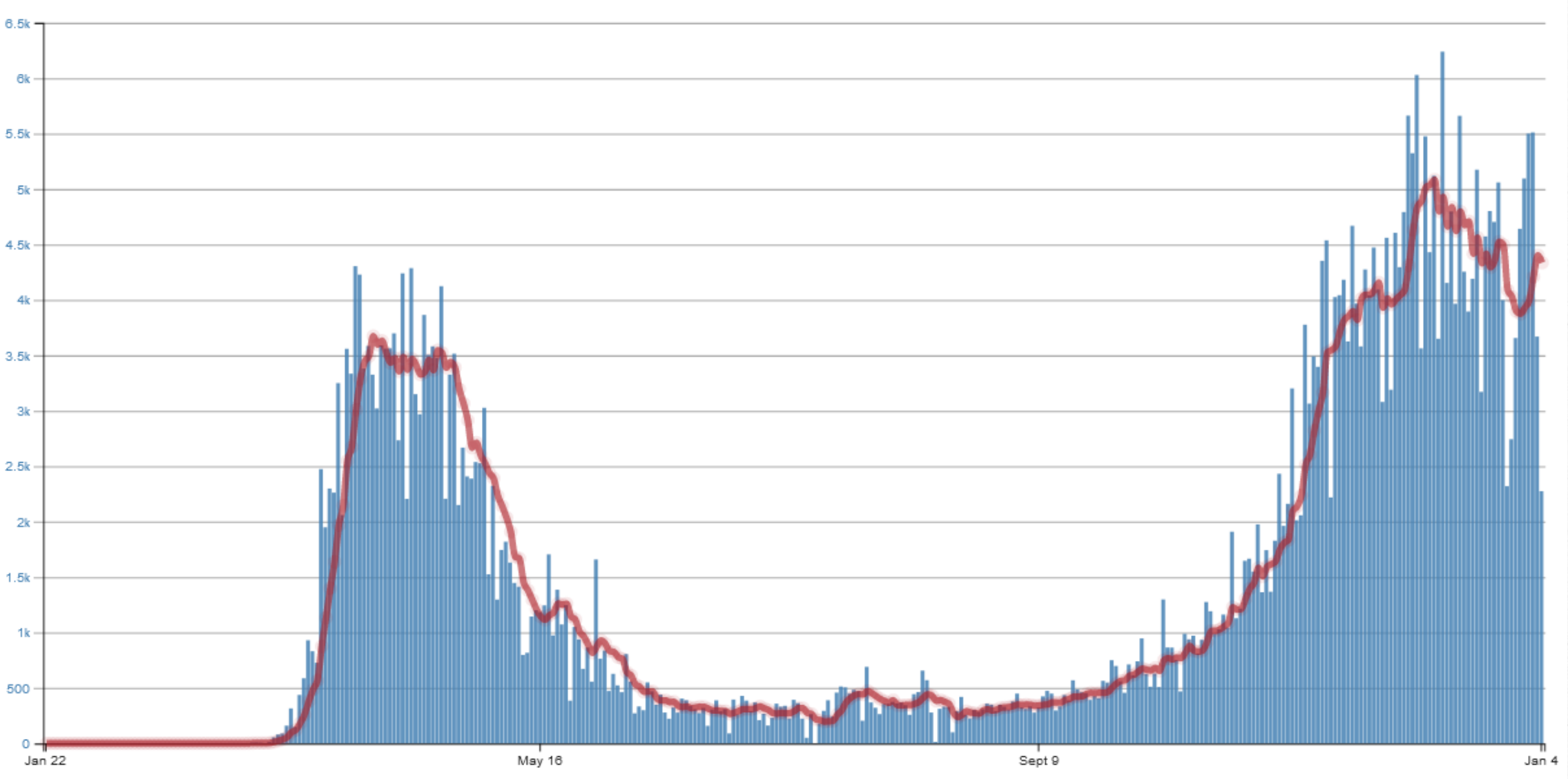

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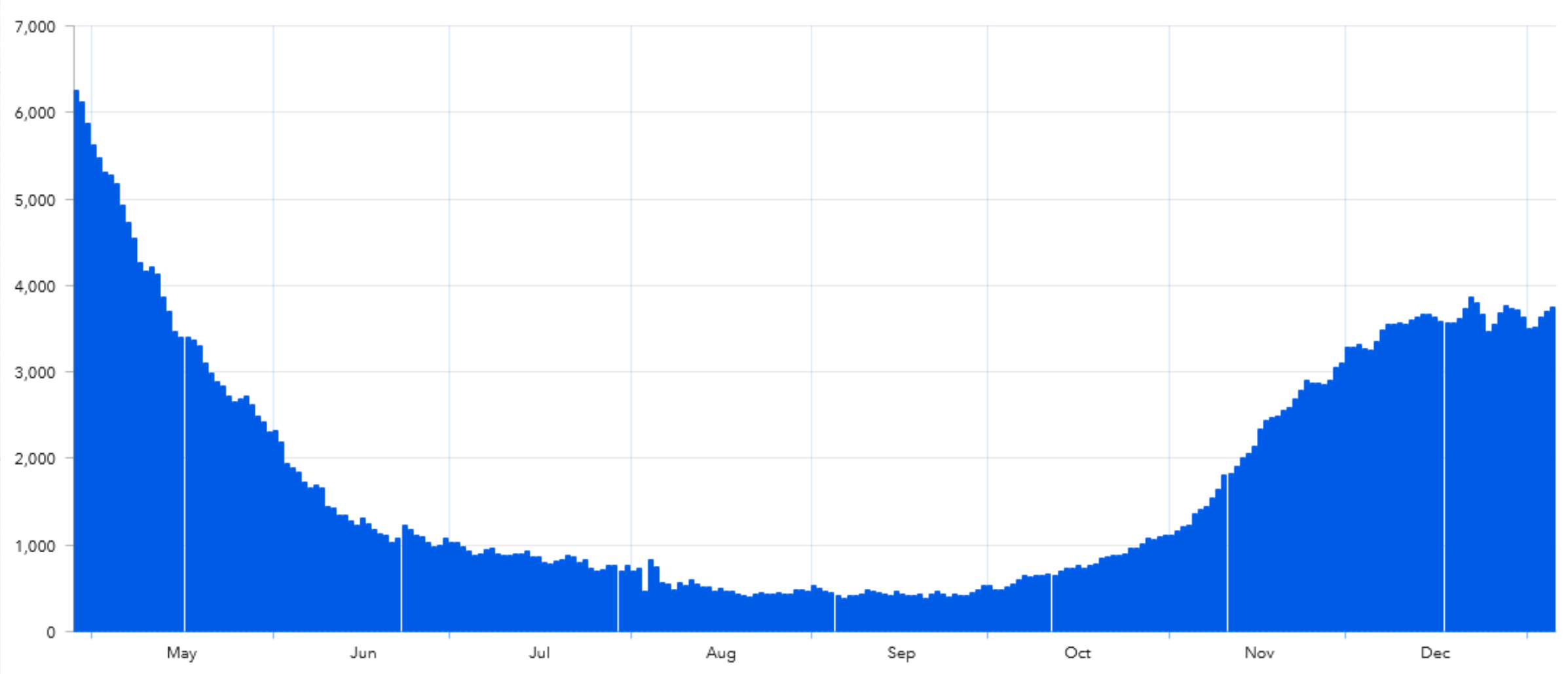
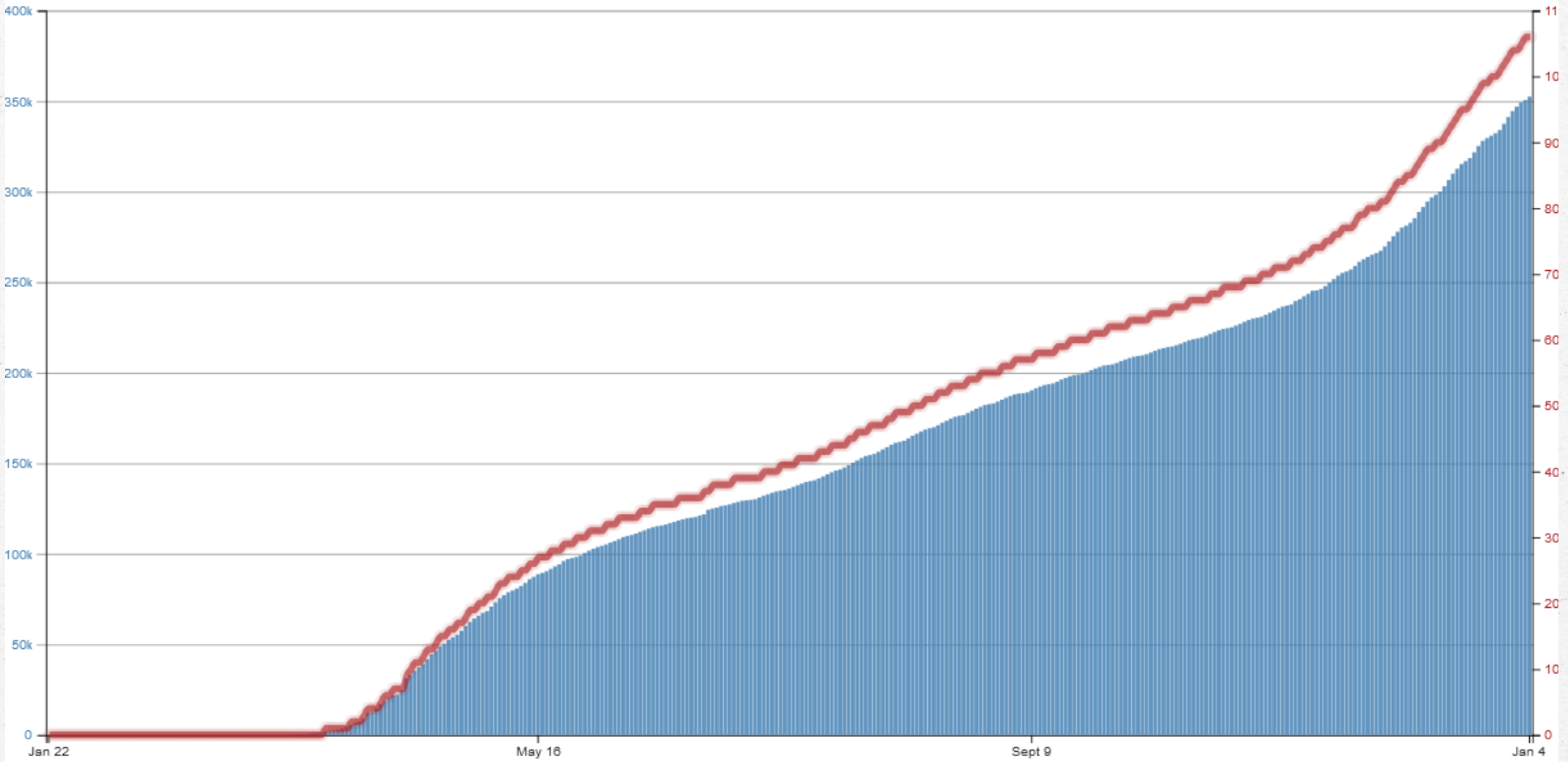
New Jersey COVID-19 Hospitalizations



NJ COVID-19 Dashboard
https://covid19.nj.gov/
Accessed 1/6/21

US COVID-19 Deaths – Total & Trends

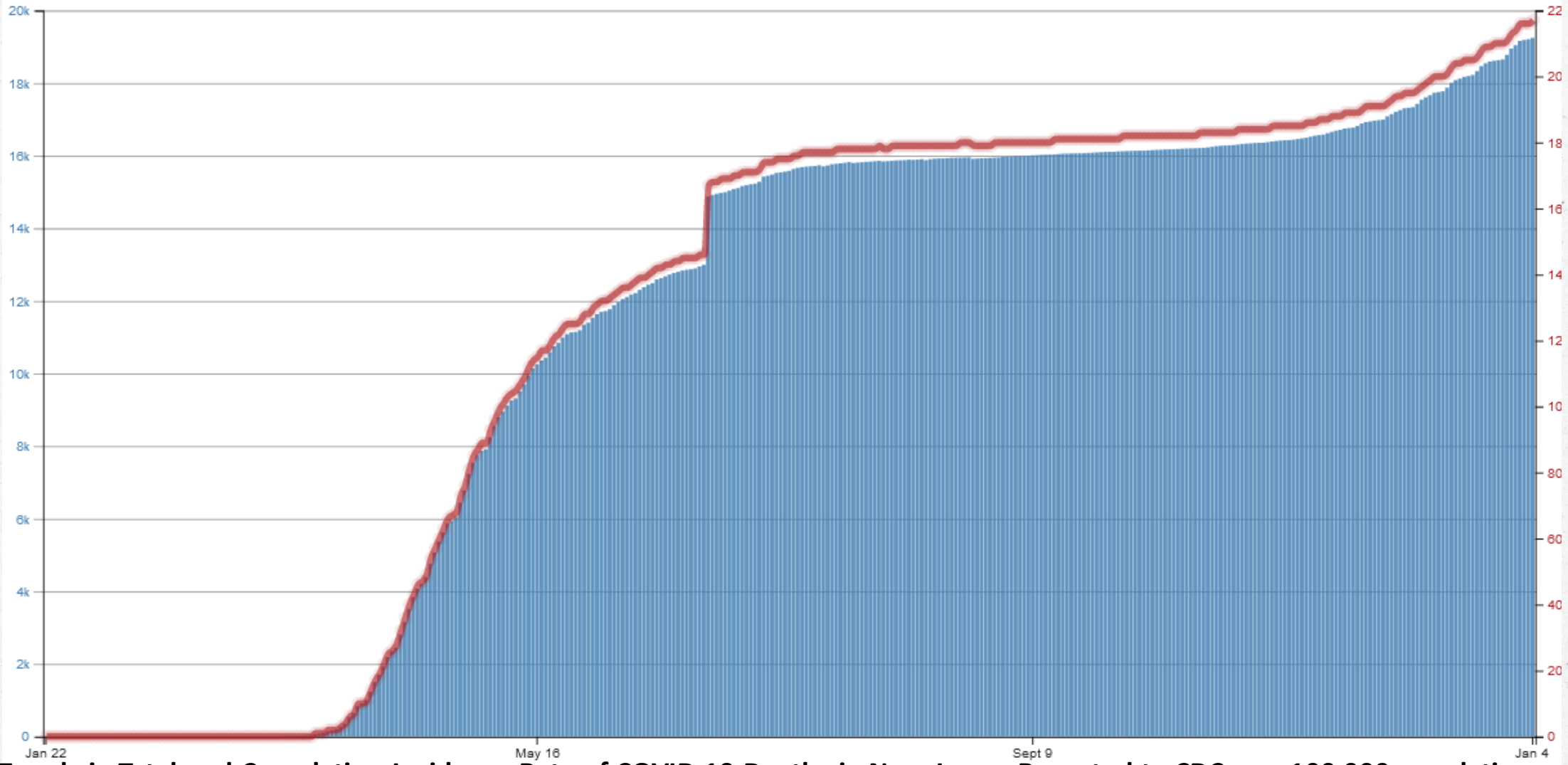


Trends in Total and Cumulative Incidence Rate of COVID-19 Deaths in New Jersey Reported to CDC, per 100,000 population

https://covid.cdc.gov/covid-data-tracker/#trends_totalandratedeaths

Accessed 1/6/21

NJ COVID-19 Deaths – Total & Trends



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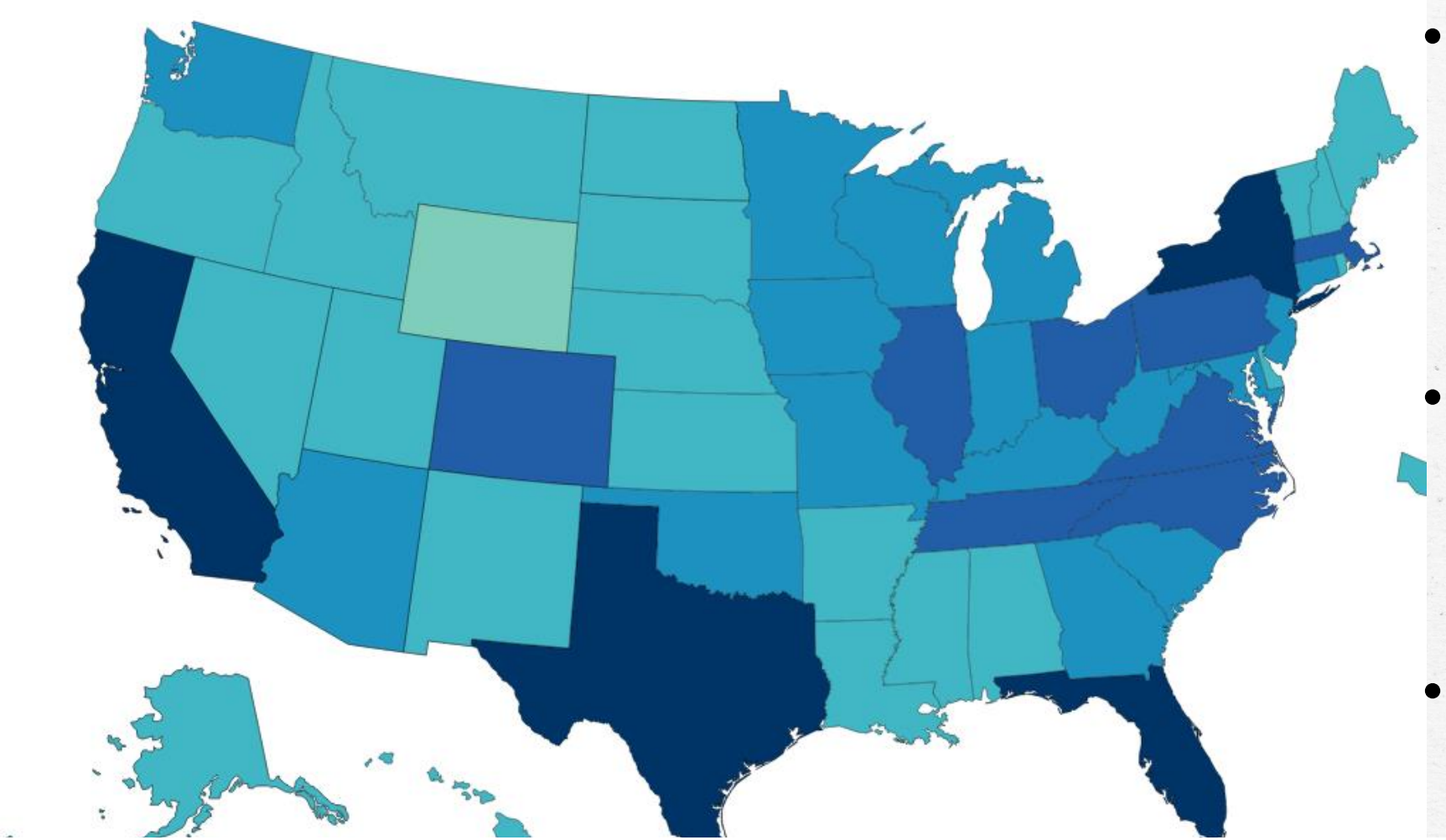
Accessed 1/6/21

The 4 T's of Battling COVID-19

- Target
- Test
- Treat
- Trace

COVID-19 Vaccinations in the United States



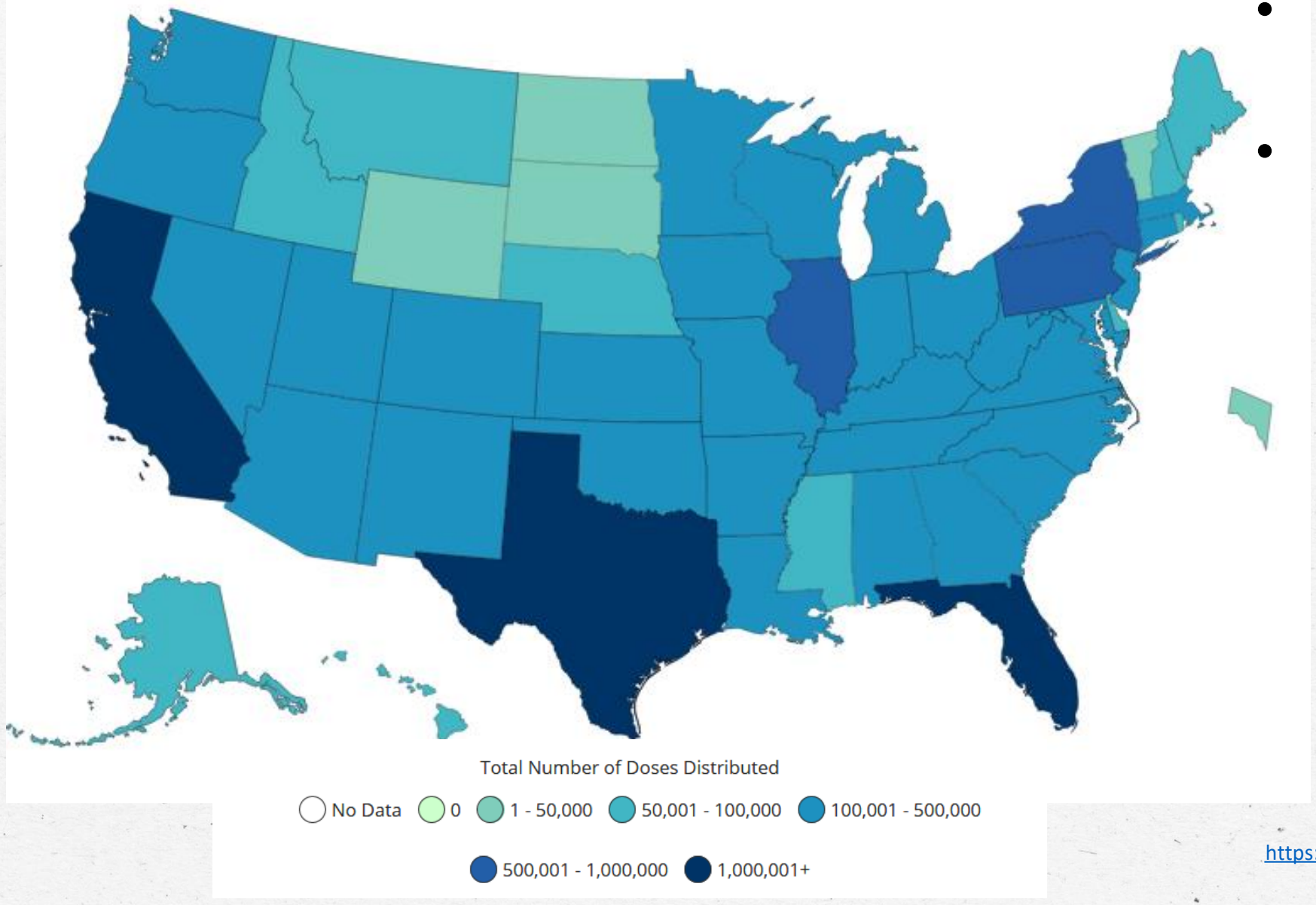
- 4,836,469 total number of people initiating first vaccination - received first dose
- 429,066 number of people initiating first vaccination in LTC facilities
- Goal was 20 million by 1/1/2021

Total Number of People Initiating Vaccination

No Data | 0 | 1 - 10,000 | 10,001 - 50,000 | 50,001 - 100,000 | 100,001 - 200,000 | 200,001+

https://covid.cdc.gov/covid-data-tracker/#vaccinations
Accessed 1/6/21

COVID-19 Total Doses Distributed in the US



- 15,418,500 total doses distributed
- 3,260,775 doses distributed for use in long term care facilities

https://covid.cdc.gov/covid-data-tracker/#vaccinations
Accessed 1/6/21

Vaccine Development: Typical vs. Accelerated

1. Preclinical Testing
2. Phase 1 Safety Trials
3. Phase 2 Expanded Trials
4. Phase 3 Efficacy Trials
5. Early or Limited Approval
6. Approval

(73 months to completion)

(14 months to completion)

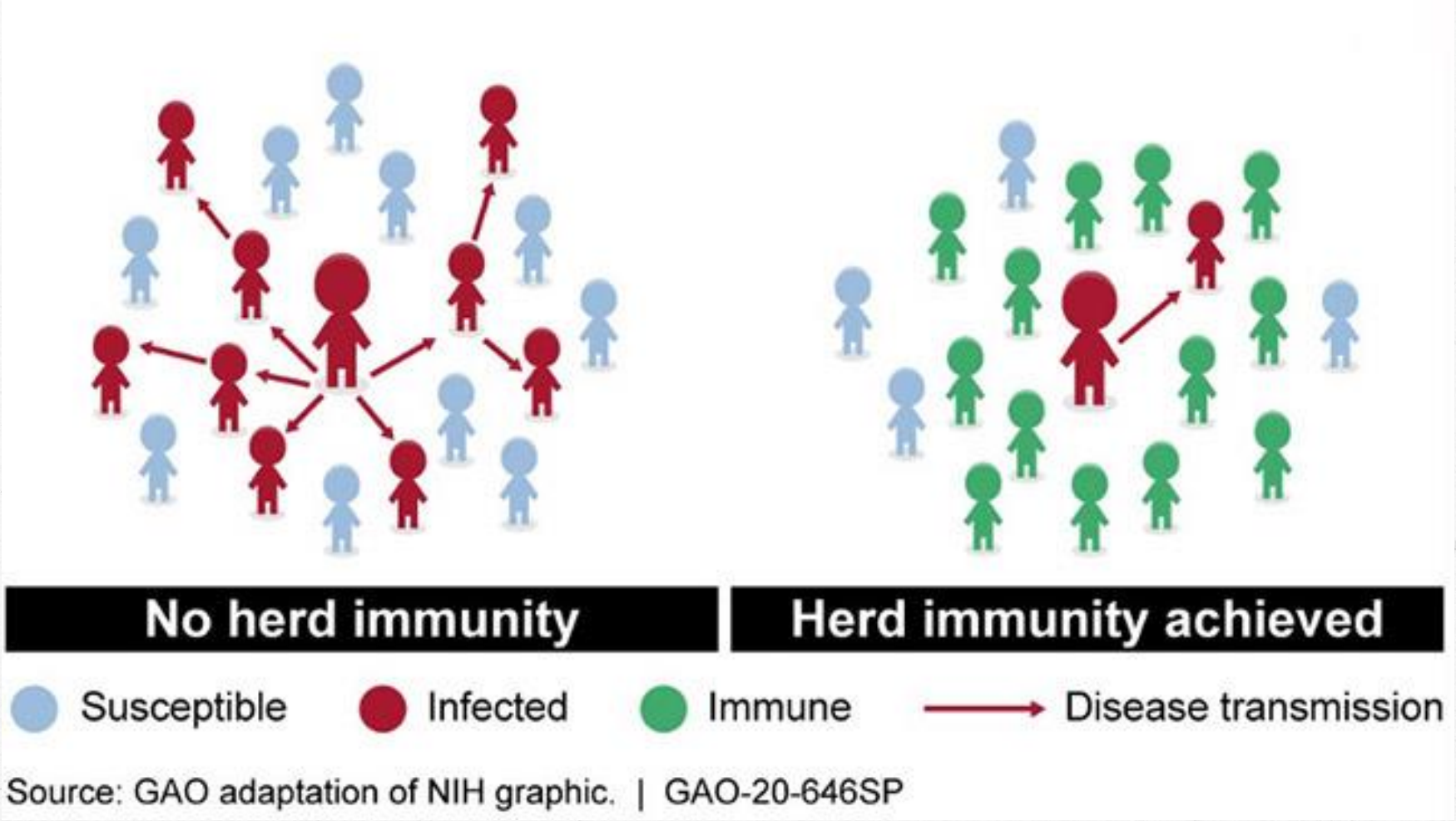
COVID-19 Vaccine Types

- mRNA
- Adenovirus
- Inactivated virus
- Protein-based

Leading COVID-19 Vaccines

- Pfizer-BioNTech – mRNA, 2 doses, storage at -70° C, 95% efficacy
- Moderna – mRNA, 2 doses, storage at -20° C, 94.5% efficacy
- Oxford AstraZeneca – adenovirus, 2 doses, 90% efficacy
- Johnson and Johnson – adenovirus, 1 dose, efficacy?
- Others: Sputnik V?, Sinopharm?

Herd Immunity



Source: HCW Hosted, COVID-19 Vaccines, An overview of COVID-19 vaccines, their distribution, and hesitation, Mark Nichter, PhD, MPH, Joseph Fong, MPH, Collin Catalfamo, MPH, Amy Lind

Herd Immunity: Opportunities & Obstacles

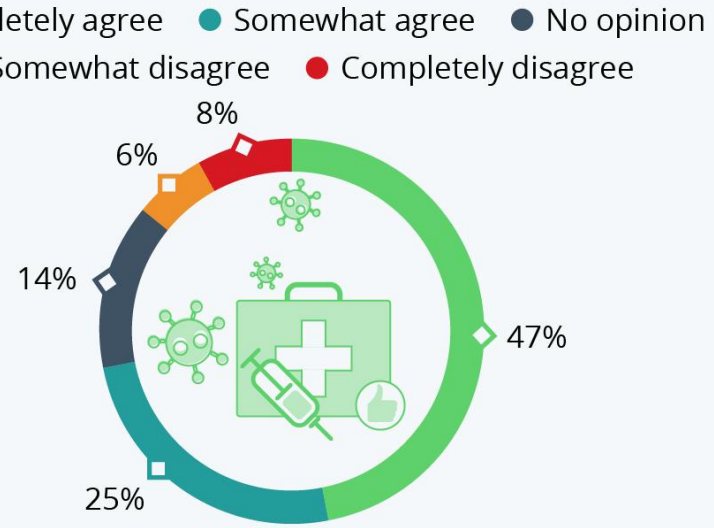
- Vaccination provides pathway to herd immunity, e.g. measles 90% vaccination rate needed to achieve herd immunity
  - Percent of population with immunity to achieve herd immunity from COVID-19 unclear: +70%? +80%? +90%?
- Vaccine hesitancy vs. vaccine acceptance:
  - Trust of medical establishment, government agencies, etc.
  - Safety concerns for side-effects, long and short term
  - Systemic racism faced by minority populations, underrepresentation in studies, mistrust of research
- Over optimistic expectations of vaccine efficacy
- Mutation and variants: South Africa, United Kingdom
- Potential wide host range

Herd Immunity: Opportunities & Obstacles

- Lack of infrastructure/politics lead to varied and lengthy implementation period by federal, state, and local governments
- Premature abandonment of public health interventions: masking, social distancing, hand-washing
- Efficacy in children, safety for pregnant women?
- Government mandates?
  - Encroachment of civil liberties
- Employer mandates?
  - Variable enforcement of exceptions

Global Majority Would Take Covid Vaccine

Percentage of people around the world who would accept a COVID-19 vaccine

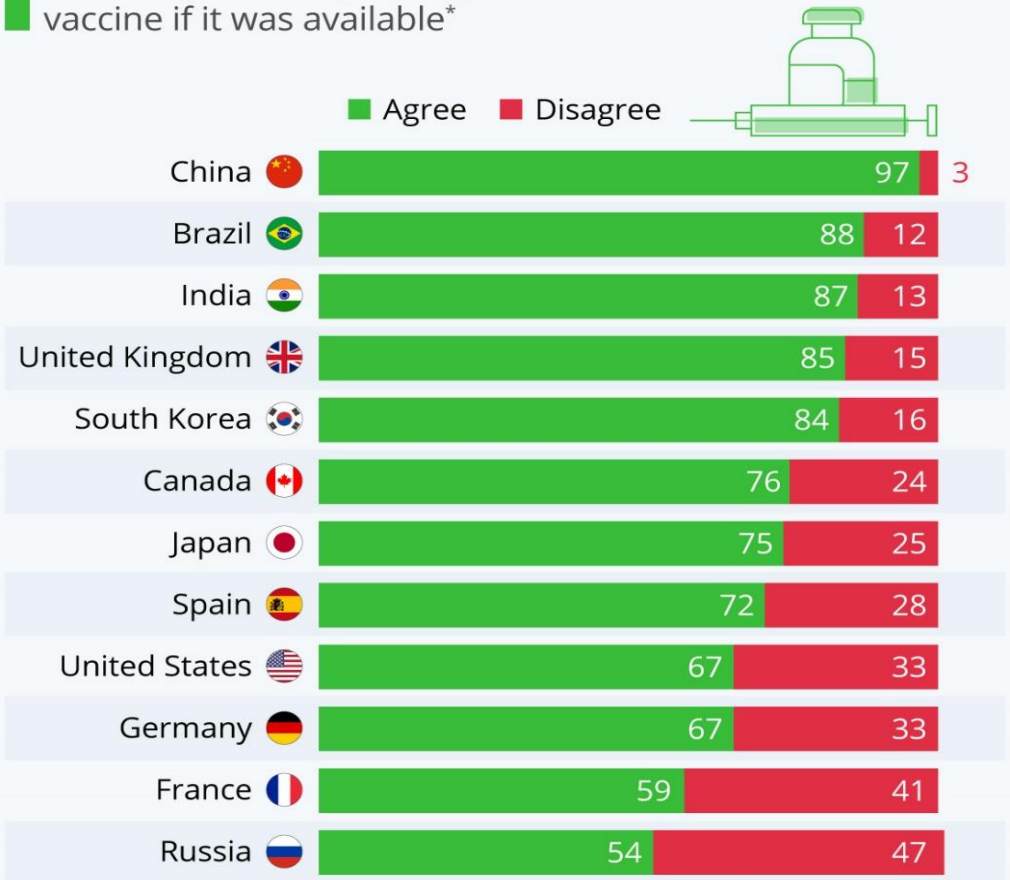


Survey conducted of 13,426 from 19 countries
Source: Nature Medicine

statista

The Nationalities Most Eager To Take A Covid-19 Vaccine

% who agree/disagree they would take a Covid-19 vaccine if it was available*



*May not add up to 100% due to rounding
n=19,519 adults in 27 countries (Jul 27-Aug 07, 2020).
Source: Ipsos MORI

Ipsos statista

Source: HCW Hosted, COVID-19 Vaccines, An overview of COVID-19 vaccines, their distribution, and hesitation, Mark Nichter, PhD, MPH, Joseph Fong, MPH, Collin Catalfamo, MPH, Amy Lind

Advisory Committee on Immunization Practices (ACIP)

- CDC's ACIP provides advice and guidance to the CDC Director regarding the use of vaccines for the control of vaccine-preventable diseases in the civilian population of the US – then left to the States to implement
- Adopted recommendations are published weekly in the Morbidity and Mortality Weekly Report
- First vaccines were authorized for emergency use in the United States by the FDA in December
- ACIP recommendations based on:
  - Scientific evidence/relevant scientific literature
  - Ethical principles related to allocation in setting of limited supply
  - Program implementation limitations

CDC Centers for Disease Control and Prevention
CDC 24/7: Saving Lives, Protecting People™

Advisory Committee on Immunization Practices (ACIP)

- COVID-19 Vaccines Working Group tasked with determining what groups should be offered vaccine within Phase 1 of the COVID-19 vaccination program when demand likely exceeds supply
- Key considerations:
  - Science: what is the burden (SARS-CoV-2 epidemiology, COVID-19 incidence, morbidity, mortality) and what are the potential harms and benefits of vaccination?
  - Implementation: what is the feasibility of vaccinating this group and how does the group value and accept COVID-19 vaccination?
  - Ethics: does vaccinating this group advance the ethical principles for COVID-19 vaccine allocation:
    - Maximize benefits and minimize harms
    - Promote justice
    - Mitigate health inequities

COVID-19 Vaccination Phasing

- Phase 1 – limited supplies, limited sites, focus on health care/frontline workers and most vulnerable
  - 1A: health care workers, long term care workers and residents
  - 1B: frontline essential workers (first responders), persons aged >75 years
  - 1C: all other essential workers (transportation, logistics) persons aged 65-74 years, persons with increased medical risks
- Phase 2 –broader network, expands to access for general population >16 years of age, anticipated surplus of doses available

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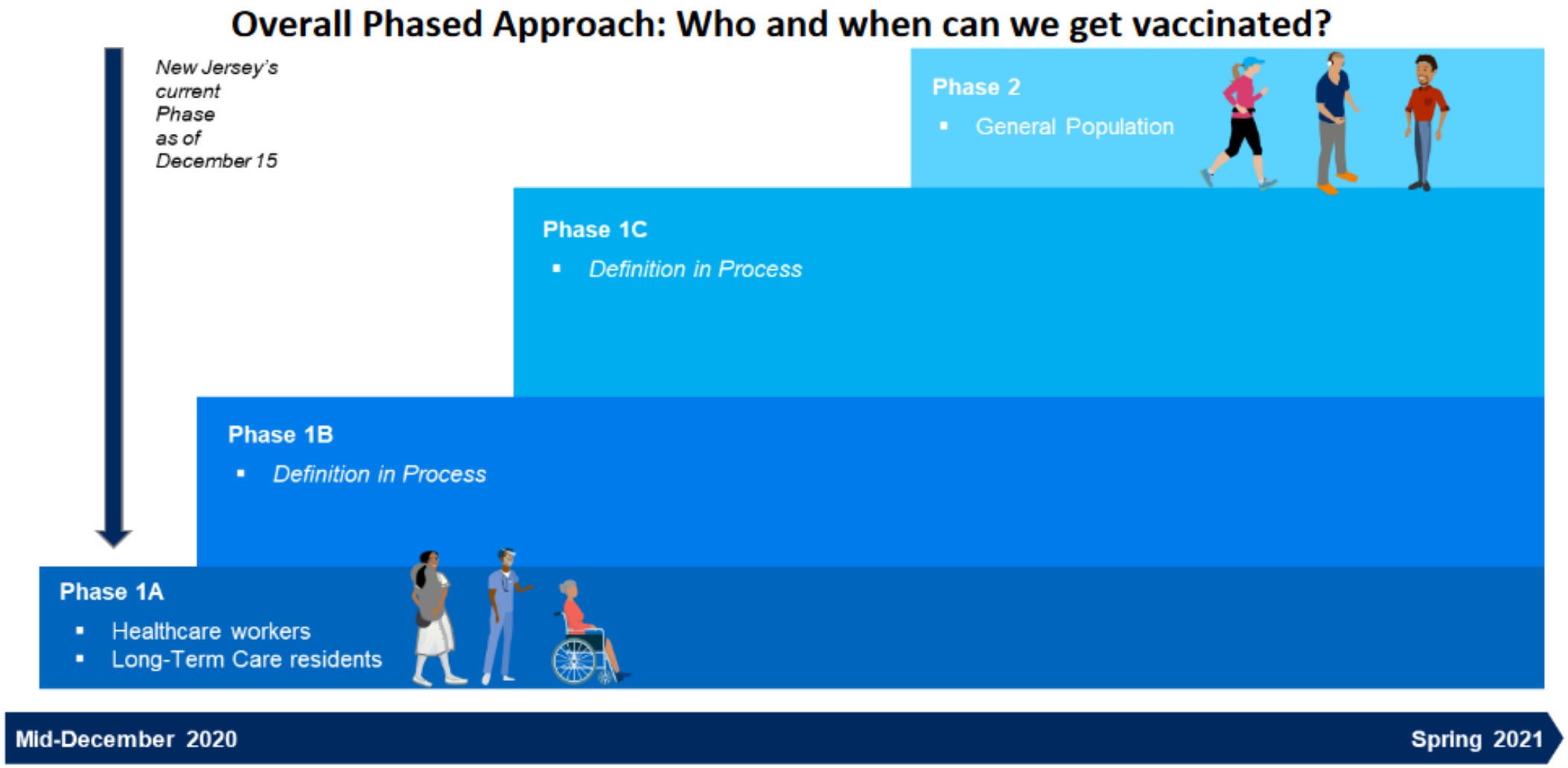
NJDOH Vaccination Rollout: Phases 1A-2



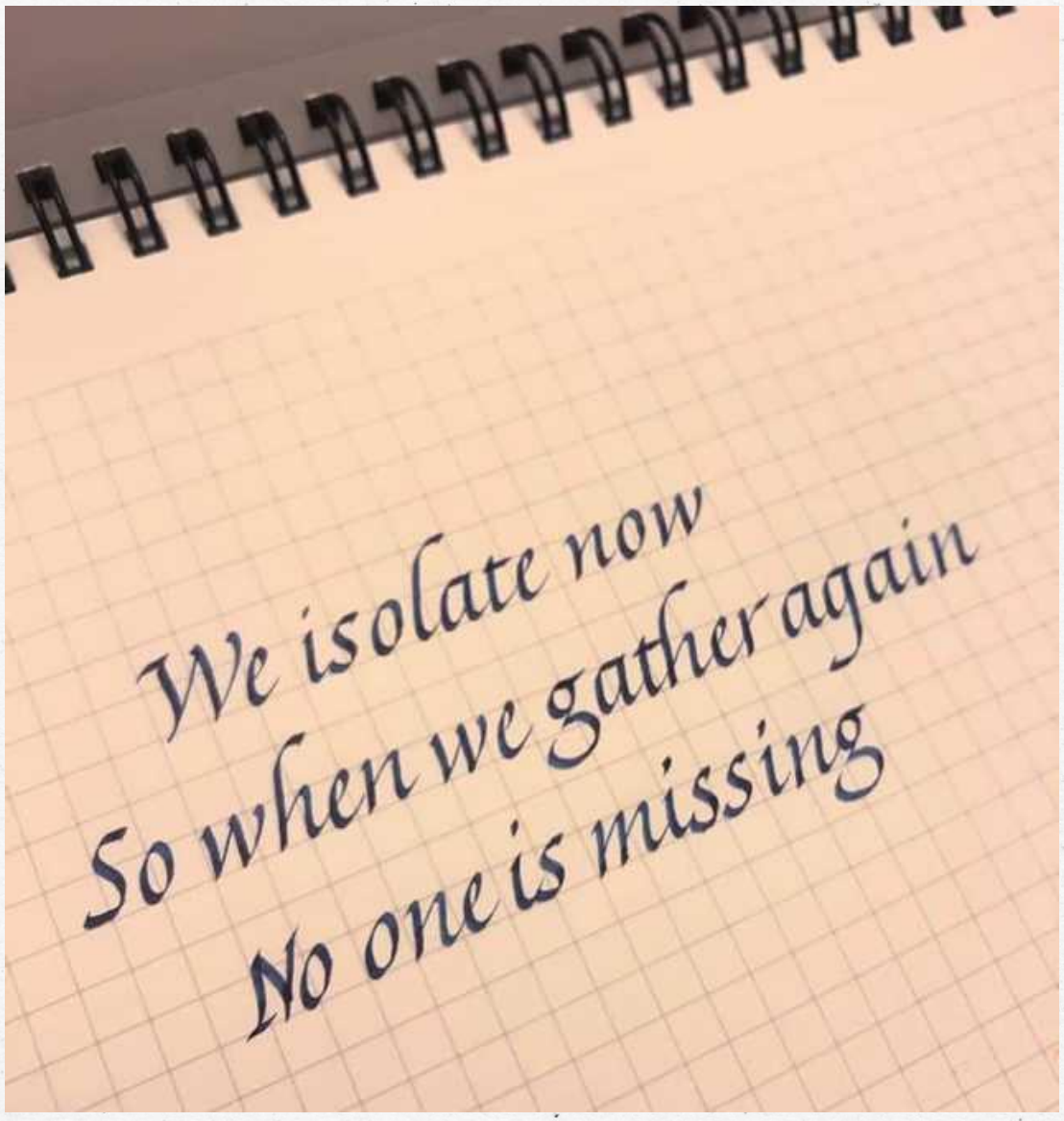
NJ Initiates Phase 1A COVID Vaccinations

- On Tuesday, December 15 the first NJ COVID-19 vaccinations were delivered at NJMS/UH vaccine clinic
- By January 4, 2021 first recipients began receiving 2nd dose
- NJ vaccine scheduling system is live at: https://covidvaccine.nj.gov/

1.14% of the NJ population has been vaccinated

RUTGERS HEALTH
Thanking our Health Care Workers from the bottom of our hearts
rutgershealth.org

THANK YOU!



https://covid-19archive.org/s/archive/item/17581
Accessed 10/29/2020