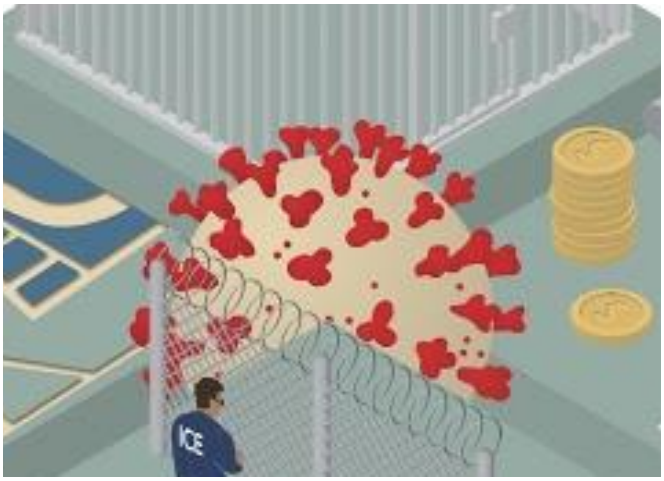
Health Inequities in COVID-19 Outcomes in Suburban Cook County: An Interactive Infographic



Primary Author: Darcie Moeller, MD

Contributing Authors:
Ina Kansariwala
Hanna Kite, MPH
Alfreda Holloway-Beth PhD, MS
Aida Luz Giachello, PhD
Linda Rae Murray MD, MPH
Jim Bloyd, MPH, DrPH
Neal Moeller
Michael S Wolf, PhD, MPH

Contents:

Introduction

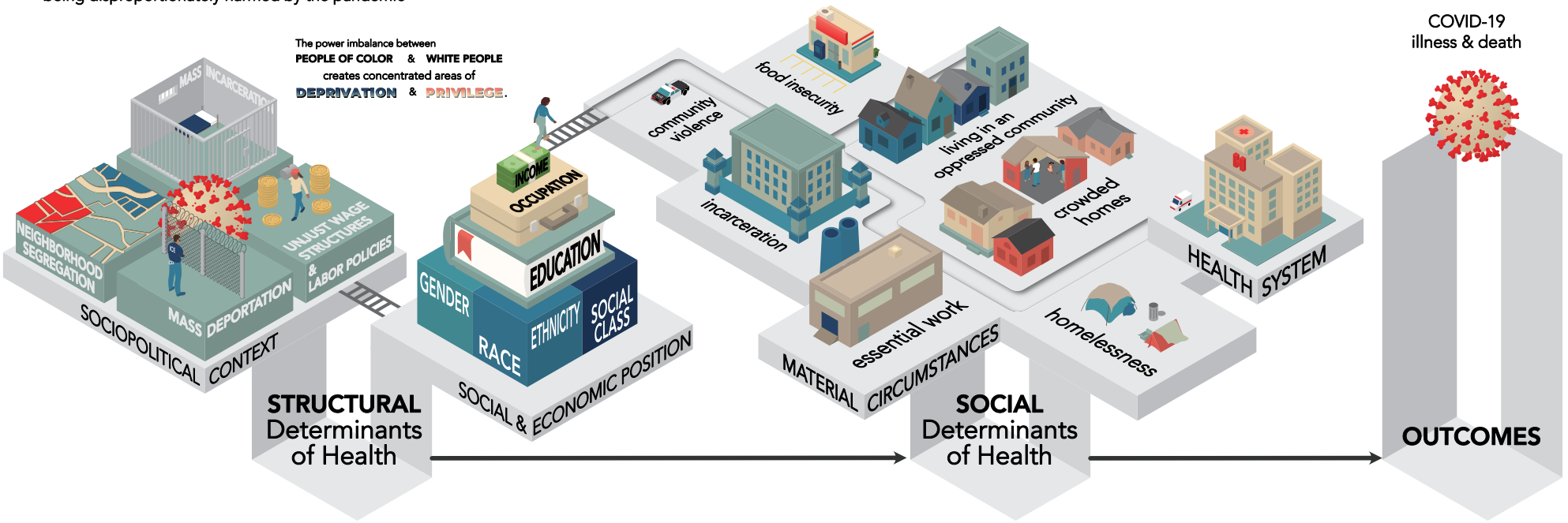
Like many chronic and communicable diseases before it, the COVID-19 pandemic has laid bare the racial and ethnic health inequities in the United States. The Cook County Department of Public Health (CCDPH) developed this infographic with the aim to explicitly illustrate the causal connection of current and historical structural racism to the racial and ethnic disparities we now see in COVID-19 outcomes. While many of the social determinants of COVID-19 outcomes, like occupational exposure, income level, and access to health care, affect all racial and ethnic groups, the historical and structural factors at play put a disproportionate burden of these social determinants on people of color.

This infographic does not represent a complete picture of all the structural and social factors obstructing Black* and Latinx* communities from thriving. Instead, it highlights some of the causal factors having the biggest impact in COVID-19 outcomes. We hope this serves as a framework on which to build discussions, programs, and policies that build health equity through this pandemic and beyond.

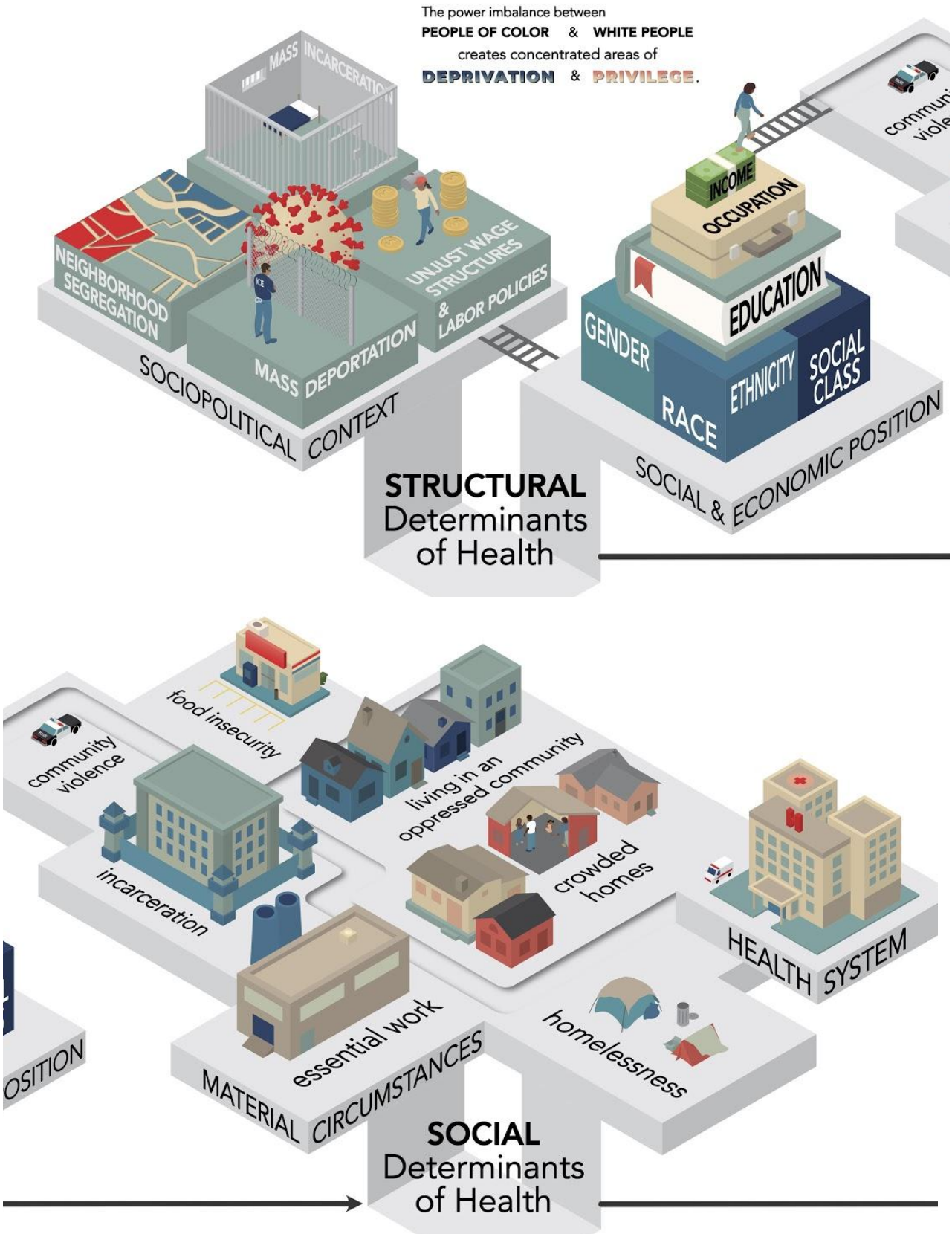
*For this infographic, and the associated text, we have chosen to use the term "Black" to refer to both those who identify as African American and people of African descent (eg. Caribbean black) regardless of birthplace. We have chosen to use the term "Latinx" rather than the terms "Hispanic" or "Latino" to refer to people who self-identify, according to the U.S. Census, as Mexicans, Mexican Americans, Puerto Ricans, Central or South American, Caribbean, Spanish, or born to or descended from any of these groups. Though these terms were chosen for their inclusivity, we recognize that many people in the racial and ethnic groups we describe may not identify themselves with these terms. All reported data quotes the original source, using the terms that were used in the original research or data collection.

The structural determinants of COVID-19 illness and death

a framework for understanding why communities of color are being disproportionately harmed by the pandemic



Infographic (Close ups for Detail)



Infographic “pop-out” text

Labels on the infographic are listed here. Each label will be linked to a “pop out” with more information. Click each link below to see the text for the corresponding pop out.

1. Structural Determinants of Health
    1.1. segregation in neighborhoods
    1.2. unjust wage structures & labor policies
    1.3. mass incarceration
    1.4. mass deportation
    1.5. education
    1.6. occupation
    1.7. income
2. Social Determinants of Health
    2.1. crowded homes
    2.2. homelessness
    2.3. incarceration
    2.4. essential work
    2.5. hunger
    2.6. community violence
    2.7. living in an oppressed community
    2.8. Health System
3. COVID-19 illness & death

Structural Determinants of Health

The conditions of daily life are often referred to as the social determinants of health. Poverty, unequal access to medical care, lack of education or poor education, lack of access to healthy food, affordable housing and others are known to be intimately tied with poor health outcomes and are associated with health inequities. For example, if someone does not have access to healthy food they may go hungry or rely on fast or convenience foods that increase their risk of obesity and consequently, the development of health conditions like type 2 diabetes. But these social determinants are rooted in systemic policies and practices of all institutions in society. We call these policies and practices the structural determinants of health because they are infused in the foundation of our sociopolitical system and assure mal-distribution of resources, wealth and power, perpetuating the social and economic disadvantage of poor people and people of color. Returning to the previous example, we can ask why this person does not have access to healthy food in the first place. Poor neighborhoods often don't have grocery stores, community gardens, and other sources of fresh and healthy foods. Again, we can ask why. Why do we have concentrated areas of poverty at all, and why are these the areas where people of color tend to live?
[39] [40] [36] [35] [16]

Segregation in neighborhoods

Residential segregation is one of the most important drivers of health inequities in Cook County. In the 1930's, banks used maps created by the Federal Housing Administration to make decisions about whom to approve mortgages to. These maps outlined non-white neighborhoods in red (leading to the term "redlining") to designate areas were "poor" real estate investments. This resulted in concentrated areas of disinvestment in the neighborhoods where people of color lived. Although the Fair Housing Act of 1968 made the practice of redlining illegal, discriminatory and predatory lending practices still flourish, perpetuating disinvestment in communities of color and restricting people of colors' ability to build wealth. A 2008 report from United for a Fair Economy notes that federal data shows "people of color are more than three times more likely to have subprime loans: high-cost loans account for 55% of loans to Blacks, but only 17% of loans to Whites."
[39] [38] [60] [09] [17] [21] [1] [47]

Unjust wage structures & labor policies

The work done by people of color has historically been devalued. For example, Black or African American, Asian, and Hispanic or Latino people represent 36% of the US workforce but 58% of agricultural workers, 70% of housekeepers, and 74% of baggage porters & bellhops. [53] For centuries this type of work was done by enslaved Black people. During the Jim Crow era domestic, agricultural and service occupations were the primary opportunities open to people of color and as such were exempted from emerging protective labor standards. 1938 saw the passage of the Fair Labor Standards Act (FLSA) which limited the work week to forty hours, banned child labor, and established a minimum wage. Many occupations held by people of color were exempt from these new laws and continue to be to this day. For example, service work such as serving food or carrying baggage, was excluded from FLSA, allowing business owners to employ Black workers without paying them. They were expected to do this work for tips. Today, many of these tipped service occupations have a subminimum wage, as little as $2.13 an hour.

There are also large inequities in access to sick pay. "Roughly 24% of [the US workforce lacks] access to any form of sick pay." [8] Only 56% of Black workers have access to paid sick leave [8] and 38% cannot earn a single paid sick day. [41] Of Latinx workers, who are disproportionately represented in food service, construction and agricultural work, 53% cannot earn a single paid sick day. Access to paid sick days are critical

to control infectious diseases as those who do not have access are less likely to stay home when they are sick and less likely to seek care when it is needed. Undocumented Latinx individuals are also less likely to take time off as they have less access, both real and perceived, to workers protections.
[41][53][8][57]

Mass incarceration

From the 1970s to the 2000s the number of people in prison in the United States grew by 500 percent, making the U.S. the country with the highest incarceration rate in the world. The war on drugs, started in 1971 by then-president Richard Nixon, along with other policies such as "zero tolerance" and the "three strikes" rule, resulted in long prison sentences for nonviolent drug offenders. People of color, young black men in particular, have been disproportionately imprisoned. As reported by the United States sentencing commission "Black male offenders received sentences on average 19.1 percent longer than similarly situated White male offenders [from] 2012-2016". [50] In Chicago, the incarceration rates differ substantially by neighborhood, with the highest incarceration rate in a black neighborhood being 40 times that of the highest incarceration rate in a white neighborhood. [49] The legal systems preference for punishment over rehabilitation causes collateral damage. The number of separated families, who experience increased economic stress and emotional trauma, increases. Communities with higher incarceration rates also suffer when those returning home after incarceration find few job prospects or opportunities to reintegrate successfully into society.
[39] [61] [54]

Mass deportation

14.2% of Illinois residents are immigrants, 22% of which are undocumented, and about 6% of all Illinois residents live with an undocumented family member. [4] Deportation, and living under the threat of deportation, has an adverse effect on health and mental well-being. The United States has a long history of violent, forced deportation, from the mass expulsion of millions during the great depression - including Mexican-American US citizens, to President Eisenhower's Operation Wetback in 1954 [24]. Fear of deportation heightened during the Trump presidency, especially with the executive order separating immigrant children from their families. Children, in particular, are intensely affected by immigration and deportation stressors. In response to Trump's executive order, the American Academy of Pediatricians released an opposition statement noting that "When children are scared, it can impact their health and development. Indeed, fear and stress, particularly prolonged exposure to serious stress – known as toxic stress – can harm the developing brain and negatively impact short- and long-term health." [55]
[46] [48]

Education

Public schools get a large portion of their funding from local property taxes. Though state dollars can help to ensure all public schools receive a minimum amount of funding per student, property-wealthy districts are far more likely to have funding over the minimum amount. Property-wealthy districts also have more resources to supplement education with extracurricular activities. Residential segregation then, leads to educational segregation. Compounding this, higher income families may opt for private school. Data from the 2002-2003 academic year shows that Black or Hispanic children made up 87% of Chicago public school enrollment while White children made up only 10%. [5]

Black and Latinx students are concentrated in lower resourced schools that are less equipped to provide high quality education. Schools where Black and Latino students are in the majority are half as likely to offer advanced placement classes and have a higher percentage of beginner teachers, than schools where White

students are the majority. [5] The result is that Black, Latinx, and low income students on average fall behind their White peers. Data from the National Assessment of Educational Progress shows that on average by the end of high school "African American and Hispanic students trail White students academically by four grade levels."[5]
[5] [39]

Occupation

Occupational opportunity is neither distributed equally nor equitably. Race, gender, and where you live all impact your exposure to networking opportunities and affect your ability to secure a position due to interviewer and/or organizational biases. A study from 2003 revealed that job applicants who are White are invited to interview at twice the rate of their Black counterparts with equal qualifications. [39] A study from 2016 suggested that even potential employers who claim to "value diversity" show patterns of discrimination against resumes that seem to be from a "racial minority."[33]

Even amongst those employed in their occupation of choice, pay gaps by race and gender are prevalent. Black men and women with college degrees earn significantly less than their White counterparts ($23 vs. $25 for women and $25 vs. $32 for men) [8]. Racial wage gaps have been increasing since the year 2000. "As of 2015, relative to[...] white men with the same education, experience, metro status, and region of residence, black men make 22.0 percent less, and black women make 34.2 percent less. Black women earn 11.7 percent less than their white female counterparts."[62] Black and Latinx women are disproportionately represented in the health care sector where pay structures exhibit significant differences based on gender, race and ethnicity. In a study of 8,089 female health care workers, almost half of self-identified "Black", "Latina" and "other" "health care workers earned less than $15 per hour, versus [...] 28.8% of White women. Black, Latina, and "other" women and their children were also significantly more likely to live in poverty [with] 1 in 6 children of Black female health care workers [living] in poverty."[30]
[32] [64]

Income

Income alone is a key contributor to overall health as illustrated by large differentials in life expectancy based on the median income of the area you were born in. Wage inequities and unemployment rates have been exacerbated by the COVID-19 pandemic. Black Americans, on average, make less than 60 percent the income of White Americans [39]. People of color are concentrated in lower-paying occupations like service work and agriculture [53] but they are also paid less for the same work done by White workers. The unemployment rates amongst Black workers in February and April of 2020 were 5.8% and 16.8%, respectively, as compared to 3.1% and 14.2% for White workers [26]. The unemployment rates for Latinx workers in February, April and June 2020 were 4.4%, 18.9% and 14.5%, respectively, as compared to 3.1%, 14.2% and 10.1% for White workers [25]. The concentration of wealth by White people, by and large, further contributes to the poverty and lack of income opportunities faced in the Black and Latinx communities. In 2014 seventy five percent of the USA's wealth was held by only 10 percent of the population. [38]

Crowded homes

COVID-19 spreads easily through homes, [27] where occupants are near each other for extended periods of time. According to census data from 2019, households with a Latinx householder are twice as likely as White householders to have less than 500 square feet per person of living space, and 2.25 times as likely to have more than one person per bedroom. [59] [42] About 13% of Black households do not have enough space to

isolate if one member becomes sick and almost 25% of Black households have multiple generations living together. [8]

Homelessness

Homelessness and housing insecurity increases people's exposure to COVID-19. Homeless individuals may stay in a shelter overnight which are - by and large - congregate facilities where many people sleep in the same room. Housing insecure individuals may stay for short stints in transitional housing or share a room with a friend or family member. People of color are disproportionately represented in the homeless population. Nationally, the homeless rate for Black individuals is 3.65 times their population rate. [8] In Chicago less than 30% of the population is Black but Black individuals make up a staggering 80% of the population staying in homeless shelters. [8] Homelessness is largely impacted by the lack of affordable housing. In 2018, to be able to comfortably afford to rent a two-bedroom apartment in Chicago you needed to make at least $22.69/hr. [3]

Incarceration

Mass incarceration has disproportionately affected minority populations - Black men in particular - making prisoners an especially vulnerable population. Prisons and jails keep people in close quarters with each other, making them ideal environments for the spread of infectious diseases like COVID-19. As of Feb 5, 2021 in the US, "...more than 350,000 people have tested positive [for COVID-19] while incarcerated and 2,305 have died, in addition to 145 corrections staff." [45] People of color are disproportionately represented in the incarcerated population. In 2017 the Black and Latinx imprisonment rates were six times and nearly 3 times that for Whites, respectively. [8] In February and March of 2020 the Cook County Jail population was 74% Black. [8] Full assessment of the governmental response to COVID-19 mitigation in Illinois jails and prisons is ongoing. Cook County Jail has been the center of multiple large outbreaks both in the Spring and Winter of 2020. [29]
[2][8][29]

Essential work

Essential workers are those who support critical infrastructure operations. There is not broad agreement on all occupations that should be considered "essential" but the following are usually included: child care, agriculture, food service and production, mail and delivery service, transportation, travel and hospitality, healthcare, security, public safety, and other critical retail and trades.

The racial and ethnic makeup of those employed in essential work settings differs from that of the US with much higher representation from Black and Latinx workers. Data from the 2018 US census shows that "...43 percent of Black and Latino workers are employed in service or production jobs that [...] cannot be done remotely" whereas "Only about one in four white workers held such jobs." [42] These work settings increase the risk of exposure to COVID-19 through close contact with other workers and/or with the general public.

In suburban Cook County, essential workers live in greater concentrations in the south, southwest and west regions. [15] More than half of the essential workers in the greater Chicago area are people of color. "Although Hispanic workers make up 21 percent of regional workers, they are especially overrepresented in construction (39.3 percent) and food service occupations (38.1 percent). Black workers are most overrepresented in healthcare support (36.6 percent) and protective service jobs (29.1 percent), compared to 13.8 percent of the workforce overall." [15]
[58] [8] [26]

Hunger

In 2019, before the COVID-19 pandemic, 10.5% of Americans suffered from food insecurity. Black, non Hispanic- and Hispanic-headed households had even higher rates at 19.1% and 15.6% respectively. [19] It is likely that food insecurity has been exacerbated through the pandemic as people have lost employment and many businesses that provide food have closed.

Hunger and food insecurity can increase a person's risk of both COVID-19 exposure and of severe illness. Those without adequate stores of food at home must leave the house frequently for food, increasing their chances for exposure. Lack of access to healthy food options also leads to higher susceptibility to chronic conditions that can make COVID-19 illness more severe.

Neighborhoods with high Black and Latinx populations "tend to have few full-service grocery stores selling fresh, healthy food options and an abundance of convenience stores and fast food restaurants that carry foods high in fat, sugar, and salt." [39] Consumption of poor food sources increases risk of diseases like obesity, high blood pressure, diabetes, and heart disease. Neighborhoods with "...the least access to chain supermarkets and [...] grocers have an average life expectancy that is approximately 11 years shorter than residents [...] with the highest access to such food providers." [32]

Community violence

Living in an area where community violence is prevalent affects health in multiple ways. Personal safety is not always assured and living in an area that does not have walkable streets or safe parks for recreation, limits people's ability to be outside and be physically active. Community violence is not limited to civilian perpetrators. Harm and death from police violence also contributes to adverse health outcomes. People of color disproportionately experience police-involved harm and are more likely to be killed by police. A 2019 study revealed police violence to be a significant cause of death with about 1 in every 1,000 Black men in the US killed by police. [23] Experiencing or witnessing violence also exposes people to trauma. Fear for safety; of self, family and neighbors, is a source of chronic stress that can increase risk for many chronic illnesses. [28]

Living in an oppressed community

People of color, even those with higher incomes, are more likely to live in oppressed, structurally vulnerable neighborhoods. The Cook County Department of Public Health's Childhood Opportunity Index helps to quantify the amount of opportunity available in each census tract. The index includes measures of educational, health, environmental, social and economic opportunity. The residents of neighborhoods that rank "very low" on the Childhood Opportunity Index are 54% Black and 32% Latinx whereas residents of neighborhoods ranking "very high" are only 4% and 5%, respectively. [22]

Health System

The health system is fraught with racial and ethnic inequities that can generally be divided into two categories: decreased access to care and lower quality of care.

Lack of health insurance is more prevalent in Latinx and Black residents. In 2017, 9.8% of people in Chicago did not have health insurance compared with 17.5% Latinx residents, 7.4% Black residents and 5.6% White residents [14]. Undocumented individuals in particular are unable to gain health insurance. Without access to insurance people are much less likely to have a primary care provider and much more likely to go to the emergency room both for non-emergent needs and for emergent needs that have arisen due to the lack of regular primary care [51]. For example, Black individuals who did not have a primary care provider "...were 5

times more likely to use the Emergency Department than Whites [...] for conditions that could be treated by a primary care provider or specialist (938 vs. 139 per 100,000,respectively)" [8]. Access can also be an issue of physical location as communities of color tend to have less options for medical care and transportation is more frequently an issue [51].

Amongst those with equivalent access to care, there are disparities in the quality of care received based on race and ethnicity. [51] One of the main vehicles driving decreased quality for people of color is the prevalence of implicit bias in medical professionals. Implicit bias, which is usually completely unconscious, affects the care Black and Latinx individuals receive by influencing how providers make care decisions. There is broad evidence showing, for example, that Black individuals receive "...shorter patient-provider interactions, fewer referrals to assessments or specialists, under [and] over-utilization of diagnostic testing, [recommendations of] treatment options based on assumptions of finances or treatment adherence, fewer special privileges and greater inconveniences during the course of medical care." [8] These biases, coupled with a long history of abuse of people of color in medical research and care, have created a prominent distrust of the medical field, further decreasing people's willingness to access care at all.

Access and quality of care are of the utmost importance during the COVID-19 pandemic. Many who have not been previously engaged in health care have waited until their illness was very severe before going to the emergency room. The health care inequities, in combination with the many other determinants discussed in this infographic, have created a situation where Black and Latinx people are already at higher risk of death if infected with COVID-19. Most of the pre-existing conditions that increase risk for severe COVID-19 illness are more prevalent in Black and Latinx populations "African Americans, [...] are 60 percent more likely to have diabetes than their white peers" [41] and "Hispanic Americans are almost twice as likely as non-Hispanic whites to die from diabetes." [51] African Americans also have the highest rates of mortality from cancer, stroke, heart disease and HIV. [51] [39]
[56]

COVID-19 illness & death

Many sources of national and local data have shown that Black and Latinx communities are bearing a disproportionate burden of COVID-19 cases and deaths.

From February 2020 to May 20, 2020 in the United States, the CDC reported the incidence of Non-hispanic Black COVID-19 deaths and Hispanic COVID-19 deaths was 3.6 and 2.6 times (respectively) the incidence of White COVID-19 deaths. This data was "age standardized" which is a way to compare groups of people that have different proportions of older and younger people in them. However, this obscures some of the more troubling extreme differences seen in COVID-19 death rates when similar ages were compared directly. For example, amongst people ages 35 to 44 years old, the incidence of Non-hispanic Black COVID-19 deaths and Hispanic COVID-19 deaths was 9.0 and 7.9 times (respectively) the incidence of White COVID-19 deaths. The higher rates in relatively younger Non-hispanic Black and Hispanic people highlights the extreme difference in years of potential life lost. [6]

As of February 18, 2021, the CDC reported the incidence of Non-Hispanic Black or African American COVID-19 deaths and Hispanic or Latino COVID-19 deaths was 1.9 and 2.3 times (respectively) the incidence of Non-Hispanic White COVID-19 deaths. [13] These rates will continue to fluctuate as more data is collected and analyzed. For example, as of February 5th the Illinois Department of Public Health (IDPH) reported percent positivity by race and ethnicity over time. Data from April 2020 show that both Black or African

American and Hispanic or Latino percent positivity was about twice that of White, not Hispanic or not Latino percent positivity. Data from January 2021 show an approximately equivalent percent positivity in Black or African American residents as compared White residents, whereas the Hispanic or Latino percent positivity remained around twice that of not Hispanic or not Latino residents. [31]

Studies have been mixed, some suggesting that the increased risk of death is being driven by the higher proportion of cases while others suggest deaths are being driven by the prevalence of underlying health risks. It is likely to be some combination of these. Structural and social determinants are responsible for both the increased exposure to COVID-19 and the higher prevalence of underlying health problems in Black and Latinx communities. [34] [44]

In assessing all of the data being presented, it is important to note it's many limitations. COVID-19 case data is collected based on positive tests from those who seek testing and those who are admitted to the hospital. This is likely to under represent Black and Latinx cases as both Black and Latinx people are more likely to experience barriers engaging in medical care. Another limitation is in the reporting of this data. IDPH notes that race and ethnicity information is missing for approximately half of all tests in Illinois. [31]

Appendix

The Cook County Department of Public Health (CCDPH) COVID-19 Health Equity Data Analysis Team tracks cases and deaths by race and ethnicity, among other variables, in suburban Cook County. Health equity is of the highest priority at CCDPH, as evidenced by their mission statement:

> “To optimize health and achieve health equity for all people and communities of Cook County through our leadership and collaborations, focusing on health promotion and prevention, while advocating for and assuring the natural environmental and social conditions necessary to advance physical, mental and social well-being. [20]”

As the disparate COVID-19 outcomes unfolded, CCDPH used data to guide their response. In communicating the data to the general public, CCDPH wants to be explicit about why people of color are bearing a disproportionate burden of the pandemic with higher case rates, more deaths, and more widespread social and economic impacts. Communicating the complex relationship of race, ethnicity and COVID-19 effects in a clear and understandable way is a challenge. When done well, infographics can increase interest and attention, improve comprehension, and make information more memorable. [37] [43] [18]

Development of the infographic began with assembling an advisory committee of experts in health equity, public health, and health communication. The development process began with open dialogue between members well-read on emerging literature showing racial and ethnic disparities in COVID-19 outcomes, epidemiologists working with the data, and public health workers with personal experience administering programs and interacting with community members during the pandemic. There was agreement. COVID-19 was having a predictable, disproportionate impact on people of color - likely for all the same reasons people of color have been bearing disproportionate burdens of many other diseases.

The literature on structural racism and social determinants of health is expansive: from historical texts describing slavery, Jim Crow laws, and the practice of redlining, to emerging scientific studies on risk factors for severe illness with COVID-19 infection. We began to collect relevant research and texts while creating a framework to diagram how determinants are linked. A rich literature exists in describing frameworks for structural and social determinants of health. [11] [7] By group consensus, we decided to organize our COVID-19 specific determinants around the World Health Organization’s (WHO) Commission on Social Determinants of Health (CSDH) Conceptual Framework published in 2007 (see **figure 1**). [52] [63]

In creating their framework, the CSDH established three fundamental questions they would aim to address:

> “1. Where do health differences among social groups originate, if we trace them back to their deepest roots?
> 2. What pathways lead from root causes to the stark differences in health status observed at the population level?
> 3. In light of the answers to the first two questions, where and how should we intervene to reduce health inequities? [52]”

Answering these questions is fundamental to the work of CCDPH in general. Tailored to the COVID-19 pandemic, the infographic aims to provide a framework for discussing questions 1 and 2. We modified the WHO framework to emphasize the structural and social determinants most pertinent to COVID-19 (see **figure 2**). The full infographic was designed using an iterative, design and feedback process using our modified framework as a base. Consideration was made for how best to present each element to enhance comprehension, promote interactivity, and communicate the overall theme.

figure 1

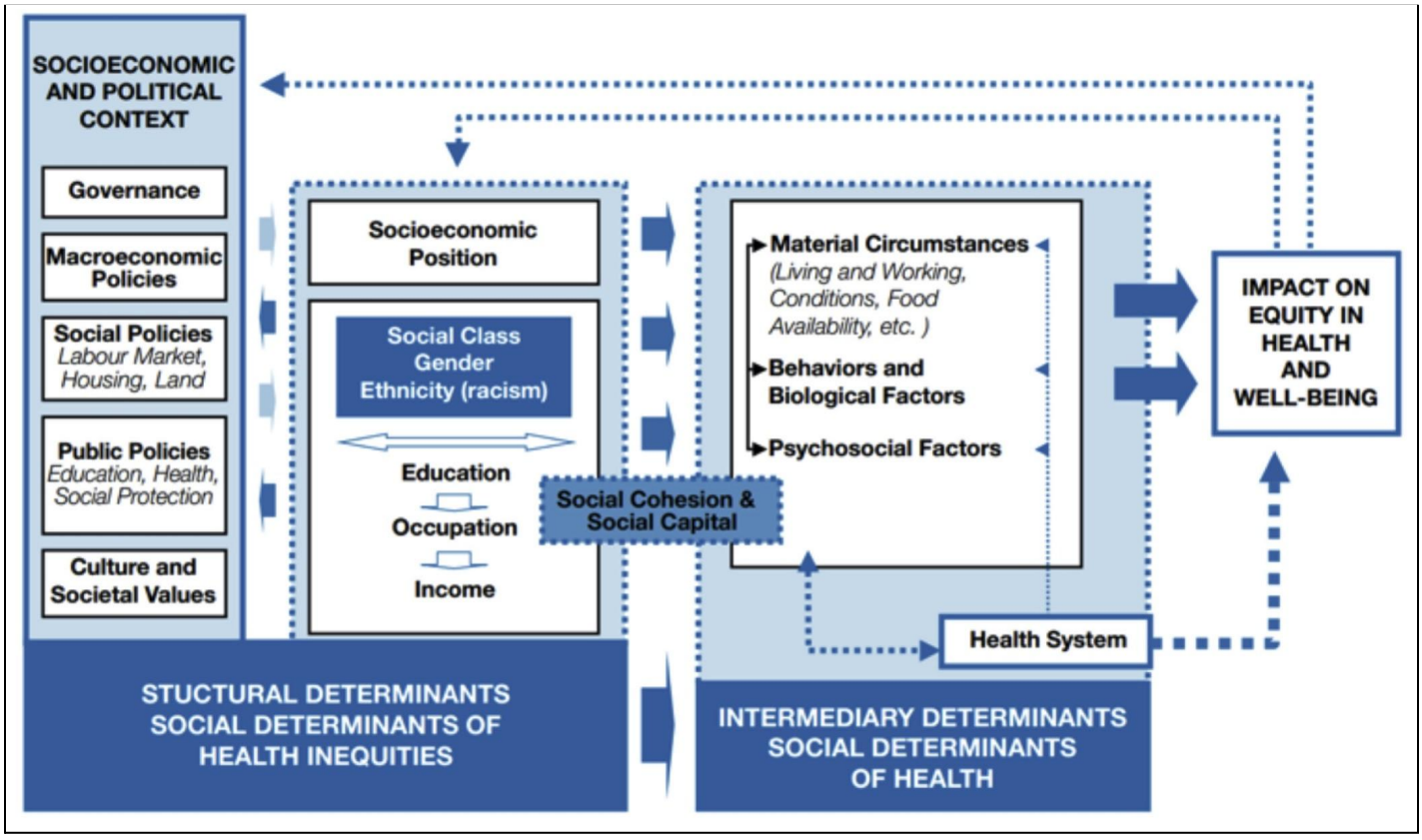
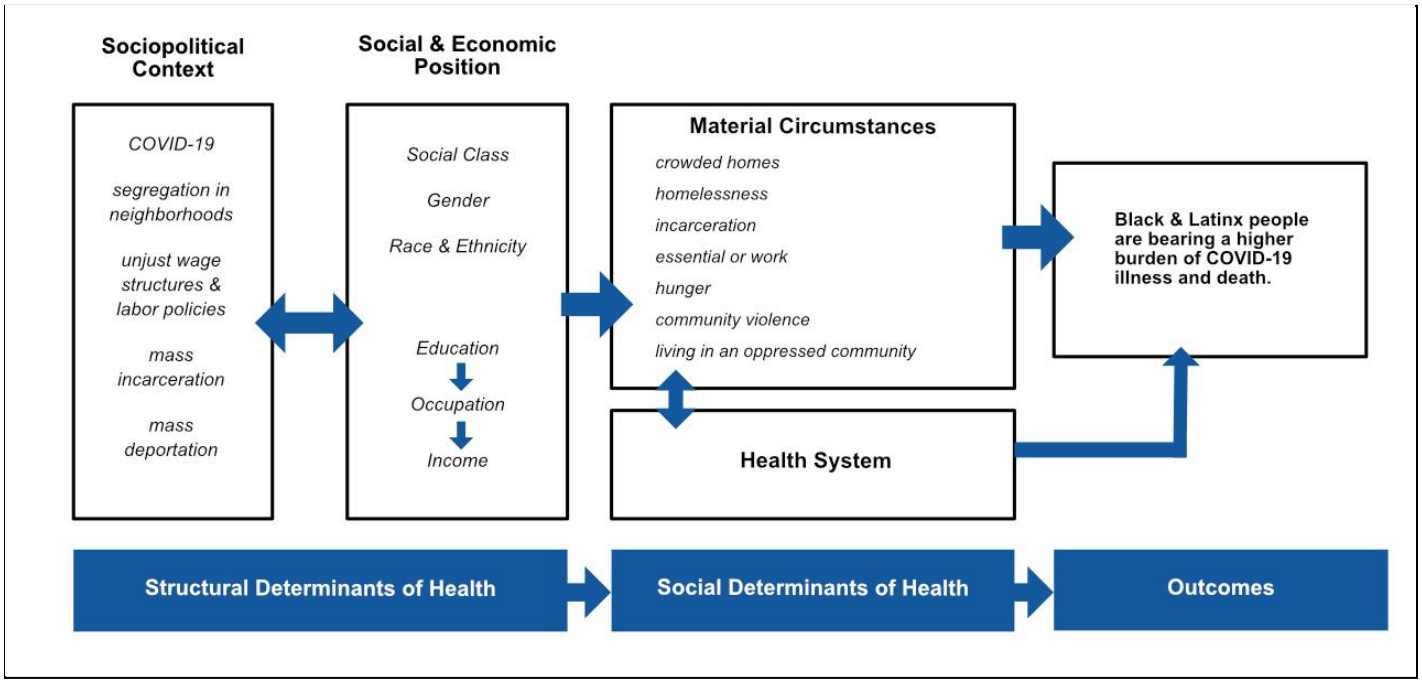


figure 2



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