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GETTING TO ZERO HIV CASES IN SAN FRANCISCO:

RECONCEPTUALIZING HOUSING AS PUBLIC HEALTH INFRASTRUCTURE IN THE FRAMEWORK OF HIV PREVENTION AND TREATMENT

By Gaspar Zaragoza

HIV/AIDS affects more than 1.1 million people in the United States alone. At the height of the HIV epidemic in 1981, acquiring HIV nearly guaranteed mortality and high morbidity. A life-threatening condition fostered by stigma, inconclusive scientific information, and inattentive government intervention enabled more American casualties from the HIV epidemic than from the Vietnam War. What used to be referred to as a Caucasian MSM (men who have sex with men) disease now disproportionately impacts ethnic and racial minorities, gender minorities, and low-income populations. The City and County of San Francisco, originally ground zero for the HIV epidemic in the United States, is redefining public health HIV interventions, potentially positioning San Francisco as one of the first major metropolitan cities in the world to reach zero HIV infection cases, zero HIV-related deaths, and zero HIV-related stigma. As innovative as the Getting to Zero campaign appears to be, it fails to formally incorporate and respond to a fundamental matter pertinent to HIV prevention, HIV treatment, and San Francisco: housing. This research explores service gaps present in Getting to Zero by investigating the relationship between class, race, and HIV, specifically by emphasizing the role housing (or lack of housing) creates in shaping health outcomes related to HIV.

I. Introduction

While there has been significant progress in the containment and management of the HIV epidemic within the United States, vulnerable populations have benefited far less from such progress. Poverty, especially urban-concentrated poverty, exacerbates HIV prevalence rates at levels similar to those found in several low-income countries in the Global South.¹ According to a CDC report presented at the Conference on Retroviruses and Opportunistic Infections in 2016, half of African American gay men and a quarter of Latinx gay men in the United States are projected to be diagnosed with HIV within their lifetime, whereas a tenth of White gay men will be diagnosed.² Heterosexual women now account for roughly a quarter of all people living with HIV in the United States.³ A macro-analysis of the relationship between structural factors, and their impact on the built urban environment that facilitate certain populations to become more vulnerable for HIV acquisition, is crucial in order to develop appropriate interventions and address these disparities.⁴ These trends suggest that focusing only on individual-level risk interventions and assessments is no longer sufficient and viable within HIV prevention. As the HIV epidemic progresses and the demographic shifts in cases look different today than they did at its beginning, we continue to see the lives of communities that have been historically underserved, marginalized, and disinvested in continuing to burden these systematic inequalities.

San Francisco, one of the prime Western metropolitan epicenters of the HIV/AIDS epidemic, presented the highest per capita rate of HIV/AIDS cases in the country throughout the late 20th century.⁵ In contemporary San Francisco, disparities in HIV prevalence are evident and persistent, primarily affecting African Americans, homeless populations, and female populations, especially trans women.⁶ Add to that the market forces of recent waves of gentrification, changing the built urban environment of San Francisco to facilitate social exclusion, hyper-segregation, and negative health outcomes for native inner-city residents. In observance of World AIDS Day in 2013, the City and County of San Francisco launched Getting to Zero San Francisco: a bold strategic public health campaign that established a multi-sector community health partnership exclusively designed to virtually eliminate all new HIV cases, HIV-related casualties, and HIV-related stigma within the span of a decade.⁷ San Francisco may envision becoming the first municipal jurisdiction in the United States (and potentially the world) to accomplish the Joint United Nations Programme on HIV/AIDS (UNAIDS) mission of Getting to Zero HIV cases. Yet the campaign's mission and strategic priorities fail to understand and integrate how disease (in this case, HIV) is manifested and allocated within a given space (in this case, San Francisco) without a historical examination of the built urban environment of San Francisco that outlines the physical foundation of population health and transforms health outcomes.

This research will focus on class, race, and HIV in San Francisco and will attempt to examine how these factors are relevant to housing. Assessing the history of the geography/built urban environment of San Francisco alongside the social, economic, and political aspects of HIV allows for drawing connections between often-overlooked factors that are nevertheless relevant to HIV acquisition. By utilizing an integrative framework, we can better comprehend the manifestation and allocation of HIV: geographical analyses will emphasize the racial and class components of HIV infection in San Francisco, and challenge conclusions that credit the spatial distribution

1 Division of HIV/AIDS Prevention. National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. Communities in Crisis: Is There a Generalized HIV Epidemic in Impoverished Urban Areas of the United States? Report prepared by Paul Denning and Elizabeth DiNenno. Atlanta, GA: Center for Disease Control and Prevention, 2010. <https://www.cdc.gov/hiv/group/poverty.html>

2 National Center for HIV/AIDS, Viral Hepatitis, STD, and TB Prevention. Lifetime Risk of HIV Diagnosis. Atlanta, GA: Center for Disease Control and Prevention, 2016. <https://www.cdc.gov/nchstp/newsroom/2016/croi-press-release-risk.html>

3 Courtney Caiola, Julie Barroso, and Sharron L. Docherty. "Capturing the Social Location of African American Mothers Living with HIV: An Inquiry into How Social Determinants of Health Are Framed." *Nursing Research* 66, no. 3 (2017): 209–221. doi:10.1097/NNR.0000000000000213.

4 Jonathan M. Metz and Helena Hansen. "Structural competency: Theorizing a new medical engagement with stigma and inequality." *Social Science & Medicine* 103, (2014): 126-133. doi:10.1016/j.socscimed.2013.06.032

5 San Francisco Department of Public Health. Atlas of HIV/AIDS in San Francisco 1981-2000. San Francisco, CA: SFDPH, 2003. <https://www.sfdph.org/dph/files/reports/RptsHIVAIDS/HIVAIDSAtlas1981-2000.pdf>

6 SFDPH. HIV Epidemiology Annual Report 2017. San Francisco, CA: SFDPH, 2018. <https://www.sfdph.org/dph/files/reports/RptsHIVAIDS/AnnualReport2017-Green-20180904-Web.pdf>

7 Getting to Zero San Francisco. "About HIV and San Francisco." Accessed February 11, 2019. <http://www.gettingtozerosf.org/about/>.

of HIV cases to random coincidence. Each piece of evidence builds upon one another to prove that housing as a structural intervention is a rational tactic in combating HIV.

This research is organized into the following three chapters. Chapter 1 begins by deconstructing the demographic shifts in HIV acquisition cases within the City and County of San Francisco to better distinguish the rapidly changing face of the current HIV epidemic. Chapter 2 emphasizes place and health encompassing poverty, HIV health disparities, and gentrification patterns to reconceptualize space (in the imagination of population health) and how disease is manifested, but also allocated by state and market forces through health, housing, and economic policy-making. Chapter 3 explores why housing is an innovative structural intervention by examining its fundamental role in public health infrastructure, maximizing HIV treatment outcomes, and modifying “risky” behavior.

The goal of the author’s research is to supplement the author’s direct service work in the field of HIV prevention and expand how the field of public health approaches HIV interventions. Having worked with two distinct populations in HIV prevention, urban (San Francisco) and non-urban (Berkeley), with an emphasis on altering “risky behaviors,” the author witnessed firsthand the structural barriers that facilitate HIV transmission for certain populations and not others. Ultimately, the author’s overarching analysis attempts to shift causality away from individuals’ decision-making for their seroconversion and make public health institutions hold accountable the influential role the built urban environment (the history embedded in the creation of San Francisco) that molds and generates population health. If the goal is truly to reach zero HIV cases, whether it be in San Francisco or the United States, society must reevaluate and redesign the structural and spatial relationships between cities and their poor, between White and non-White populations, and between medical institutions and their patients, in order to strategically approach ending the HIV/AIDS epidemic.

II. Chapter 1: The Changing Face of the HIV/AIDS Epidemic in SF

The HIV/AIDS epidemic in San Francisco over time has resulted in significant demographic shifts in HIV cases that demonstrate the profound HIV-related health equity gap found throughout the city and the rest of the nation. According to the 2018 San Francisco Department of Public Health HIV Semi-Annual Surveillance Report, as of December 31st, 2018, there were 15,892 people living with HIV in San Francisco.⁸ Furthermore, 30,089 San Franciscan residents have received an AIDS diagnosis, followed by approximately 20,925 cumulative AIDS-related deaths in 2018.⁹ HIV+ San Franciscans encompassed 12% of all HIV cases in the State of California and represent 2% of all cases in the United States.¹⁰ Only 190 new HIV cases were diagnosed in 2018 in comparison to the 398 cases reported in 2013 and the 522 cases documented in 2008.¹¹ These data suggest a steady decline of new HIV cases, a reduction of more than 60% of diagnoses within the past decade, but if overall HIV cases are decreasing, then the more important question is the following: Who is still acquiring HIV, and why?

HIV incidence data by ethnicity suggest astounding differences among White and non-White populations. In 2018, people of color represented exactly 70.5% of all new HIV diagnoses in San Francisco, the highest share it has ever held within the last decade.¹² Furthermore, this trend in which people of color disproportionately represent half or more of all new HIV diagnoses in San Francisco has occurred consecutively since 2012.¹³ In comparison, White populations, between 2011 and 2018, have seen declines of roughly around 22% in new HIV diagnoses with 1-4% decrements annually; indeed, this is the only subgroup that has consistently experienced decreasing cases in the 21st century.¹⁴ Where in 2007, White populations represented exactly half of all HIV diagnoses given in San Francisco, in 2018 they represented less than a third of all diagnoses.¹⁵ We have established that the

8 SFDPH. HIV Semi-Annual Surveillance Report. San Francisco, CA: SFDPH, 2019.
<https://www.sfdph.org/dph/files/reports/RptsHIVAIDS/HIV-Semi-Annual-Report-Dec2018.pdf>

9 SFDPH. HIV Semi-Annual Surveillance Report. San Francisco, CA: SFDPH, 2019.

10 SFDPH. HIV Epidemiology Annual Report 2017. San Francisco, CA: SFDPH, 2018.

11 SFDPH. HIV Semi-Annual Surveillance Report. San Francisco, CA: SFDPH, 2019.

12 SFDPH. HIV Semi-Annual Surveillance Report. San Francisco, CA: SFDPH, 2019.

13 SFDPH. HIV Semi-Annual Surveillance Report. San Francisco, CA: SFDPH, 2019.

14 SFDPH. HIV Semi-Annual Surveillance Report. San Francisco, CA: SFDPH, 2019.

15 SFDPH. HIV Semi-Annual Surveillance Report. San Francisco, CA: SFDPH, 2019.

positive impacts of Getting to Zero are not universally felt by all San Franciscans. When HIV surveillance data is disaggregated by race and ethnicity, it is clear that the current HIV epidemic is a racialized issue in San Francisco.

a. The HIV Gap Among Black and White San Franciscans

In this research, the author chose to focus primarily on White and African American populations in San Francisco for two reasons: first, in order to examine distinct health disparities surrounding HIV using controversial values that highlight structural racism; and second, because data collection for African Americans is much more reliable than any other community of color (e.g., a lack of concrete Asian American and Pacific Islander data collected in San Francisco; the instability of the diverse use/meaning/application of the identities Hispanic/non-White Hispanic/Latinx). As can be seen in **Figure 1.1**, a line graph portraying HIV incidence rates for men in San Francisco between the years of 2006 and 2017, African American men were the only subgroup to exceptionally surpass all other racial groups in HIV incidence rates.¹⁶ In 2017, the HIV incidence rate of African American men in San Francisco was 116 cases per 100,000 residents, whereas the HIV incidence rate of White men was about a third of that value, coming in at 39 cases per 100,000 residents.¹⁷ However, it is important to note the 2012 anomaly present in **Figure 1.1**, where annual rates of White men recently diagnosed with HIV just about surpass African American men, with around 5-10 more cases per 100,000 residents.¹⁸ Despite the anomaly, HIV incidence rates fluctuate for African American men, while HIV incidence rates for White men in San Francisco have experienced steady declines after 2012.¹⁹ While HIV incidence rates are gradually diminishing for all ethnic and racial groups since 2006, HIV-related disparities are more pronounced for African American populations especially among African American women.

HIV incidence rates for women in San Francisco underscore that HIV is a racialized social disease. According to **Figure 1.2**, a line graph portraying HIV incidence rates for women in San Francisco between the years of 2006 and 2017, reveals that African American women were disproportionately impacted by HIV in San Francisco.²⁰ The annual rate of African American women newly diagnosed with HIV was 43 cases per 100,000 residents in 2017, as compared to White women, which was around 5 cases per 100,000 residents.²¹ From this data alone, African American women in San Francisco were about eight times more likely to receive an HIV diagnosis. Furthermore, for the year 2017, the HIV incidence rate for African American women *exceeded* White men in San Francisco, by 4 more cases per 100,000 residents. The highest HIV incidence rate for African American women was in 2011, with 65-68 cases per 100,000 residents, versus less than 10 cases per 100,000 residents for White women.²² To add more context to the values presented in this section, African Americans only represent 5.5% of the overall San Francisco population, a demographic subgroup that has been shrinking since 2000.²³ In summary, both male and female African Americans, experience adverse health outcomes in relation to HIV; they have the highest HIV incidence rates in the city. This is no coincidence: Chapter 2 examines poverty and its relationship to place and health. HIV in San Francisco is not manifested just as a racialized social issue, but also a class issue--especially in the context of housing status.

b. HIV and Housing Status in San Francisco

Relative to HIV/AIDS, housing status is a fundamental factor in determining HIV-related health outcomes. Despite constituting less than 1% of San Francisco's cumulative population, homeless individuals are overrepresented in

16 SFDPH. HIV Epidemiology Annual Report 2017. San Francisco, CA: SFDPH, 2018.

17 SFDPH. HIV Epidemiology Annual Report 2017. San Francisco, CA: SFDPH, 2018.

18 SFDPH. HIV Epidemiology Annual Report 2017. San Francisco, CA: SFDPH, 2018.

19 SFDPH. *HIV Epidemiology Annual Report 2017*. San Francisco, CA: SFDPH, 2018.

20 SFDPH. *HIV Epidemiology Annual Report 2017*. San Francisco, CA: SFDPH, 2018.

21 SFDPH. *HIV Epidemiology Annual Report 2017*. San Francisco, CA: SFDPH, 2018.

22 SFDPH. *HIV Epidemiology Annual Report 2017*. San Francisco, CA: SFDPH, 2018.

23 United States Census Bureau, "QuickFacts San Francisco County, California." Accessed March 14, 2019. <https://www.census.gov/quickfacts/sanfranciscocountycalifornia>.

new HIV diagnoses.²⁴ According to the 2017 San Francisco Homeless Count report, the number of individuals experiencing homelessness in San Francisco is approximately at 7,499 as of January 2017-- a 2% increase since 2013. Moreover, those experiencing homelessness have a recurring history of facing housing instability: three in four survey participants answered that they have been homeless in the past five years.²⁵

The proportion of the homeless population with a recent HIV diagnosis (recent being defined as within the fiscal year) has been on the rise since 2015 and has been in the range of 10-15% of all new HIV diagnoses in San Francisco for more than a decade.²⁶ The progression of homelessness and the HIV incidence rates coincide. As seen in **Figure 1.3**, The San Francisco Homeless Count reported in 2015 that over half, or 59% of survey respondents, shared that they had been experiencing homelessness for more than a year, a phenomenon present and growing since 2012.²⁷ Incorporating this data into the framework of viral suppression, the utilization of Antiretroviral Therapy [ART] to reduce the amount of HIV in a given person to an undetectable level (undetectable equals untransmittable), in San Francisco, the intersection of homelessness and HIV peaks. For reference, the goal for all HIV+ cases is to reach a suppressed viral load in order to achieve three results: prevent the individual from reaching HIV Stage 3 (commonly known as AIDS); increase survival rates significantly; and virtually eliminate the possibility of transmitting the virus to others (regardless of the mode of transmission), essentially making treatment a form of prevention. This in turn reduces HIV-care related costs for all parties, individual and county. In San Francisco, there were 13,113 cases of people living with HIV reported in 2017, 12,793 of which were housed while the remaining 320 were homeless.²⁸ Only a third of HIV+ homeless people were virally suppressed whereas among their housed counterparts, three-quarters of cases reached viral suppression.²⁹ These low rates of viral load suppression have resulted in high mortality rates and substantially low-probability survival rates for this demographic group, as they would for any other.³⁰ However, although there have been substantial developments in the success of HIV prevention initiatives in San Francisco, homeless populations have clearly not benefited from such improvements, continuing to be disproportionately diagnosed with HIV, and with lower rates of viral suppression than any other population in the city. Housing status (or rather, lack of housing) is a clear determinant of HIV disparities. The use of housing as a prevention and treatment intervention for HIV is an innovative bold strategy that addresses the active role the built urban environment plays in designing population health, especially for historically marginalized, underserved, and disinvested communities.

With the application and analysis of the San Francisco Department of Public Health HIV epidemiological surveillance data from the previous decade, we have established the consensus that there is currently a demographic shift of those affected by the current HIV/AIDS epidemic in San Francisco. The data suggests the need for a macro-level analysis to identify why these historically underserved, marginalized, and disinvested populations, particularly African American San Franciscans, San Franciscans of color, and those experiencing homelessness, are systematically impacted by HIV, especially in the era of Getting to Zero, Antiretroviral Therapy (HAART), Pre-Exposure Prophylaxis (PrEP), and Post-Exposure Prophylaxis (PEP). Chapter 2 integrates a geographical macro analysis using data collected in the past three decades from the San Francisco Atlas of HIV/AIDS to better grasp how disease (HIV) is manifested and allocated by state and market forces throughout San Francisco.

III. Chapter 2: Place and Health – Space and Disease

Several thematic maps explicitly or implicitly explore hypotheses on the relationships between poverty, HIV infection, health outcomes, race/ethnicity and the public health response of our city. These are not the only themes

24 Diane Havlir and Joe Hollendoner. "Housing needed to reduce HIV infections." *The San Francisco Chronicle* (San Francisco), November 29, 2018, accessed March 20, 2019, <https://www.sfchronicle.com/opinion/openforum/article/Housing-needed-to-reduce-HIV-infections-13432863.php?psid=1fSIV#article-comments>.

25 Applied Survey Research. *San Francisco 2017 Homeless County and Survey Comprehensive Report*. (San Francisco, CA: ASR, 2017).

26 SFDPH. *HIV Epidemiology Annual Report 2017*. San Francisco, CA: SFDPH, 2018.

27 Applied Survey Research. *San Francisco 2017 Homeless County and Survey Comprehensive Report*. (San Francisco, CA: ASR, 2017).

28 SFDPH. *HIV Epidemiology Annual Report 2017*. San Francisco, CA: SFDPH, 2018

29 SFDPH. *HIV Epidemiology Annual Report 2017*. San Francisco, CA: SFDPH, 2018

30 SFDPH. *HIV Epidemiology Annual Report 2017*. San Francisco, CA: SFDPH, 2018

or hypotheses evident in this second Atlas of HIV/AIDS in San Francisco. We invite the reader to engage in what we believe is the primary aim of this resource – to generate new hypotheses on the causes of HIV/AIDS infection and health outcomes and innovations on how to respond.³¹

Chapter 2 examines the geographic relationships that emerge between space and disease in San Francisco, specifically by focusing on poverty and the resource scarce conditions created that generate the way HIV is spatialized. This chapter heavily relies on the use of visual data such as maps to facilitate solidifying the associations between HIV health disparities, current susceptible populations, and poverty-induced changes such as gentrification. It is important to note that many claims made in this section are derived solely from visual analysis and lack precise quantitative analyses to establish clearer links. Hence, the use of the term “association”. Nevertheless, visual analysis still reinforces the idea that class and race are interconnected and can support the claim that housing status is a fundamental issue when addressing the current HIV/AIDS epidemic in San Francisco. As mentioned in the San Francisco Atlas of HIV/AIDS, HIV surveillance data collected are used to generate a hypothesis that examines how public health interventions to HIV (in the first three decades of the epidemic) do not have a universal stable impact and are rather fragmented and diffused throughout the different neighborhoods and districts found in the city compounded by racial and class makeup.

a. Poverty and Space

Before exploring how HIV is spatialized throughout San Francisco, this section will attempt to spatialize financial health, specifically by focusing on median household income, median rent paid, and poverty levels. According to the 2010 American Community Survey, the median household income (regardless of race/ethnicity) in San Francisco was \$71,304.³² This value increased in the span of a decade: the 2000 overall median household income was \$45,000.³³ However, this increase was not uniform across the city’s population. The following neighborhoods had territories containing the lowest median household income in the region: Tenderloin, South of Market, Downtown, Western Addition, Bayview, and Visitacion Valley.³⁴ These neighborhoods are located along the inner-city and southeast of San Francisco. Virtually all neighborhoods east of the Castro (and southeast of San Francisco) gained an influx of wealthy residents throughout the decade. The Castro is used as a reference point due to its central location. The same neighborhoods that had the lowest median household income had tracts where at least a quarter or more of its residents were living below the Federal Poverty Line.³⁵ This correlates to the demographic alterations that have occurred within the 21st century of San Francisco, which will be explained in the following section. Additionally, it is important to note neighborhoods located west of the Castro had less than 5% of inhabitants living under the Federal Poverty Line.³⁶

As seen in **Figure 2.1**, bar graphs specifying migration patterns of low-income populations based on race, the city experienced an upsurge of higher-income residents across all low-income communities, more than half (an average of 59%) migrated out of San Francisco, many of whom were native to San Francisco.³⁷ This is because virtually all neighborhoods in San Francisco experienced increases in median rent paid: where in 2000, the average rent was \$891 (for a one bedroom unit), 15 years later, this average more than doubled to \$1,880.³⁸ These disparities reflect the intensity of the housing market of San Francisco that burdens the poor the hardest. Furthermore, rising rent burdens are consistent in all low-income populations, regardless of race and ethnicity. In 2015, half or more reported to be rent-burdened, spending a third or more of their income solely on rent-related

31 San Francisco Department of Public Health. *Atlas of HIV/AIDS in San Francisco 2010*. San Francisco, CA: SFDPH, 2013. <https://www.sfdph.org/dph/files/reports/RptsHIVAIDS/HIVAIDSAtlas2010>

32 SFDPH. *Atlas of HIV/AIDS in San Francisco 2010*. San Francisco, CA: SFDPH, 2013.

33 SFDPH. *Atlas of HIV/AIDS in San Francisco 1981-2000*. San Francisco, CA: 2003.

34 SFDPH. *Atlas of HIV/AIDS in San Francisco 2010*. San Francisco, CA: SFDPH, 2013.

35 SFDPH. *Atlas of HIV/AIDS in San Francisco 2010*. San Francisco, CA: SFDPH, 2013.

36 SFDPH. *Atlas of HIV/AIDS in San Francisco 2010*. San Francisco, CA: SFDPH, 2013.

37 UC Berkeley Urban Displacement Project and The California Housing Partnership. *Rising Housing Costs and Re-Segregation in the San Francisco Bay Area County Results Supplement*. (Berkeley, CA: University of California Press, 2018).

38 UC Berkeley Urban Displacement Project and The California Housing Partnership. *Rising Housing Costs and Re-Segregation in the SF Bay Area County Results Supplement*.

costs, a trend that has only been increasing since 2000.³⁹

b. The Spatial Relationship Between Poverty, HIV, and Race

Examining parts of San Francisco that have the highest concentration of poverty, these trends also include high HIV incidence rates in almost all neighborhoods mentioned earlier. Connecting this back to HIV health disparities in San Francisco, areas with the highest HIV incidence for 2009-2010 include the following: Tenderloin, South of Market, the Mission, and Western Addition.⁴⁰ It is important to point out HIV/AIDS in the Tenderloin, the “Skidrow of San Francisco” and home to many low-income and homeless populations, became the second epicenter (in both centuries) of the HIV/AIDS epidemic and sub-epidemics formed in neighboring areas of the Tenderloin.⁴¹ HIV-related disparities in relation to poverty are even more striking when observing the low proportion of poor San Franciscans that were linked to care after being diagnosed with HIV and reached viral suppression. As seen in **Figure 2.2**, a map detailing the proportion of HIV cases linked to care within 3 months of diagnosis, the same southeast San Francisco neighborhoods that received the majority of all new HIV diagnoses in 2010 (Tenderloin, South of Market, the Mission, and Bayview), had less than 85% of HIV cases in these respective areas connected to care within three months post diagnosis.⁴² The only exception to this trend was the Western Addition neighborhood.⁴³ However, these trends were consistent with community viral load counts and ART adherence among HIV cases in San Francisco.

Community viral load count aggregates individual viral loads, the amount of virus copies found in an individual’s system, pertaining to a specific space, ideally the closer the value to zero the better. The highest mean community viral load found in 2010 corresponded to the following zones: Tenderloin, South of Market, the Mission, and Bayview.⁴⁴ Neighborhoods with the lowest ART adherence (in this case approximately three-quarters or lower are using ART to reach viral suppression) belonged to low-income areas mentioned before repeatedly: Tenderloin, South of Market, and Bayview. These data suggest a strong correlation between poverty and disparities in virtually all relevant aspects of HIV: diagnosis, community viral load, and ART adherence.

As mentioned in Chapter 1, we have established the fact that African American San Franciscans are disproportionately impacted by HIV/AIDS. Neighborhoods with the highest levels of poverty and considered segregated in San Francisco were predominantly occupied by people of color, approximately about a third of all low-income populations.⁴⁵ Moreover, in 2015, African Americans were the only racial group to have two-thirds of its working-class population living in segregated, high-poverty tracts in San Francisco, with roughly a 20% increase since 2000.⁴⁶ In comparison, in 2015, White San Franciscans had about a tenth of its low-income population living in segregated, high-poverty tracts, with virtually no increases or decreases since 2000.⁴⁷ As housing prices skyrocketed between 2000 and 2015, around 3,000 low-income African Americans households migrated out of San Francisco which represented a total of 75% of all low-income African Americans.⁴⁸ Furthermore, African American residents (regardless of income level) paid the highest average rent-to-income ratio, 45%, the amount of income spent solely on rent.⁴⁹

39 UC Berkeley Urban Displacement Project and The California Housing Partnership. *Rising Housing Costs and Re-segregation in the SF Bay Area County Results Supplement*.

40 SFDPH. *Atlas of HIV/AIDS in San Francisco 2010*. San Francisco, CA: SFDPH, 2013.

41 SFDPH. *Atlas of HIV/AIDS in San Francisco 1981-2000*. San Francisco, CA: 2003.

42 SFDPH. *Atlas of HIV/AIDS in San Francisco 2010*. San Francisco, CA: SFDPH, 2013.

43 SFDPH. *Atlas of HIV/AIDS in San Francisco 2010*. San Francisco, CA: SFDPH, 2013.

44 SFDPH. *Atlas of HIV/AIDS in San Francisco 2010*. San Francisco, CA: SFDPH, 2013.

45 UC Berkeley Urban Displacement Project and The California Housing Partnership. *Rising Housing Costs and Re-segregation in the SF Bay Area County Results Supplement*.

46 UC Berkeley Urban Displacement Project and The California Housing Partnership. *Rising Housing Costs and Re-segregation in the SF Bay Area County Results Supplement*.

47 UC Berkeley Urban Displacement Project and The California Housing Partnership. *Rising Housing Costs and Re-segregation in the SF Bay Area County Results Supplement*.

48 UC Berkeley Urban Displacement Project and The California Housing Partnership. *Rising Housing Costs and Re-segregation in the SF Bay Area County Results Supplement*.

49 UC Berkeley Urban Displacement Project and The California Housing Partnership. *Rising Housing Costs and Re-segregation in the SF Bay Area County Results Supplement*.

To provide more context, African Americans were more rent-burdened compared to all other racial groups in San Francisco and even placed higher than the city's average rent-burden, 36%.⁵⁰ Neighborhoods that experienced intense demographic shifts were historically African American communities of San Francisco, particularly four neighborhoods: Tenderloin, Western Addition, Mission [borders], and Bayview.⁵¹ As seen in **Figure 2.3A and Figure 2.3B**, HIV surveillance maps reflecting the portion of African Americans living with HIV in San Francisco, these were virtually the same neighborhoods that received the majority of all new HIV diagnoses throughout the early twenty-first century: Tenderloin, Western Addition, and Bayview.⁵² Interestingly, these neighborhoods had the highest proportion of non-MSM populations living with HIV/AIDS in 2010: heterosexual women and heterosexual men.⁵³ To summarize, African Americans in San Francisco were more likely to live in segregated and high poverty tracts, more likely to be pushed out of the city due to financial circumstances out of their control, and more likely to live in a neighborhood with high HIV incidence rates.

Indeed, in 2015, homelessness was concentrated in the same neighborhoods with large African American populations and new HIV diagnoses: Tenderloin, Western Addition, Mission, and Bayview.⁵⁴ Nationally, the average life expectancy for homeless populations is 25 years less than housed populations.⁵⁵ Moreover, homelessness is associated with less access to health care services and other crucial resources that may improve their housing and health status. According to the 2017 San Francisco Homeless Count, more than two-thirds of participants shared that they are currently living with one or more health conditions, including physical disabilities, chronic substance use, and severe mental health conditions. In the 2013 San Francisco Homeless Count, about 6% of participants indicated they were living with HIV/AIDS; four years later, this value nearly doubled to 11%.⁵⁶ Moreover, disparities are amplified when comparing chronically homeless populations and non-chronically homeless populations in San Francisco. The San Francisco Homeless Count Survey defines chronic homelessness using the United States Department of Housing and Urban Development definition: an unaccompanied individual or head of a family household with a disabling condition who has either experienced homelessness for a year or more or has experienced at least four episodes of homelessness in the past three years.⁵⁷ These data suggest that health disparities related to HIV/AIDS reflect the opposite of what the Getting to Zero initiative entails and promotes.

Data on White residents in San Francisco show values inverse of African American populations, especially in the context of HIV health disparities and overall urban health. The first epicenter of the HIV/AIDS epidemic in San Francisco was geographically in the Castro, a historical LGBTQ+ neighborhood, predominantly White and affluent.⁵⁸ It is important to note that the highest HIV prevalence rates occurred in the Castro in the late 20th century and early 21st century, ranging from 8,692 to 13,357 cases per 100,000 residents.⁵⁹ As seen in **Figure 2.4**, a scatter plot detailing HIV mortality rates for different neighborhoods in San Francisco, when comparing the Castro to the neighborhoods of interest (Western Addition, Tenderloin, and South of Market) mentioned earlier, almost all of these neighborhoods have mortality rates higher than the Castro, with the exception of Western Addition which is only slightly below, as of 2017.⁶⁰ This trend is consistent with levels of neighborhood resources, community resources or assets relevant to quality of life, in San Francisco. The level of neighborhood resources for White populations (regardless of income level) was the highest than any other racial group in San Francisco, where White San Franciscans had access to more than 70% of highly and/or moderately rated resources as of

50 UC Berkeley Urban Displacement Project and The California Housing Partnership. *Rising Housing Costs and Re-Segregation in the SF Bay Area County Results Supplement*.

51 UC Berkeley Urban Displacement Project and The California Housing Partnership. *Rising Housing Costs and Re-Segregation in the SF Bay Area County Results Supplement*.

52 SFPDPH. *Atlas of HIV/AIDS in San Francisco 2010*. San Francisco, CA: SFPDPH, 2013.

53 SFPDPH. *Atlas of HIV/AIDS in San Francisco 2010*. San Francisco, CA: SFPDPH, 2013.

54 Applied Survey Research. *SF 2017 Homeless County & Survey Comprehensive Report*.

55 Applied Survey Research. *SF 2017 Homeless County & Survey Comprehensive Report*.

56 Applied Survey Research. *SF 2017 Homeless County & Survey Comprehensive Report*.

57 Applied Survey Research. *SF 2017 Homeless County & Survey Comprehensive Report*.

58 SFPDPH. *Atlas of HIV/AIDS in San Francisco 1981-2000*. San Francisco, CA: 2003.

59 SFPDPH. *Atlas of HIV/AIDS in San Francisco 2010*. San Francisco, CA: SFPDPH, 2013.

60 SFPDPH. *HIV Epidemiology Annual Report 2017*. San Francisco, CA: SFPDPH, 2018

2015.⁶¹ In comparison to Black San Franciscans, even those of middle and high-income populations, only 20% had access to highly rated resources in their neighborhoods, making them the racial group with the poorest access to quality resources in their communities.⁶²

These data points are significant because not only do they suggest that income-level is less of a defining factor in constructing health outcomes but rather race can predetermine quality of life in San Francisco. For example, lack of quality resources within the framework of HIV can be interpreted as lacking HIV testing sites or AIDS Drug Assistance Programs (ADAP) participating clinics or pharmacies. ADAP is a federally funded program to connect uninsured or underinsured populations to HIV prevention or HIV treatment medications.⁶³ As seen in **Figure 2.5**, a map with data points representing ADAP participating pharmacies and clinics, in the Bayview, there is only one ADAP participating clinic and two ADAP participating pharmacies.⁶⁴ Whereas, as seen in **Figure 2.5**, higher-income and White populations located on the opposite side of Bayview have an influx of ADAP participating sites (having more than three combined ADAP participating clinics and pharmacies throughout different neighborhoods) despite low HIV diagnoses and mortality rates found throughout the northwest region of San Francisco.⁶⁵ This lends further evidence to the geographic disparity in HIV in San Francisco. As mentioned throughout this paper, class and (more importantly) race define HIV-related health outcomes especially in the way the disease is manifested and allocated throughout San Francisco.

c. The Historical Legacy of Racialized Space and its Consequences

Resource allocation in San Francisco is deeply embedded with historical political, social, and economic factors that have been responsible in shaping and designing contemporary San Francisco. With the economic pressures caused by the Great Depression, the Roosevelt administration created the Home Owners Loan Corporation under the New Deal package as an attempt to stabilize and restore housing markets all throughout the United States.⁶⁶ Essentially, the Home Owners Loan Corporation functioned as an emergency response federal program specifically created to restructure the mortgage lending market. This restructuring resulted in creating the historical practice that would value property (or rather space) based on racial demographic composition. What is commonly referred to as ‘redlining maps’ today, were previously called “Security Maps” by the Home Owners Loan Corporation. These maps were based on cumulative “rigorous” assessments that included demographic data and economic reports on geographic locations throughout the nation.⁶⁷ Hence the name Security Maps, the Home Owners Loan Corporation used these maps to predetermine whether or not neighborhoods or districts were worth ‘investing’ in using New Deal aid funds. These Security Maps were color-coded with 4 distinct categories: Best (green), Still Desirable (blue), Definitely Declining (yellow), Hazardous (red). Best and Still Desirable locations were of middle or affluent class status and predominantly American-born, White-dominated neighborhoods. Definitely Declining and Hazardous locations included high concentrations of foreign-born residents, ethnic and racial minorities, and working-class status. The practice of redlining has created a racialized (and class) system that has perpetuated the disinvestment in urban communities, perpetuated segregation (especially in regard to homeownership), and reinforces wealth inequality solely on the basis of race alone.⁶⁸ The following quote is only a small example of the racialized language used by the Home Owners Loan Corporation when discussing property values in San

61 UC Berkeley Urban Displacement Project and The California Housing Partnership. *Rising Housing Costs and Re-Segregation in the SF Bay Area County Results Supplement*.

62 UC Berkeley Urban Displacement Project and The California Housing Partnership. *Rising Housing Costs and Re-Segregation in the SF Bay Area County Results Supplement*.

63 Office of AIDS. *AIDS Drug Assistance Program*. Sacramento, CA: California Department of Public Health, 2019. <https://www.cdph.ca.gov/Programs/CID/DOA/Pages/OAadap.aspx>.

64 SFDPH. *Atlas of HIV/AIDS in San Francisco 2010*. San Francisco, CA: SFDPH, 2013.

65 SFDPH. *Atlas of HIV/AIDS in San Francisco 2010*. San Francisco, CA: SFDPH, 2013.

66 Robert K. Nelson, LaDale Winling, Richard Marciano, Nathan Connolly, et al., “Mapping Inequality,” *American Panorama*, ed. Robert K. Nelson and Edward L. Ayers, accessed March 5, 2019, <https://dsl.richmond.edu/panorama/redlining/>

67 Robert K. Nelson, LaDale Winling, Richard Marciano, Nathan Connolly, et al., “Mapping Inequality,” *American Panorama*, ed. Robert K. Nelson and Edward L. Ayers, accessed March 5, 2019, <https://dsl.richmond.edu/panorama/redlining/>

68 UC Berkeley Urban Displacement Project and The California Housing Partnership. *Rising Housing Costs and Re-Segregation in the SF Bay Area County Results Supplement*.

Francisco.

This large area of 125 blocks or more slopes gradually from northwest to southeast. It is what might be termed the “*melting pot of the West*” and is the nearest approach to a slum district in San Francisco. It has a highly congested population consisting of Japanese, Russians, Mexicans, Negroes, etc. having a very low income level. In the north-central part of the area is the largest concentration of Japanese in the City, and Negroes predominate in its northwest section. The southern part is much less affected by the racial situation which has been described, and has many of the qualities of Area D-4. The area is approximately 100% built-up and has a population density estimated to run up to as high as 100,000 to the square mile. The percentage of owner-occupied is very low, and vacancies are numerous with an average of over 10%. About 50% of the area is zoned second-residential, the balance being given over to the business and light industry. There are very few single-family residences in the area, and they are invariably very old. The area is well provided with schools, transportation facilities, and recreational areas. Only one mortgagee institution was found who would even consider residential loans in this neighborhood, and they will only consider applications on the basis of land value. A standard six-room house in this area would probably have sold for \$4250 in 1929, \$2740 in 1933, and is currently selling for \$3500. The same home would have rented for \$40 in 1929, \$25 in 1933, and \$32.50 now.⁶⁹

According to the Home Owners Loan Corporation, “the melting pot of the West” is synonymous with ‘slum district’ to which this label is used to define what would be considered today as a territory encompassing parts of the Tenderloin, Western Addition, and South of Market.⁷⁰ The language used in the Security Map of San Francisco (like Security Maps all throughout the United States) were overtly racist and classist in describing parts of the city that were worth investing in and not investing. This particular tract received a grading of Hazardous (red), which, based on the language used by the Home Owners Loan Corporations, was due to the “highly congested populations consisting of Japanese, Russians, Mexicans, Negroes, etc. having a very low income level.”⁷¹ Examining other parts of the Security Maps, this type of language reinforces and advocates for Whites to self-segregate from these “undesirable” populations. With a hazardous grading, these territories lost access to opportunities and resources created by New Deal aid simply based on racialized factors. In general, in 2019, these same communities have some of the highest amounts of its residents living in highly concentrated poverty, experiencing homelessness, and HIV-related disparities. The historical impact of housing policy that emerged from the New Deal played a fundamental role in the way the HIV epidemic developed in San Francisco. Moreover, 87% of areas that received a grading of Hazardous and/or Definitely Declining in the Security Maps of San Francisco in the 1930s are now currently (and have been) undergoing rapid gentrification, as seen in **Figures 2.6, 2.7, & 2.8**.⁷² The same neighborhoods that have historically housed low-income, non-White populations are now experiencing a different wave of structural violence that results in their displacement from sites that were previously disinvested and abandoned by municipal and federal government agencies.

IV. Chapter 3: Why Housing?

You have to treat the sickest homeless people first, because they use the most resources, and the only way to do that is to know exactly who and where they are and what has worked or hasn’t in each case,” Dr. Josh Bamberger, said. “Once those people are housed, you can concentrate on the rest of the population and snowball to ending homelessness.”⁷³

As mentioned in the quote above, Bamberger makes an excellent point about optimizing resources by

69 Robert K. Nelson, LaDale Winling, Richard Marciano, Nathan Connolly, et al., “Mapping Inequality,” *American Panorama*, ed. Robert K. Nelson and Edward L. Ayers, accessed March 5, 2019, <https://dsl.richmond.edu/panorama/redlining/>

70 Robert K. Nelson, LaDale Winling, Richard Marciano, Nathan Connolly, et al., “Mapping Inequality,” *American Panorama*, ed. Robert K. Nelson and Edward L. Ayers, accessed March 5, 2019, <https://dsl.richmond.edu/panorama/redlining/>

71 Robert K. Nelson, LaDale Winling, Richard Marciano, Nathan Connolly, et al., “Mapping Inequality,” *American Panorama*, ed. Robert K. Nelson and Edward L. Ayers, accessed March 5, 2019, <https://dsl.richmond.edu/panorama/redlining/>

72 UC Berkeley Urban Displacement Project and The California Housing Partnership. “Mapping Displacement.” Accessed April 1, 2019. <https://www.urbandisplacement.org/map/sf>

73 Heather Knight and Kevin Fagan. “S.F spends record \$241 million on homeless, can’t track results.” *The San Francisco Chronicle* (San Francisco), February 5, 2016, accessed March 29, 2019, <https://www.sfchronicle.com/bayarea/article/S-F-spends-record-241-million-on-homeless-6808319.php>

prioritizing society's most vulnerable where radical interventions will be most noticed. As examined in the previous chapters, there is a vital relationship between race and class that spatially produces the way HIV is distributed in San Francisco. This chapter will focus on integrating housing as a means of HIV prevention and treatment. The hypothesis presented in this chapter is if San Francisco begins investing and optimizing housing resources to strengthen San Francisco's most vulnerable populations, homeless and low-income populations, there will be a positive investment return manifested through strengthened population health, specific to HIV. The result is significantly lower HIV-related costs burdened by the city paid by San Franciscan taxpayers and establishes a renewed commitment to serving, empowering, and investing in the city's historically marginalized communities. Currently, the Getting to Zero campaign fails to recognize the momentum housing can provide to accomplish the goal in a timely manner.

As seen in **Figure 3.1**, the author firmly believes there should be an attempt to incorporate housing as a strategic priority within Getting to Zero for HIV prevention and HIV treatment.⁷⁴ This section will explore existing research that supports structural interventions such as housing as a solution to the HIV epidemic in the United States is one refreshing possibility. Furthermore, San Francisco has the unique opportunity to leverage the Getting to Zero initiative to experiment with housing that can potentially also address the current housing crisis that exists in San Francisco and throughout the nation.

a. HIV, US Public Policy, and the Rise of Infectious Diseases

The following will examine the detrimental role of the lack of housing in the spread of HIV during the first years of the epidemic in the twentieth century. In "Plague and Power Relations," geographer Rodrick Wallace argues that municipal responses (specifically in New York City and San Francisco) to integrate cities following the Civil Rights Movement enabled the conditions that allowed infectious diseases such as HIV to thrive and destabilize urban minority communities. As the Civil Rights Movements mobilized minority communities to demand political power and proper resource allocation in the South, political leaders in New York City and San Francisco resorted to "planned shrinkage" in the 1970s (formally known as municipal disinvestment), with the sole purpose of diffusing ethnic minority voting blocks in each respective city and attempting to respond to the fiscal crises of the time.⁷⁵ Municipal disinvestment led to urban desertification and decay through severe cutbacks on essential municipal services that allowed for public health, fire department, and police infrastructure to deteriorate in predominantly poor ethnic communities. Additionally, this practice of disinvestment was also perpetuated by the private sector: many landlords simply abandoned buildings that no longer turned a profit, given the population it housed. For example, it is estimated that in the 1980s, between 55% and 81% of housing was destroyed in the South Bronx of New York City (not including other high poverty areas in New York City) due to planned shrinkage.⁷⁶

In relation to HIV, urban renewal projects fostered urban displacement which also brought social network diffusion and the spread of infectious diseases; nonetheless, the additional spread was not just limited to HIV/AIDS but also included other sexually transmitted infections, tuberculosis, and other related diseases.⁷⁷ Planned shrinkage "greatly compromises attempts to control HIV infection in a very large population."⁷⁸ This reflects the sentiment that micro-level public health interventions fail to consider the structural mechanisms that create the conditions certain populations are predisposed to as a direct result of public policy. Specifically, Wallace claims that municipal disinvestment policies in San Francisco reserved central San Francisco for White middle-class

74 Getting to Zero San Francisco. "Getting to Zero July 2015 Strategic Plan." Accessed February 19, 2019. <https://www.gettingtozerosf.org/getting-to-zero-july-2015-strategic-plan/>.

75 Rodrick Wallace. "A synergism of plagues: 'Planned shrinkage,' contagious housing destruction, and AIDS in the Bronx." *Environmental Research* 47 (1988): 1-33. doi:10.1016/s0013-9351(88)80018-5

76 Rodrick Wallace, Deborah Wallace, J E Ullmann, and H Andrews. "Deindustrialization, inner-city decay, and the hierarchical diffusion of AIDS in the USA: How neoliberal and cold war policies magnified the ecological niche for emerging infections and created a national security crisis." *Environmental Research* 31, no. 01 (1999): 113-139. doi.10.1068/a310113

77 Wallace et al. "Deindustrialization, inner-city decay, and the hierarchical diffusion of AIDS in the USA." *Environmental Research* 31, no. 01 (1999): 113-139.

78 Rodrick Wallace. "A synergism of plagues: 'Planned shrinkage,' contagious housing destruction, and AIDS in the Bronx." *Environmental Research* 47 (1988): p. 22.

residents.

As examined in Chapter 2, the HIV epidemic outbreaks were the least concentrated in central San Francisco in both centuries. Furthermore, US census data examined in Chapter 2 regarding racial and income make-up of San Francisco tracts also support Wallace's assertion about the consequences of municipal disinvestment, in which central San Francisco is majority White and affluent. Other geographers argue that a combination of deindustrialization in the cities (which emerged from neoliberal globalization policies) and Cold War policies that prioritized military funding over all other sectors in society, created enough vulnerabilities in American public health infrastructure to permit the HIV epidemic to thrive in inner-city populations.⁷⁹ This further validates the importance of public health interventions that address the social, economic, and political factors that mold and produce population health outcomes. It is important to note the time period in which Rodrick Wallace makes these claims, 1999, just shortly after the HIV epidemic peaked and the rise of neoliberal economic policies in the United States emerged.

To conclude, regressive social policies such as planned shrinkage prioritized "fiscal responsibility" in urban planning, even if it meant jeopardizing the lives of those historically underserved and marginalized. This, in turn, resulted in the unintended consequence of the rise of infectious diseases in American society (and skyrocketing health-related costs that followed), and specifically enabled HIV conditions in urban America to mirror those in the Global South. This raises the question that if the destruction of urban housing facilitated the spread of HIV in urban cities throughout the late twentieth century, then would the opposite be true today in ending the HIV epidemic in the United States? Investing in and optimizing housing resources for the poor and those experiencing homelessness (in the context of HIV in contemporary society) can be a step forward to amend the injustices and structural violence inner-city communities endured in the previous century. The next section will address why housing, now more than ever, is relevant in combating the current HIV epidemic in San Francisco.

b. Housing as Viral Suppression

As mentioned in Chapter 1, there is a strong correlation between HIV-related health outcomes and housing status. Homeless populations in San Francisco represent less than 1% of the cumulative population and yet they are disproportionately impacted by HIV diagnoses (Havlir, 2018). According to a study conducted in Zuckerberg San Francisco General Hospital Ward 86 in 2017, disparities in viral suppression and mean viral load are evident when comparing living arrangements of different people living with HIV in San Francisco.⁸⁰ As seen in **Figure 3.2**, there is an inverse relationship between viral suppression and viral load as housing status becomes more "destabilized."⁸¹ Destabilized housing refers to non-traditional forms of housing which entails living in a rehabilitation center, single room occupancy hotel, couch-surfing, shelters, and the streets.

Those living with HIV in San Francisco who privately rent or own housing had the highest percent of viral suppression, 85%, and the lowest mean viral load, 7004, making this the most favorable housing status for optimizing HIV-related health outcomes.⁸² In comparison, those living with HIV in San Francisco who were homeless had the lowest percent of viral suppression, 42%, and the highest mean viral load, 87109, making homelessness the worst living arrangement for patients at Ward 86, as it drastically hinders HIV treatment.⁸³ All other living arrangements mentioned produce HIV-related health outcomes that sit between those experiencing

79 Wallace et al. "Deindustrialization, inner-city decay, and the hierarchical diffusion of AIDS in the USA." *Environmental Research* 31, no. 01 (1999): 113-139.

80 Angelo Clemenzi-Allen, Elvin Geng, Katerina Christopoulos, Hali Hammer, Susan Buchbinder, Diane Havlir, and Monica Gandhi. "Degree of Housing Instability Shows Independent 'Dose-Response' With Virologic Suppression Rates Among People Living With Human Immunodeficiency Virus." *Open Forum Infectious Diseases* 5, no. 03 (2018): 1-35. doi.org/10.1093/ofid/ofy305.

81 Clemenzi-Allen et al. "Degree of Housing Instability Shows Independent 'Dose-Response' With Virologic Suppression Rates Among People Living With Human Immunodeficiency Virus." *Open Forum Infectious Diseases* 5, no. 03 (2018): 1-35.

82 Clemenzi-Allen et al. "Degree of Housing Instability Shows Independent 'Dose-Response' With Virologic Suppression Rates Among People Living With Human Immunodeficiency Virus." *Open Forum Infectious Diseases* 5, no. 03 (2018): 1-35.

83 Clemenzi-Allen et al. "Degree of Housing Instability Shows Independent 'Dose-Response' With Virologic Suppression Rates Among People Living With Human Immunodeficiency Virus." *Open Forum Infectious Diseases* 5, no. 03 (2018): 1-35.

the best and worst living arrangements described above. However, it is important to acknowledge that any form of housing still provides more advantageous outcomes than homelessness. As seen in the graph, disparities are evident across the housing status spectrum, when comparing a subgroup of housed populations to homeless populations.⁸⁴

The next section will provide specific examples in which housing as a structural intervention can negate negative health outcomes relevant to HIV acquisition. In summary, mean viral load is 12 times higher for homeless populations than housed populations and the potential for viral suppression is decimated by half simply by experiencing homelessness. This data alone should be a call to action to examine the potential solution housing can bring to end the epidemic in San Francisco. If housing can provide such remarkable improvements to treatment outcomes, in the following section, the author argues that the same can be said when contextualizing housing as a form of HIV prevention.

c. Housing “Risky” People Goes a Long Way

In the past few decades, public health interventions have obsessed over the behavior modifications of at-risk populations to improve overall population health. Yet there is an abundance of research that shows the benevolent role housing plays when it comes to improving or even eliminating “risky” behaviors for vulnerable populations in relation to HIV. It is important to understand that structural interventions attempt to modify the environment in an attempt “to alter the context within which health is produced and reproduced.”⁸⁵ For example, survival sex, the act of exchanging sex for access to basic resources (food, housing, drugs, money) to survive, is practiced by some inner-city populations. The micro-level behavioral intervention commonly deployed by public health officials, such as enforcing condom use with partners, in some cases has been linked to increased intimate partner violence for heterosexual women.⁸⁶ To provide more context surrounding sex work, “if a woman is impoverished and depends on subsistence strategies such as trading sex, self-protection against the seemingly improbable threat of infection may be overshadowed by the more immediate needs to obtain money, food, or a place to sleep.”⁸⁷ Furthermore, “the odds of exchanging sex among clients whose housing status worsened over time were five times as high.”⁸⁸ This narrative depicts just one example of the opportunity-cost analysis that some inner-city populations conduct when it comes to engaging in “risky” behaviors (at least for survival sex): the primary motive is to survive (hence the phrase, survival sex) and other unintended consequences are relegated as secondary.

How can municipal government agencies more effectively address the structural factors that lead to “risky behaviors,” rather than targeting the survival mechanisms of society’s most vulnerable populations? In other words, in the philosophy of harm reduction, how can we meet and empower vulnerable populations where they are? Housing can provide the opportunity for agency, allowing for personal control of one’s private space; or, where an individual can employ harm reduction tactics such as the ability to safely store condoms and safe injection equipment, which can ultimately lower HIV acquisition.⁸⁹ Overall, housing provides a space in which “risky” populations are provided with more options to engage or disengage in “risky” behaviors. As seen in the different examples provided in this Chapter, most “risky” people opt for choices that do not jeopardize their health and well-being.

84 Clemenzi-Allen et al. “Degree of Housing Instability Shows Independent ‘Dose-Response’ With Virologic Suppression Rates Among People Living With Human Immunodeficiency Virus.” *Open Forum Infectious Diseases* 5, no. 03 (2018): 1-35.

85 Tim Rhodes, Merrill Singer, Philippe Bourgois, Samuel R. Friedman, and Steffanie A. Strathdee. “The social structural production of HIV risk among injecting drug users.” *Social Science & Medicine* 61, no. 05 (2005): p. 1034. doi:10.1016/j.socscimed.2004.12.024.

86 Elise D. Riley, Monica Gandhi, C. Bradley Hare, Jennifer Cohen, Stephen W. Hwang. “Poverty, unstable housing, and HIV infection among women living in the United States.” *Current HIV/AIDS Reports* 4, no. 04 (2007): 181-186. doi:10.1007/s11904-007-0026-5.

87 Elise D. Riley et al. Poverty, unstable housing, and HIV infection among women living in the United States.” *Current HIV/AIDS Reports* 4, no. 04 (2007): p. 184.

88 Angela Aidala, Jay E. Cross, Ron Stall, David Harre, and Ester Sumartojo. “Housing Status and HIV Risk Behaviors: Implications for prevention and policy.” *AIDS and Behavior* 9, no. 03 (2005): p. 263. doi:10.1007/s10461-005-9000-7.

89 Tim Rhodes, Merrill Singer, Philippe Bourgois, Samuel R. Friedman, and Steffanie A. Strathdee. “The social structural production of HIV risk among injecting drug users.” *Social Science & Medicine* 61, no. 05 (2005): 1026-1044.

Housing as a structural intervention to address HIV prevention and treatment has proven to be one an innovative possibility, in order to strengthen and empower population health in San Francisco. Essentially, this chapter frames housing as a form of medicine and healthcare (or rather an extension of it), that can play a fundamental role in achieving health equity, especially in relation to HIV. Housing has historically been subjected to a myriad of economic, social, and political factors that directly impact health outcomes.

V. Conclusion

This research explored the way HIV is socially produced in San Francisco, specifically through the lens of race and class, and how these intrinsic relationships mold striking health outcomes relevant to HIV. San Francisco, one of the major Western metropolitan cities devastated by the HIV/AIDS epidemic in the late twentieth century, emerged as a public health global leader through the successes that came about from the city's Getting to Zero initiative launched just a few years ago. Some are arguing that San Francisco may be the first municipal jurisdiction to accomplish UNAIDS mission of ending the HIV epidemic. Yet the Getting to Zero initiative fails to incorporate housing as HIV prevention and HIV treatment as a strategic priority in facilitating the goal of this public health campaign. There is an abundance of literature that supports housing as a structural intervention to counter the HIV epidemic in the United States. This research emphasizes the importance of housing, framing housing as a means of expanding and empowering healthcare specifically for San Francisco's most vulnerable, homeless and low-income population, many of whom are disproportionately people of color (primarily African Americans). As suggested in this research, the author emphasizes housing given its intimate relationship with income inequality and racial apartheid in the United States.

As explored in this research, the HIV epidemic flourishes in urban America due to the collective consequences emerging from the social, political, and economic policies that transformed the urban environment in order to disenfranchise and hyper-marginalize poor ethnic communities. Whether it be through redlining or municipal disinvestment, urban policy fostered the necessary conditions that allowed for the destructive nature of the HIV epidemic, especially in the way the epidemic is spatialized in contemporary San Francisco. Furthermore, San Francisco has the opportunity to experiment with an invigorating approach to HIV through the use of housing to transform the way public health interventions address health holistically and expand beyond the rudimentary focus of behavior-level modifications. The city can choose to invest in its most vulnerable constituents, or continue the legacy of disservice and neglect universally experienced by the Other over the last two centuries of American society. We are the generation that will end the HIV epidemic, but only if, as a society, we embody the fundamental notion that public health is public wealth.

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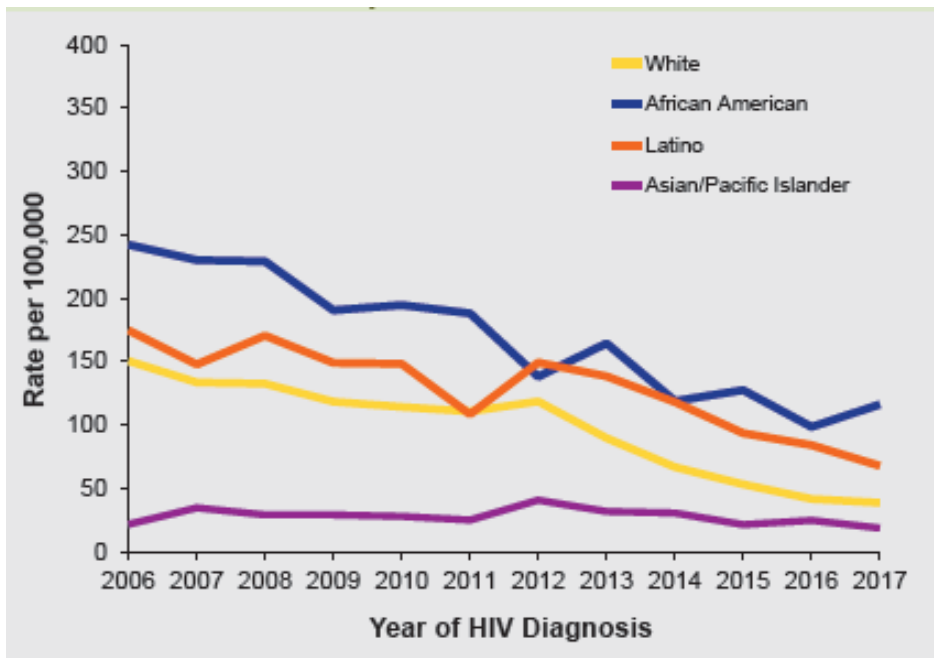
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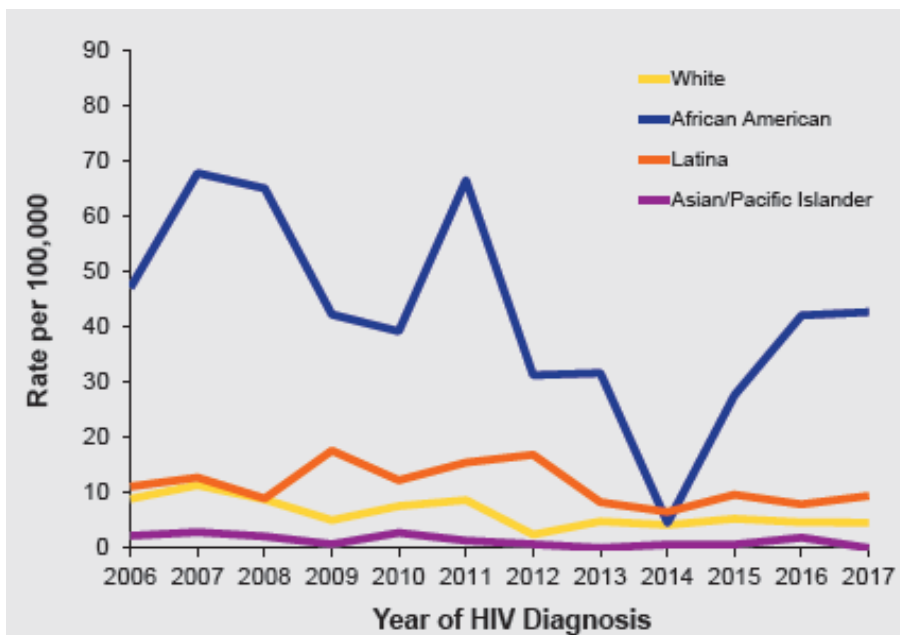
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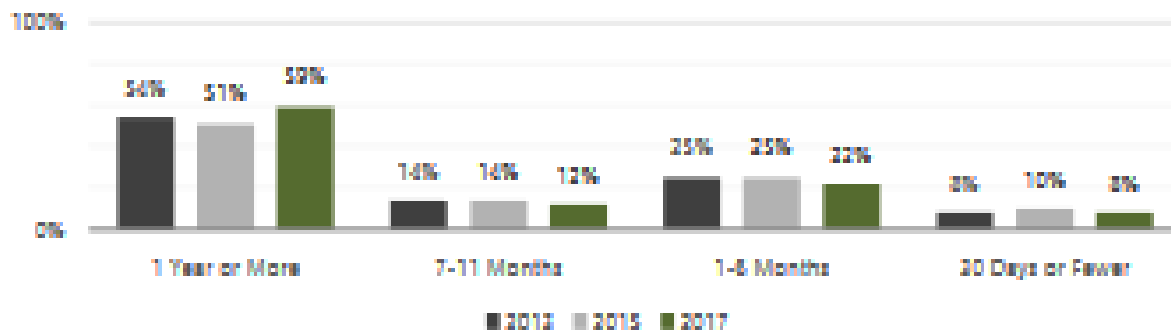
Figure 1.1 Annual Rates of Men Diagnosed in San Francisco with HIV by Race, 2006-2017

Source: SFPDPH. *HIV Epidemiology Annual Report 2017*. San Francisco, CA: SFPDPH, 2018

Figure 1.2 Annual Rates of Women Diagnosed in San Francisco with HIV by Race, 2006-2017

Source: SFPDPH. *HIV Epidemiology Annual Report 2017*. San Francisco, CA: SFPDPH, 2018

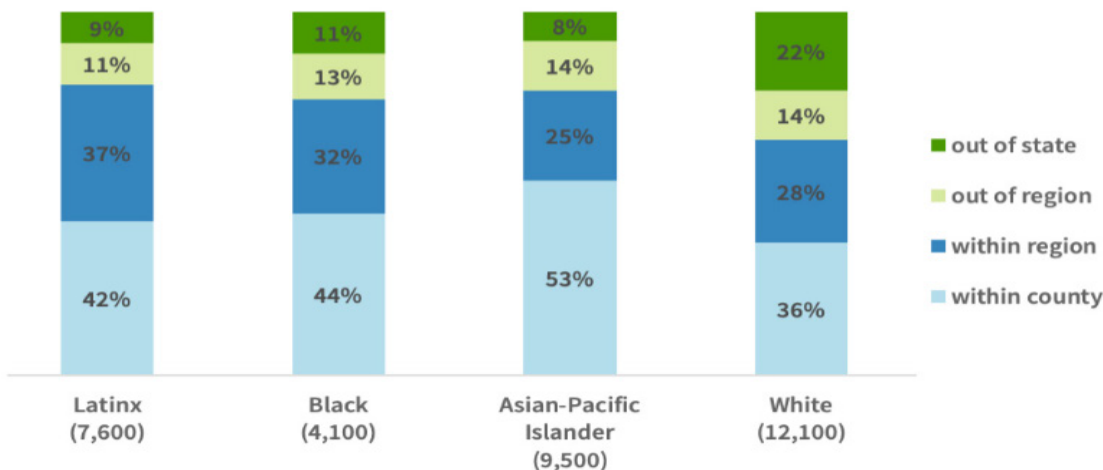
Figure 1.3 Length of Current Homelessness Episode in San Francisco, 2013-2017



Source :Applied Survey Research. *San Francisco 2017 Homeless County and Survey Comprehensive Report*. (San Francisco, CA: ASR, 2017).

Figure 2.1 Migration of Low-Income Movers in San Francisco by Race, 2015

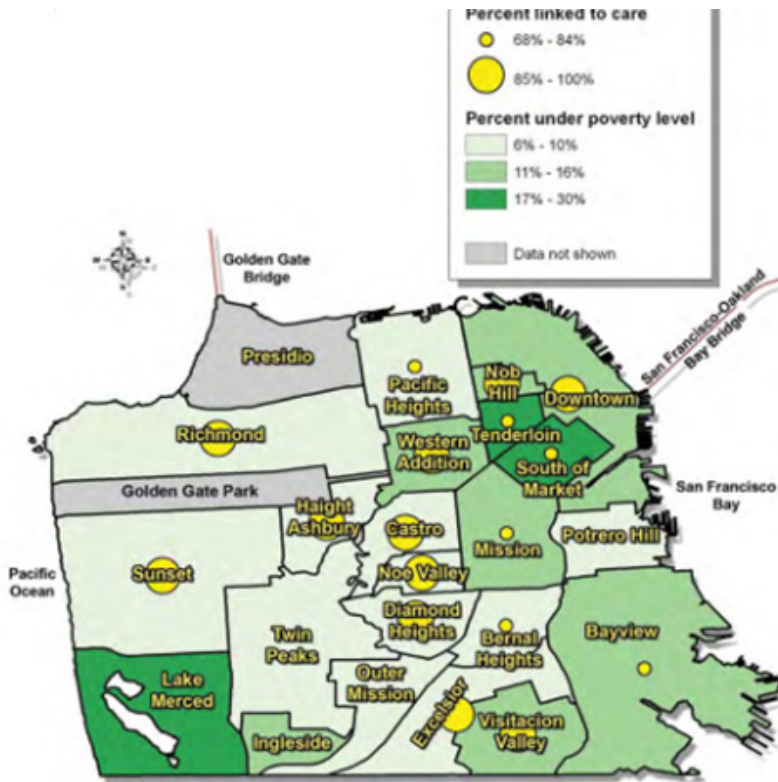
Figure 1. Destination of Low-Income Movers by Race (2015)



Source: IPUMS-USA, University of Minnesota, 2015

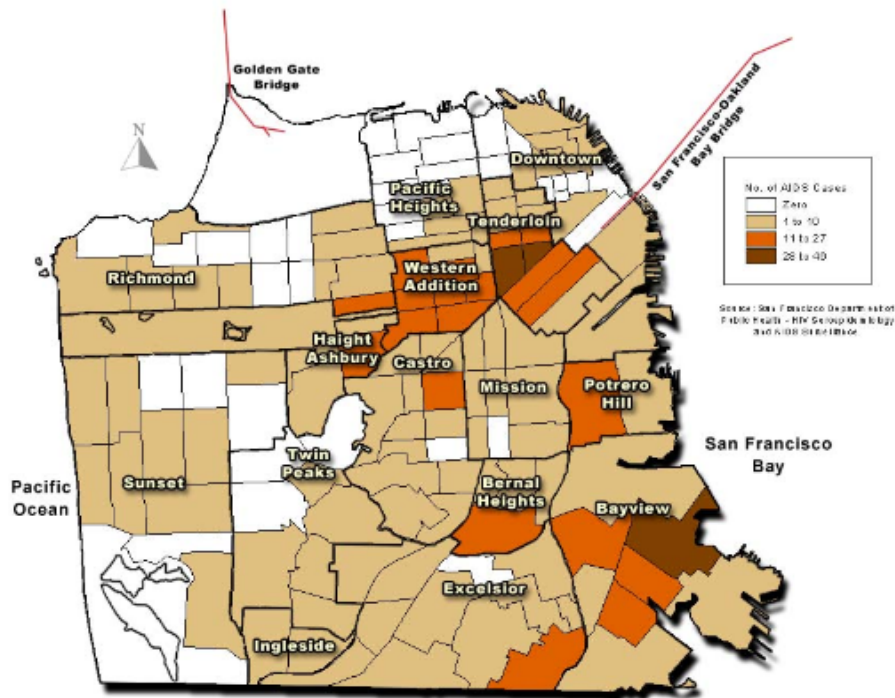
Source: UC Berkeley Urban Displacement Project and The California Housing Partnership. *Rising Housing Costs and Re-Segregation in the San Francisco Bay Area County Results Supplement*. (Berkeley, CA: University of California Press, 2018)

Figure 2.2 Map of Share of SF Residents Connected to Care After HIV Diagnosis, 2010



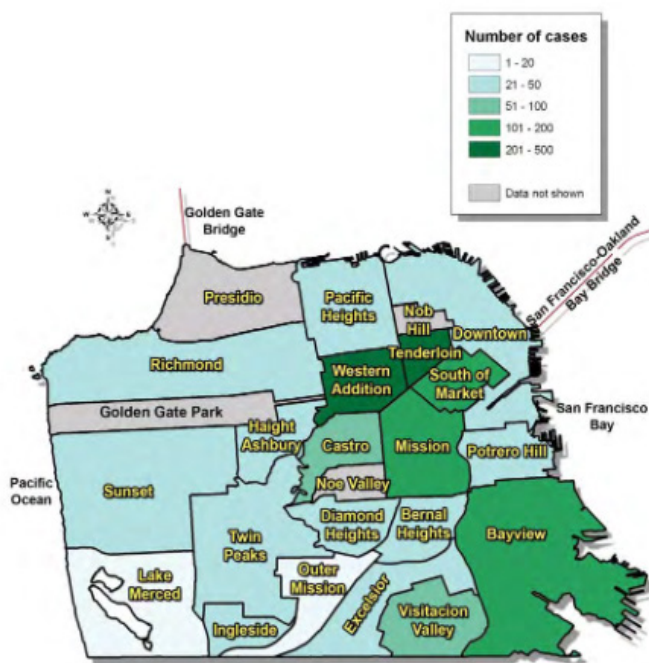
Source: SFDPH. *Atlas of HIV/AIDS in San Francisco 2010*. San Francisco, CA: SFDPH, 2013

Figure 2.3A Map of HIV Surveillance Data for African Americans in SF, 1988-2000



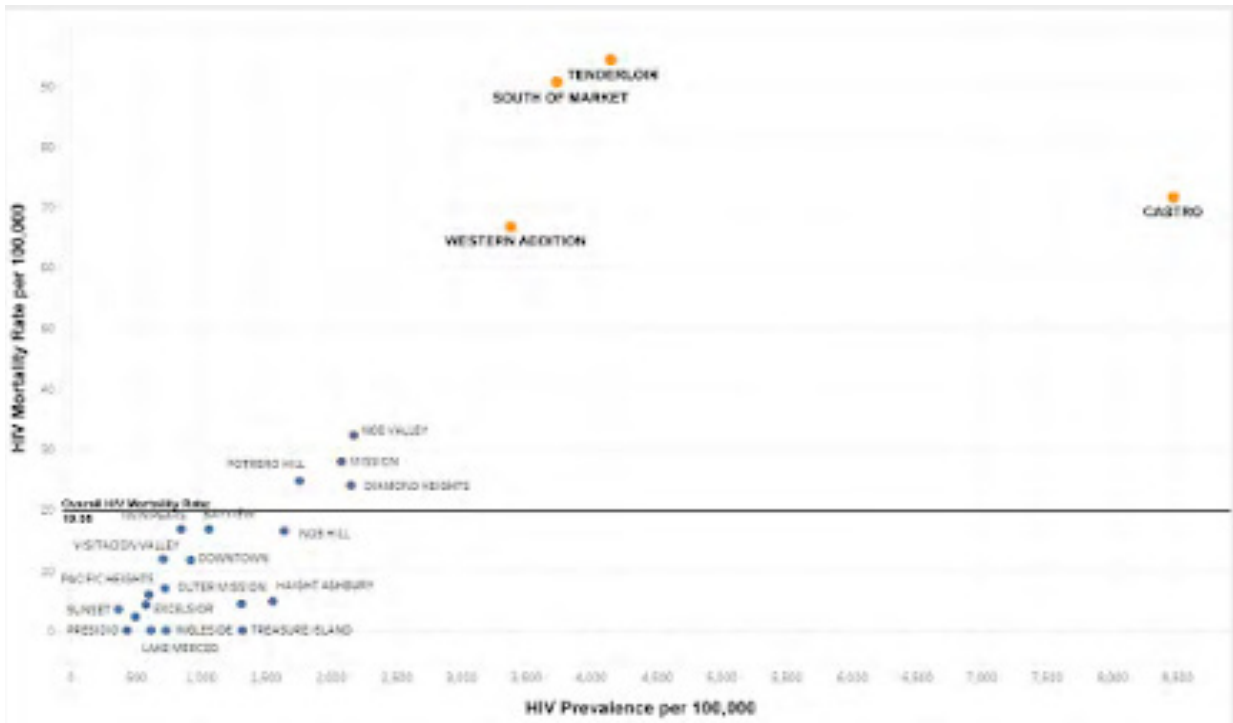
Source: SFPDPH. *Atlas of HIV/AIDS in San Francisco 2010*. San Francisco, CA: SFPDPH, 2013.

Figure 2.3B Map of HIV Surveillance Data for African Americans in SF, 2010



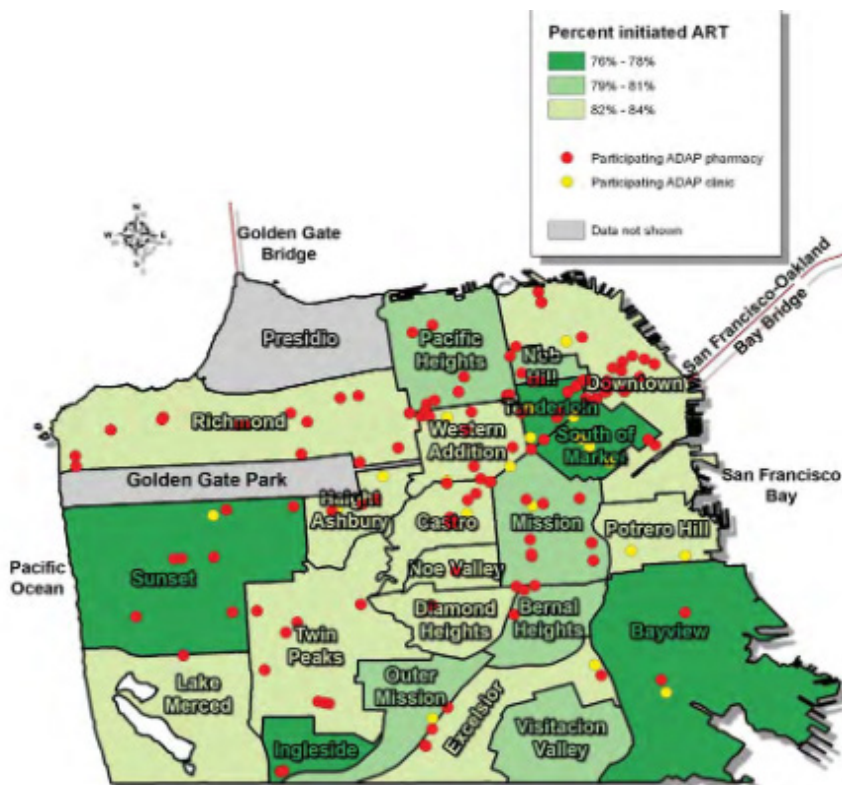
Source: SFPDPH. *Atlas of HIV/AIDS in San Francisco 2010*. San Francisco, CA: SFPDPH, 2013.

Figure 2.4 HIV Mortality Rates for Different SF Neighborhoods, 2017



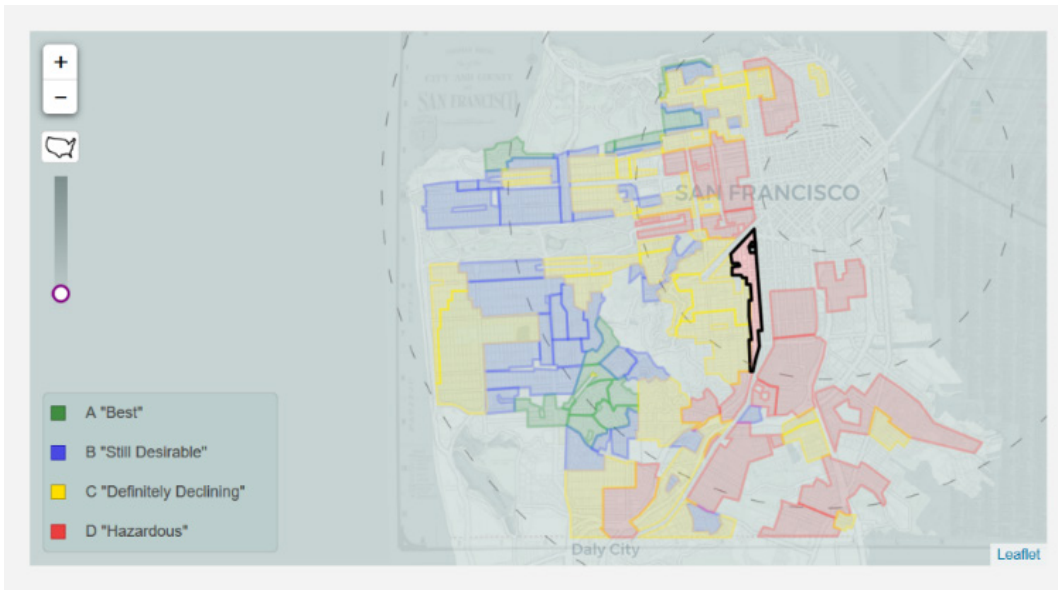
Source: SFPDPH. *HIV Epidemiology Annual Report 2017*. San Francisco, CA: SFPDPH, 2018

Figure 2.5 Map of ADAP sites and ART use among PLWH in SF, 2010



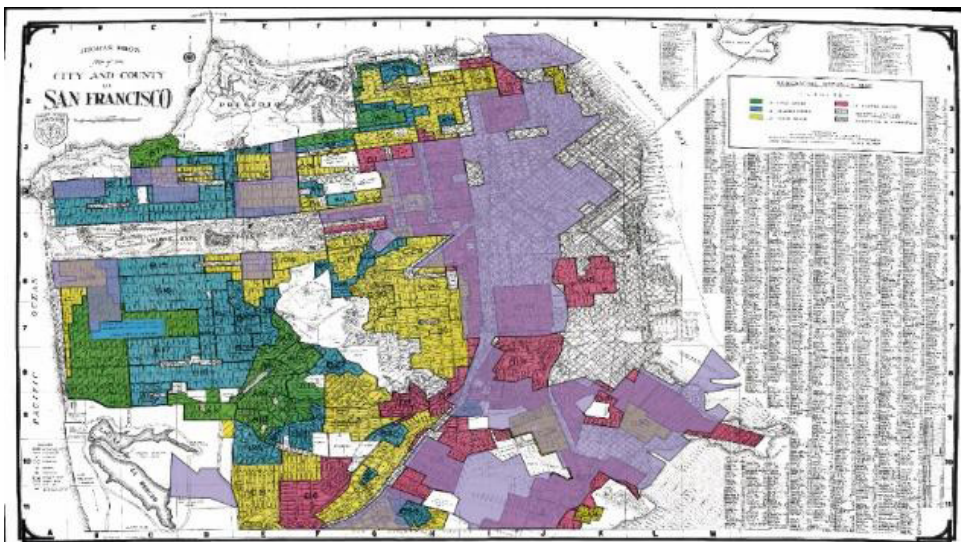
Source: SFPDPH. *Atlas of HIV/AIDS in San Francisco 2010*. San Francisco, CA: SFPDPH, 2013

Figure 2.6 Screenshot of Digital Interactive Red Lining Map of SF



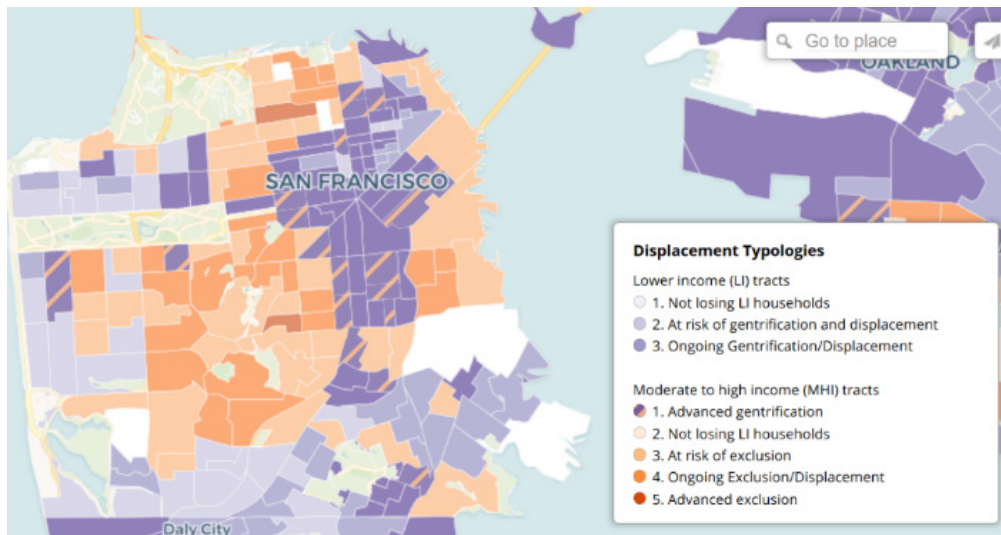
Source: Robert K. Nelson, LaDale Winling, Richard Marciano, Nathan Connolly, et al., “Mapping Inequality,” *American Panorama*, ed. Robert K. Nelson and Edward L. Ayers, accessed March 5, 2019, <https://dsl.richmond.edu/panorama/redlining/>

Figure 2.7 Digitized Security Map of San Francisco



Source: Robert K. Nelson, LaDale Winling, Richard Marciano, Nathan Connolly, et al., “Mapping Inequality,” *American Panorama*, ed. Robert K. Nelson and Edward L. Ayers, accessed March 5, 2019, <https://dsl.richmond.edu/panorama/redlining/>

Figure 2.8 Map of Current Displacement and Gentrification Patterns in SF

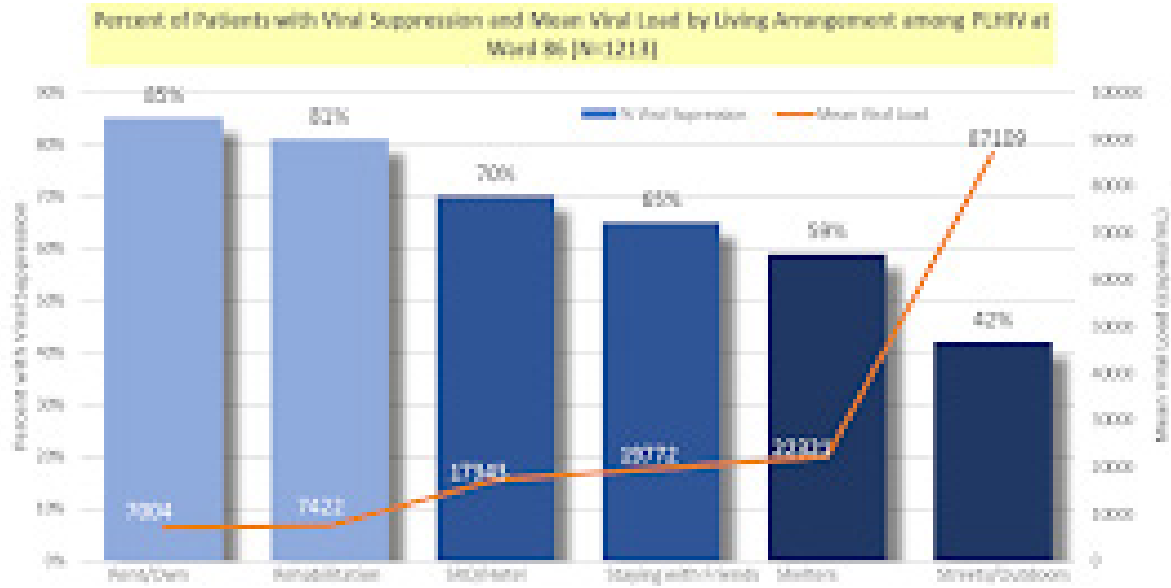


Source: UC Berkeley Urban Displacement Project and The California Housing Partnership. “Mapping Displacement.” Accessed April 1, 2019. <https://www.urbandisplacement.org/map/sf>

Figure 3.1 GTZSF Strategic Priorities Modified 2017



Source: Getting to Zero San Francisco. “Getting to Zero July 2015 Strategic Plan.” Accessed February 19, 2019. <https://www.gettingtozerosf.org/getting-to-zero-july-2015-strategic-plan/>.

Figure 3.2 (Viral Suppression and Mean Viral Load by Living Arrangement in 2018)

Source: Clemenzi-Allen et al. “Degree of Housing Instability Shows Independent ‘Dose-Response’ With Virologic Suppression Rates Among People Living With Human Immunodeficiency Virus.” *Open Forum Infectious Diseases* 5, no. 03 (2018): 1-35.

