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## **HEALTH, HOUSING, AND URBAN INCLUSION IN THE TIME OF COVID-19: EVIDENCE FROM DETROIT AND DURBAN**

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### **ABSTRACT**

*“Housing is a key site through which COVID-19 is experienced.” (Rogers and Power, 2020: 177)*

This paper explores how COVID-19 has illuminated the intersections between health and housing, in the context of equity and inclusive cities. This paper reviews the theoretical pathways that link housing as an important determinant of health, and applies them to the COVID-19 situation. For example, stay-at-home orders are impossible for homeless individuals, social distancing is difficult in overcrowded housing, lockdowns in poor quality homes can result in health challenges, and pandemic-induced unemployment increases risk of eviction and poor health outcomes. Importantly, the pandemic has sharpened the visibility of existing inequitable structures that shape the social and built environment and place vulnerable populations at heightened risk. Anecdotal evidence from Detroit, Michigan, USA and Durban, South Africa allows for preliminary exploration of these intersections. The paper concludes with recommendations for cities to improve equity and inclusivity.

**KEY WORDS** Health, Housing, Equity, Inclusion, COVID-19

## 1. INTRODUCTION

COVID-19 is a recent major global health challenge. Globally, 115.3 million cases of COVID-19 have been reported and 2.56 million people have died of COVID-19 as of 4 March 2021 (Johns Hopkins University & Medicine Coronavirus Resource Center, 2020). Since it first appeared in Wuhan, China in November 2019, cases spread quickly around the world, and on March 11, 2020, the World Health Organization (WHO) declared the coronavirus outbreak a global pandemic (Cucinotta and Vanelli, 2020). Shortly afterwards, most countries responded by closing borders and instituting strict lockdowns. While the intersections between health and housing are widely recognized (Taylor, 2018), the extended stay-at-home orders coupled with the propensity of household transmission of COVID-19 make clear that “[h]ousing is a key site through which COVID-19 is experienced” (Rogers and Power, 2020: 177).

This paper aims to explore how the COVID-19 pandemic has further illuminated the intersections between health and housing, in the context of equity and inclusive cities. Examples based on rational, observational evidence reveal that stay-at-home orders are impossible for individuals experiencing homelessness. Overcrowded housing makes it difficult to practice social distancing and contributes to household transmission of COVID-19. Extended lockdowns in poor quality housing can result in physical and mental health challenges. Further, unemployment and under-employment as a result of the pandemic make it difficult for residents to afford basic housing, healthcare, and other necessities, putting them at risk of eviction and poor health outcomes. Importantly, the pandemic has sharpened the visibility of existing inequitable structures that shape the social and built environment and place people of color and other vulnerable populations at heightened risk during COVID-19. The pandemic reveals the need for cities to intentionally focus on inclusivity.

The remainder of this paper is structured as follows. The first section reviews the four broad theoretical pathways that

demonstrate how housing functions as an important determinant of health. Next, the paper applies the COVID-19 context to these four theoretical pathways to outline the specific ways that COVID-19 and housing interact, given the available global evidence. The following section discusses inequity as a root of these interactions. Anecdotal evidence from two global cities, Detroit, Michigan, USA and Durban, South Africa, allows for preliminary exploration of these intersections between health, housing, and inclusive cities in the time of COVID-19. Finally, the paper concludes with recommendations for cities to improve equity and inclusivity, in order to reduce susceptibility to future pandemics and improve the health and lives of all citizens.

## 2. LITERATURE & THEORETICAL APPROACH

### 2.1. HOUSING & HEALTH PATHWAYS

It is well understood that there are social and built environment factors that determine one's health outcomes, beyond individual genetics and behavior. Social determinants of health (SDOH) are “the conditions in which people are born, grow, live, work and age. These circumstances are shaped by the distribution of money, power, and resources at global, national, and local levels” (World Health Organization, n.d.). SDOH largely depend on one's access to and the quality of such resources that impact health risks and outcomes: healthcare, education, employment, transportation, housing, nutrition, and more. The WHO further states that SDOH are “mostly responsible for health inequities – the unfair and avoidable differences in health status seen within and between countries” (World Health Organization, n.d.).

Housing functions as an important social determinant of health via several mechanisms. Earlier literature and systematic reviews documented three main pathways linking housing and health: 1) physical conditions within homes; 2) neighborhood area conditions; and 3) housing tenure and affordability (Gibson et al., 2011, Robert

Wood Johnson Foundation, 2011). For example, Gibson refers to the psychosocial impacts of housing tenure: “owning one's home may confer greater feelings of security or prestige than social or private renting, and is often used as an indicator of greater long-term command over resources. Conversely, the burden of debt involved may lead to anxiety and worry” which can negatively impact health (Gibson et al., 2011: 176). Most recently, building off the previous literature, Taylor (2018) suggested that housing and health interrelate via four broad pathways, teasing out the differences between housing tenure (stability) and housing affordability.

First, the housing stability pathway describes how one's access to a stable home impacts one's health. The link between homelessness and poor health is well documented (Maness and Khan, 2014). For example, “[m]any people experiencing homelessness have chronic mental and physical conditions, engage in high rates of substance abuse (including sharing of needles), and have often less access to healthcare” (Tsai and Wilson, 2020: e186). However, “housing is often viewed as a dichotomous issue: one is either homeless or housed, a perspective which omits the various precarious housing situations that people, especially vulnerable populations, may face” (Hernandez and Suglia, 2016: 29). Thus Taylor's housing stability framework allows for understanding the full spectrum of housing insecurity in its various forms, such as being behind on rent or mortgage payments, frequent moves, living in hotels, or couch surfing, and its subsequent health implications (Taylor, 2018). For example, housing instability “is associated with emotional, behavioral and academic problems among children, and with increased risk of teen pregnancy, early drug use, and depression during adolescence” (Robert Wood Johnson Foundation, 2011: 5).

The second mechanism is the housing safety and quality pathway. This refers to the link between the physical conditions inside the home and its occupants' health. For example, housing containing mold or dust create poor air quality which can trigger respiratory illnesses – in the United States, 40% of asthma attacks are a result of triggers inside the

home (Maqbool et al., 2015, Green and Healthy Homes Initiative, n.d.). Lead, often found in pipes or paint, can result in permanent damage to a child's brain and nervous system (Green and Healthy Homes Initiative, n.d.). Fires, accidental injury, carbon monoxide poisoning, and more all demonstrate how a home's environment can produce negative health outcomes.

Third, the affordability pathway depicts the situation by which the financial burden of housing reduces the occupant's income available for healthcare and health-promoting goods, including nutrition. Many parts of the world are experiencing an affordable housing crisis. For example, in the United States, 37.8 million households (31.5%) are cost-burdened, paying over the recommended 30% of their income towards housing; and 18.2 million households pay over 50% of their income to housing, with low-income renters particularly affected (Joint Center for Housing Studies of Harvard University, 2019: 4). In South Africa, the typical monthly rent for the cheapest, newly built house was 4,000 ZAR (~\$260 USD), equating to over 50% of one's income (calculated with GDP per capita at \$6,001 USD) (Centre for Affordable Housing Finance in Africa, 2020). With limited income left over after paying for housing, many households struggle to afford other necessities which can negatively impact health.

Finally, the neighborhood pathway demonstrates that the location of one's house determines one's health. Environmental characteristics of a neighborhood, such as access to public transit, grocery stores, environmental pollution, parks, health clinics, as well as social factors such as neighborhood segregation and social capital can all have an impact on health – both positive and negative (Taylor, 2018).

Clearly the evidence shows a strong link between housing and health. Indeed, one review concluded, "Overall, the research supports the critical link between stable, decent, and affordable housing and positive health outcomes" (Maqbool et al., 2015: 1). The remainder of this paper primarily uses these four pathways for categorization. These

pathways are useful to exemplify housing and health linkages especially for policy-making purposes; however, it is important to note that these pathways are often interconnected and thus it can be difficult to disentangle their effects. For example, those who are housing insecure because of financial reasons also often end up residing in poor quality housing that is located in neighborhoods with less services – such a situation links all four pathways, so it is difficult to tease out direct causality. However, as will be discussed later, the roots of such situations are primarily inequity and injustice.

## 2.2 HOUSING & COVID-19

The COVID-19 pandemic has sharpened the visibility of this important link between health and housing. Perhaps most obviously, the pandemic precipitated various government-mandated shelter-in-place and stay-at-home orders to attempt to prevent the spread of infection. Consequently,

*"[Homes] are now serving not only as shelter and refuge, but also as workplace and school and gym and theater and restaurant and bar and laundry and town square. They now contain, for many, an entire day's worth of demands. But whether a house or a compact apartment, those dwellings were never meant to be as profoundly multifunctional as a shelter-in-place scenario requires them to be" (Garber, 2020).*

Evidence from Italy found that the "lockdown and consequent confinement of people inside their homes has contributed to the worsening of Non-Communicable Diseases, such as some chronic diseases (e.g., cardiovascular disease and diabetes) and mental disorders such as anxiety, insomnia, depression, and learning problems in children" (D'alessandro et al., 2020: 62). Indeed, "quarantined people are very likely to show mood lability, depressive and anxiety symptoms, irritability, insomnia, and acute and post-traumatic stress symptoms" (Amerio et al., 2020: 2). Perhaps unsurprisingly, there is also evidence of increased rates of domestic violence during the lockdown, especially considering financial stress due to the pandemic (Rogers and Power, 2020).

The pandemic also highlights homes as a focal point of health by another mechanism: household transmission of COVID-19. Evidence from China found an overall 16.3% rate of secondary transmission of SARS-CoV-2 among household residents, and among spouses of COVID-19-positive patients, even higher at 27.8% (Li et al., 2020). This data reveals that COVID-19's household transmission rate is higher than that of other prominent infectious diseases including severe acute respiratory syndrome (SARS) and Middle East respiratory syndrome (MERS), suggesting that the probability of household transmission may be stronger than community transmission (Li et al., 2020). Consequently, certain factors relating to household composition and structure may contribute to an overall higher case load of COVID-19. Indeed, the United States Centers for Disease Control and Prevention guidelines emphasized quarantining the entire household at home if a member tested positive (Mericle et al., 2020), clearly showing the strong link between housing and health during the pandemic.

The remainder of this section applies the existing evidence on COVID-19 to the four theoretical health and housing pathways iterated above. It is important to note that as COVID-19 is a new phenomenon, the literature and evidence are thus far limited.

### 2.2.1. THE HOUSING STABILITY PATHWAY

Stable housing is a function of several factors, including access to and availability of affordable housing. Quite simply, stay-at-home orders are impossible for individuals experiencing homelessness, placing these individuals at higher risk of exposure to COVID-19 (Rogers and Power, 2020). "Many people experiencing homelessness live in congregate living settings – be it formal (ie, shelters or halfway houses) or informal (ie, encampments or abandoned buildings) – and might not have regular access to basic hygiene supplies or showering facilities, all of which could facilitate virus transmission" (Tsai and Wilson, 2020: e186). Further, individuals experiencing homelessness are often transient and their mobility

poses specific challenges for conducting COVID-19 prevention, testing, treatment, and quarantine measures (Tsai and Wilson, 2020). Thus, tailored strategies to prevent the spread of COVID-19 among individuals experiencing homelessness are important. COVID-19 has also illuminated housing insecurity, particularly among college students. In both the United States and South Africa, the onset of the pandemic concurred with university campuses and residence halls closing, leaving many students with limited options. For those forced to double-up, their risk of COVID-19 exposure is increased, and “the lack of secure housing negatively impacts student enrollment and success” (Graham, 2020).

### **2.2.2. THE HOUSING QUALITY & SAFETY PATHWAY**

The manner in which housing is designed has significant implications for its quality. One feature of housing quality is having adequate space for the number of occupants. In the time of COVID-19, overcrowded housing makes it particularly difficult to practice social distancing and contributes to household transmission of the disease. In the United States, over 4 million households lived in crowded housing in 2017 (United States census Bureau, 2017). Overcrowding is even more acute in developing countries: “Social distancing and quarantine are next to impossible in the dense, informal settlements that house over 1 billion of the world’s population” (Rogers and Power, 2020: 179). In South Africa, 23% of the urban population resides in crowded informal settlements (United Nations Global SDG Database, 2019). Space limitations are also prevalent in South Africa’s Reconstruction and Development Programme (RDP) homes: the government built millions of RDP homes post-apartheid; however, they are criticized for their small size and while housing policy envisaged families building onto these homes, many families have been too poor to invest in expansion, resulting in inadequate housing (Adebayo, 2011). Further, the open floor plan commonly used in US housing design prevents social distancing, and also leads to limited privacy and increased stress (Garber, 2020).

Beyond the risk of contracting COVID-19 in overcrowded housing, extended lockdowns inside homes of poor quality can result in numerous other negative physical and mental health outcomes. A study of university students in Milan, Italy during the country’s strict lockdown found poor housing to be associated with increased risk of depressive symptoms, particularly when respondents’ housing had small dimensions, had limited views and outdoor livable space, and otherwise was of poor quality based on indicators including natural lighting, thermo-hygrometric comfort, and privacy (Amerio et al., 2020). This same study found an increased risk of depressive symptoms among respondents who indicated worsened working performance related to working from home (Amerio et al., 2020). While this study was limited in its sample size, one can anticipate these mental health effects to be fairly widespread in areas with poor housing.

A key aspect of housing quality during COVID-19 is the presence of running water. In addition to limiting the comfort of those residing in these homes, lacking water specifically makes hand hygiene difficult, which is a key infection prevention tool to lessen the spread of COVID-19. Three billion people globally lack basic handwashing facilities and in the United States alone, nearly 2 million people lack running water in their house, representing a significant global challenge (Karaye and Horney, 2020, World Health Organization, 2019).

COVID-19 also produces economic implications which affect housing quality: in a tightened economy, property owners have limited ability to pay for standard maintenance. Renters will be particularly impacted: “Staff reductions will make it harder for property owners to conduct house repairs and ensure safe living spaces for residents, precisely when those renters need to stay in their units” (Goodman and Magder, 2020: 3). Various preventative measures are recommended to improve housing units in the time of COVID-19, including hand sanitizer stations, plexiglass screens for staff offices, personal protective equipment for staff and maintenance crews, and contactless doors, sinks, and other amenities. However, such measures require upfront funding which

may not be currently available. These protective measures are particularly important for multifamily or congregate housing – such as nursing homes, homeless shelters, and prisons. Considering the typology of housing is not specifically mentioned in Taylor’s four pathways; however, COVID-19 reveals that this should be a factor that is examined in more detail as housing type can determine health outcomes.

### **2.2.3. THE HOUSING AFFORDABILITY PATHWAY**

The COVID-19 pandemic has had a staggering economic impact. A World Bank report forecasted global GDP contracting by 5.2% in 2020 – “the deepest global recession in eight decades” (World Bank, 2020: xv). Unemployment and under-employment due to the pandemic make it difficult for residents to afford their housing, healthcare, and other necessities – putting them at risk of eviction and poor mental and physical health outcomes (Jin et al., 1995).

In the United States, a recent weekly Household Pulse Survey revealed that from 14-26 October, 10.9% of adults (almost 24 million) reported that their household sometimes or often did not have enough food to eat in the past week (Center on Budget and Policy Priorities, 2020). Of these adults, 81% said that they “‘couldn’t afford to buy more food,’ rather than (or in addition to) non-financial factors such as lack of transportation or safety concerns due to the pandemic” (Center on Budget and Policy Priorities, 2020: 2). This directly translates to health outcomes, as a lack of food negatively impacts one’s nutrition. Compounding this finding, nearly 80 million US adults (1 in 3) reported that it was somewhat or very difficult to cover usual household expenses in the past week – including food, housing, transportation, and medical payments, which directly shows the cost trade-off between necessities (Center on Budget and Policy Priorities, 2020).

A South African survey discovered that within the first month of lockdown, 3 million South Africans lost their employment and income and vulnerable groups including African/Blacks, women, and youth were disproportionately affected (Haffajee, 2020). A shocking 47% of survey respondents stated that their household ran out of money for food in April 2020 (prior to 21% in 2018), with 1 in 5 respondents sharing that at least one household member went hungry in the past week (Haffajee, 2020).

In the United States, renters disproportionately are employed in industries most affected by COVID-19 including the entertainment, transportation, and food and accommodation sectors (Goodman and Magder, 2020). In general, “most renters have lower incomes than homeowners and have little or no savings and cannot withstand the double whammy of lost income and potentially falling ill with the coronavirus” (Goodman and Magder, 2020: 6). In recognition of the economic hardship, global policymakers have proposed and implemented moratoriums on rent and mortgage payments; however, they have met with various levels of success (Rogers and Power, 2020). Notably, nearly 1 in 6 adult renters in the United States (11.5 million adults) were not caught up with their rent payments in late October 2020 (Center on Budget and Policy Priorities, 2020), representing significant financial hardship and threat of eviction. This situation relates to the housing stability pathway, especially since if one has an eviction on one’s record or is ‘blacklisted’ for habitual rent arrears, it becomes difficult to secure future housing. Herein lies a full-circle link between health and housing: a global health pandemic precipitated an economic downturn which consequently makes it difficult for individuals to afford housing, healthcare, and basic necessities, and the subsequent lack of such services negatively impacts one’s health.

#### 2.2.4. THE NEIGHBORHOOD PATHWAY

The epidemiology of COVID-19 provides strong evidence for the importance of neighborhood characteristics to determine health outcomes. Evidence

in the United States has found that “neighborhoods with the highest proportion of racial/ethnic minorities and the most persons living in poverty are experiencing higher rates of hospitalization and death” due to COVID-19 (Hatef et al., 2020: 2). For example, a recent study evaluating COVID-19 cases from seven US states used the Area Deprivation Index (ADI, which includes factors relating to income, education, and housing quality), and found that zip codes with a higher ADI had a higher COVID-19 prevalence compared to zip codes with a lower ADI (Hatef et al., 2020). Another recent study ranked US counties by their level of social vulnerability and importantly found that social factors including “minority status and language, household composition and disability, and housing and transportation [predicted] COVID-19 case counts” (Karaye and Horney, 2020: 323).

Neighborhood configuration in informal settlements poses unique challenges during COVID-19. A study measuring distance between dwellings in two informal settlements in Cape Town, South Africa found that nearest neighbors are within 0.5-0.7m, and thus, upon leaving one’s home, one would be in violation of social distancing regulations (Gibson and Rush, 2020). However, due to the nature of the settlements, most homes lack water and toilets, and thus travel to neighborhood communal sanitation areas is a necessity, creating sites for potential disease transmission (Gibson and Rush, 2020).

Neighborhoods are often important sources of social connection and community services; however, lockdowns due to COVID-19 “have shaken the dynamics of sociability as well as disrupted the use of public spaces” (de Oliveira and de Aguiar Arantes, 2020: 1) Brazil</title><secondary-title>City & Society (Washington, DC. This particularly contributes to social isolation, which has negative physical and mental health impacts particularly among the elderly, who lack means to access food, medications, and companionship (Archambault et al., 2020). Other neighborhood characteristics of relevance during COVID-19 include access to internet, especially to facilitate

working from home and maintain social connections, as well as access to parks for socially distanced outdoor physical exercise to promote health during the sedentary quarantine.

#### 2.3. EQUITY & INCLUSIVE CITIES

Importantly, the pandemic has sharpened the visibility of existing inequitable structures that shape the social and built environment and place people of color and other vulnerable populations at heightened risk during COVID-19.

Both the United States and South Africa have historical legacies of inequality that shape modern structures. In the United States, a tarnished history of slavery of African labor turned into legalized racial segregation of public spaces in the late 1800s with the Jim Crow laws. In the 1900s, discrimination housing segregation was particularly pronounced via zoning laws, redlining maps, and racial covenants in property deeds preventing homeownership by Black people – the effects of which remain visible today, as clearly evidenced by the currency of the issues raised under the Black Lives Matter movement.

In South Africa, segregation of local Africans began under colonialism and continued after independence, legalized, for example, through the 1913 Land Act which limited land ownership of Black Africans to “native reserves” which encompassed only 13% of the total land. Most notably, inequity was entrenched during *apartheid*: the system and formal laws of racial segregation and discrimination implemented by the National Party from 1948 until 1994, conferring power to the minority white population over Black, Coloured, and Indian people. Apartheid in South Africa had and continues to have numerous negative effects on many sectors, particularly housing, whereby land use was racially segregated and Black Africans were restricted to living in the urban periphery. Today, South African cities are among the most unequal in the world, with Gini coefficients above 0.7 (United Nations Human Settlement Program, 2016).

This inequitable legacy is revealed during COVID-19. For example, across the United States, African Americans are dying from COVID-19 at 2.2 times the rate of white people (The COVID Tracking Project, 2020). Other US minorities (Hispanic or Latino, American Indian or Alaska Native, and Native Hawaiian and Pacific Islander) also have higher death rates than whites (The COVID Tracking Project, 2020). In South Africa, there is a paucity of data on race; however, there are indications that Blacks and mixed-race patients have a higher risk of dying from COVID-19 than white patients (Associated Press, 2020). The finding of increased COVID-19 cases in socially vulnerable counties in the US, especially minority communities, “underscores the importance of continuing to work to address inequities related to the social determinants of health” (Karaye and Horney, 2020: 321).

At the heart of all of these housing and health pathways lie poverty, inequity, and institutional racism. Poverty increases one’s risk of exposure to COVID-19 via several mechanisms. First, lower-income people are more likely to live in crowded housing which increases risk of household transmission. These individuals are also less likely to have opportunities to work from home which increases their exposure to COVID-19, particularly if they rely on public transportation to access their place of employment (Patel et al., 2020). Further, they are more likely to have unstable income which can increase housing insecurity; in South Africa, a significant proportion of the population is engaged in the informal sector for subsistence livelihoods. Importantly, they are also more likely to have comorbidities placing them at a higher risk of severe illness due to COVID-19 and more likely to access healthcare at advanced stages of illness resulting in worse health outcomes (Patel et al., 2020).

“COVID-19, although global, is not an ‘egalitarian’ or ‘democratic’ disease. On the contrary, it tends to have an uneven impact on different territories and socio-racial groups that constitute the urban space, which can further deepen the already overwhelming inequalities [in cities]” (de Oliveira and de Aguiar Arantes, 2020: 9). It is thus important for

cities to recognize inequitable structures and intentionally focus on inclusivity.

### **3. GLIMPSES FROM TWO CITIES**

#### **3.1. METHODOLOGICAL APPROACH**

Anecdotal evidence from two global cities, Detroit, Michigan, USA and Durban, South Africa, allows for preliminary exploration of these intersections between health, housing, and inclusive cities in the time of COVID-19. Detroit and Durban were selected not only due to the authors’ personal familiarity with these cities, but because of the interesting parallels despite the very distinct developmental contexts between the United States and South Africa. The two countries have significantly different resource levels; for example, South Africa’s GDP per capita was \$6,001 in 2019 compared to \$65,297 for the United States (The World Bank, 2021). However, both cities are marked by a legacy of unjust urban planning and discriminatory housing policies that exclude vulnerable populations, experience high levels of poverty, have a Black majority population, have high levels of health comorbidities, and experience significant challenges relating to housing delivery.

Detroit struggles with a legacy of racial segregation, “white flight” to the suburbs whereas “Black people were immobile due to discriminatory housing policies” (Simmons, 2019: 91), and economic decline precipitating the 2008 housing crisis and the municipal bankruptcy in 2013. Today, 36.4% of Detroiters live in poverty and the median household income is a low \$29,481 USD (United States Census Bureau, 2018). Race is an important factor in Detroit: a vast majority – 78.6% – of the current population is African American, with 7.6% being Hispanic or Latino, and only 10.3% being white (United States Census Bureau, 2018).

In Durban (part of eThekweni Metropolitan Municipality), apartheid’s racial segregation legacy remains very much present. For example, Blacks and Coloureds are the primary populations living in informal areas (Marx and

Charlton, 2003) and government-built low-cost RDP homes are criticized for their poor quality and distance from the city center which “entrenches rather than ameliorates the structural injustice that [is] the legacy of apartheid spatial segregation” (Pithouse, 2008: 1). Fifty-two percent of residents live below the poverty line (the vast majority of whom identify as Black), and residents face high unemployment, limited financial resources, skill/literacy, mixed access to basic services, and an increasingly high cost of living (eThekweni Municipality, 2017). The majority of eThekweni’s inhabitants are Black Africans (73.8%), while 16.7% are Asian, 6.6% are White, and 2.5% are Coloured (South African Census, 2011).

Further, both cities have been hit hard by COVID-19. As of November 29, the United States ranks first in COVID-19 cases with 13.3 million cases and 266,452 deaths; South Africa ranks 16<sup>th</sup> globally in cases (785,139) and 14<sup>th</sup> in deaths (21,439) (Johns Hopkins University & Medicine Coronavirus Resource Center, 2020). Detroit and Durban have similarly had negative experiences with COVID-19 as will be discussed below.

Thus, the pandemic provides an interesting scenario to explore the two cities’ experiences at the intersection of health, housing, and inclusivity. Each city section describes how the city experienced COVID-19, surmises urban and social attributes of the two cities that make them more susceptible to COVID-19 with particular attention to the four health and housing pathways, and evaluates initial government response and outcomes to determine whether the links between health and housing are recognized and equitable approaches are utilized at the municipal level.

#### **3.2. DETROIT, MICHIGAN, UNITED STATES**

##### **3.2.1. COVID-19 IN DETROIT**

Michigan’s first case of COVID-19 presented on 10 March 2020; on 24 March 2020 Governor Whitmer instituted a stay at home order. With a shrinking population of 672,662, Detroit, Michigan is only the 23<sup>rd</sup> largest US city (United

States Census Bureau, 2018) – and yet, Detroit was an early epicenter of COVID-19 in the United States. As of 28 November 2020, the City of Detroit alone has had 19,985 confirmed cases and 1,584 residents have died from COVID-19 (Detroit Health Department, 2020).

The COVID-19 pandemic is exacerbating poverty and housing insecurity in Detroit. Importantly, COVID-19 has shed light on the racial disparities prevalent in Detroit. In early April 2020, Blacks experienced 33% of COVID-19 cases and 40% of COVID-19 deaths in Michigan, despite making up only 14% of Michigan's population (Wayland et al., 2020). This trend has continued: as of 28 October 2020, Blacks have died from COVID-19 at more than double the rate of whites in the state of Michigan (The COVID Tracking Project, 2020).

COVID-19 importantly brings to light the burden of disease that already existed in Detroit. Detroit is home to numerous individuals who fall into high-risk groups for severe illness if infected with COVID-19. For example, 13.3% of Detroit's population is over age 65 (United States Census Bureau, 2018). Further, the top community-identified health needs in Detroit in 2019 were 1) diabetes, 2) mental health, and 3) obesity, nutrition, and physical activity (Henry Ford Health System, 2019). These three health conditions are intricately tied with COVID-19: diabetes is a risk factor for severe illness; mental health can be expected to be challenged during this time of quarantine and economic stress; and access to nutrition and physical activity are difficult during lockdown. However, Detroit's high case prevalence and mortality rates indicate that other factors are at play than merely high-risk individuals with comorbidities.

### 3.2.2. HOUSING & HEALTH PATHWAYS & DETROIT'S COVID-19 RISK

Using the housing and health pathways as a framework of analysis, Detroit has numerous attributes that may explain its higher susceptibility to COVID-19.

Relating to the housing stability pathway, Detroit has a visible challenge of

homelessness. In January 2019 at least 1,965 individuals were experiencing homelessness in Detroit, of which 280 were chronically homeless, an 11% increase from 2018 (Homeless Action Network of Detroit, 2019). As demonstrated above, individuals experiencing homelessness may be at increased risk of COVID-19. Indeed, by 28 May 2020, 93 homeless individuals had tested positive at Detroit's homeless quarantine facilities and at least 3 had died (Moran, 2020).

Beyond homelessness, housing instability is quite prevalent in Detroit. Data from 2017 indicates 13% of Detroit residents (88,382) reported being evicted or losing their home in the previous year (Erb-Downward and Merchant, 2020). Further, there are insufficient numbers of housing units for low-income Detroiters: Detroit "has an estimated 24,000 fewer units of habitable housing than the city's population. This leaves 9% of all households in Detroit with no other options than to leave the city, live in blighted housing, or doubled up with other families" (Erb-Downward and Merchant, 2020). Such instability and overcrowding can place individuals at heightened risk of COVID-19 and other health challenges.

Housing quality is also particularly poignant in Detroit, where 80% of housing units were built before 1960 (Dewar et al., 2020). In 2014, the city had 40,000 blighted houses with an additional 38,000 on the verge of blight (Trickey, 2017). Many units require significant repairs and rehabilitation to maintain a healthy and habitable environment. Thus, as Detroiters spend more time at home during the pandemic, they are increasingly exposed to household hazards, including lead, asbestos, mold, and more.

Water is another challenge in Detroit: the City has implemented massive water shut-offs to over 20,000 homes since 2014 (Neavling, 2020b). However, as mentioned above, access to water for handwashing is a critical tool for prevention of COVID-19, placing households without water at heightened risk. Further, only 59.3% of Detroit's households have broadband internet (United States Census Bureau, 2018) –

inability to work from home and lack of access to important health information may be a contributing factor for higher prevalence of COVID-19.

Poverty is a key feature in Detroit, and thus, it can be expected that the housing affordability pathway plays a significant role for risk of COVID-19. Nearly 70% of Detroit renters pay over the federally recommended 30% of their income toward housing (Poethig et al., 2017). This reflects a significant cost burden and limits financial resources available for health-promoting goods and services. COVID-19 and Michigan's Stay-at-Home order exacerbated Detroit's unemployment rate – 39.2% in May 2020, compared to 9.8% prior to the pandemic, with low-income service industry jobs particularly hit hard (Aguilar, 2020) – further reducing funding available for housing and health for Detroiters.

Many neighborhood factors also make Detroit more vulnerable to COVID-19. Detroit is famously known as the Motor City, and its limited public transportation infrastructure may be a significant complicating factor for COVID-19. In a city with the nation's highest car insurance rates and low personal automobile ownership (Neavling, 2020a), 85,000 people rely on Detroit's Department of Transportation bus routes each day (Ferretti, 2020a) – increasing their risk of exposure to COVID-19 while in transit as well as that of the drivers. Further, in the initial months of the pandemic, Detroit's public bus system partially shut down, and on some days a shortage of bus drivers cancelled service completely (Ferretti, 2020a). Shutdowns severely impact residents' ability to access employment, health, and other services, with potential to increase financial and health vulnerability. Detroit is also home to Michigan's most polluted zip code, 48217, and has been associated with very high rates of asthma, chronic lung disease, cancer, and other health challenges (Neavling, 2020c) – these comorbidities place residents at higher risk for severe illness from COVID-19.

The typology of housing is also important to consider. For example, nursing homes in Detroit were particularly impacted by COVID-19, with a 44% attack rate from

March 7 through May 8, among which 24% of COVID-19 positive nursing home residents died (Sanchez et al., 2020). Suspected causes of ongoing transmission “included incomplete resident and health care personnel cohorting, continued reintroduction of the virus (e.g., from admission of residents with unknown COVID-19 status or residents requiring routine outpatient medical treatment, such as hemodialysis), and space limitations prohibiting use of private rooms to isolate residents whose infection status was unknown” (Sanchez et al., 2020: 3), demonstrating a clear link between housing and health.

Clearly, health and housing are interlinked in Detroit and the various attributes and pathways demonstrate plausible mechanisms explaining Detroit’s higher susceptibility to COVID-19.

### 3.2.3. GOVERNMENT RESPONSE

Overall, the City of Detroit has shown impressive leadership in recognizing many of the above intersections between health and housing in its response to COVID-19. Mayor Mike Duggan has been an instrumental champion of COVID-19 response in Detroit; it is likely that his health background as president and CEO of the Detroit Medical Center facilitated his understanding of the importance of rapid response.

In March 2020, the Detroit Health Department quickly mobilized COVID-19 response. With testing being an important tool to identify and treat COVID-19, the City has provided free drive-through COVID-19 testing since 29 March 2020. Recognizing the transportation barriers in Detroit, the City also offered transportation to the testing site; 1,707 people have used this service (City of Detroit, 2020).

Further, the City immediately targeted vulnerable populations. For example, the City quickly opened new shelters for homeless individuals which provided 500 additional beds and allowed for social distancing, including a Salvation Army shelter to quarantine symptomatic patients (Wayne State University, 2020). Additionally, in collaboration with a local health system, the Detroit

Health Department mobilized a team of volunteers to conduct mobile COVID-19 testing and outreach among Detroit’s homeless shelters, nursing homes, and seniors living in Section 8 affordable housing units (Henry Ford Health System, 2020). The targeting of these specific groups demonstrates the city’s recognition of congregate housing as a determinant of COVID-19. Further, Detroit was the first US city to receive Abbott machines that provide 15-minute rapid testing for COVID-19, facilitating quick testing of these vulnerable populations as well as first responders including city police and fire departments.

Efforts have since become longer-term as nurses continue to conduct screening three times a week at each of Detroit’s 24 homeless shelters (City of Detroit, 2020), and the City has just finished conducting re-testing of all 26 Detroit nursing homes in November as COVID-19 cases begin to surge again.

The water shut offs remain a contentious issue in Detroit. Fortunately, the city began restoring water access for free at the onset of the pandemic; however, this process was delayed for thousands of homes which prevented proper hygiene practices (Neavling, 2020b).

At a policy level, Detroit instituted an eviction moratorium and increased the Homeowner’s Property Tax Assistance Program (Wayne State University, 2020). Detroit received at least \$31 million in COVID-19 response funding through the federal CARES Act, for which rental assistance, eviction defense, housing counseling, homeless outreach, and permanent supportive housing were prioritized (Frank, 2020, Ferretti, 2020b). As of 29 November 2020, \$15,702,853 in COVID-19 funding has been approved for “housing/homelessness/non-congregate shelters services” (City of Detroit, 2020), demonstrating that Detroit recognizes the strong importance of housing during this global health pandemic.

## 3.3. DURBAN, SOUTH AFRICA

### 3.3.1. COVID-19 IN DURBAN

On 5 March 2020, South Africa reported its first confirmed case of COVID-19 in Durban, transmitted via an individual who recently travelled from a high-risk European country. By 15 March 2020, 17 cases were confirmed among recent travelers including one via community transmission, and thus President Ramaphosa declared a national state of disaster, closing schools and restricting travel. On 27 March, a national lockdown was implemented – this was one of the earliest and strictest lockdowns globally, including a ban on alcohol sales.

St. Augustine Hospital in Durban became an early site of rapid transmission of COVID-19 and published a report on its experience. One single case of COVID-19 in a patient who had recently returned from Europe and was admitted to the hospital on 9 March seeded an outbreak resulting in a total of 119 confirmed cases of COVID-19 by 30 April, including 80 staff members and 39 patients – making up 14% of all confirmed cases in KwaZulu-Natal Province at the time (Lessels et al., 2020). Frequent movement of patients and staff between wards facilitated the rapid transmission, and also contributed to additional outbreaks at a local nursing home and outpatient dialysis unit (Lessels et al., 2020). Among the 39 COVID-19 positive patients at St. Augustine’s Hospital, 15 died, each having significant comorbidities (Lessels et al., 2020).

The existing health burden in Durban raises alarm for high risk of severe cases of COVID-19. eThekweni suffers one of the highest rates of HIV prevalence in South Africa at 22.3% of adults (McIntyre, 2018). Tuberculosis is also a risk factor for COVID-19; KwaZulu-Natal Province in which Durban is located has among the highest incidence rates for tuberculosis in South Africa at 685 people per 100,000 in 2015 (Kanabus, 2020).

In eThekweni District, as of 26 November 2020, there have been 59,848 confirmed cases and 1,621 deaths (KwaZulu-Natal Province, 2020). These numbers

are likely higher in actuality due to underreporting and undertesting.

### 3.3.2. HOUSING & HEALTH PATHWAYS & DURBAN'S COVID-19 RISK

Similar to Detroit, Durban has numerous attributes that may explain its higher susceptibility to COVID-19, and use of the housing and health pathways as an analysis framework helps to better understand these intersections.

Relating to the housing stability pathway, Durban faces challenges with homelessness and housing insecurity. In 2016, over 3,933 individuals experienced homelessness in the city; among these, 1,974 lived on the street and 1,954 lived in shelters, with a majority identifying as Black (87% street-dwelling and 62% shelter-dwelling) (Desmond et al., 2016). At the time of the 2016 survey, nearly half were unemployed and many who did have a source of income was from informal economic activities (Desmond et al., 2016), indicating that this population may be severely high at risk during an economic lockdown due to COVID-19 (Desmond et al., 2016). Durban's homeless also face many health challenges – many lack basic necessities including clean water, bathing facilities, hygiene products, and food; one-third of unsheltered and one-fourth of sheltered individuals experience severe distress or anxiety; and females reported higher rates of seeking healthcare for chronic conditions (27%) and communicable diseases (22%) (Desmond et al., 2016).

Perhaps Durban's largest phenomenon linking health and housing is its high prevalence of informal settlements. In eThekweni Municipality, approximately a quarter of the 3.8 million population reside in informal settlements (eThekweni Municipality, 2017). By nature of their informality, dwellers lack secure tenure and suffer threat of eviction, leading to housing instability. Numerous reported incidents of eviction in Durban over the years show such threat to be a constant anxiety for such dwellers (Pithouse, 2008), demonstrating a link between housing and mental health.

Housing quality is also a huge concern in Durban. Overcrowded housing, especially in informal settlements, hostels, homeless shelters, and inner-city housing, poses an acute risk for COVID-19 transmission due to the inability to social distance and self-isolate. Further, 24% of eThekweni households lack access to potable water, sanitation, and electricity (Department of Health: KwaZulu-Natal, 2018). Lacking these resources prevents basic hygiene practices to quell the spread of COVID-19, inhibits economic activities that are dependent on electricity, as well as makes living conditions difficult during the lengthy national lockdown.

Poverty is a significant reality in Durban, making the affordability pathway between health and housing very clear. Prior to the pandemic, Durban's official unemployment rate was a high 22.3% (eThekweni Municipality, 2018). Given that the country lost 3 million jobs in the first month of lockdown (Haffajee, 2020), it is expected that this number has risen substantially. Specific sectors are particularly hurt by the pandemic: tourism contributed approximately \$900 million (3.5% of city GDP) and employed 60,300 people in 2017 (Turner, 2018), and further, Durban is home to South Africa's largest sea port which brings substantial revenue to the city. However, with the borders closed during lockdown, both the tourism and import/export industries are suffering. Further, a large proportion of eThekweni's residents are engaged in informal economic activities – primarily domestic household work and trade; for example, there are an estimated 50,000 street vendors in Durban (Alfers et al., 2016). The strict lockdown has limited these individuals' ability to conduct their livelihoods, increasing financial burden and poverty, which subsequently reduces resident's ability to pay for basic necessities, including healthcare and housing costs.

Finally, a variety of neighborhood-level factors also enhance Durban's susceptibility to COVID-19. The segregated spatial design of apartheid places disadvantaged residents at the outskirts of the city, significantly restricting their access to healthcare, employment, and other services (Parnell and Pieterse, 2014). Households that

do not own a personal vehicle but are able to afford public transport systems place themselves at risk of COVID-19 by entering crowded vehicles and spaces.

### 3.3.3. GOVERNMENT RESPONSE

To ease social and housing challenges during lockdown, at the national level, South Africa implemented a variety of regulations under its Disaster Management Act, which served as guidelines for local authorities in Durban to respond. First, Regulation 11 CA stated that “no person may be evicted from their place of residence, regardless of whether it is a formal or informal residence or a farm dwelling, for the duration of the lockdown” (Republic of South Africa, 2020). When Lockdown Alert Level 5 ended on 30 April 2020, subsequent regulations during Lockdown Alert Levels 4 and 3 (Regulation 19 and 36 (1) and (2)) suspended eviction orders through 17 August 2020, and afterwards during Lockdown Level 2, Subregulation 53 (1) further specified a clause to prevent the destruction of residences. However, local government enforcement of these national mandates has been mixed – during the first two months of lockdown, there were reports of 18 illegal evictions and violent destruction of domiciles in eThekweni settlements affecting 900 people, allegedly instructed by eThekweni Municipality (Draper, 2020).

eThekweni Municipality embarked on efforts to improve housing quality and lives of vulnerable populations during COVID-19. For example, the city provided water tanks to informal settlements, and conducted a sanitization campaign in informal settlements, hostels, informal traders' stalls, and public transportation facilities (Buthelezi, 2020). The city also focused on homeless individuals, providing temporary shelters, access to healthcare, and other supportive services – spending R66 million on homeless initiatives in the first three months of the lockdown (Majola, 2020). Further, the city reconnected 3,644 households that were in arrears during lockdown (Maziwisa, 2020).

However, the municipality has not been free of criticism for its COVID-19 response, including delayed implementation of efforts, claims of

corruption, and inequitable distribution (i.e. providing each ward with 1,000 food parcels, regardless of their population size) (Maziwisa, 2020). Further, eThekweni Metro did actively set up numerous administrative units to coordinate response, including the COVID-19 Municipal Command Team, the COVID-19 Joint Operation Centre, and the COVID-19 War Room; however, “the multiplicity of structures in COVID-19 response may result in unnecessary overlap and duplication of efforts at a time when resources are scarce” (Maziwisa, 2020).

While the municipality had been allocated nearly R600 million for COVID-19 response as of August, the pandemic has exacerbated the already stretched municipal budget (Naidoo, 2020). For example, in April and May alone, eThekweni lost R1.5 billion in revenue (Hanuman-Pillay, 2020). Financial constraints will continue to hamper full implementation of government response to COVID-19 in Durban.

#### **4. CONCLUSION**

While the evidence is preliminary, housing and health are shown to distinctly intersect on a variety of levels during COVID-19 via the various mechanisms found in the housing stability, housing quality, housing affordability, and neighborhood pathways. Housing and human settlements are significant determinants of health, and certain housing features place those who are already socially and economically excluded at further risk of COVID-19 disease. As more evidence becomes available on the impacts of the pandemic, we encourage other researchers to submit the housing and health linkages discussed in this paper to more rigorous qualitative and quantitative analysis.

Editors of a prominent housing journal recently commented: “Whether COVID-19 is creating new housing challenges or simply revealing or exacerbating the deep structural flaws in our existing housing systems is an open question” (Rogers and Power, 2020: 180). The evidence from this paper suggests that COVID-19 has brought unique housing challenges via the scenario of lockdowns as well as

the concern for household transmission of disease. However, the deeper exploration of the housing and health pathways supported by the existing evidence from Detroit and Durban reveal that inequity and injustice are at the root of social vulnerabilities that enhance susceptibility to COVID-19. Initial government response in both Detroit and Durban demonstrates understanding of some of the intersections between health and housing, and begins to recognize and respond to vulnerable populations, though much work remains to be done to improve equitable outcomes.

The pandemic clearly reveals the need for cities to intentionally focus on inclusivity. Governments have often been intentional and unintentional vehicles for inequitable policies and practices; the pandemic has made these disparities more visible and thus presents an opportunity for governments to respond more equitably. In the short-term, cities must continue to prioritize vulnerable populations during COVID-19. Community-based participatory approaches are best practice to understand locally-identified needs and solutions. Given the findings between housing and health, interdisciplinary approaches must be prioritized to achieve better results. Moving forward, urban planners and policymakers must acknowledge inequitable historical processes of urban exclusion and prioritize racially equitable urban planning so as to dismantle these unjust legacies (Solis, 2020, Goetz et al., 2020). Current international attention on inclusive cities demonstrates the importance of equity; this approach must be reflected in housing policy and practice to ensure access to housing that safeguards the health of the vulnerable. In the longer-term, cities must focus on poverty elimination, inclusive economic growth, and community-based approaches in order to equitably rebuild after COVID-19, reduce susceptibility to future pandemics, and improve the health and lives of all residents.

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