COVALENT: <u>Cov</u>id-19 Seropre<u>valen</u>ce <u>T</u>racking Dashboard

Neal Freedman on behalf of the CDC/NIH Covid-19 Serology Database Team

Leverages expertise gained from the NCI Clinical Trials Reporting Program: https://www.cancer.gov/about-nci/organization/ccct/ctrp

Key contributors:

- CDC: Francisco Averhoff, Chris Edens

- NCI: Brent Coffey, Christine Custis, Neal Freedman, Tony Kerlavage, Engineering and Extraction teams

- NIAID: Liliana Brown, Lori Newman

To create a repository of SARS-CoV-2 seroprevalence studies: COVALENT

AIMS:

1) Develop a transparent and publicly accessible repository to systematically document and track SARS-Cov-2 seroprevalence studies in the United States

2) Develop a harmonized way to catalog and display seroprevalence test results across studies

3) Develop an interactive dashboard to visualize and compare SARS-Cov-2 seroprevalence studies and results by geography, calendar time, and other key factors.

What is the need?*

- Officially reported cases represent "tip of the iceberg" of SARS-CoV-2 infection incidence

- Seroprevalence studies can help close this gap and thus can:

  - Inform mitigation and public health interventions

  - Inform design and implementation of vaccine efficacy trials

  - Improve predictive models of the epidemic

  - Distinguish natural vs vaccine immunity

- Combing results from multiple studies is essential to increase data strength and characterize the impact of COVID-19 in the US

- But this is hard!
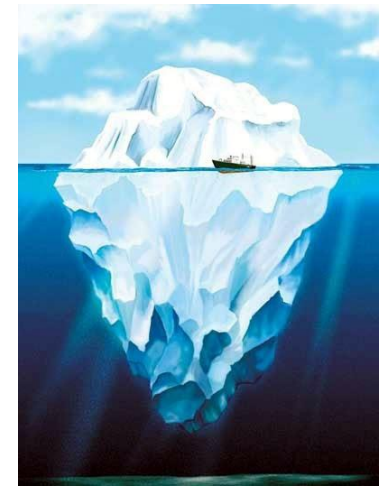
*Highlighted at May 7, 2020 COVID-19 Serology Studies Workshop (https://www.cell.com/immunity/pdfExtended/S1074-7613(20)30267-3)

Many seroprevalence studies have been initiated worldwide

- Very large national studies (such as CDC Commercial Laboratory Seroprevalence Survey)

- County-based studies

- Studies in the general population and studies among special populations (health care workers, pregnant women, athletic organizations, etc.)

- Cross-sectional and longitudinal studies

CDC 10-site Commercial Lab Seroprevalence Survey

https://www.cdc.gov/coronavirus/2019-ncov/cases-updates/commercial-lab-surveys.html#surveymap

Nationwide Commercial Laboratory Seroprevalence Survey

https://covid.cdc.gov/covid-data-tracker/#national-lab
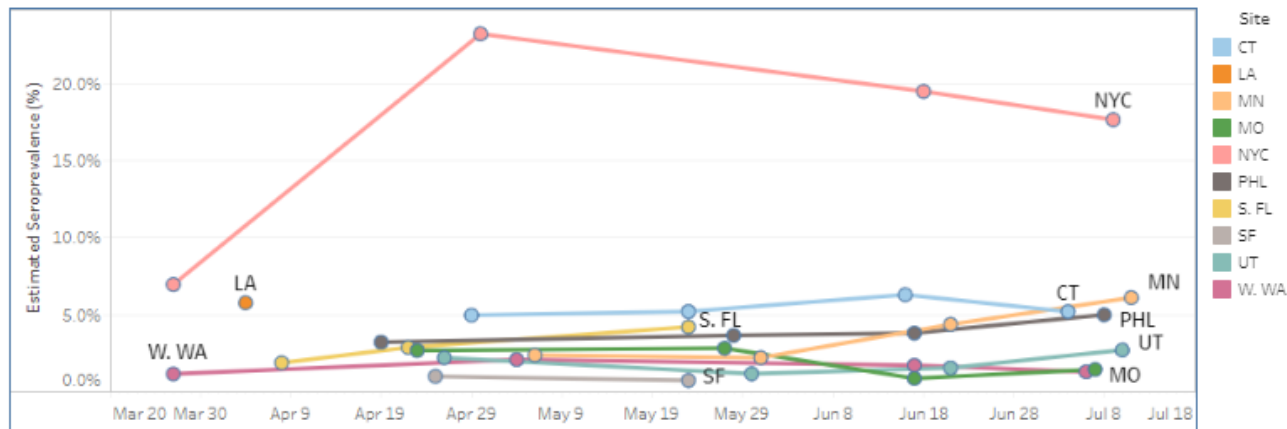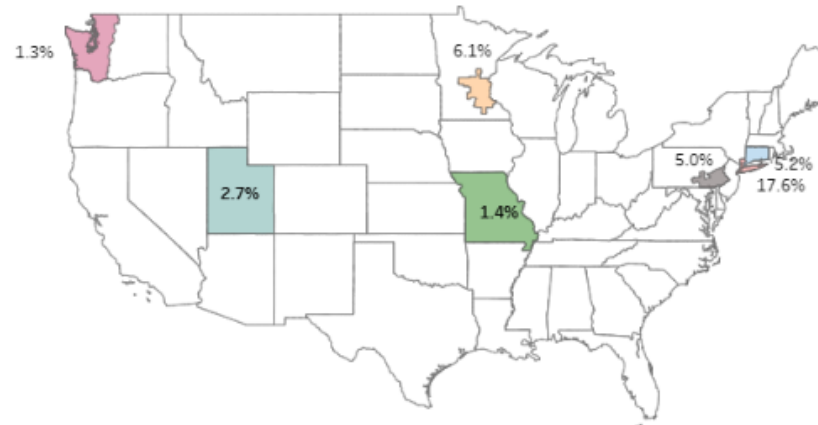
Blood donation Seroprevalence study

https://vitalant.org/Vitalant/media/News/Vitalantseroprevalenceheatmap09092020.jpg
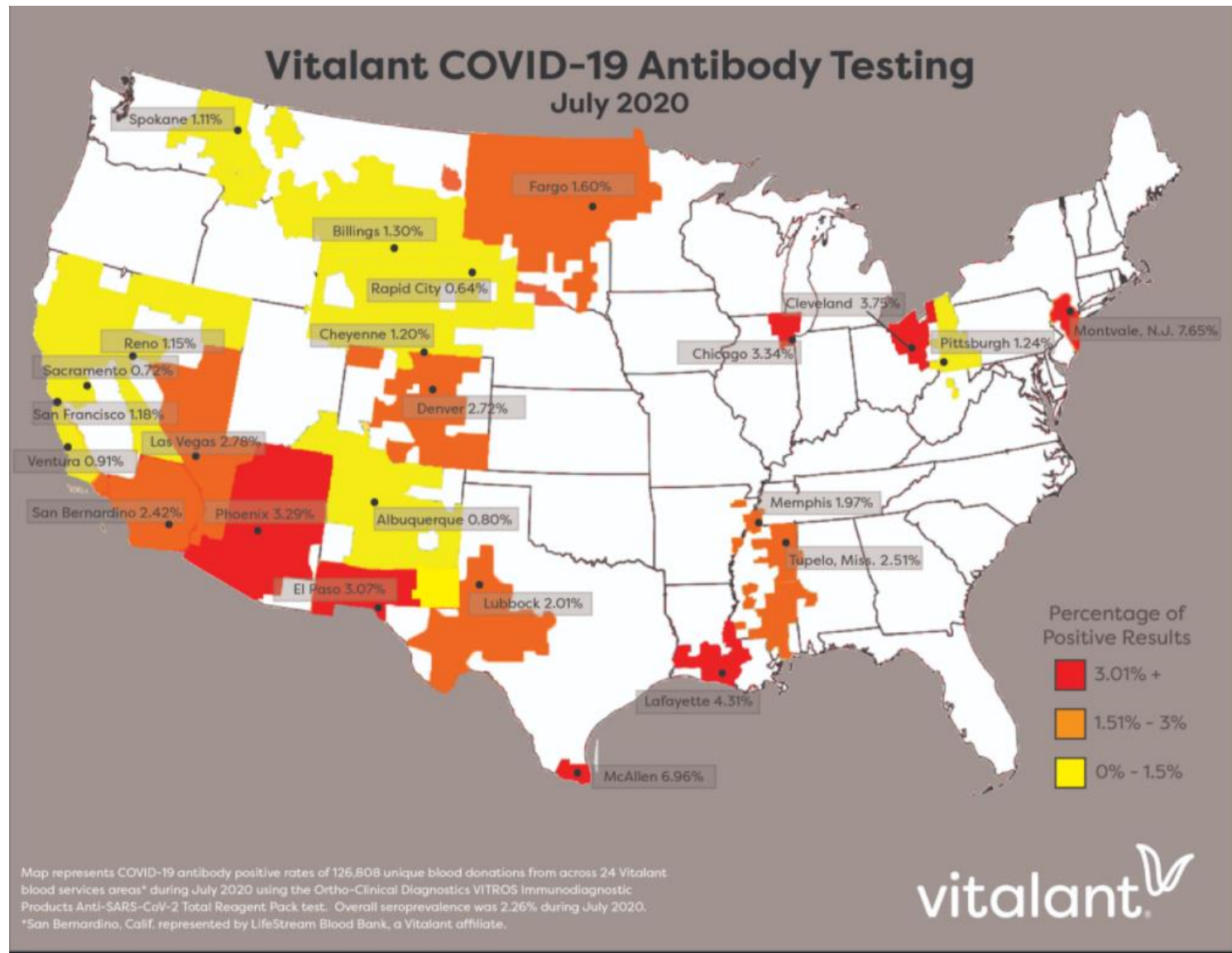
Figure 2: Prevalence of SARS-CoV-2 antibodies in sampled population of dialysis patients, by state
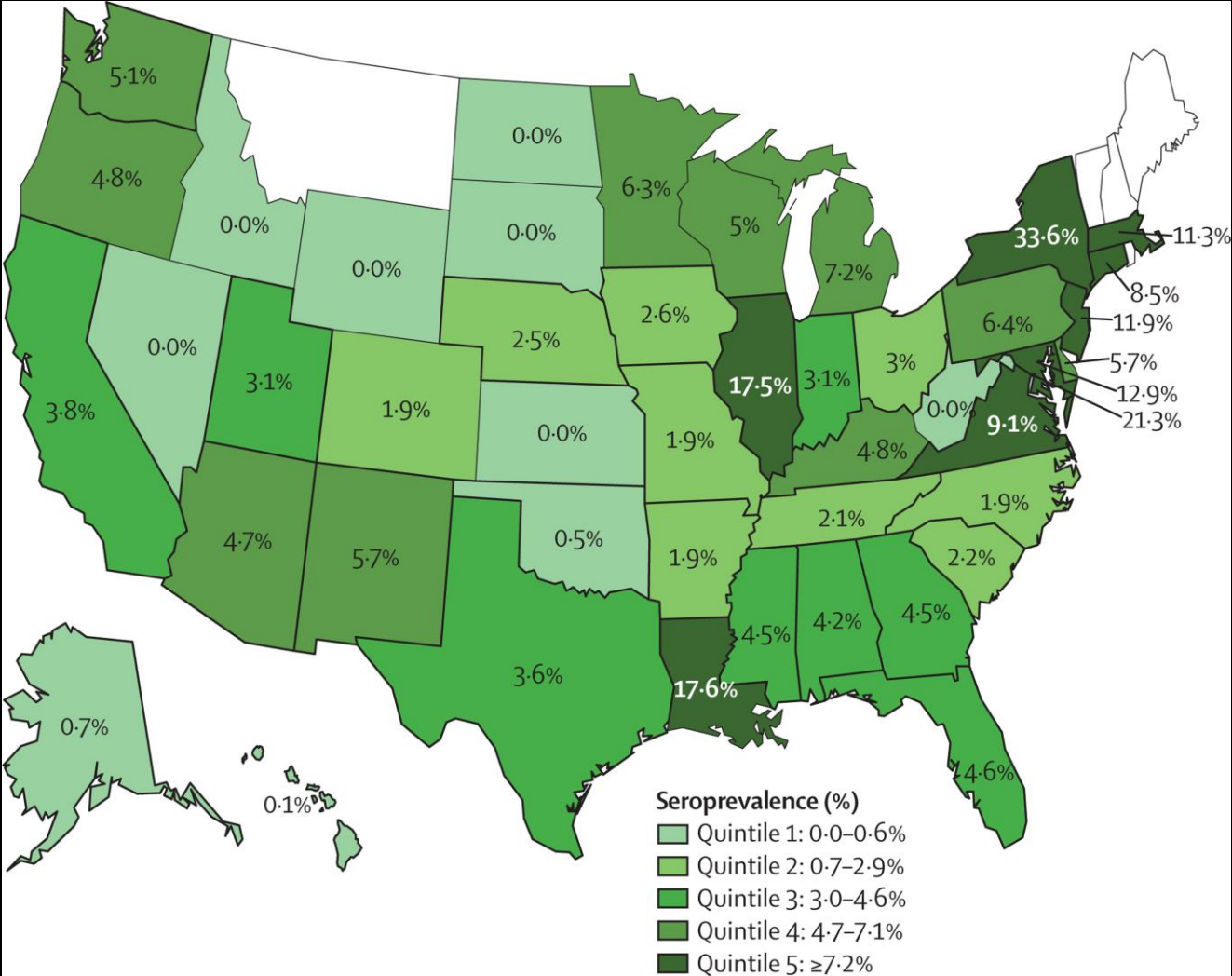
Prevalence of SARS-CoV-2 antibodies in a large nationwide sample of patients on dialysis in the USA: a cross-sectional study
The Lancet DOI: (10.1016/S0140-6736(20)32009-2)

Population Point Prevalence of SARS-CoV-2 Infection Based on a Statewide Random Sample — Indiana, April 25–29, 2020

Please note: This report has been corrected. An erratum has been published.

Nir Menachemi, PhD[1,2]; Constantin T. Yiannoutsos, PhD[1]; Brian E. Dixon, PhD[1,2]; Thomas J. Duszynski, MPH[1]; William F. Fadel, PhD[1]; Kara K. Wools-Kaloustian, MD[3]; Nadia Unruh Needleman, MS[1]; Kristina Box, MD[4]; Virginia Caine, MD[5]; Connor Norwood, PhD[6]; Lindsay Weaver, MD[4]; Paul K. Halverson, DrPH[1] (View author affiliations)

View suggested citation

Summary

What is already known about this topic?

No state has conducted a random sample study to determine the population prevalence of SARS-CoV-2 infection at a given point in time.

What is added by this report?

In a random sample of Indiana residents aged ≥12 years, the estimated prevalence of current or previous SARS-CoV-2 infection in late April 2020 was 2.79%. Among persons with active infection, 44% reported no symptoms.

What are the implications for public health practice?

The number of reported cases represents an estimated one of 10 infections. Given that many persons in Indiana remain susceptible, adherence to evidence-based public health mitigation measures (e.g., social distancing, consistent and correct use of face coverings, and hand hygiene) is needed to reduce surge in hospitalizations and prevent morbidity and mortality from COVID-19.

Article Metrics

Altmetric:

633

- News (50)
- Blogs (7)
- Policy documents (1)
- Twitter (252)
- Facebook (4)
- Reddit (1)
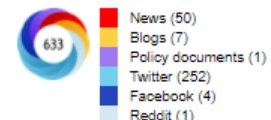
Citations: 1

Views: 15,912

Views equals page views plus PDF downloads

Metric Details

Tables

Table 1

Table 2

References

Related Materials

PDF [104K]

Indiana survey found higher rates of COVID-19 infection among Hispanic/Latino participants in April

Evidence of current or previous infection

All participants — 2%

Hispanic participants — 8%

To slow spread in minority communities:

Everyone should
- Social distance
- Wash hands frequently
- Wear cloth face coverings

Communities can
- Involve local leaders
- Provide language-appropriate education
- Increase testing and contact tracing
- Decrease workplace exposures

ONLINE FIRST FREE

Prevalence of SARS-CoV-2 Infection Among Health Care Workers in a Tertiary Community Hospital

Allen Jeremias, MD, MSc[1]; James Nguyen, MD[1]; Joseph Levine, MD[1]; et al

≫ Author Affiliations | Article Information

Figure. Health Care Workers Who Tested Positive for SARS-CoV-2 Antibodies by Job Title and Department
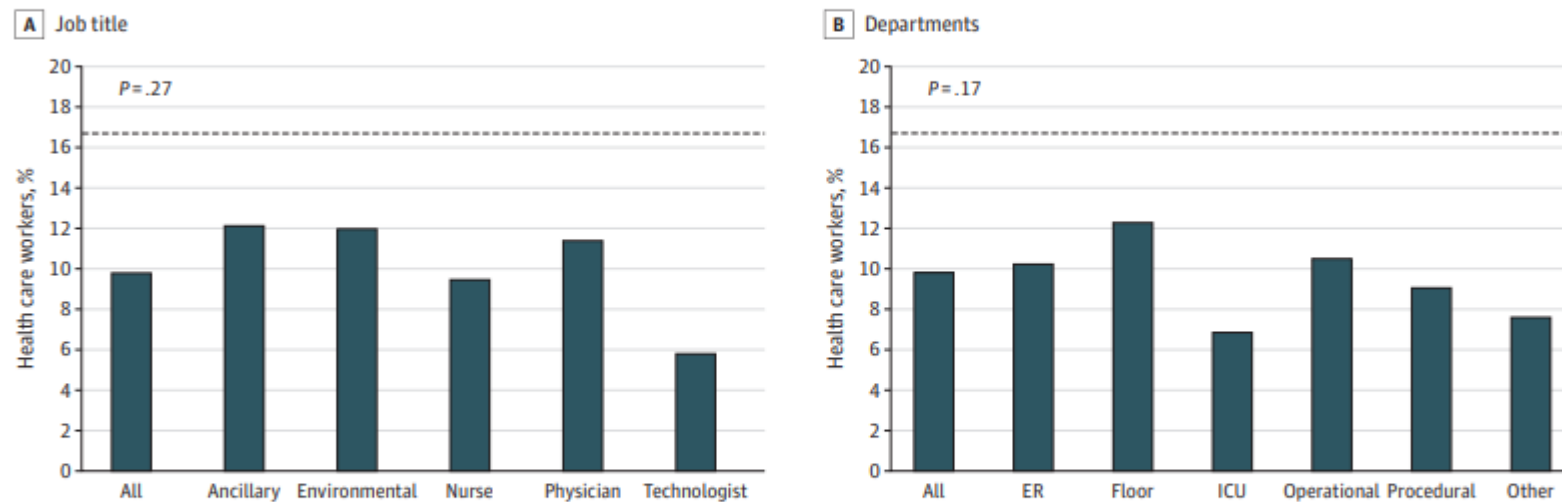
Percentage of employees who tested positive for antibodies based on job title (A) and department (B). The dotted line indicates the general population on Long Island. A total of 1699 employees were surveyed, including 322 in ancillary services, 100 in environmental health, 1043 nurses, 79 physicians, and 155 technologists. Of the 1699 employees, 88 worked in the emergency room (ER), 489 on the hospital floor, 321 in the intensive care unit (ICU), 400 in operational services (ie, employees who rotate through all areas of the hospital), 243 in procedural services (eg, operating room, cardiac procedures, diagnostic radiology procedures, endoscopy), and 158 in other services.

Challenges to understanding published seroprevalence studies

- Findings from studies published in a variety of ways:
  - peer-reviewed journals, pre-print servers, websites, press releases
- Many are hard to find without substantial effort
- Hard to compare across key factors (geography, time, etc).
- Variability in study objectives and methodologies
- No standardized way to share plans, methods, and results
  - Information about studies only available at time of data release, which could be many months delayed
  - Duplicative effort but also gaps

Key user questions that COVALENT aims to help answer:

- Are there studies being conducted in Maryland?

- What is the prevalence where I live?

- How is the prevalence changing over time?

- What studies are being conducted that are not yet published?

- Have there been any studies among special populations (teachers, health care workers...) in my state?

- What tests are other researchers using?

- Is the prevalence among blood donors representative of the general population?

COVALENT: Captured data fields

- Study title, organization, contact information
- Study design
- Study population
- Study location
- Collection period and frequency
- Test and performance characteristics (sensitivity, specificity, etc)
- Has data been generated? If so, where is it located
- Seroprevalence results per demographic determinants
- Study quality

Progress to date

- Defined standardized fields to obtain from studies (Common Data Elements)

- Developed prototype for recording study data

- Developed infrastructure to store and deconvolute seroprevalence results and tag with key factors such as geography, time, and demographics

- Imported 41 studies to date

- Developed prototype for displaying information from seroprevalence studies and associated results (demo up next!)

- Engaged with key stakeholders to collect information to define scope and capabilities of the system and to encourage the use of the resource

- Starting to work with NCI/NIAID/NIH Offices of Communications and Public Liaison to help with landing page, dedicated email address, 508 compliance, branding and logos, etc.

Next Steps

- Develop initial landing webpage

- Incorporate feedback from key stakeholders for data analysis and visualization and finalize prototype

- Develop robust SOPs for study identification, extraction of study data, quality control of data entry

- Public release of study catalog and results dashboard

- Develop methodology for assessing and rating the quality of studies

- Continue to gather data from traditional and less traditional sources
     (e.g. private industry, Universities, etc.)

- Finalize and activate an online user data entry interface and API

And on to the demo!