COVID-19 and the social restructuring of American cities

Disparities in COVID-19 outcomes near and long term

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Coronavirus and COVID-19 Overview

Coronavirus (SARS-CoV-2) is a type of virus commonly found in bats that is believed to have first crossed over into humans via **zoonotic transfer** in Wuhan, China in late 2019.

How this happened is unclear, whether it came directly from a bat in a **"wet market"**, passed to an intermediate animal then to humans or escaped from a research laboratory.

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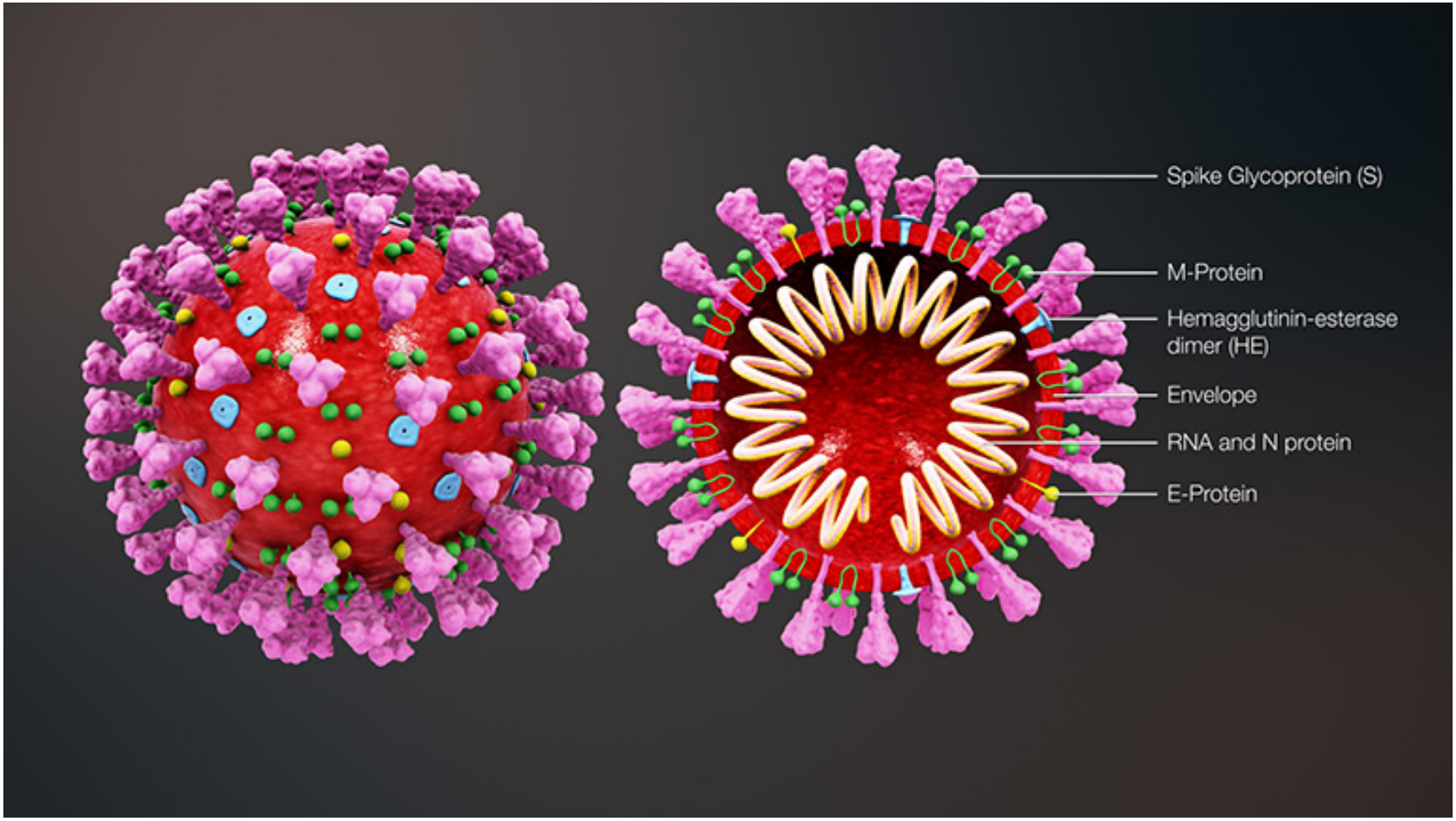
Coronavirus, COVID-19 Overview

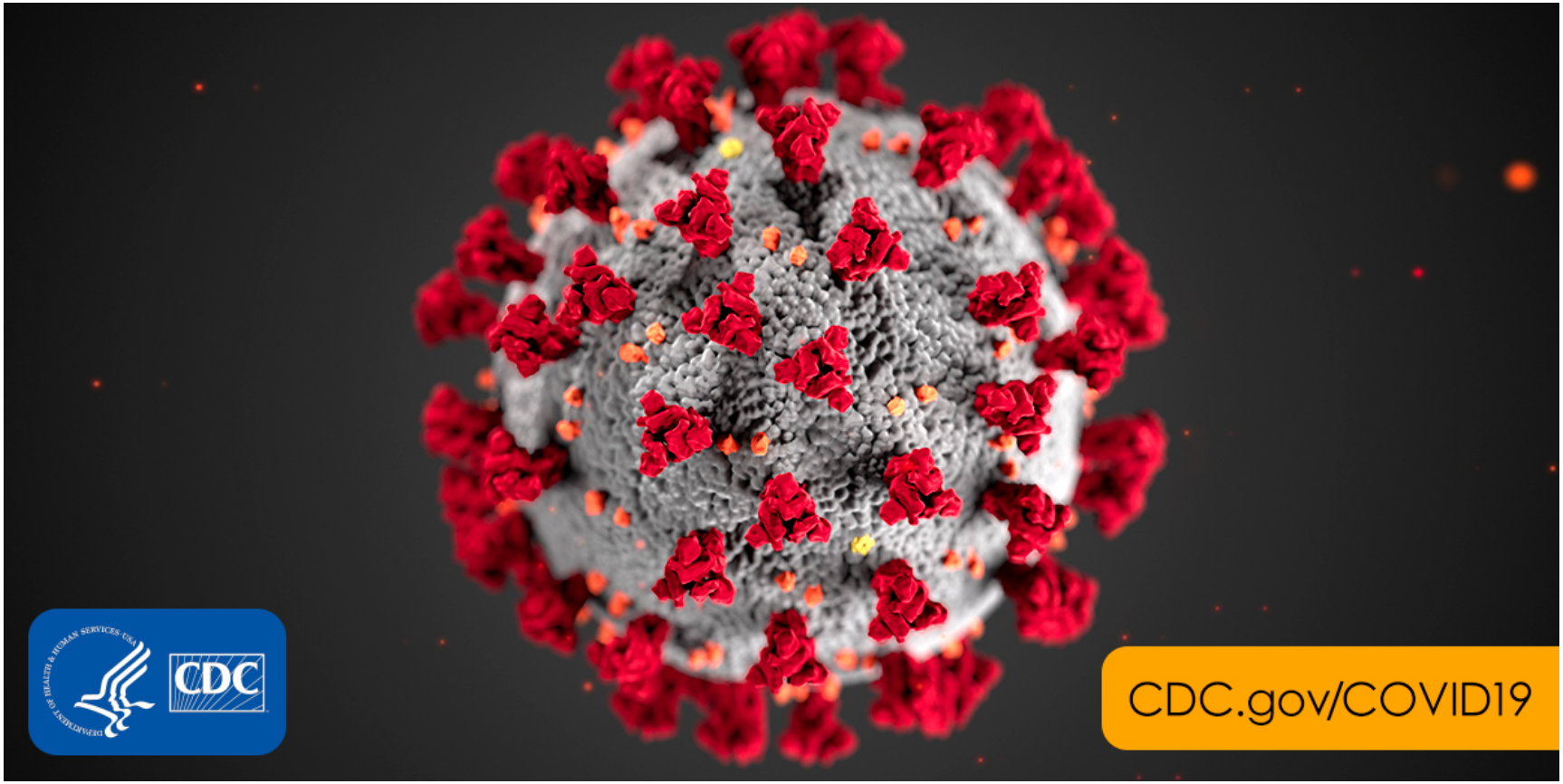
Coronavirus causes a disease known as **COVID-19** (CV-19), which has spread around the world since December, bringing the global economy to a grinding halt

The effects of CV-19 have been **unprecedented**, with countries all over the World asking people to **stay at home** and keep **physical distance**.

What is a virus?

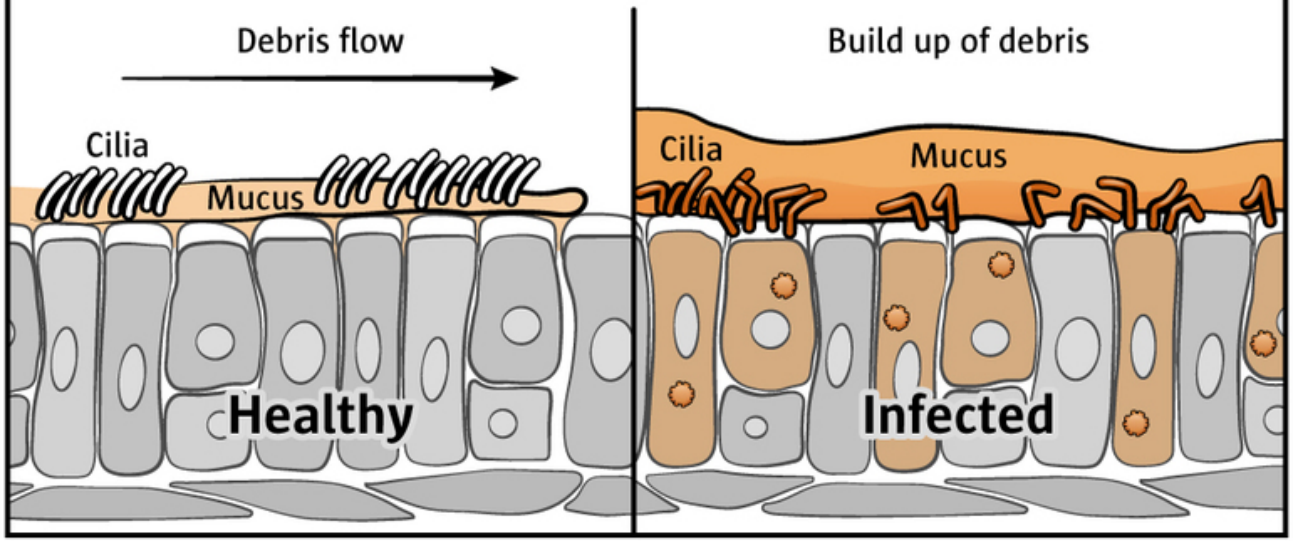
- Viruses are organic nanoparticles
- Viruses may have double-stranded DNA, double-stranded RNA, single-stranded DNA or single-stranded RNA depending on the nature and function of the specific virus.
- The genetic material is not typically exposed but covered by a protein coat known as a capsid.

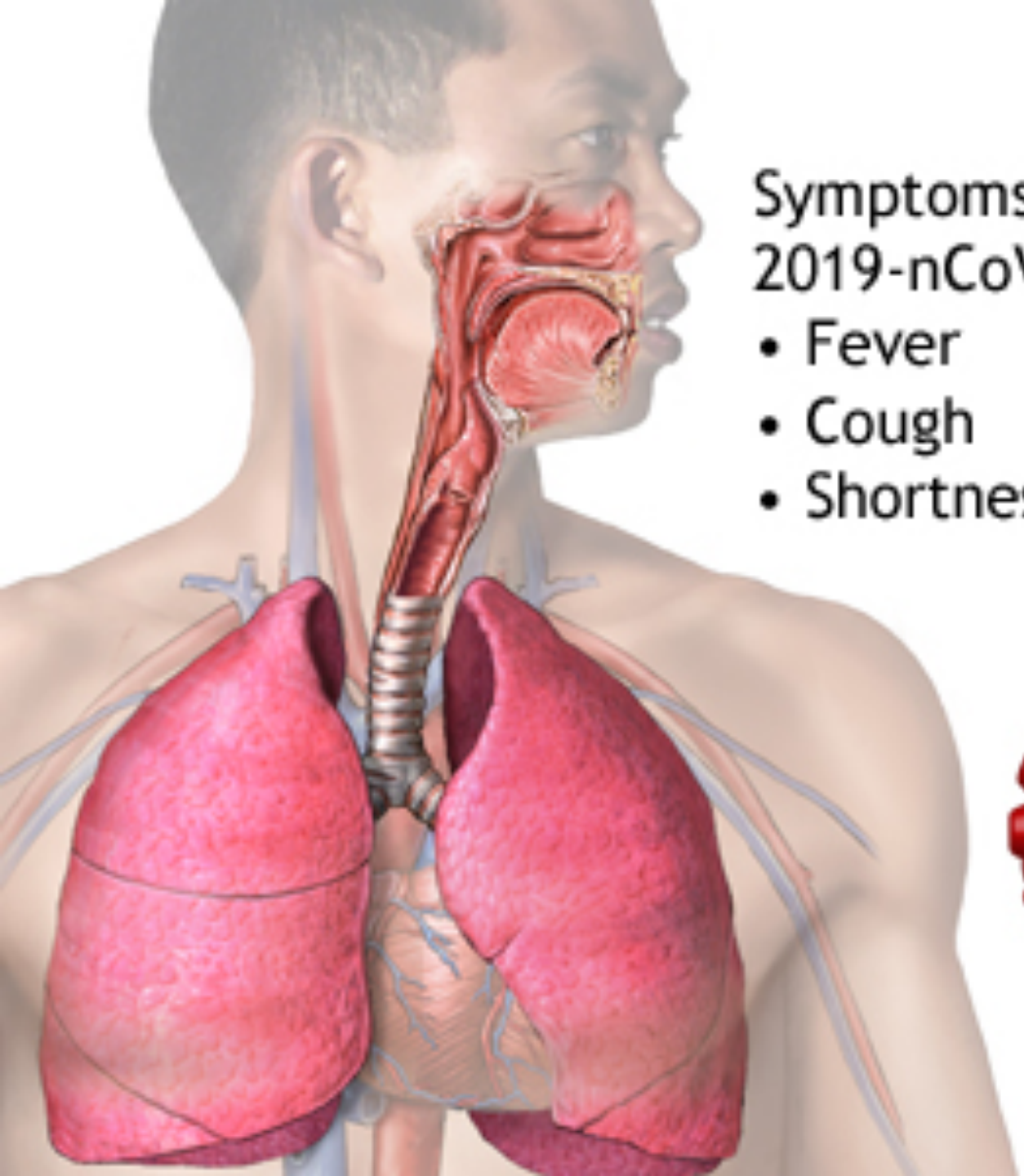

Spike Glycoprotein (S)
M-Protein
Hemagglutinin-esterase dimer (HE)
Envelope
RNA and N protein
E-Protein


CDC
CDC.gov/COVID19

1. VIRAL REPLICATION

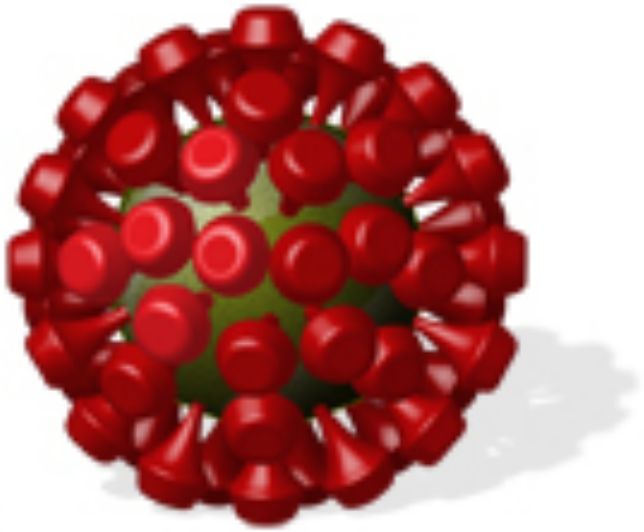
The virus invades and replicates in the lung cells – both in the ones that produce mucus and in those bearing cilia, hair-like projections that move debris out of the lungs. Affected cilia don't work normally, and a buildup of debris and fluids occurs, causing shortness of breath and, in some cases, pneumonia.





Symptoms of infection with 2019-nCoV can include:

- Fever
- Cough
- Shortness of breath



Rethinking the virus as the cycle of life continues...

- Viruses are important microbial predators that influence global biogeochemical cycles and drive microbial evolution, although their impact is often under appreciated.
- Viruses reproduce after attaching and transferring their genetic material into a host cell. The host's cellular machinery is then redirected to the making of more viruses and results in the death of the host cell in the vast majority of cases.
- Viruses have developed intriguing mechanisms to utilize host proteins for their own defence and for shifting metabolism from host to virus. *Environmental Microbiology* (**Roucourt and Lavigne, 2009**).

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Health disparities and COVID-19

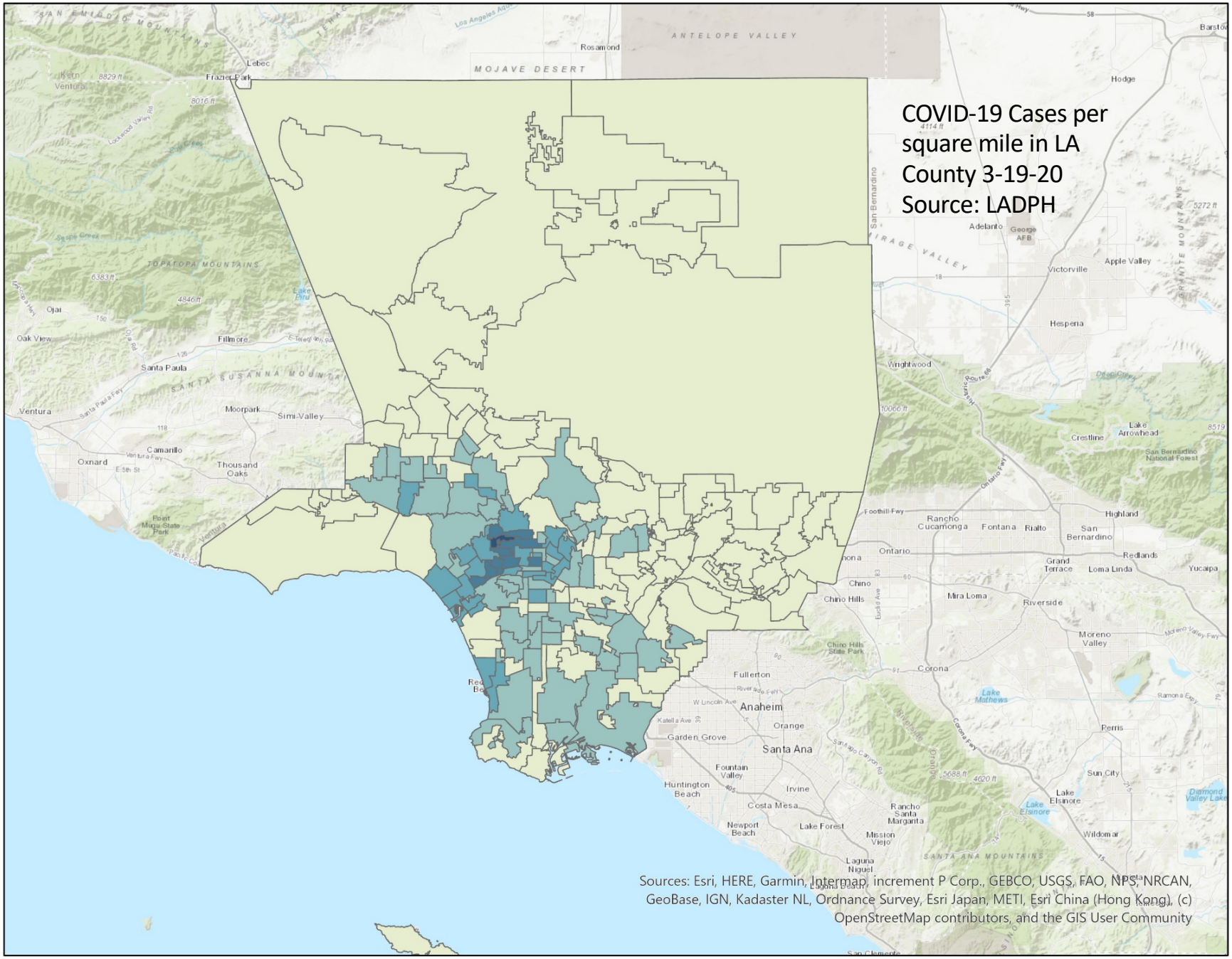
CV-19 Pandemic has highlighted already existing health disparities

Health disparities are driven by social disparities

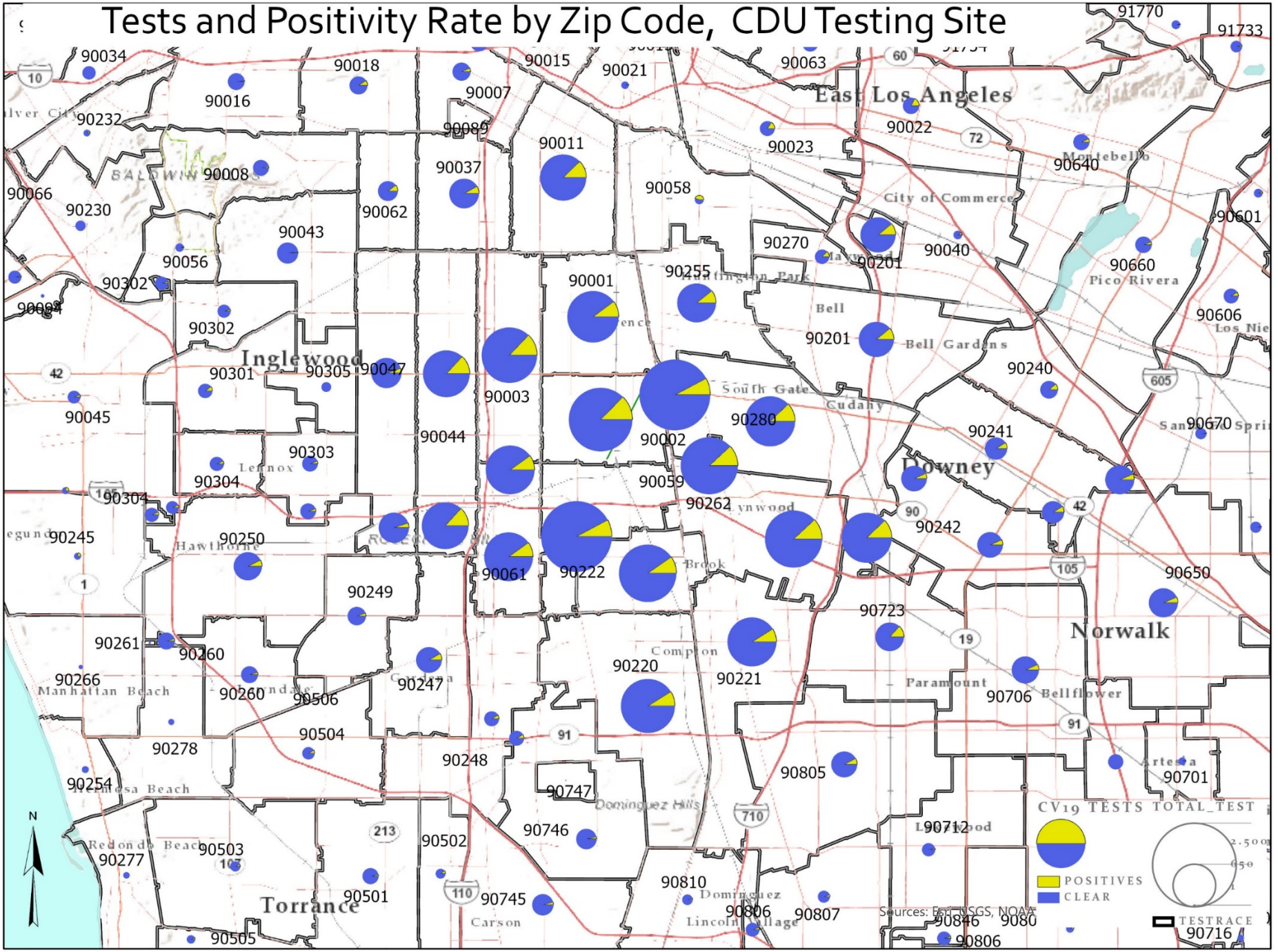
As in all disasters the most socially vulnerable are affected first

LA County and CV-19

- Early Lack of testing equity made it look like a West LA disease at first
- COVID-19 is currently surging in LA County with infection rates projected to rise to more than 1 infected person per 100 persons within the next week or so.
- There is ongoing penetration, due to easy transmission via air, lack of mask use and possible pre/asymptomatic spreading of COVID-19
- As a result traditional testing and contract tracing to control the virus is not as effective in LA County.


COVID-19 Cases per square mile in LA County 3-19-20
Source: LADPH
Sources: Esri, HERE, Garmin, Intermap, increment P Corp., GEBCO, USGS, FAO, NPS, NRCAN, GeoBase, IGN, Kadaster NL, Ordnance Survey, Esri Japan, METI, Esri China (Hong Kong), (c) OpenStreetMap contributors, and the GIS User Community

Tests and Positivity Rate by Zip Code, CDU Testing Site



Daily age adjusted case rates in LA County 4/28 to 6/28, 2020
In Quintiles
Source: LADPH


ANTELOPE VALLEY
8829 ft
8016 ft
138
Lancaster
Palmdale
Santa Clara River
Ventura
Santa Clarita
Los Angeles
Angeles National Forest
10066 ft
SAN GABRIEL MOUNTAINS
Simi Valley
Ventura
Oxnard
Thousand Oaks
Los Angeles River
Point Mugu State Park
El Monte
West Covina
Rancho Cucamonga
Ontario
Pomona
Santa Monica
Los Angeles
Redondo Beach
Anaheim
Corona
Long Beach
Santa Ana
Huntington Beach
Orange
5688 ft
Lake Forest
Rancho Santa Margarita
405
110
91
395


Microsoft Office Home
Mail - Paul Robinson - Outlook
Google Hangouts
Raj Chetty on the econom
LA County Department of Publ
Not secure
www.publichealth.lacounty.gov/media/Coronavirus/
Not syncing
Home
About
FAQs
Comment
Contact
LEARN MORE ABOUT
COVID-19
• BACKGROUND INFORMATION
• SYMPTOMS
• RESOURCES
County of Los Angeles
Public Health
COVID-19 in Los Angeles County*
Total
100,772
CASES**
3,326
DEATHS
Daily New
2,903
CASES**
22
DEATHS
06/29 Update

CV-19 and SV

- While CV-19 knows no race, class or ethnicity, the history of America has evolved largely along those lines.
- Health Disparities rooted in social relations have exacerbated the impact of CV-19 on working class essential workers and their families (i.e. hospital workers, transit drivers, etc.)
- The health care system compounds the negative effects of being exposed to coronavirus

Economic impacts

- Big economic impacts of COVID-19 are on the horizon
- African American and Latinos are more concentrated in front line employment, thus more exposure to COVID-19, but that also means many are still working post shutdown
- Long term impact of job losses in wealthier zip codes will actually be more extreme than lower income zips (60% vs 30%) (Chetty,2020)
- As unemployment benefits and PPP payments expire, many people will drop out of the middle class into poverty, as demand for dining, entertainment and retail shopping service will not fully recover.

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New opportunities

- In the coming months/years the fallout from COVID-19 will likely lead to new social relationships and bring about alternate distributions of wealth and power in American cities.
- Vulnerable communities that can weather the initial storm may find new opportunities for social mobility and may gain more equitable access to resources such as housing and education in the longer term.