# A Predictive Equity Metric for the Distribution of Testing and Vaccination Resources Based on Vulnerability to COVID-19: Race and Ethnicity Plus What?

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Center for Neighborhood Knowledge





#### Los Angeles Neighborhoods and COVID-19 Medical Vulnerability Indicators:

A Local Data Model for Equity in Public Health Decision-Making

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### **COVID-19 Medical Vulnerability Indicators**

- **1. Pre-Existing Health Conditions**
- **2. Barriers to Accessing Services**
- **3. Built-Environment Risk**
- 4. Social Vulnerability

# **Pre-Existing Health Vulnerability**

The Pre-existing Health Vulnerability indicator was designed to capture risks of COVID-19 infection and death due to preexisting health conditions that have been identified in scientific journals and through input from health experts consulted for this project. This indicator is comprised of six different variables, all of which are derived from the California Health Interview Survey, a California based population survey:

- Diabetes
- Obesity
- Heart Disease
- Health Status
- Mental Health
- Food Insecurity

# **Barriers to Accessing Services**

The indicator on Barriers to Accessing Services is meant to capture barriers that increase difficulty in accessing COVID-19 and other general health care services. This indicator is composed of five different variables, all derived from the 2014-18 5-year American Community Survey data:

- Non-U.S citizens
- English Language Barrier
- Lack of Broadband Access
- Lack of Health Insurance
- Vehicles per Person

## **Built Environmental Risk**

The built environment risk indicator is meant to identify areas at higher risk of COVID-19 infection due to lack of adequate space available to adhere to shelter-in-place mandates and other precautions that aim to limit the spread of COVID-19. The indicator is composed of four variables:

- Population Density
- Building Structure Density
- In-unit Housing Crowding
- Availability of Parks and Open Space per 1000 residents

## **Social Vulnerability Index**

The SVI is a close replica of the 2018 Social Vulnerability Index, which was created by the CDC to identify vulnerable areas in need of preparation and response to hazardous events or natural disasters. The SVI indicator addresses the level to which a community experiences different social conditions, such as unemployment, and that might affect its ability to prepare and respond to hazardous events, such as the COVID-19 pandemic. The CDC's SVI is only available at the census tract level. We utilize the same data source used by the CDC to construct their SVI, 2014-18 5-year ACS, and adopted the same methodological approach to construct the SVI for ZCTAs. A total of 15 variables, organized into four dimensions, are used to construct the SVI for ZCTAs in Los Angeles County:

- Socioeconomic Status
- Household Composition
- Minority Status and Language
- Housing Type and Transportation



### Preexisting Health Vulnerability, Los Angeles County





Ethnoracial Distribution by Preexisting Health Vulnerability



**Barriers to Accessing Services,** Los Angeles County **Highest Vulnerability** High Moderate Low

Lowest Vulnerability



Ethnoracial Distribution by Neighborhood Barriers to Accessing Services



Built Environmental Risk, Los Angeles County





Ethnoracial Distribution by Neighborhood Built Environment Vulnerability







Ethnoracial Distribution by Neighborhood Social Vulnerability Index