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The Spatial Dilemma of Sustainable Transportation and Just Affordable Housing: Part I, Housing Choice Vouchers

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Part I, Housing Choice Vouchers

September 2022

UCLA Center for Neighborhood Knowledge

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16. Abstract

This study examines the spatial distribution of tenant-based Housing Choice Voucher (Section 8) units to understand whether geographic patterns and trends are consistent with climate change and equity goals. The analysis compares the location of HCV units in 2012 and net changes from 2012 to 2019 with a number of transportation, environmental, and racial and economic equity metrics. While the change in units from 2012 to 2019 shows promising trends for reducing vehicle miles traveled and increasing walkability and transit accessibility, there is a cost: higher exposure to pollution and a higher rate of vehicle collisions. HCV units are further concentrated in disproportionately low-income neighborhoods and neighborhoods of color, with worsened access to economic opportunity. The findings reveal an inherent structural dilemma in whether the HCV program is able to simultaneously achieve climate and equity goals.

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The UCLA Center for Neighborhood Knowledge conducts basic and applied research on the socioeconomic formation and internal dynamics of neighborhoods and how these collective spatial units are positioned and embedded within regions. The Center for Neighborhood Knowledge works with a broad set of data and employs a range of analytical skills to examine neighborhood phenomena across time and space.

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The University of California Institute of Transportation Studies (UC ITS) is a network of faculty, research and administrative staff, and students dedicated to advancing the state of the art in transportation engineering, planning, and policy for the people of California. Established by the Legislature in 1947, ITS has branches at UC Berkeley, UC Davis, UC Irvine, and UCLA.

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Introduction

California's intense affordable housing crisis has highlighted the fundamental linkage between land use, transportation, climate policy, and equity. Reducing climate-changing greenhouse-gas emissions is a priority policy goal for the State of California, and, as both research and policy interest have shown, reducing vehicle travel represents a key mechanism for achieving this goal. In order to equitably achieve this reduction, it is critical that affordable housing options be situated in geographies that facilitate less driving. That means reliable access to public transit, walkable neighborhoods, and economic opportunities. When combined, these (and other) elements can create more sustainable communities.

In the face of rising housing prices, publicly subsidized affordable housing plays an important role in housing low-income and other vulnerable Californians. This report examines a major type of subsidized affordable housing, Housing Choice Vouchers (HCV), also known as "Section 8." The Housing Choice Voucher Program is run by the U.S. Department of Housing and Urban Development (HUD) and is the nation's major tenant-based rental support program, with over 2.6 million vouchers in use as of May 2022 (U.S. HUD, 2022d). They generally cover the gap between 30 percent of a household's income and the cost of rent. This report focuses on the tenant-based program that constitutes the bulk of Section 8. In the tenant-based program, vouchers are not tethered to a particular building but are instead portable and usable in a variety of market units (Center on Budget and Policy Priorities, 2009).

This study examines the spatial distribution of units where subsidized Housing Choice Vouchers are used to determine whether recent geographic patterns and trends are consistent with climate change and equity goals. Although there is an extensive literature on the location of affordable housing with respect to the geographic concentration of poverty and racially segregated neighborhoods, this study is the first to assess empirically and quantitatively such spatial patterns in relation to environmental and social justice. The analysis compares the location of Housing Choice Voucher units in 2012 to net changes from 2012 to 2019. The study focuses on two sets of primary policy goals: transportation and environmental (as measured by vehicle miles traveled, pollution, and other transportation characteristics) and racial and economic equity (measured by levels of racial segregation, unemployment, and employment opportunity).

This report first analyzes the extent to which HCV units meet the state's climate policy goals and whether those patterns have changed over time. Our analysis finds that while the change in units from 2012 to 2019 shows promising trends for reducing vehicle miles traveled (VMT) and increasing walkability and transit accessibility, there is a cost: higher exposure to pollution and a higher rate of vehicle collisions.

In addition to climate goals, the state has broader socio-economic justice goals—backed in part by state and federal fair housing law, which mandates that the location of affordable housing not perpetuate segregation or concentration of poverty. We again measure the extent to which HCV units meet these goals, and find that the trends are less encouraging. The change in units from 2012 to 2019 has further concentrated HCV units in census tracts that are disproportionately low-income and predominantly people of color. Additionally, the location of new units has worsened access to economic opportunity, as measured through tract-level unemployment and jobs-housing fit.

These findings, taken together, reveal a major policy dilemma for the location of affordable housing. Shifting the location of affordable housing to more sustainable and lower-VMT neighborhoods consequently decreases

access to employment opportunities, exacerbates racial segregation, and increases health risks. This reality creates a major challenge to the state and local governments as they struggle to address climate change and promote more racial and economic equity and fairness. As California continues to experience a growing housing crisis and the demand for affordable housing continues to rise, resolving this dilemma will be essential. There are partial solutions that can marginally reduce the tradeoff, but real change will require rectifying deeply embedded systemic inequality.

Literature Review

This section summarizes the literature relevant to this study, highlighting the many ways that geography interacts with opportunity, health, and other factors that influence wellbeing. We discuss four bodies of research below. The first focuses on how urban spatial structure and transportation disparities can negatively impact residents in disadvantaged neighborhoods. Segregated and stratified places, in combination with inadequate means to overcome distance, in turn contribute to poor outcomes. The second part summarizes the findings from the Moving to Opportunity Program, a major social experiment designed to study the benefits of relocating households from poor to less poor neighborhoods. Although the results are mixed, there appears to be short-term and long-term gains by a number of metrics to justify offering renters the opportunity to move into less poor neighborhoods. The next part reviews studies of vehicle travel by low-income people. Not surprisingly, they generate fewer VMT than others, due in part to having fewer vehicles per person. The final body of research covers the negative externalities encountered by residents living in disadvantaged areas. They experience multiple burdens, ranging from mobile sources of air pollution to higher traffic injury and death rates.

Spatial and Transportation Mismatch

Extensive literature over the last half century explain that where people live greatly determines their opportunities and affects health, employment, income, and educational outcomes (Brooks-Gunn, Duncan, and Aber, 1997; Ellen and Turner, 1997; Jencks and Mayer, 1990; Popkin et al., 2000; Joassart-Marcelli, 2007; and Ong and González, 2019). Recent research has found that neighborhood disparities contribute significantly to the intergenerational reproduction of inequality—that is, children growing up in poor neighborhoods are likely to become poor adults (Chetty and Hendren, 2018). Such spatial inequality also contributes to the compounding reproduction of racial inequality (Chetty et al., 2020).

The seminal work in the field of space and inequality is by John Kain (1968), who studied how the evolving urban spatial structure in the 1960s contributed to Black unemployment. He argues that minorities, trapped in the inner city due to long histories of racialized housing discrimination, became increasingly separated from economic opportunities as jobs moved into suburban areas. Implicit in this physical reconfiguration of the cityscape was the lack of jobs within and close to low-income neighborhoods, due to disinvestment and underinvestment (Soja, Morales, and Wolff, 1983). The growing spatial disconnection is inherently a form of inequality in relative location. Since Kain's (1968) initial publication, his core argument, called the spatial mismatch hypothesis (SMH), has been tested numerous times. A majority of the findings are consistent with at least the central tenet of SMH: restrictions to residential mobility produce adverse labor market outcomes for low-skilled Black urban residents (Gobillon, Selod, and Zenou, 2007; Holzer, 1991; Ihlanfeldt and Sjoquist, 1998; and Kain, 2004).

One of the theoretical limitations of SMH as originally formulated is that it does not explicitly take into account residents' means to overcome spatial disconnection. According to the logic of SMH, the separation between housing and jobs in and of itself produces inequalities. However, affluent and suburban areas also have a wide separation between housing and jobs but with far fewer negative consequences. Unlike the urban residents discussed by Kain (1968), these suburbanites generally have the means to overcome the separation. This insight led to the development of the concept of spatial-transportation mismatch (STM). It examines distance and transportation/modal access as a contributing factor of employment outcomes. STM also refines SMH by incorporating the role of an individual's transportation resources in confounding the effects of spatial mismatch. In

particular, studies of transportation mismatch highlights the lack of access to a private automobile as a key factor in access to opportunities. Beyond the socioeconomic status of neighborhoods alone, spatial barriers are less daunting if an individual can travel by car as opposed to public transit, allowing access to far more jobs and destinations in shorter time, even in many dense urban areas (De La Cruz-Viesca et al., 2016; Blumenberg and Ong, 1998; Ong and Miller, 2005; Raphael et al., 2001; Taylor and Ong, 1995; Kawabata and Shen, 2006; and Shen, 2000). It is for this reason that in response to spatial mismatch findings, the federally and state-funded reverse commute transit programs of the 1960s through 1980s proved largely ineffective (Rosenbloom, 1992), as they neither addressed automobile access nor worked to undo residential segregation itself.

Car ownership is influenced by both income and costs (including purchase, lease, loan costs and interest, insurance premiums, maintenance, fuel, etc.). Residents in disadvantaged neighborhoods face disproportionately higher poverty rates and thus are less likely to have a private vehicle, which in turn lowers access to opportunities and produces systemic inequality of outcomes. This can be partially offset by two other factors that also influence accessibility: 1) whether transit stops are within a reasonable walking distance, whether that transit is frequent and reliable, and whether it travels to desired destinations and 2) the availability of nearby services and opportunities, as density of land use also plays a major role (Ong and González, 2019). A 2021 study comparing employment, quality of elementary schools, and health care accessibility indicators in rural and urban neighborhoods in California confirms that residents in disadvantaged neighborhoods face significant barriers to opportunities as a result of spatial stratification (Ong et al., 2021). Partially the product of larger structural factors like the dispersal of spatial structure and a lower-wage labor market, these outcomes are a result from greater reliance on automobiles and more VMT.

Moving to Opportunity

This extensive literature on the negative impacts of racial and class segregation (implicit elements of SMH and STM) prompted policy initiatives to incentivize and support movement out of areas of concentrated poverty into more economically and racially integrated neighborhoods. Designed as a social experiment, the Moving to Opportunity (MTO) Program was launched by the federal government in 1993 to understand how residential mobility into areas with higher income would affect residents previously living in public housing. Volunteers from public housing in New York City, Los Angeles, Chicago, Boston, and Baltimore received vouchers and counseling support to move to neighborhoods with low poverty rates, received vouchers without counseling to move to any neighborhood regardless of neighborhood characteristics, or were placed in a control group (U.S. HUD, 2017b and Katz, Ludwig, and Sanbonmatsu, 2022).

Evaluations of the MTO program over ten years showed mixed results, with economic outcomes such as employment proving inconclusive (Carlson et al., 2012; Jacob and Ludwig, 2012; Ludwig et al., 2008; Abt Associates et al., 2006; and Blumenberg and Pierce, 2014). In fact, many outcomes for the MTO volunteers were only slightly different than the control group (Goering and Feins, 2003 and Joassart-Marcelli, 2007), and most households ultimately returned to higher-poverty neighborhoods (Feins and Shroder, 2005; Turner et al., 2011; and Blumenberg and Pierce, 2014). Outcomes appear to have been partially dependent on overcoming transportation barriers. Blumenberg and Pierce (2014) studied the relationship between vehicle and public transit access and employment outcomes among the subsidized-housing participants in the MTO program. They found that having an automobile helped participants gain and keep employment, indicating that policies to increase low-income households' access to a vehicle would benefit employment outcomes.

Despite the mixed labor-market effects, MTO produced a number of benefits. The long-term effects for young children were promising (Chetty, Hendren, and Katz, 2016). Both children and adults saw improved quality of life, especially by health measures such as asthma, obesity, and mental illness incidence (Ludwig et al., 2008 and Joassart-Marcelli, 2007). Child behavior and test scores also showed significant positive results, though research suggests that children who were older at the time of the move received less benefit than those who were younger at the time of the move (Chetty, Hendren, and Katz, 2016).

In spite of the potential gains from moving to neighborhoods that offered better opportunities, many residents remained in low-opportunity areas for various reasons, ranging from mechanisms associated with social networks, limited human capital, discrimination, and reliance on public transportation (Fernandez and Harris, 1992; Tigges, Browne, and Green, 1998; Galster, 2012; Bergman et al., 2019; and Houston, Basolo, and Yang, 2013). A 2019 study of recipients of Housing Choice Vouchers were more likely to move to higher-opportunity neighborhoods if they were provided with additional services and counseling (Bergman et al., 2019). These results indicate that it is not simply a matter of choice that keeps people concentrated in low-income neighborhoods but rather that there are structural and personal barriers preventing them from moving to other neighborhoods (Gennetian et al., 2012).

Vehicle Miles Traveled

Most low-income adults depend on vehicles to complete trips within a reasonable time, but they are less likely than higher-income adults to own vehicles (Clifton, 2004; Froud et al., 2002; Pucher and Renne, 2003; Rogalsky, 2010; and Blumenberg and Agrawal, 2014). Low-income people without vehicles may pay for taxis, share rides, or borrow from family and friends (Giuliano and Moore, 1999; Lovejoy and Handy, 2011; Rogalsky, 2010; Roy, Tubbs, and Burton, 2004; Clifton, 2004; Grieco, 1995; and Blumenberg and Agrawal, 2014). Income and person-trips per household are also positively related (Santos et al., 2011 and Blumenberg and Agrawal, 2014). More specifically, a 2011 study found that household VMT rises steeply with income up to $50,000 a year per household and then levels out until it rises again when income reaches $150,000 (Boarnet et al., 2017 and Newmark and Haas, 2015).

Residents of subsidized affordable housing developments in particular are less likely to use available parking in their buildings and therefore to have cars and travel by car. A survey looking at parking utilization overnight in affordable housing developments in San Diego found that their residents used parking at under half the rate of all rental units (Willson, O'Connor, and Hajjiri, 2012). A similar survey in the San Francisco Bay Area found 31 percent of the over 9,000 spaces in 68 surveyed affordable developments sat empty (Cohen, 2015 and Hughes, 2022), demonstrating reduced VMT.

Policy discussions about reducing VMT should consider the spatial barriers facing disadvantaged neighborhoods. Low-income residents living in disadvantaged areas own fewer vehicles and therefore have low VMT, but they also face residential segregation and economic underinvestment on top of lower access to transportation resources like public transit. The most disadvantaged might need to increase their VMT to gain access across spatial barriers. The most just VMT reduction strategies should aim to lower average VMT across all of society, where residents in advantaged areas can reduce vehicle usage enough to offset potential increases in VMT in disadvantaged areas.

It is also important to note the difficulty in interpreting the average VMT by neighborhood. Neighborhood VMT can be influenced by a variety of factors with potentially conflicting motivations. Take vehicle ownership: a

neighborhood with low VMT may have low VMT because its residents face greater barriers to vehicle ownership. It could also have low VMT because vehicle ownership is not required because it has greater diversity of uses in close proximity and greater access to high-quality public transit. High VMT could be an indicator of greater access, where residents have the ability to travel for work and to access retail. It could also indicate that traveling to work or for retail is forced. Residents may have to travel outside of their neighborhood to get those same opportunities. Thus, high and low VMT alone do not necessarily indicate positive or negative aspects of a neighborhood in relation to either climate or equity goals. Given these nuances, this study aims to describe where affordable housing is located and how that is changing in reference to VMT by analyzing those same locations and changes along a number of other climate and equity metrics.

Negative Externalities

An extensive body of published research finds that economically and socially disadvantaged neighborhoods are disproportionately exposed to negative localized externalities, the indirect cost imposed on residents from nearby activities. Of particular interest to this study are environmental hazards and risks associated with traffic.

Air pollution has been linked with a myriad of negative health outcomes (Englert, 2004 and Braithwaite et al., 2019). While many federally regulated pollutants (particulate matter, lead, ground-level ozone, carbon monoxide, nitrogen dioxide, and sulfur dioxide) are widely dispersed, others are highly localized. Of particular concern among the latter is $PM_{2.5}$ (fine particulate matter with a diameter of 2.5 micrometers or smaller), much of which is generated by vehicular traffic. The level of $PM_{2.5}$ decays rapidly, approaching ambient level within one or two hundred meters (Ong, Graham, and Houston, 2006). This pollutant can produce adverse health impacts, such as cardiopulmonary disorders and adverse birth outcomes (Feng et al., 2016). Because of past discriminatory siting of freeways and other factors, environmentally disadvantaged neighborhoods are disproportionally impacted by traffic-generated particulate matter (Houston et al., 2004, 2006, 2011 and Wu et al., 2009). In turn, subsidized housing units are concentrated in such high-traffic, health-impairing locations (Houston, Basolo, and Yang, 2013).

The other relevant negative externality to this study is traffic collisions. In 2019, motor vehicle crashes led to over 2.5 million emergency room visits for injuries and caused more than 36,000 deaths, making this one of the leading causes of death in the U.S. (Centers for Disease Control and Prevention, 2022). Although many vehicle collisions are preventable, they are an unfortunate and inherent part of the vehicle-centered transportation system in the U.S. Automobile crash risks are disproportionately concentrated in disadvantaged neighborhoods (LaScala, Gruenewald, and Johnson, 2004; Loukaitou-Sideris, Liggett, and Sung, 2007; Cottrill and Thakuriah, 2010; Morency et al., 2012; and Yuan and Wang, 2021). The disparity in the spatial distribution of vehicular collisions is due to a number of factors: differences in the volume and density of traffic, roadway infrastructure and design, placement of private and public facilities, and legal rules. The previous cited research has found that the high-risk factors associated with collision rates are correlated with a neighborhood's socioeconomic and demographic characteristics. Affluent and non-minority areas tend to experience significantly lower crash rates than poorer and predominantly minority areas. Much of the traffic in the latter areas is generated by private and commercial travel originating from outside the neighborhood. In other words, disadvantaged neighborhoods bear a heavy external cost for the mobility benefits of others.

Policy and Programmatic Context

This section summarizes the information on the policies and programs relevant to this study. This study sits at the intersection of policies to build sustainable communities to combat climate change and policies to further fair housing. Fair housing initiatives aim to encourage individual locational choices as well as site affordable housing in locations with lower poverty and higher racial diversity. The climate initiatives of interest seek to reduce automobile travel in pursuit of a broader goal of reducing greenhouse-gas (GHG) emissions. This research seeks to understand how these two sets of policies interact and to formulate new strategies that spatially redistribute affordable housing in ways that improve access to economic and educational opportunities while simultaneously contributing to climate-change objectives.

Climate Change Initiatives

Curbing VMT is a top policy priority for sustainability, as vehicle emissions are a top contributor to climate-changing GHG emissions (CARB, 2021). In 2006, California passed the Global Warming Solutions Act (Assembly Bill 32), which required California to reduce its GHG emissions by approximately 15 percent to achieve 1990 emissions levels by 2020. One initiative of AB 32 was the Emissions Trading Program ("cap-and-trade"), which established a statewide cap on GHG emissions across multiple industries, including electrical power plants, industrial plants, and natural gas and petroleum distributors. Businesses are required to limit their carbon emissions to below the cap or obtain one of the allocated pollution permits that dwindle throughout the program. Revenue from auctioning the permits funds California's Greenhouse Gas Reduction Fund for state agencies to disperse to emissions-reducing programs (CARB, 2022 and Sahota, 2015).

In 2008, Senate Bill 732 established the Strategic Growth Council to coordinate state agency activities related to climate and equity, including planning to meet AB 32 measures. Under this council, the Affordable Housing and Sustainable Communities Program receives funding from the Greenhouse Gas Reduction Fund to create and maintain affordable housing near transit stations (Georgetown Climate Center, 2011 and California HCD, 2022a).

California also established their commitment to offset the negative effects of climate change by integrating transportation, land-use, and housing strategies to reduce private vehicle emissions through the Sustainable Communities and Climate Protection Act of 2008 (Senate Bill 375). SB 375 requires the California Air Resources Board (CARB) to set GHG emissions reduction targets. Strategies to reach those targets promote improved transportation options and sustainable communities where housing and access to opportunities are both located within neighborhoods, reducing residents' commutes to work or trips to school. Developing affordable housing adjacent to opportunities align both climate and equity concerns, ensuring that low-income residents can access education, employment, and other needs in a manner that contributes to broader state sustainability goals (Terner Center, 2020).

An integral part of California's climate change initiatives is a stated commitment to equity. In 2012, the Legislature passed Senate Bill 535, directing that 25 percent of the proceeds from the Greenhouse Gas Reduction Fund go to projects that provide a benefit to disadvantaged communities, with at least ten percent of these projects located within those communities. The legislation gave California Environmental Protection Agency (CalEPA) responsibility for identifying disadvantaged communities, a task for which the agency uses the CalEnviroScreen tool, discussed further below, to identify the most pollution-burdened neighborhoods. In 2016, the Legislature

passed Assembly Bill 1550, which amended SB 535's rules to require that 25 percent of proceeds from the cap-and-trade fund be spent on projects both benefiting and *located in* disadvantaged communities (Magavern et al., n.d.; Magavern and Sanchez, 2015; and Eng and Nzegwu, 2018).

Affordable Housing Siting and Fair Housing Initiatives

While the primary aim of subsidized housing programs is affordability for low-income families, fair housing laws also require that they not perpetuate segregation and concentrated poverty (Acevedo-Garcia et al., 2016). In 2018, the California Legislature passed Assembly Bill 686, which changed the legal requirements for all public agencies involved in housing development (California HCD, 2021). Taking language from the federal Affirmatively Furthering Fair Housing rule (proposed in 2015, rescinded in 2020, and currently in the process of being reinstated (Capps, 2021 and White House, 2022)), the California rule requires stricter adherence to "taking meaningful actions, in addition to combating discrimination, that overcome patterns of segregation and foster inclusive communities" (California HCD, 2021, pp. 9, 14, 57). These obligations require all public agencies "to promote more inclusive communities" in their policies and plans (California HCD, 2021, p. 9). Additionally, the housing element, a state requirement of all local governments as part of their general plan, must include fair housing outreach, enforcement, identification and reduction of barriers, and identification of potential sites, subject to review by the state Department of Housing and Community Development (HCD) (California HCD, 2021, 2022b). The analysis must include examination of "trends and patterns within the locality and in comparison to the broader region," "integration and segregation," "racially or ethnically concentrated areas of poverty," and, of particular interest here, "disparities in access to opportunity" (California HCD, 2021, p. 11).

Overview of the Housing Choice Voucher Program (Section 8)

The government uses two primary avenues to subsidize housing: building or supporting project-based developments and providing vouchers for individual units or households. The former consists of public housing, Low-income Housing Tax Credit (LIHTC) developments, and HUD's project-based HCV buildings (Scally, Gold, and DuBois, 2018). Affordable housing vouchers for households, the subject of this report, are facilitated through the Housing Choice Voucher Program (U.S. HUD, 2017a). Unlike project-based programs, tenant-based assistance is not tied to specific buildings and units.

The HCV program also includes both tenant-based and project-based elements. The project-based HCV program (not analyzed in this report) offers private property owners subsidies for building or renovating units in exchange for restricting their rents to up to 110 percent of HUD's Fair Market Rent (FMR) levels (discussed further below). Unlike LIHTC buildings, paid for through tax credits, these project-based HCV buildings are funded directly by HUD's Housing Choice Voucher Program. Local housing agencies manage the HCV program and determine which projects will receive funding. Only 20 percent of the HCV program may be allocated to projects; the rest is reserved for tenant-based vouchers (U.S. HUD, 2022c and Scally, Gold, and DuBois, 2018).

In the tenant-based HCV Program, the local public housing agency gives eligible renters a voucher that covers the cost of the difference between the area's FMR and 30 percent of their household income (a standard for being "rent-burdened"). This program is designed to allow residents the opportunity to search for housing that meets their needs in a location of their choice (U.S. HUD, 2017a and Basolo and Nguyen, 2005). Tenants use the voucher as partial payment for rent, paid directly to a private property owner by the housing agency; the tenant pays the rest. Though administered within the housing agency's jurisdiction, the HCV subsidy may be used

elsewhere—in any unit that meets the program's health and safety requirements and where the owner agrees to the lease and a housing assistance payment contract with the local housing agency (U.S. HUD, 2017a).

Landlord participation in the voucher process is entirely voluntary. Although some local housing authorities provide listing services for landlords interested in leasing to voucher-holders, the landlord is not required to apply or register. Instead, a tenant with a voucher is responsible for finding a rental unit that reaches the program standards on the private market (U.S. HUD, 2019).

As of November 2021, in all but 17 states, the District of Columbia, and some localities, landlords are legally allowed to decline leasing to applicants for no other reason than using a voucher (Kye et al., 2022). Studies indicate that this type of discrimination may prevent mobility to higher economic and educational opportunities (Galvez and Oppenheimer, 2020; McClure, Schwartz, and Taghavi, 2015; Schwartz, McClure, and Taghavi, 2016; and Tighe, Hatch, and Mead, 2017). Though research on landlord participation is limited, studies indicate that program requirements and bureaucracy present a barrier to participation. The program requires landlords to request approval for the lease agreements and have the unit inspected for quality before executing the lease and the contract with the housing agency, adding additional time and uncertainty.

Financial reasons also influence participation. HUD requires that the rent for voucher units is reasonable compared to comparable units (the process for which is discussed below), but landlords may instead opt out to gain higher rents on the market if HUD rates do not accurately reflect the area's market (Nisar et al., 2018). Conversely, in sub-regions of a metropolitan area with relatively lower rents, vouchers encourage some participation by providing a higher rent than landlords could otherwise obtain, along with assurance of payment (Garboden et al., 2018). However, the rapidly increasing price of rents in California and across the country (Aurand et al., 2021) is creating a disincentive for landlord participation, as landlords can earn more for units on the market than the voucher program can accommodate.

Nonetheless, the HCV program allows voucher-holders the opportunity to live in neighborhoods of their choice. In 2017, vouchers were used in 87 percent of all U.S. census tracts (McClure and Schwartz, 2021). On the other hand, the neighborhood characteristics of where voucher-holders choose to live bear similarities to those of project-based subsidized housing. While voucher-holders tend to choose lower-poverty and less segregated neighborhoods than the areas with public housing, their chosen neighborhoods are similar to those of project-based subsidized development other than public housing, in terms of poverty and racial segregation (Schwartz, 2014).

The administration of Section 8 vouchers has implications for the spatial distribution of units where voucher-holders reside. The program is administered by cities or counties in California, often listed as public housing agencies or authorities. HUD lists 97 counties and cities in California as having a public housing agency or authority, which is only a small fraction of the 540 local governments in the state—although the larger cities and counties are mostly represented (U.S. HUD GIS Helpdesk, 2022 and California Senate Governance and Finance Committee, 2016). In other words, most local jurisdictions are not proactive in providing Section 8 housing for residents.

Furthermore, participating local governments can give preference to local residents and impose geographic restrictions on where vouchers are used. While in some cases residents can use vouchers outside of the jurisdiction where they received the voucher, this can be difficult, given the challenges associated with finding a landlord who will accept a voucher, especially in localities without their own housing authority. Some housing authorities mandate that voucher recipients stay within the housing authority's jurisdiction for a minimum period of

time before taking advantage of portability benefits (U.S. HUD, 2022b and Housing Authority of the City of Los Angeles, n.d.). Those already living in more desirable cities prior to getting a voucher may be likely to prefer staying there rather than relocating, even to cheaper neighborhoods.

The other major component in determining the geographic distribution of Housing Choice Voucher units is the determination of a “Fair Market Rent.” Vouchers cover rent up to but not exceeding a region’s FMR, making the FMR the maximum a landlord can receive. HUD calculates FMR annually for each metropolitan area as well as some subdivided metropolitan areas, estimating the 40th percentile of gross rents (U.S. HUD, 2022a, n.d.-a and Center on Budget and Policy Priorities, 2009) for “standard quality units” within a designated area (U.S. HUD, 2022a). Because of this rent ceiling, landlords in high-rent areas of a region are disincentivized to rent to voucher-holders if they believe they can receive higher rents from non-voucher households. A discussion of whether Fair Market Rents have actually kept pace with California rent growth follows in the findings section of this report.

Data, Indicators, and Methodology

To explore the relationships between the locations of Section 8 units, vehicle miles traveled, and other neighborhood factors, we drew on a wide range of data sources to construct indicators and analyze geographic relationships. This section describes those data sources and our analytical methods. We first describe our data, including the use of indicators created for previous analyses. Second, we outline the methodology used to create the variables used in this analysis. Finally, we describe the methods for conducting the analysis itself.

Major Data Sources

This report relies on several data sources in part because housing, environmental policy, and equity goals have often been siloed under unique agencies and considered independent from each other. Data on the count of Housing Choice Voucher units by census tract come from HUD's Picture of Subsidized Households, published online for 2012 and 2019 (U.S. HUD, 2021). HUD aggregated data on assisted households from state and local housing agencies and landlords into 2010 census tract boundaries for both available and occupied Section 8 units.[1] We use the former because it is the most comprehensive. HUD also reports characteristics of the household, including sources of income, racial composition, age of the primary householder, and household size (U.S. HUD, 2021), as well as Fair Market Rent values (U.S. HUD, 2022a).

We matched these data to census-tract-level data on transportation and other neighborhood characteristics. In prior work for CARB on transportation disparities, UCLA Center for Neighborhood Knowledge (CNK) researchers constructed indicators and metrics on systematic variation in transportation resources and accessibility (Ong et al., 2022). For this project, we use average vehicle miles traveled per household (HVMT), commute vehicle miles traveled per worker (CVMT), access to high-quality transit locations, walkability, traffic collisions, and jobs-housing fit, explained future below.

We also use the American Community Survey (ACS) census-tract-level statistics for neighborhood characteristics, including demographics (racial and ethnic composition of the neighborhood), economic status (employment status and poverty level), and housing (tenure and housing costs). The ACS pools a series of monthly samples to provide an ongoing stream of detailed and updated information. The 2015-2019 five-year ACS estimates are used for this project (except where noted), as they provide larger sample sizes than single-year estimates, making data available for small geographies such as a census tract (U.S. Census Bureau, 2019).

The project also includes pollution data derived from CalEnviroScreen 4.0 (OEHHA, 2022). CalEnviroScreen is a mapping tool developed by the CalEPA Office of Environmental Health Hazard Assessment (OEHHA) to identify the state's most pollution-burdened and vulnerable communities. The final score represents a composite of 21 different indicators relating to the environmental, health, and socioeconomic status of a neighborhood and its residents. Disadvantaged communities are defined as the 25 percent of highest scoring census tracts in CalEnviroScreen, along with other areas with high amounts of pollution and low populations. Using the tool's

1. In this context, "unoccupied" HCV/Section 8 units refers to units whose landlord has registered for the tenant-based Section 8 program but which do not currently have a voucher-holding tenant. Only three percent of units in the dataset in 2012 were unoccupied (U.S. HUD, 2021, n.d.-b).

composite scores, CalEPA is able to identify disadvantaged communities to prioritize public investments using cap-and-trade funds to improve health and economic opportunities (OEHHA, 2022 and August et al., 2021).

The basic geographic unit of analysis in this report is the census tract, which serves as a reasonable proxy for neighborhoods. We use the terms “census tract” and “neighborhood” interchangeably in this report. All indicators are reported at the census-tract-level (2010 vintage boundaries).

Variable Construction

The basic units of analysis for this report are the aggregated counts of available units for Housing Choice Vouchers, which are reported as two primary variables: 1) the number of HCV units per census tract in 2012, and 2) the net change in HCV units per census tract between 2012 and 2019. In order to ensure consistent census tract boundaries across all datasets, 2012 data was used as the base year, as it was the first year provided using the 2010 tract boundaries. To analyze change over time, we calculate a simple net difference between 2012 available units and 2019 available units. This metric does not differentiate change by exits and entries; it merely reflects either a positive or negative change in the total count (or no net change).

We compare base year HCV unit availability and net change in unit availability against various sustainability, health, and socioeconomic indicators to determine, respectively, a baseline distribution and any progress or regression towards state goals of environmental and socioeconomic justice.

Vehicle miles traveled serves as our primary transportation sustainability metric and dependent variable. The VMT indicator measures the distance traveled by automobile for residents of a particular census tract. Our VMT variable does not indicate individual-level travel, but rather is an average indicator for a given tract.

This report uses two VMT metrics: household VMT and commute VMT. Household VMT measures the average miles traveled per household within a census tract for any trip types, including commuting to school or work, childcare, errands, and more. In prior research (Ong et al., 2022), the HVMT indicator was constructed using a combination of CARB’s VMT estimates (based on California Bureau of Automotive Repairs odometer readings from 2016 to 2017), counts of registered vehicles from California Department of Motor Vehicles, and ACS vehicle and household counts. This HVMT indicator does not isolate VMT for specific types of trips, such as home-to-work commutes, but it can provide insight on a household’s general travel patterns. Commute VMT narrows the trip types counted to only examine commute trips and calculates the average per worker. The CVMT indicator represents the mean distance a worker drives to work by vehicle in a given period of time, providing insight on a commuters’ general travel patterns. Again from prior work (Ong et al., 2022), it was constructed using 2015 Longitudinal Employer-household Dynamics data on commute flows (U.S. Census Bureau, 2015), combined with distances generated through HERE street network.[2]

It is important to note the limitations of relying on VMT data to measure sustainability, some of which are discussed in the literature review above. VMT levels for a given census tract can have myriad explanations. For instance, a tract may have high VMT because it has a significant number of wealthy residents with multiple cars, or it may have a high VMT because it has a significant number of low-income residents who must drive long distances to access jobs. VMT can be due in part to regional opportunities and activities beyond one’s neighborhood and therefore can indicate a necessity to travel rather than an unwillingness to find alternate modes

2. For more information on the methodologies for constructing the HVMT and CVMT indicators, see Ong et al. (2022).

of transportation. However, that is not to diminish the importance of transit: better access to high-quality transit can cut down high VMT by providing meaningful alternatives to households.

Another limitation to note is that the average household VMT within a census tract is not necessarily applicable to residents of HCV units. If a household with a voucher moves into a neighborhood with high average VMT, it is possible they will have similar characteristics and travel behavior and therefore similar VMT to the tract average—or they might be unable to afford a vehicle, placing them far below the average VMT of that tract. While it is impossible to fully separate individual household behavior from average tract behavior, we can draw some conclusions from the overall trends—moving into a high-VMT neighborhood likely changes the structure of one's needs and opportunities.

Although VMT does not capture miles traveled using other transportation modes per se,[3] California residents have a strong dependence on personal vehicles as their primary mode of transportation, and automobiles account for almost all of the state's GHG emissions from passenger travel (Wasserman et al., 2022 and CARB, 2021). We supplement our analysis of VMT, however, with other sustainability indicators, such as access to high-quality transit and walkability. Transit access is measured by the percentage of a census tract that falls in a high-quality transit location: one quarter mile from a bus stop with 15-minute-or-less peak headways, a rail station, or a ferry terminal. Planners generally accept a quarter mile as the distance a typical person is willing to walk to local transit (Ong et al., 2022). Meanwhile, the Walkability Index 2.0 indicator, constructed by the U.S. EPA, characterizes every census tract based on its relative walkability, using physical characteristics (pedestrian-oriented intersections and quantity of occupied housing), business activities (mix of worksite jobs by economic sector), and travel behavior (commute mode). Areas with more intersections, mixed uses, and carpooling are designated as being more conducive to walking and therefore have higher index scores (U.S. EPA, 2013). It should be noted, however, the index does not account for other key factors, such as aesthetics, open space, and safety (Ong et al., 2022).

Changes in housing choice vouchers are also assessed against neighborhood health-related indicators such as traffic collisions and pollution. UC Berkeley's Transportation Injury Mapping System provides data on the distribution of all traffic collisions that occurred between 2011 to 2015 (Safe Transportation Research and Education Center, UC Berkeley, 2022). To account for differences in roadways across tracts (e.g., some have major arterials, while others have mostly small residential streets), collisions are normalized by the number of lane-miles (e.g., a boulevard with four lanes is weighted twice as much as a two-lane road) (Ong et al., 2022).

To assess changes in Housing Choice Vouchers against fair housing goals, we include metrics from the ACS related to the level of racial segregation and socioeconomic status (U.S. Census Bureau, 2019). For the former, we utilize the neighborhood's racial composition, specifically the share of residents who are non-Hispanic white. For the latter, we include the poverty rate, which represents the percentage of individuals who live below the federal poverty threshold. That level is based on the minimum income needed to meet basic needs. The threshold is adjusted for family size and inflation but not for the higher cost of living in California. In 2019, the federal poverty line was $25,750 per year for a family of four (U.S. Department of Health and Human Services, 2019).

Lastly, we include metrics related to job opportunities. The first is the neighborhood's unemployment rate, which is the number of unemployed individuals as a percentage of the civilian labor force (U.S. Census Bureau, 2019). Higher rates are associated with both individual characteristics (e.g., level of education) and contextual characteristics (e.g., the relative amount of social capital). We also use the jobs-housing-fit index to gauge

3. Though, of course, people shifting travel from cars to other modes would reduce VMT

employment opportunity. This ratio is the measure of the number of low-wage jobs relative to the availability of nearby affordable housing (Ong et al., 2022). If there is a lack of affordable housing, then workers are forced to commute longer distances. The indicator was constructed using a combination of two publicly available datasets: data on jobs by earnings level were derived from the 2006-2010 five-year Census Transportation Planning Products dataset (U.S. Census Bureau, 2016) and data on housing units by rent levels come from the 2008-2012 five-year ACS (U.S. Census Bureau, 2019).

Methodology

We began by creating a classification for each indicator, dividing all census tracts in California into quintiles with roughly even numbers of tracts. Not all indicators could be perfectly evenly disaggregated because the underlying data are not equally distributed, meaning that in some cases, an indicator could have a large number of tracts with the same value.

We then tabulated the share of base year (2012) HCV units and the share of net change in HCV units (between 2012 and 2019) in each set of indicator quintiles. For example, a value of ten percent of HCV unit change in a given indicator quintile indicates that a tenth of the net change in units occurred in census tracts in that quintile.

Empirical Findings

This section summarizes the empirical findings of our analysis. We begin with an examination of cumulative changes in HCV units over time across the state as a whole. From there, we provide a regional example, focusing on Southern California, the state's most populous region (U.S. Census Bureau, 2019), to understand how changes in units are geographically distributed. HCV units and changes in unit location are then analyzed in relation to transportation, environmental, and health factors (VMT, transit access, walkability, pollution, and vehicle collisions). Lastly, we examine the implications of changing unit location for socio-economic and racial justice goals, comparing unit location to poverty levels, racial composition of neighborhoods, unemployment, jobs-housing fit, and market rents.

Spatial-temporal Changes in Section 8 Voucher Units

The state gained a net total of almost 29,000 Section 8 voucher units between 2012 and 2019, an increase of just under ten percent (from approximately 314,000 in 2012 to 343,000 in 2019). Across all tracts, there was a net gain of approximately 64,000 units, tempered by a net loss of 35,000 units. **Figure 1** shows this distribution. It should be noted that the counts capture only change at the tract level; the numbers do not capture changes within a tract. For example, a given tract could report zero change between 2012 and 2019, even if an equal number of units entered and exited the HCV Program within that tract.

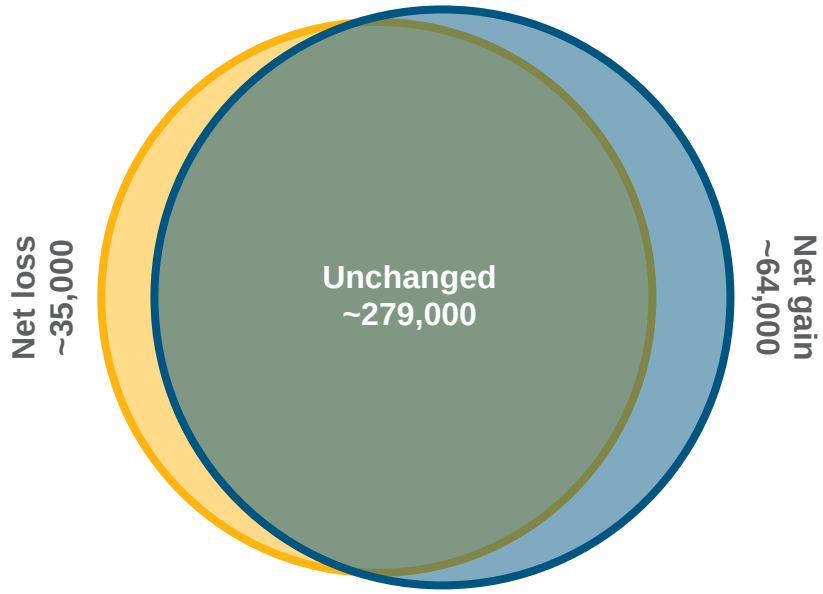

Figure 1. Net Change in Housing Choice Voucher Units in California, 2012-2019

Data source: U.S. HUD, 2021

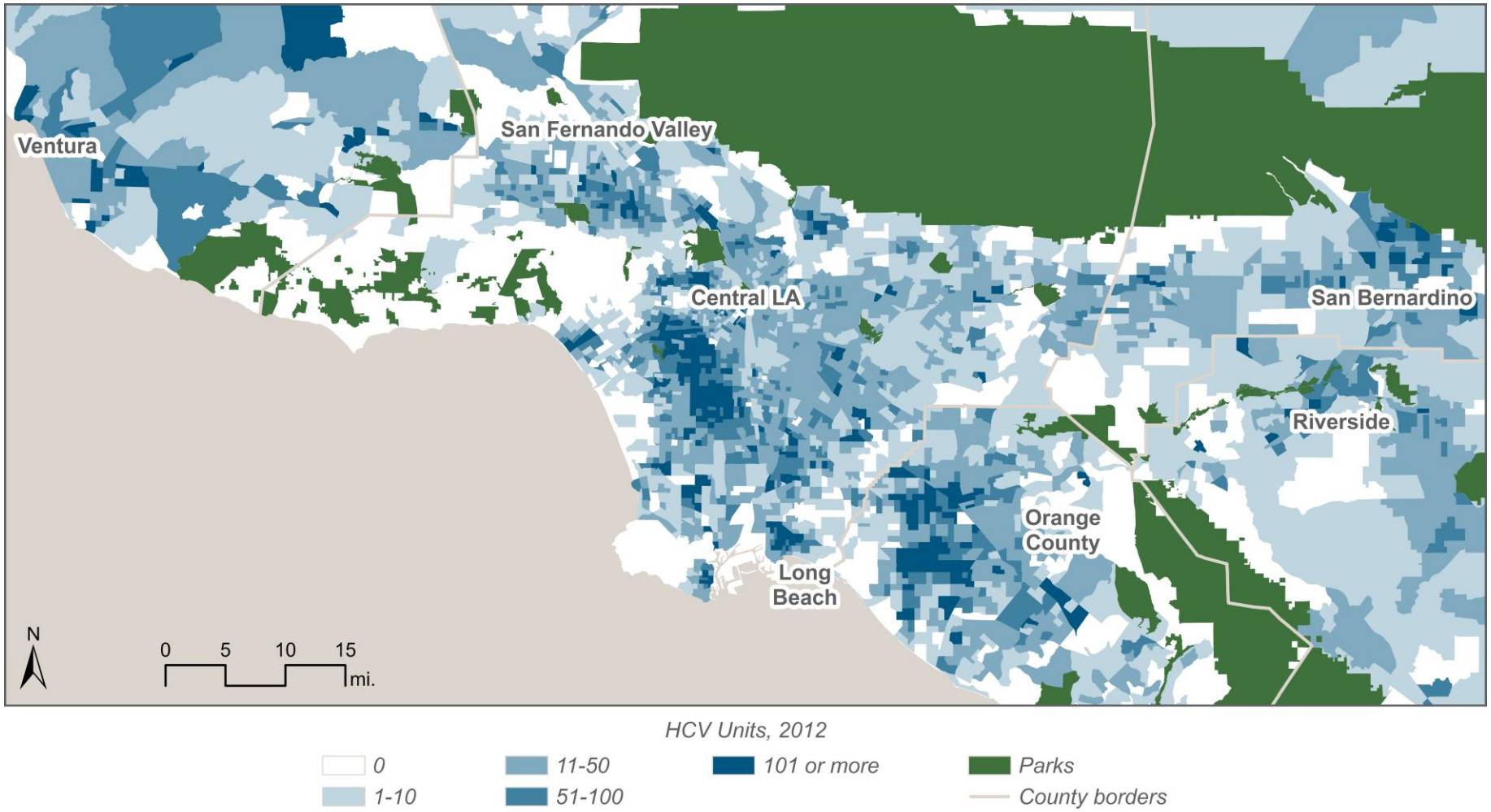

Figure 2. Housing Choice Voucher Unit Locations, 2012

Data sources: U.S. HUD, 2021; California Open Data, 2019; and Esri, 2010

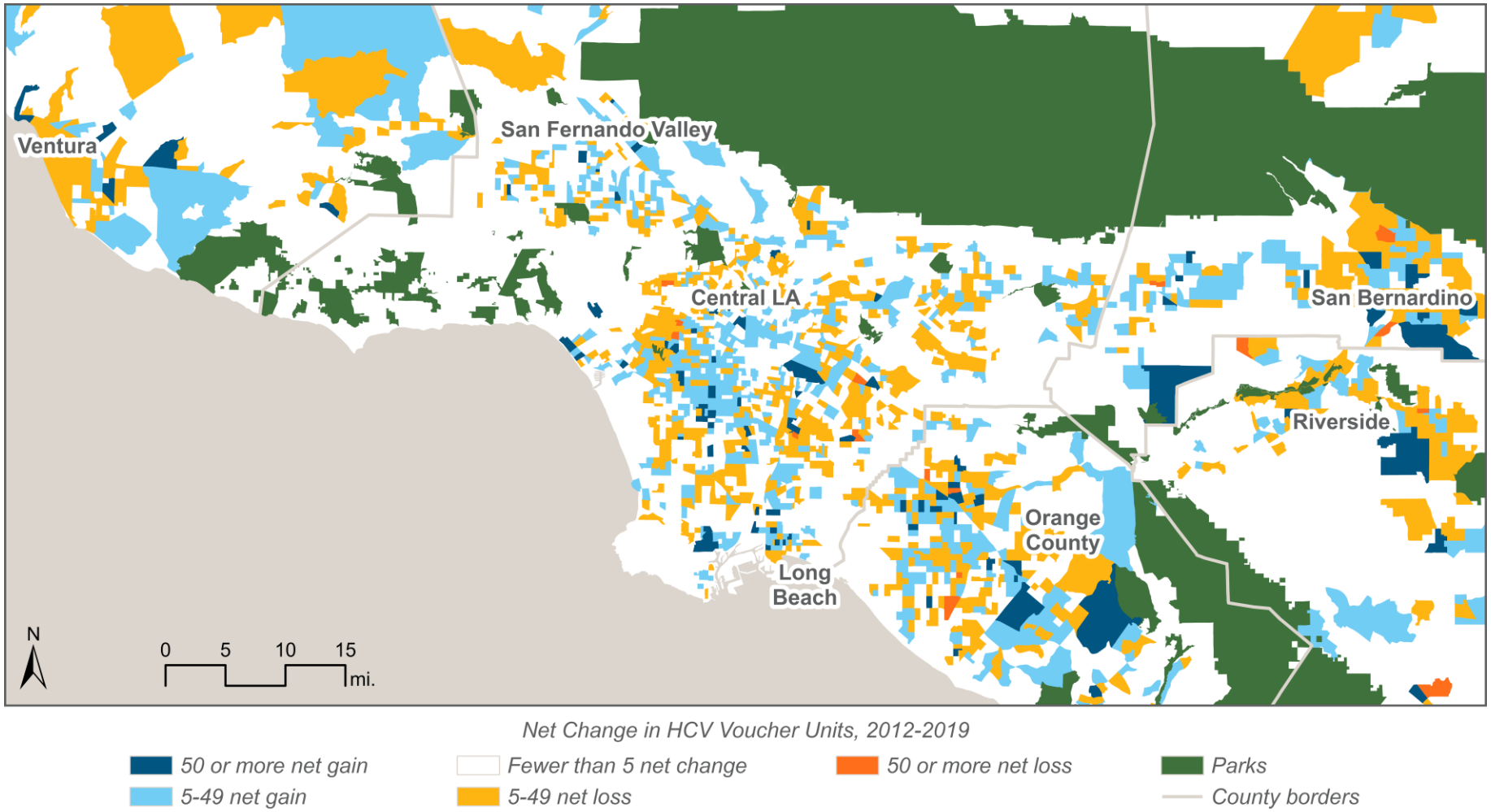

Figure 3. Net Change in Housing Choice Voucher Units by Tract, 2012-2019

Data sources: U.S. HUD, 2021; California Open Data, 2019; and Esri, 2010

In 2012, voucher units in Southern California were highly concentrated in the urban core of Los Angeles and Long Beach, with smaller concentrations in the eastern portion of the San Fernando Valley, West Pasadena, and urban Orange County (See **Figure 2**). This distribution mirrors areas that are poor and disproportionately people of color (U.S. Census Bureau, 2019), in line with previous literature on the location of voucher units.

Figure 3 shows the net change in voucher units by census tract, with orange and gold indicating a net loss of units and light and dark blue indicating a net gain. White areas experienced minimal change. The tracts with the highest net gains are again predominantly concentrated in dense urban cores and other areas with high concentrations of both people of color and poverty. The losses, meanwhile, tend to be in areas adjacent to those most marginalized neighborhoods (U.S. Census Bureau, 2019).

The spatial pattern seen in Southern California is indicative of broader trends statewide: units further concentrated between 2012 and 2019 in denser, more urban, poorer, and more non-white areas. As we discuss below, this has positive implications for climate goals but negative effects on segregation and access to opportunity.

Vehicle Miles Traveled

One of California's high-priority environmental goals is reducing vehicle miles traveled. With vehicle emissions as a top contributor to GHG emissions (CARB, 2021) and other pollutants, this is a crucial step in fighting climate change. In order to achieve this reduction in VMT, the state is promoting the development of sustainable communities that provide access to economic opportunity, school, childcare, and other needs through shorter or more environmentally friendly commuting options, such as public transportation or walking. Developing affordable housing in sustainable neighborhoods is critical to achieving such goals around climate equity.

In 2012, almost half of HCV units were in tracts that fell in either the lowest or second-lowest quintiles for HVMT, and just ten percent fell in the highest bracket (See **Figure 4**). Looking at net change from 2012 to 2019, the pattern is even more skewed: 58 percent of the net change occurred in the lowest HVMT quintile. Moreover, there was a net loss of units in the highest VMT quintile, further indicating that units shifted out of high-VMT tracts and into low-VMT tracts.

There are two possible (and non-exclusive) insights to be drawn from this trend. The first is that units could be concentrated in areas with good transit or walkability, reducing the need for a car for daily needs. The second is that units are concentrated in poorer census tracts where car ownership rates are lower, thereby reducing VMT not because residents can access necessities through other means but because they simply do not have a car and therefore may struggle to access necessities.

We find similar patterns by commute VMT (See **Figure 5**). Over half of 2012 units were in the lowest two CVMT quintiles. Again, the skew is even more when looking at net change in units from 2012 to 2019.

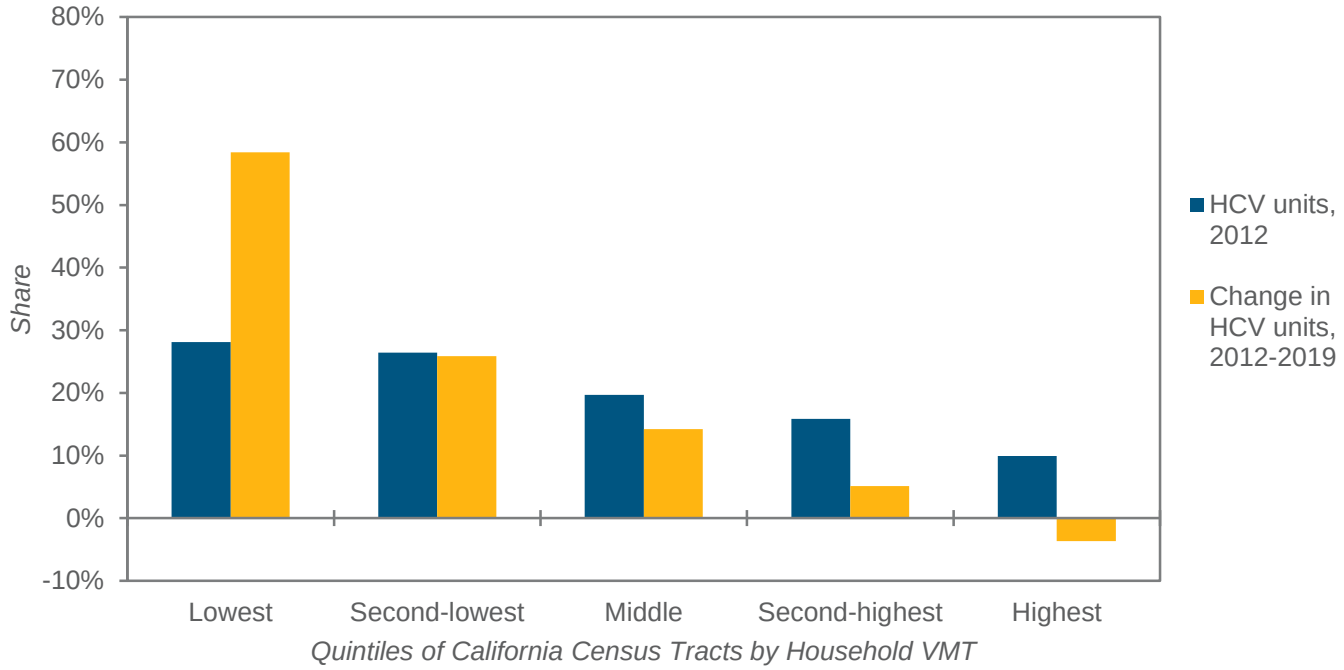

Figure 4. Housing Choice Voucher Units by Household VMT

Data sources: U.S. HUD, 2021 and Ong et al., 2022

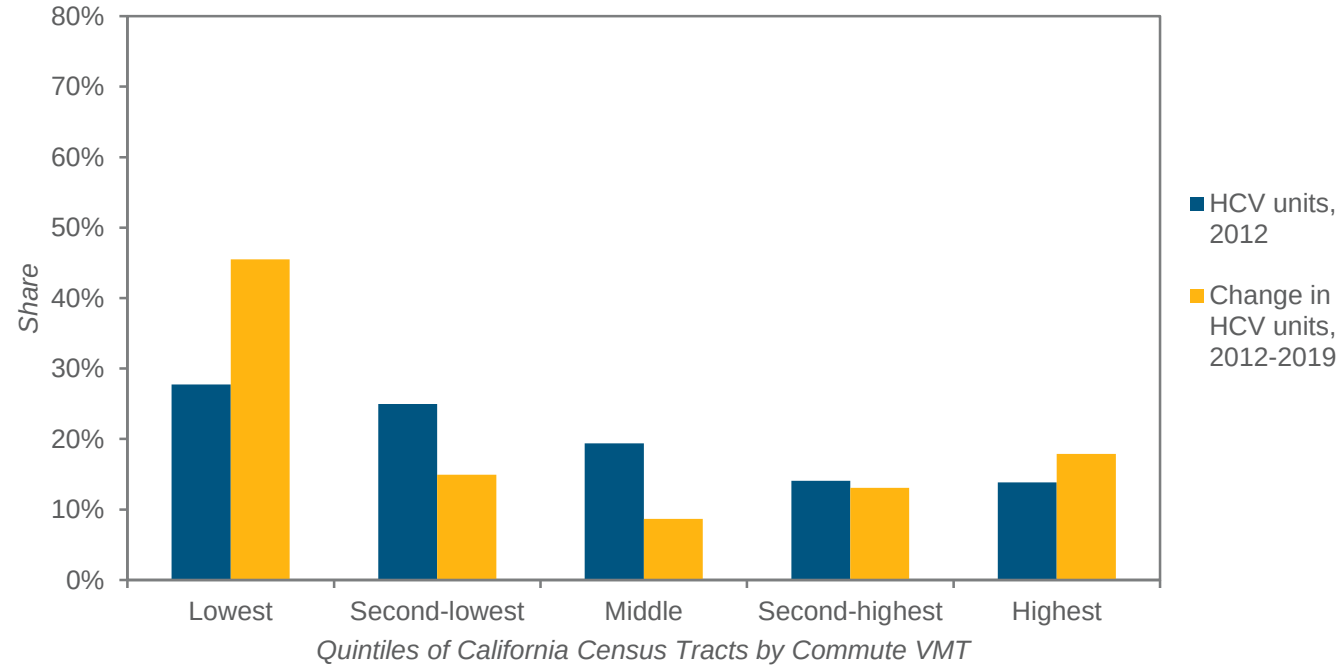

Figure 5. Housing Choice Voucher Units by Commute VMT

Data sources: U.S. HUD, 2021 and Ong et al., 2022

Secondary Environmental Benefits: Transit and Walkability

In order to ensure that reduced VMT does not come at the expense of access to opportunities, ability to travel within and between communities, and quality of life, it is important to examine the transit access and walkability of HCV units as well.

In 2012, HCV units varied widely in their access to high-quality public transit (See **Figure 6**). One quarter of units lay in census tracts that had no high-quality transit locations, as defined above. However, the next highest share of HCV units (22%) fell in the most transit-accessible category, where almost the entire tract was within one quarter mile of a high-frequency transit stop. This wide, even distribution indicates that HCV units are not uniform in their access to transit: while some residents may live in census tracts that allow them to easily use public transport, many do not.

The change from 2012 to 2019 is encouraging in this metric: almost half of the changed units were in the most transit-accessible census tracts, versus just 10 percent in the lowest category (those with no high-frequency transit stops within a quarter mile). This increased access to public transportation may further sustainability goals, as it allows HCV recipients to potentially reduce VMT without reducing quality of life or access to economic opportunity.

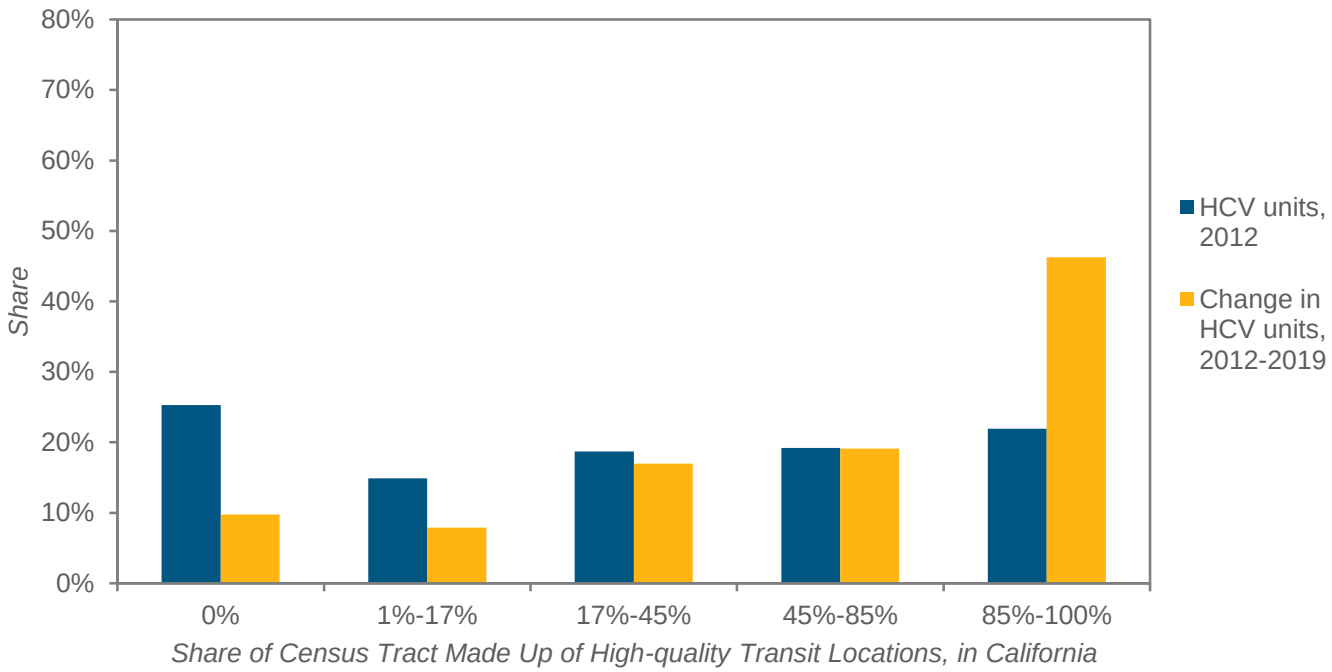

Figure 6. Housing Choice Voucher Units by High-quality Transit Locations

Data sources: U.S. HUD, 2021 and Ong et al., 2022

Walkability is an important metric in any neighborhood, but perhaps even more so in populations or geographies where car ownership is less likely (as is the case for low-income households). **Figure 7** shows the distribution of units by walkability scores. Analysis of the location of HCV units shows a clear positive trend: over 40 percent of new units from 2012-2019 were in areas classified as most walkable, an increase over 2012 levels. Additionally,

while 25 percent of 2012 units were in the least walkable census tracts, only 10 percent of new units were in this quintile. While not a reduction in absolute numbers, it is an indication that units are not being further concentrated in these low-walkability areas. Like the increase in HCV units near high-quality transit locations, this metric shows a hopeful trend for sustainability goals.

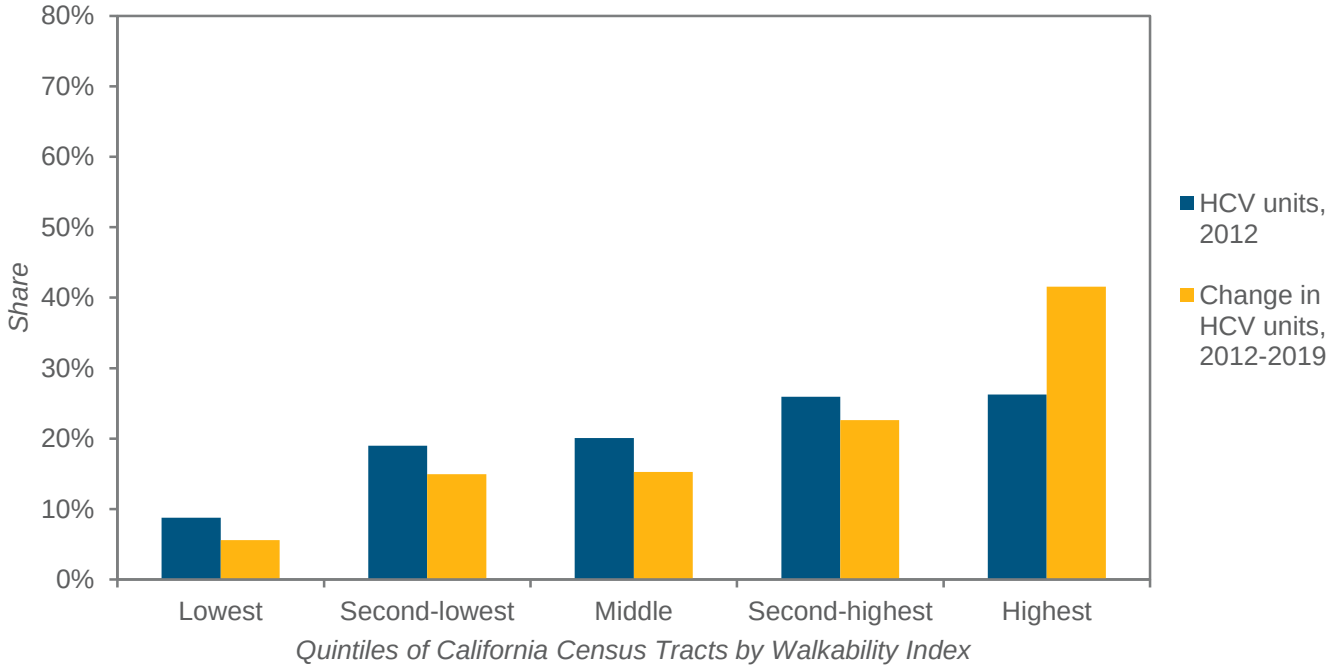

Figure 7. Housing Choice Voucher Units by Walkability

Data sources: U.S. HUD, 2021; U.S. EPA, 2013; and Ong et al., 2022

Health Costs

These shifts in HCV units to lower-VMT, more transit-friendly, more walkable areas can come with high environmental and other health costs for HCV residents, given pollution burden and other risks in urban areas. In order to examine these potential costs, we next analyze patterns in the distribution of HCV units by exposure to pollution and vehicle crashes.

Here, the trends are more concerning. In 2012, units were already more likely to be in the higher quintiles of pollution levels (See **Figure 8**): 69 percent of units were in the middle quintile or higher, evenly distributed among the top three levels. The shift from 2012 to 2019 only exacerbated this pattern, with over 30 percent of the changed units in the highest quintile and 82 percent in the highest three. This suggests that while California is making progress in siting units in areas with low VMT and high transit and walkability, those tracts come with a tradeoff: higher levels of pollution.

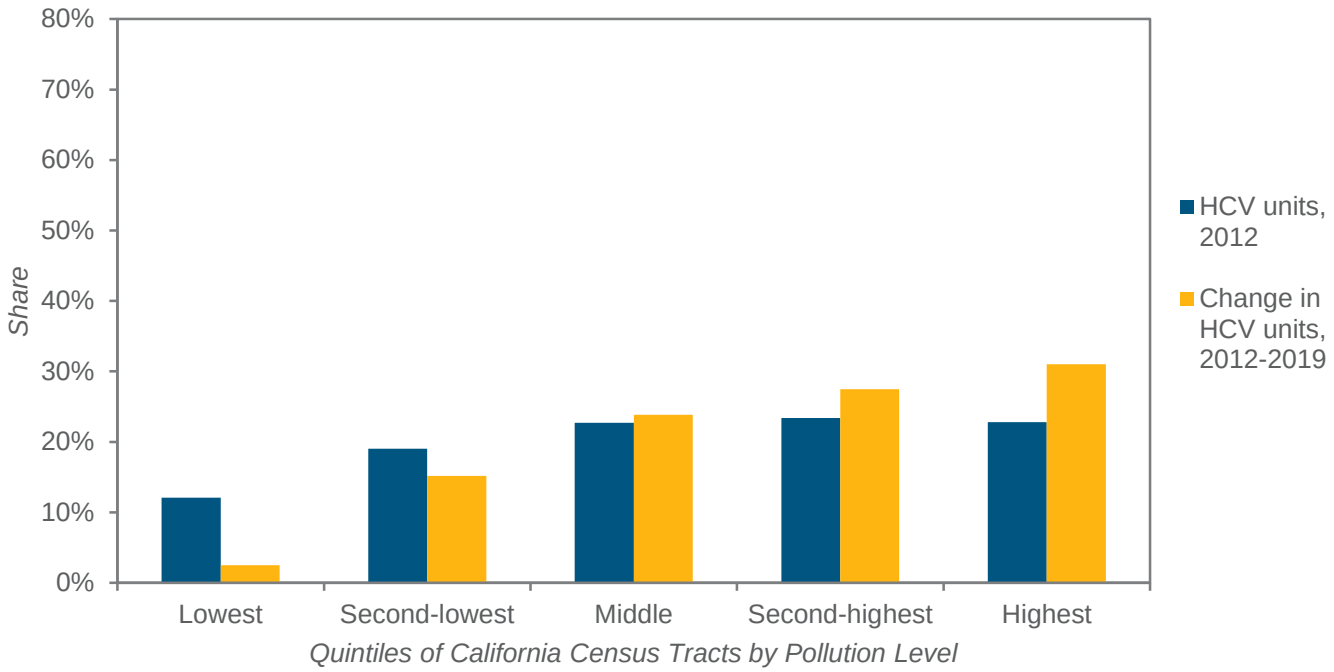

Figure 8. Housing Choice Voucher Units by Pollution Levels

Data sources: U.S. HUD, 2021 and OEHHA, 2022

The trends for vehicle collision rates are just as stark, with a sharp slope upward in both 2012 base units and 2012-2019 change (See **Figure 9**). In 2012, more than 30 percent of units were in the highest-quintile crash areas, and over half of the changed units fell in that category.

These costs illustrate the need to ensure that environmental goals are being met in a way that is equitable. If affordable housing units are disproportionately located in census tracts with high environmental costs, this pattern will further exacerbate the extent to which low-income residents bear the burden of climate change.

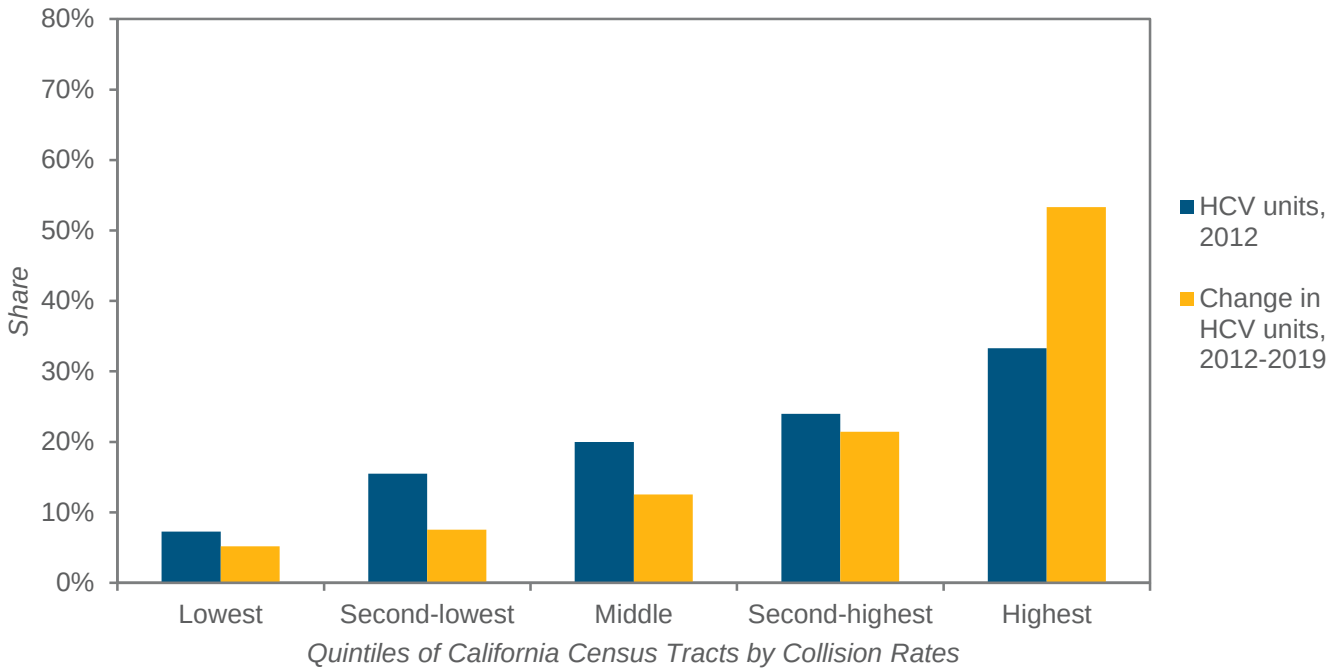

Figure 9. Housing Choice Voucher Units by Vehicle Collision Rates

Data sources: U.S. HUD, 2021; Safe Transportation Research and Education Center, UC Berkeley, 2022; and Ong et al., 2022

Economic and Racial Segregation

In addition to climate goals, affordable housing must abide by state and federal fair housing laws discussed above, dictating that the location of affordable housing not perpetuate segregation or concentration of poverty. While data on the location of HCV units and the change in unit distribution shows some positive signs for environmental effects, they also reveal an increase in racial and economic segregation. In 2012, HCV units were already disproportionately located in poor neighborhoods (See **Figure 10**) and neighborhoods of color (See **Figure 11**). This trend continued, with the 2012-2019 change further concentrating HCV units in these areas.

Thirty-six percent of 2012 units were located in the highest-poverty census tracts, and almost two of every three units lay in the top two quintiles. The change from 2012 to 2019 was dramatic: where in 2012, the top two quintiles were close to even, almost 80 percent of the new units were in the poorest quintile—the largest fraction in a single quintile in any of the breakdowns in this report (See **Figure 10**).

The same trends emerge when examining the racial makeup of tracts, using the percentage of non-Hispanic white residents as a simplified metric (See **Figure 11**). Most HCV residents live in census tracts home to predominantly people of color: fewer than eight percent of units in 2012 and even less of the growth from 2012 to 2019 were located in census tracts with the highest percentage of non-Hispanic white residents. Conversely, over 30 percent of 2012 units were in tracts with the lowest percentage of non-Hispanic white residents, and almost 60 percent were in the lowest two quintiles.

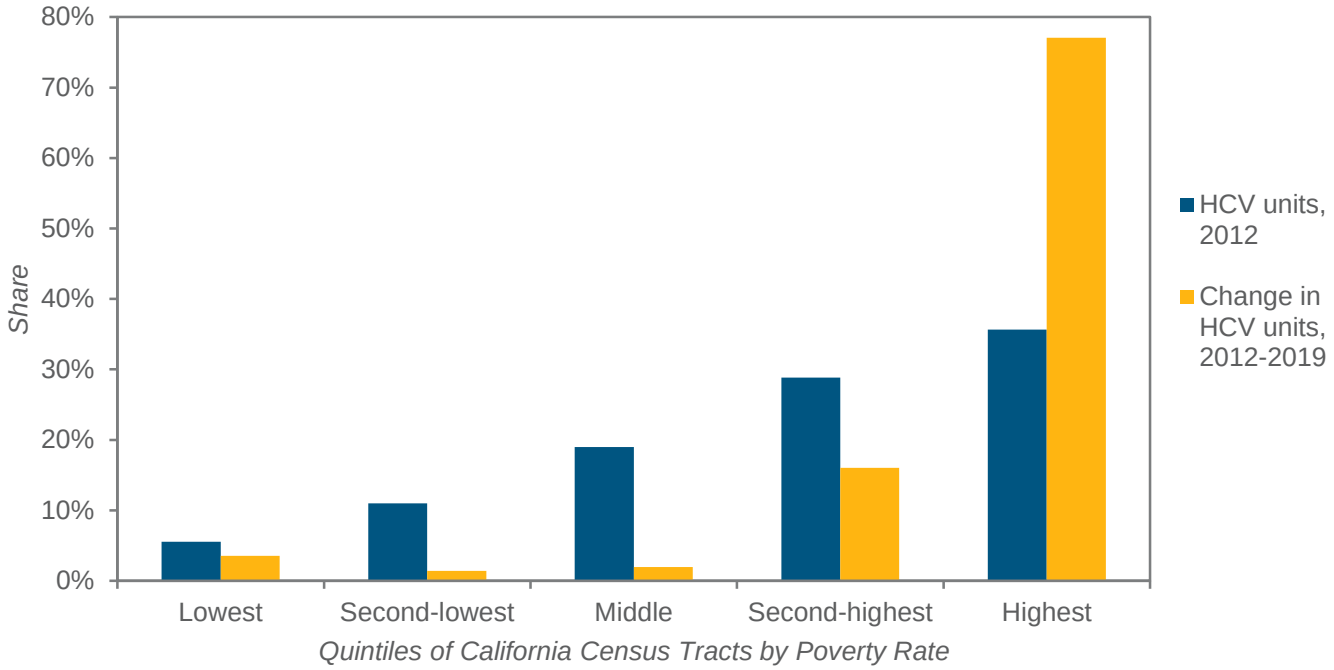

Figure 10. Housing Choice Voucher Units by Neighborhood Poverty

Data sources: U.S. HUD, 2021 and U.S. Census Bureau, 2019

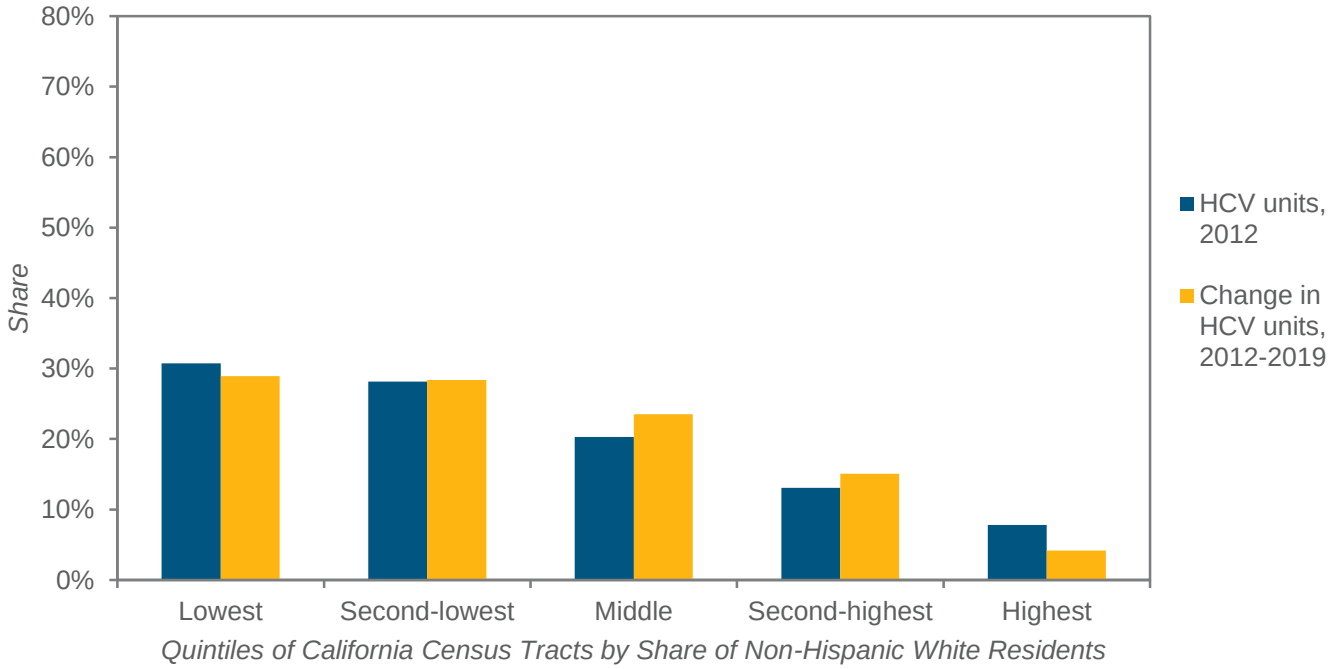

Figure 11. Housing Choice Voucher Units by Race/Ethnicity

Data sources: U.S. HUD, 2021 and U.S. Census Bureau, 2019

HCV units also became more isolated from employment opportunities. In 2012, units were already heavily concentrated in neighborhoods with high unemployment, with over half of units in the top two quintiles. The 2012-2019 change was even more uneven, with almost 45 percent of units in the highest category (See **Figure 12**).

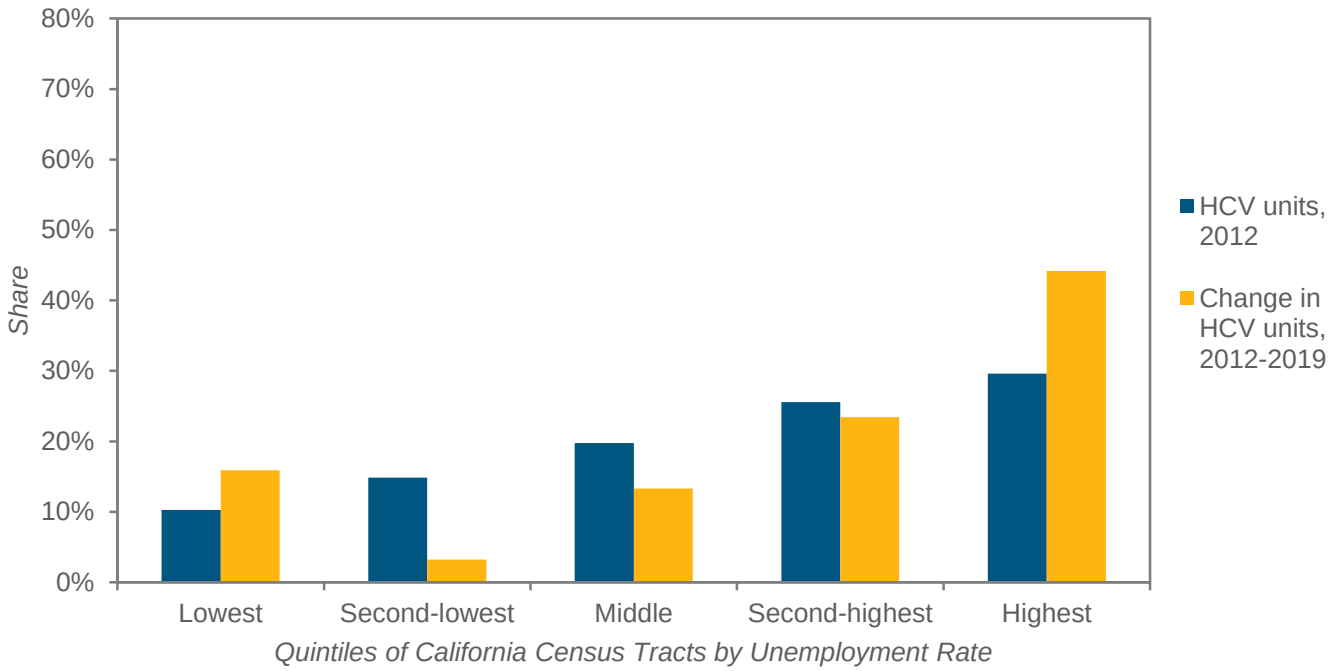

Figure 12. Housing Choice Voucher Units by Neighborhood Unemployment

Data sources: U.S. HUD, 2021 and U.S. Census Bureau, 2019

For jobs-housing fit, a metric that assesses balance between low-wage workers and affordable housing, almost half of the change in units occurred in the lowest quintile (See **Figure 13**). A low jobs-housing fit value indicates that there are relatively fewer low-skill or low-wage jobs, relative to the supply of affordable housing. This requires residents to travel from their neighborhoods in order to find employment, with insufficient supply of jobs in their home neighborhood. On the other side, a high value for the jobs-housing fit means there are significant low-skill or low-wage jobs relative to the supply of affordable housing, indicating that workers are commuting to this neighborhood from more distant residential areas. Therefore, the concentration of new units in areas with low jobs-housing fit values suggests that voucher-holders must travel from their neighborhoods to find employment opportunities.

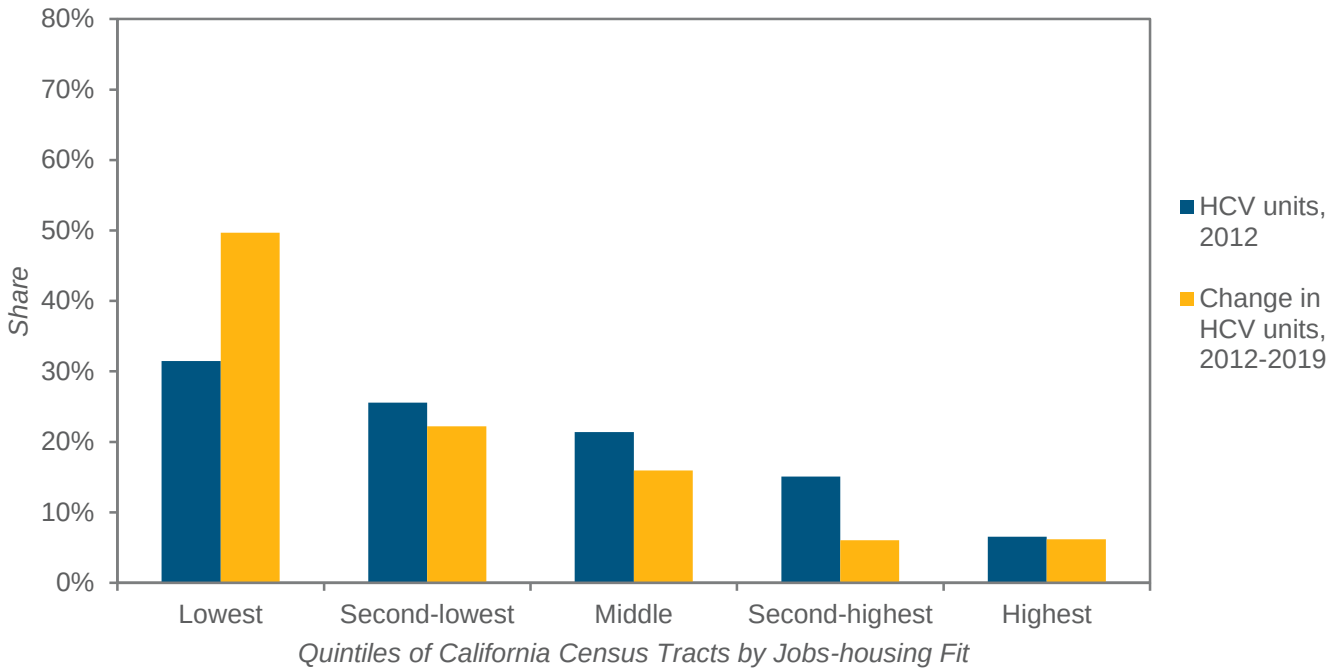

Figure 13. Housing Choice Voucher Units by Jobs-housing Fit

Data sources: U.S. HUD, 2021 and Ong et al., 2022

These trends, taken in concert, indicate a concerning pattern. HCV units are being further concentrated in areas with low economic opportunity and high segregation. These patterns were present in 2012 and have only been deepened since then. The fact that these trends are so broadly overlapping speaks to another reality about cities: census tracts that are poor tend to also be predominantly people of color, to be more isolated from economic opportunity, and to face high environmental costs. Together, this suggests that the siting of affordable housing units is not meeting state goals of reducing segregation and concentrated poverty and may in fact be perpetuating the very challenges it seeks to overcome.

Underlying Market Forces

One of the contributing factors driving the shift in the spatial distribution of Section 8 Housing Choice Voucher units is changes in the housing market, along with what appears to be a lag by the housing program in response to those changes.

The period from 2012 to 2019 saw significant increases in rent in many markets. For rental units with under two years of tenure, rent increases averaged almost 30 percent in real dollars (See **Figure 14**). These increases were less steep for longer-tenured residents, but were still upwards of 15 percent in real dollars for units with 10-or-more-year tenures. Renter income did increase in this period as well, by 28 percent in inflation-adjusted dollars. However, the speed and strength of that recovery was felt unequally.

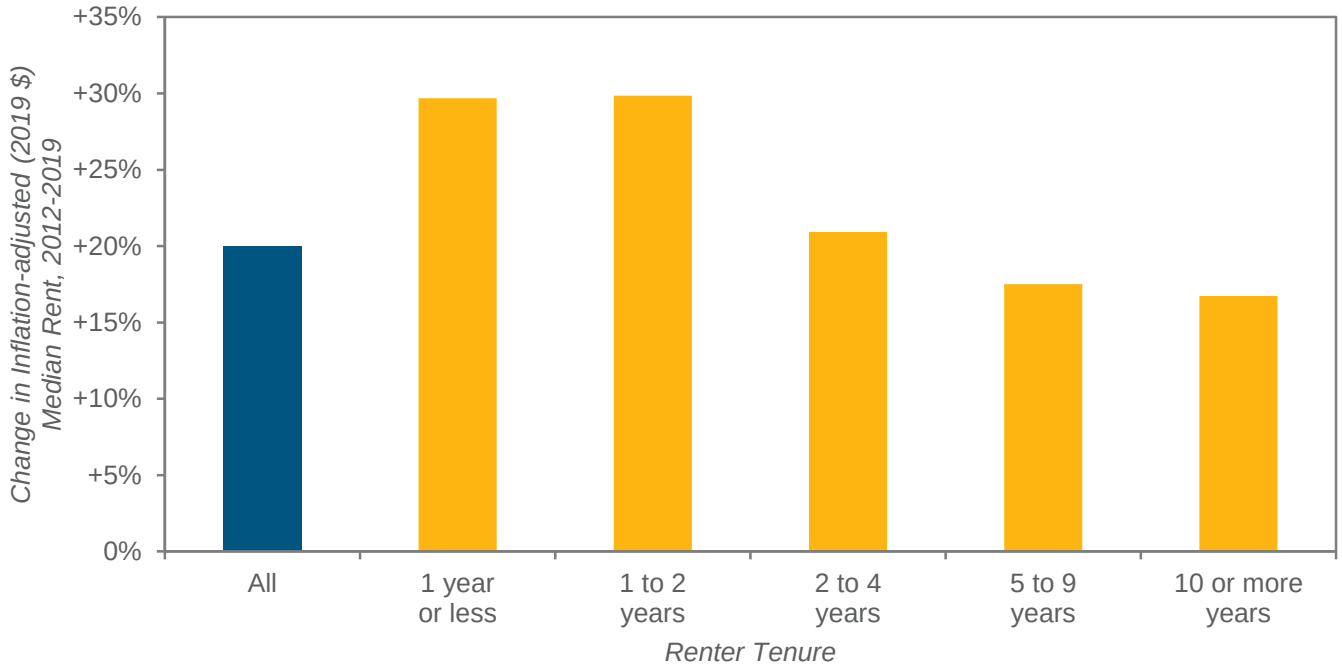

Figure 14. Real Rent Increase by Renter Tenure in California, 2012-2019

Data sources: U.S. Census Bureau, 2019 and Bureau of Labor Statistics, 2022

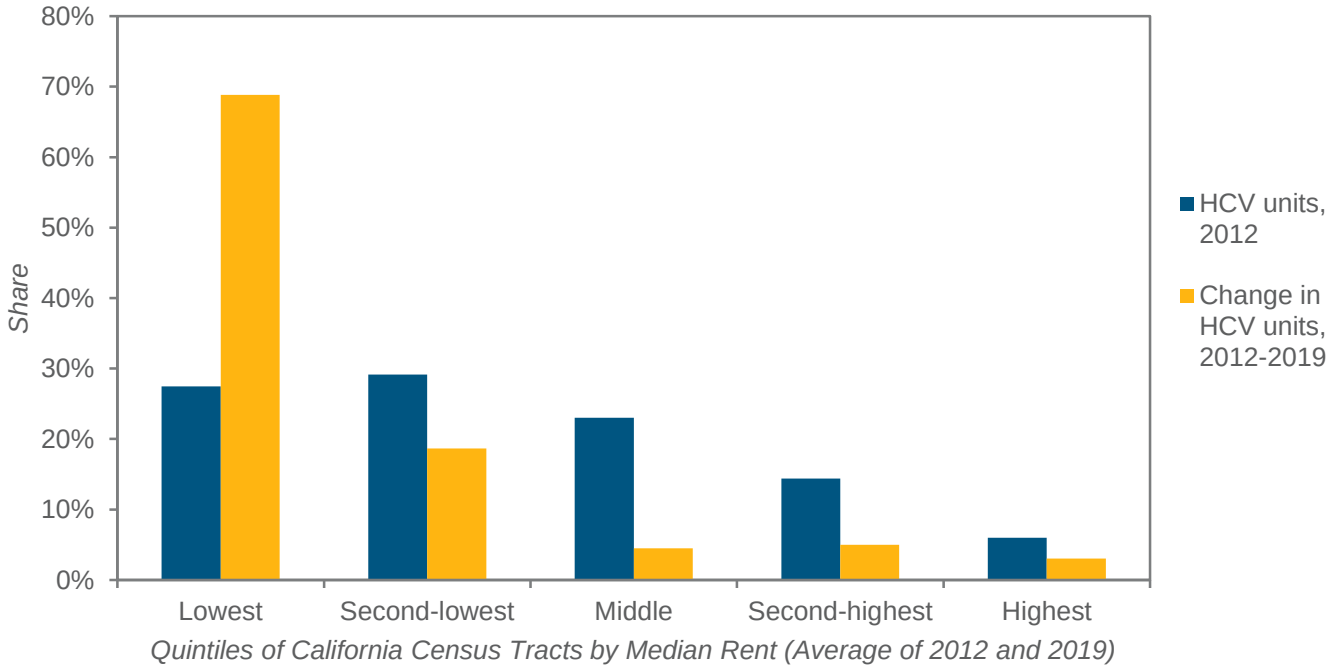

Figure 15. Housing Choice Vouchers Units by Neighborhood Rent Levels

Data sources: U.S. HUD, 2021 and U.S. Census Bureau, 2019

Perhaps partly in response to these rent increases, HCV units became increasingly concentrated in the lowest quintile of rent levels (See **Figure 15**). While in 2012, units were approximately evenly distributed between the bottom three quintiles, almost 70 percent of the 2012-2019 changed units were in the lowest quintile.

Housing Choice Vouchers have a unique relationship to market rents, because of the process of setting Fair Market Rent, described above. Because FMR—the maximum that Section 8 landlords can receive in rent—is set through ACS estimates, the rate of change can be significantly slower than that of market rents, despite efforts to factor in marginal changes for recently rented units rather than changes in the average for all units. This may be especially challenging in times of high turbulence, such as what followed the Great Recession's housing crisis. Between 2012 and 2019, the best available data for this study indicates that FMR did not keep pace with change in market rents in many markets. **Figure 16** shows these discrepancies across California counties, dividing counties where the change in Fair Market Rent was above or below that of market rent.

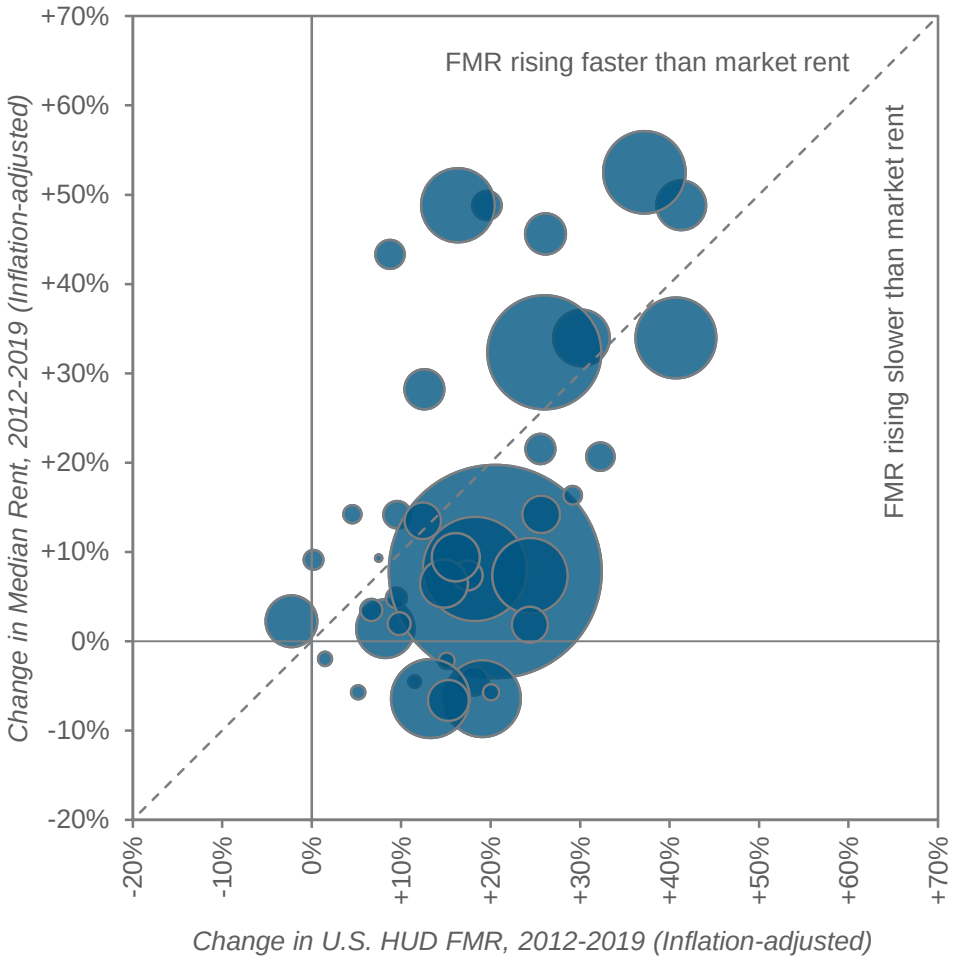

Figure 16. Comparison of Changes in Median Rent versus U.S. HUD Fair Market Rent in California Counties, 2012-2019

Note: Circles are sized by the number of rental housing units in each county.

Data sources: U.S. Census Bureau, 2019; U.S. HUD, 2022a; and Bureau of Labor Statistics, 2022

The effective result of this slow change in FMR is that in many markets, payments to landlords lowered relative to the rate at which the market was increasing. Therefore, landlords were incentivized to exit the program in order to obtain higher rents through the market. The exception to this is units in neighborhoods where market rents largely remained low: in those places, FMR continued to be a reasonable proxy for market rents, and landlords were not incentivized to leave the program. This further concentrated available supply of units in poorer areas—which again tend to align with neighborhoods of color, neighborhoods with lower access to economic opportunities, and neighborhoods with high environmental burdens, as we have seen throughout this analysis.

Conclusion and Recommendations

Our findings reveal an inherent structural dilemma or contradiction in whether the Housing Choice Voucher Program is able to simultaneously achieve two broad and critically important policy goals adopted by California's policymakers. First, the state aims to attenuate climate change through sustainable development and transportation. Climate change drives global warming, which has severe economic, social, and political consequences. Reducing VMT through sustainable urban design is an important element in the effort to reduce GHG emissions, as VMT is a leading contributor (CARB, 2021). The other major societal goal is promoting greater access to geographic opportunities for low-income renters. This is driven by the knowledge that moving poor families to non-poor neighborhoods generates some short-term and long-term benefits for parents and children. The hope is to break a cycle of poverty by allowing greater access to opportunity. One mechanism to do so is to give greater geographic choice to those receiving housing subsidies. This would allow many to relocate from neighborhoods of concentrated poverty if units elsewhere are available. Yet, there are challenges with implementing this approach, as discussed previously in this report.

The empirical evidence shows that Section 8 housing has not been able to simultaneously fulfill both policy goals. By standard measures, the location of these subsidized units are disproportionately in transportation-sustainable neighborhoods, ones that generate lower average vehicle miles traveled, are near high-quality transit locations, and are walkable. This was true in 2012 and became even more so in the changes between 2012 and 2019. Unfortunately, this seeming progress has come at a high cost to HCV renters. In 2012, subsidized renters were disproportionately concentrated in areas with high vehicle collision rates and environmental burdens. This negative geographic distribution became worse over time. These problems are compounded by increasing economic segregation into high-poverty areas and persistent racial segregation. Finally, we found a decrease in economic opportunity and a worsening of employment prospects for those in HCV units. The quantitative findings reveal a real-world inability to simultaneously achieve sustainability goals and socioeconomic-justice goals. Moreover, the results show that this disjuncture has become worse over time.

Tackling the dilemma would require multi-agency collaboration. Other CNK research for state agencies and qualitative interviews with their staff and affordable-housing developers suggest that the state is only in an initial stage in its efforts to implement a comprehensive, effective approach to bridge the two major policy goals. State policies do encourage cross-sector collaboration among those in the environmental, transportation, and housing arenas. There has been progress, with some joint committees and projects working on the intersection of those three sectors around equity. However, much more is needed from public agencies that appear to remain largely in separate silos and not yet fully coordinated on similar projects. This is apparent, for example, in the development of separate neighborhood assessment tools for sustainability, housing and transportation, which are critical to monitoring and assessing progress. This division is compounded by the fragmentation of the affordable housing into multiple and separate local jurisdictions. Each state or local agency focuses on and/or prioritizes its own narrow and immediate mission and priorities. Integration across sectors and agencies is understandably incredibly challenging but is essential to countering the negative aspects of the trajectory detailed above in the locations of affordable housing.

Along with greater multi-agency collaboration, some programmatic improvements are possible to address poor implementation, on both the demand and supply side. There are also steps local public housing authorities can take to increase the supply of available units. For example, providing the addition of customized services such as search assistance, landlord engagement, and short-term financial assistance can significantly increase the

percentage of households that use vouchers to move to neighborhoods with higher economic opportunity and lower levels of concentrated poverty (Bergman et al., 2019). A case study of the Cincinnati Metropolitan Housing Authority finds that there are potential improvements through proactive outreach to encourage landlord participation (Varady, Jaroscak, and Kleinhans, 2017). Moreover, evidence suggests that HUD could do a better and more timely job of matching Fair Market Rents with the changes in the rental market and of implementing Small Area Fair Market Rents, which allow FMRs to vary within a metropolitan area and rise in higher-rent sub-regions (Center on Budget and Policy Priorities and Poverty and Race Research Action Council, 2018 and U.S. HUD, n.d.-a). However, higher subsidies per unit may come with a tradeoff of fewer affordable units, due to budgetary constraints. Together, these actions can attenuate the tradeoff between achieving sustainable transportation and just affordable housing.

Programmatic changes alone will likely produce only marginal improvements as more fundamental contradictions are deeply embedded in the spatial urban structure. This stratified structure continuously acts to reproduce racial and class disparities and segregation. For example, one element of this reproduction process is the politically imposed constraints on the overall supply of housing in California metropolitan areas, driven by “not in my backyard” sentiments, which drive up rent and create and sustain more exclusive, high-rent neighborhoods. Tackling such underlying structural economic, social, and political barriers is daunting—but ultimately must be done to meet equitable sustainability and housing goals.

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