HOUSING & SUSTAINABILITY IN THE INLAND REGION:

Affordability, Equity, and Changing Demographics

UC RIVERSIDE | School of Public Policy

UC RIVERSIDE | Inland Center for Sustainable Development

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A MESSAGE FROM ICSD'S INTERNAL & EXTERNAL DIRECTORS

Dear Colleagues and Friends,

Beginning in 2019, the Inland Center for Sustainable Development has been hard at work delivering reports, issue briefs, case studies, podcasts and Randall Lewis Seminars on various topics including, housing affordability, cost-burdens, energy, and COVID-19, primarily focusing on the Riverside and San Bernardino Region.

Despite the challenges our Center has faced, especially with our establishment only a few months prior to the COVID-19 outbreak, we have continued to provide tools to promote a greater research on the Inland Southern California Region, a region that has historically been underserved, and under researched. During our past three years functioning as ICSD, we have strived to uphold and contribute to the larger University of California Riverside community, in addition to the even larger Riverside-San Bernardino Region. We look forward to continuing our research in coming years, and continuing to provide the region with invaluable, accurate and objective policy information, data, research, and events.

This report serves as an amalgamation of our previous year in research and work. Please enjoy learning about our region and research focus. Perhaps most importantly, thank you to our sponsors (included on the next page); without their increasing generosity this year's research program would be impossible.

Dr. Qingfang Wang
Internal Director &
Professor of Public Policy

Rick Bishop
External Director

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Our members make it possible for us to continue our research, engage students in regional issues, and maintain our community outreach efforts. We are thankful for their continued support:

SECTION 1: INTRODUCTION

California is widely known for its high cost of housing and living, which is largely the result of the inability for new housing production to match the state's population growth. Since 1970, California has experienced an extended and increasing housing shortage. This shortage has been estimated to be 3-4 million housing units (20-30% of California's housing stock) and by 2018, California ranked 49th in the United States in terms of housing units per resident (McGhee et al., 2021; U.S. Census, 2017). Although the interrelationship between cost and supply are largely known among state and local policymakers, the state continues to struggle to find effective solutions that significantly relieve the housing crisis. Among the factors commonly attributed to the housing deficit include: 1) regulations/policies, such as the California Environmental Quality Act (CEQA), which is often criticized for being abused by slow / no growth advocates, and 2) Proposition 13, which limits property taxes to 1% of a home's original assessed value and may contribute to local jurisdiction preference of commercial land uses and the fiscalization of land use (Levin, n.d.).

With housing costs now well above the national average and a worsening homelessness problem (Levin, 2022), housing challenges have ever increasingly become more significant to voters and policymakers alike. The number of Californians able to purchase a median-priced home continues to shrink. Just 24% of California households could afford to purchase the $797,000 median-priced home in the first quarter of 2022, down from 27% in first-quarter 2021 (Q1 2022 Housing Affordability Index, 2022). Homeownership rates in California are among the lowest in the nation (Housing Vacancies and Homeownership, 2022), and the U.S. Department of Housing and Urban Development (HUD) identified California's household homelessness rate as the second highest in the nation (Homelessness Statistics by State, 2020). Additionally, many that are not facing direct homelessnes are significantly cost-burdened, with 38% of homeowners and 55% of renters paying more than one-third of their income on housing, which is the threshold that most researchers use to identify cost-burdened homes. The state's housing woes do not apply just to those looking to purchase a home. The National Low Income Housing Coalition estimates that the shortage of rental homes affordable and available for extremely low income renters (whose incomes are at or below the poverty guideline of 30% of their area median income) is in excess of 1 million units (California, n.d.). The Inland Southern California Region is not immune from the statewide housing crisis. Housing production is not keeping up with population growth, 41.5% of households in the region are housing cost-burdened where they spend more than 30% of their income on housing (Kimberlin, 2019), and the Inland Region is the third most overcrowded region in the United States as of 2019 (Cox, 2021). The region ranks in the top 10 among the most populous Metropolitan Statistical Areas (MSAs) of households with high energy burdens, further exacerbating affordability for many.

Lease rates for a typical rental house in the Inland Empire was $2,469 in December 2021, representing a 28 % rise from $1,931 in March 2020. Similarly, the value of a typical owner-occupied house in this region rose from $388,404 in March 2020 to $534,393 in December 2021, a 37.6 % increase. Housing affordability has commanded the attention of the state's residents so much that one-third of Californians have seriously considered leaving the state due to high housing costs (Baldassare, 2021).

This report builds upon ICSD's previous research on the region's housing affordability and socioeconomic landscape. In the previous year, we profiled the Inland Region's housing stock, examined housing construction trends, and reviewed the implications of statewide policies. ICSD's research culminated with the August 2021 release of our annual report titled "Regional Challenges and Opportunities for Housing Development in Inland Southern California"(ICSD, 2021), which expanded on the ongoing conversation and research encompassing the Inland Region's substantive housing challenges, including, regional affordability, the jobs-housing imbalance, and rising unattainability of housing needs. To further our research on this topic, in this report we examine the consequences of having an insufficient housing supply that fails to accommodate the region's growing population.

As you read this report, we challenge our readers to think about sustainability in the broad, overarching definition of "sustainability" and its related and relevant policy concepts. Many definitions can be offered for 'sustainability'. For example, the New Oxford American Dictionary defines sustainability as "the ability to be maintained at a certain rate or level", while the Merriam-Webster Dictionary defines sustainability as simply, "capable of being sustained" (Oxford University Press, 2022; Merriam-Webster, n.d.). As discussed in the next section of this report, the United Nations defines sustainability as, "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987). This definition can be applied broadly to sustainability, and encompasses many competing demands placed upon this term. We encourage our readers to consider the social, economic, and environmental aspects of sustainability in addition to the process of sustainable policy making. Sustainability cannot fully be understood, and should not be understood as simply an environmental issue: sustainability in policy is diverse and multifaceted. We invite you to expand your knowledge of the interrelationships of sustainability through our report. Our belief is that this broad understanding of sustainability should be at the forefront of policy research; sustainability is an ongoing conversation, not a myopic mandate only incorporating one aspect of public policy.

1.1. Section Summaries

Not unlike environmental and energy issues, housing reform can also be approached from a sustainability standpoint. In Section 2, we re-examine the traditional concept of "sustainability" and explore how economic and social dimensions of policy affect the formation and existence of sustainable housing. We define sustainable housing as housing that can meet the current needs of a growing population that additionally has the infrastructure to adequately serve future generations; at the same time, sustainable housing should promotes social mobility, is affordable to residents, has minimal environmental impact, and ideally, is located in opportunity-rich communi-

ties with access to jobs and amenities. We also look at the extent that policies can contribute and support sustainable housing. In this section, we ask:

- Why is it important to consider all facets of sustainability?
- What have we learned from historical policies that did not approach land use issues with sustainability in mind?
- How have some modern policies incorporated sustainable policy design?

In Section 3, we examine the state of housing affordability within the Inland Region by identifying discrepancies between existing housing stock that is affordable to low-income households, and the realistic availability of these units to low-income households. We define this variance between the supply and demand as an affordability mismatch. Furthermore, we delve into the extent to which households are housing cost-burdened, and how neighborhoods are evolving and the effects of residential inequality. In this section, we ponder on the following questions:

- Do renters and owners experience similar patterns of affordability mismatches?
- Which jurisdictions have the highest/lowest affordability mismatch indices?
- What common characteristics do jurisdictions with low supply of affordable and available housing units share?
- How has the Inland Region's socio-demographic profile changed through the decades?

Section 4 examines how COVID-19 continues to impact the Inland Region. Overcrowding in homes, which we define for the purposes of this section as a household having more than two people residing in a bedroom, is one of the issues we explore. Since overcrowding affects susceptibility to illnesses, ability to telework, and the academic performance of children, for example, we study the characteristics of overcrowded households and the racial and ethnic disparities of those experiencing overcrowding. Additionally, because COVID-19 has put many small businesses at risk of closing, we look at the spatial distribution of financial aid from the Paycheck Protection Program (PPP). The Paycheck Protection Program is a Small Business Administration (SBA) backed loan program that helps businesses retain their workforce during the COVID-19 pandemic. We examine the characteristics of small businesses that received PPP loans and observe the geographical distribution of PPP loans at the neighborhood level. In this section, we address the following questions:

- What common characteristics are shared by overcrowded homes?
- How prominent of an issue is overcrowding in the Inland Region compared to the rest of Southern California, the state, and the nation?
- Has telework transformed our work and home lifestyles?
- What are some common characteristics shared by small businesses that received PPP loans?
- Which neighborhoods received PPP loans?
- What were some of the shortcomings of the PPP loan program?

Section 5 provides a conclusion to this report. In this conclusion, we discuss the topics studied this year, and offer a brief overview of our recent publications. We additionally consider the interrelationships between the sustainability issues that we explored throughout this report, and how those are related to creating sustainable housing.

SECTION 2: SUSTAINABILITY

The United Nations (UN) World Commission on Environment and Development defines sustainability as "meeting the needs of the present without compromising the ability of future generations to meet their own needs" (Brundtland, 1987). Actions such as polluting the environment, wasting valuable resources, and the overconsumption of single-use plastics are just a few examples of unsustainable practices that are relatively commonplace. Current discussions of sustainable practices, such as environmental preservation, energy conservation, and clean energy use, while informative and meaningful, can be somewhat myopic. While these actions are undeniably more sustainable than their antithetical counterparts, the social and economic forms of sustainability are sometimes understated when compared to more commonly recognized environmental benefits. Many have viewed sustainability as multi-dimensional, with social, environmental, and economic facets (Porter & van der Linde, 1995; Daly & Goodland, 1996; Brundlandt, 1987; O'Connor, 2006; Mensah, 2019). The more nuanced forms of sustainability deserve equal academic and social attention to broadly strengthen sustainability discussions.

2.1. Dimensions of Sustainability

Support for environmental sustainability gained considerable momentum from the 1960s to the 1980s. By the 1980s, comprehensive regulations aimed at preserving and/or improving the environment were being enacted at all levels of government. Laws during this era were largely prefaced on the recognition that humans were at least partially responsible for many adverse effects on environmental and public health. For example, the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), also known as Superfund, became a landmark law that took a proactive approach to clean up abandoned toxic waste sites (Myers, 2013). The law additionally held entities accountable for producing toxic waste areas, and taxed chemical and petroleum industries to help fund the cleanup of Superfund sites (areas that posed significant threats to the environment). This and subsequent environmental legislation and regulation has increasingly embraced the concept of social responsibility: the philosophy that individuals and entities (E.g. corporations, firms, governments) have both moral and ethical obligations to make sensible and reliable environmental and social decisions (Kolk, 2016; Ali & Kaur, 2021).

However, opportunities for citizens to be socially responsible are not universal, particularly for low income households. The ability to participate in Net Energy Metering (NEM) can serve as an example. NEM allows citizens to produce clean energy, such as solar, and receive credits on utility bills when excess energy is transferred

back to the utility's grid. However, this type of program is generally not viable for low-income households as they can often either require up-front financing of the photovoltaic (PV) systems, or require payment plans that are not affordable for the first several years. An important policy making consideration is how to promote equal access in sustainability policy. In this way, efficient, well-targeted and broad sustainability policy needs to incorporate a social dimension. The role of social sustainability is to remove barriers that inhibit access to programs for all households that can improve a range of social benefits and outcomes. Other examples of social sustainability include providing access to quality healthcare and education, and removing gender inequities (Saith, 2006; Kolk, 2016; Brodhag & Taliere, 2006; Pierobon, 2018). Some maintain that true social sustainability requires voluntarily sacrificing profit for the benefit of society (Elhauge, 2005; Portney, 2008), while others view that economic profit and sustainability can be achieved simultaneously (Carroll, 1999). Due to the inherent link between social sustainability and the environment, a discussion of their intersection is necessary.

Economic sustainability strives to accomplish viable monetary growth by preserving capital and resources that maintain economic stability. Examples of economic stability for businesses include reducing material waste, recycling resources when possible to lower operational materials cost, and making environmental cost-effectiveness a priority (Zhong & Wu, 2015). For investor-owned utilities (IOUs) in California, because revenues are regulated by the California Public Utilities Commission, revenues do not solely depend on energy sales. This allows utilities to maximize their profit margins by developing economically sustainable strategies to minimize operational costs, which could include deferral of significant investments that are needed to augment energy sources. One way IOUs accomplish this is by encouraging their customer base to lower energy consumption and participate in energy-saving programs.

The broad interpretations of environmental, social, and economic sustainability indicate that sustainability cannot be easily or even modularly defined. Eriksen and Brown express the difficulty of balancing social and equity outcomes promoted by sustainability (Eriksen & Brown, 2011). Sustainability is a product of how the environment, the economy, and society work together to influence broader outcomes. Due to this definition and the broad nature of sustainability, compartmentalizing sustainability into purely categorical dimensions is not particularly meaningful or impactful. Sustainability should be approached holistically and include diverse perspectives in the dialogue of sustainability (Brandon & Lombardi, 2005; Armstrong and Kamieniecki, 2019). Therefore, housing, and many commensurate quality of life issues, are indirect and direct issues of sustainability.

Policies that address housing affordability should be designed with deferential treatment to the interaction of environmental, social, and economic factors. For example, zoning laws that are intended to protect natural environments and historical districts are extremely important to local communities and should be given due reverence. However, stringent zoning has often been criticized for its exclusionary practices and disparate impacts on minorities, as exemplified through the court case between the Texas Department of Housing and Community Affairs vs. Inclusive Communities Project (TDHCA v. ICP, 2015). Single-family zoning is often critiqued as a significant contributor to the state's housing shortage. In 2018 Governor Newsom called for the production of 3.5 million new homes over a seven-year period. However, one study estimated that California, as of 2019, was

only zoned for 2.8 million homes (Monkkonen & Friedman, 2019). The manner in which zoning laws have been used historically and even today is increasingly being viewed as an impediment for meeting California's growing population's need for additional, and often, higher density housing. The general overemphasis in municipal zoning code on single family zoning has disproportionately affected low- and moderate-income (LMI) households. These households and residents, who are in need of affordable units, have been priced out of many–if not most–Southern Californian housing markets due to an increasing lack of affordable supply (Johnson, 2022). A contributing factor to the state's high housing costs is the insufficiency of new housing supply to meet the housing demand of California's population, regardless of whether new homes meet affordability thresholds. California's housing shortage is decades in the making; since the 1970s, California has experienced an extended and increasing housing shortage, so much that by 2014, California ranked 49th in the U.S. in terms of housing units per resident (Woetzel et al., 2016).

2.2 Selected Legislative and Policy Context for Sustainability and Housing

Part of our research examines topics related to housing policies that conflict with the need to address the environmental, social and economic dimensions of sustainability. Housing challenges include, but are not limited to, issues of affordability, lack of supply, overcrowding, energy affordability, zoning, and access to opportunity. Housing California's growing population is a challenge exacerbated by low housing stock, and steep increases in housing costs relative to income growth (Johnson, 2022). To overcome these challenges, innovative policies and initiatives are needed to address how the environmental, social, and economic facets of sustainability can be applied to housing, especially to the benefit of low-income families.

Therefore, deferential treatment to the interaction of environmental, social, and economic factors is needed for successful and efficient policymaking. The neglect of this interaction is seen, albeit not perfectly analogously, in the negative externalities our current society is facing as a result of past policies. For example, during the practice of redlining in the 1930s, black homeowners were often excluded from government-backed mortgages due to race-based criteria that discouraged mortgage lenders from investing in properties in areas deemed as high-risk for lenders. The legacy of this practice has reinforced racial segregation and widened the racial wealth gap that continues to persist in today's society (Jan, 2017; Mitchell & Franko, 2018). Many neighborhoods that were redlined in the 1930s remain economically disadvantaged, resulting in relatively low property values and a significant population of low- and moderate-income (LMI) households (Jan, 2018; Foster et al., 2019; Vermeer 2021). Moreover, redlined areas also tend to experience worse health outcomes (Townsley et al., 2021), bad air quality, and persistent environmental vulnerability (Wison, 2020; Kulenova, 2020; Lane et al., 2022). Similarly, zoning codes have created analogous issues. While their intent was to protect against noxious / non-compatible land uses and increase property values, zoning regulations spawned largely from Los Angeles and New York efforts in the early 1900's have been associated with racism, classism, and other problems. Studies indicate that strict zoning regulations constrain the supply of housing and inflate housing prices, as well as contribute to inequality, segregation, and a weaker economy (Quigley & Raphael, 2005; Schuetz, 2009; Calder, 2017; Chetty & Hendren, 2015).

Studies also show that climate change will be exacerbated for formerly redlined communities due to increased urban heat (Anderson, 2020; Hoffman et al., 2019). This exemplifies how the effects of an era of discriminatory mortgage lending and zoning have manifested into modern day inequities including poor health outcomes, lack of economic opportunities, and segregated communities. Crafting housing policies that limit negative externalities for future generations is of paramount importance.

In 2006, recognizing the "serious threat to the economic well-being, public health, natural resources, and the environment of California", the State Assembly enacted the Global Warming Solutions Act (AB 32), which proposed to reduce greenhouse gas emissions (AB-32: Air Pollution, 2006). The law resulted in several major initiatives that reduced carbon emissions and generated funding for further emission reduction programs. The Cap-and-Trade Program of 2013 was one such resulting program. The program sets progressive caps (or limits) on the amount of permissible emissions. When industries need to exceed caps, they can purchase allowances from others who have met their requirements and have no need for additional emissions output. The revenue generated from the program funds the state's Greenhouse Gas Reduction Fund (GGRF), which supports programs that reduce emissions and are aligned with the goals of AB 32. However, AB 32 was enacted as a standalone law and did not address the unequal needs of different communities.

SB 535, enacted in 2012, formally recognized that low-income and communities of color often faced unequal and disproportionate climate effects (Kim & Lee, 2019). This law designated that at least 25% of the proceeds from the Greenhouse Gas Reduction Fund go to projects that benefit disadvantaged communities as deemed by the California Environmental Protection Agency (CalEPA). SB 535 exemplifies how policies can lead to increased investments in vulnerable communities and reduce environmental injustice by increasing accessibility to benefits reaped from climate efforts. This law prioritizes the community needs of more vulnerable populations, makes environmental benefits more accessible, and reduces environmental inequities that hinder quality of life. Since the passage of SB 535, a 2015 study found that over 2,000 solar power systems had been installed for low-income households, 2,250 trees were planted in disadvantaged communities, and 600 high-polluting cars and trucks were replaced with electric or plug-in hybrid vehicles (Sanchez, 2015). As an Inland example, the City of Montclair in San Bernardino County has directly benefited from SB 535. Montclair's average household income is 20% below the statewide average, has high rates of food insecurity, and minimal accessibility to fresh foods (Hughes, 2016). These issues were partially addressed through the creation of the Montclair Fruit Park. The Montclair Fruit Garden, which promoted the creation of a community fresh food garden, was funded through this program (Sanchez, 2015).

By some metrics, racial and economic inequities in California have continued to widen. In 2010, California had 278 racially or ethnically concentrated areas of poverty (R/ECAPs)[1]; by 2017 that number had increased to 391

1 The U.S. Department of Housing and Urban Development (HUD) defines R/ECAPs as census tracts that have a majority non-white population, and either have a poverty rate greater than 40% or have a poverty rate three times greater than neighboring metropolitan/micropolitan areas.

(HUD, 2018). State policies such as the Affirmatively Furthering Fair Housing (AFFH) Act of 2018 (AB 686) continue to strive for sustainable housing solutions that cultivate environmental, social, and economic equity. The AFFH aims to create inclusive communities where access to resources and opportunities are not class dependent. In an effort to accomplish this, the Act requires that city and county housing elements revised after January 1, 2021, include an analysis of fair housing trends and practices, identify high and low opportunity sites, and develop programs that affirmatively further fair housing.

2.3. Consequences of Lack of Sustainability and Affordability

According to the California Department of Housing and Community Development, the state's most salient housing challenges include, an insufficient housing stock, increased inequality, lack of opportunity, high cost burdens, low homeownership rates, persistent homelessness, discrimination, and insufficient accommodations for people with disabilities. Many of these housing issues are inherently interrelated. For example, unaffordable housing costs typically inhibit low-income residents from living in opportunity-rich neighborhoods. Low housing supply drives up home prices, placing homeownership out of reach for many, especially those with lower incomes. For people with disabilities, the pool of housing available is further limited due to discrimination (Aitken et al., 2019), accessibility issues (Beard, 2012), and lack of supportive housing options (Koenig, 2015).

These interconnected challenges have implications on health, education, and social mobility. Health can be affected by poor physical housing conditions and by the financial stress induced by unaffordable housing costs (Rolfe et al., 2020). Poor housing conditions can include issues such as dampness and mold, which can lead to respiratory diseases (Fisk et al., 2010). Low-income households are more likely to live in overcrowded housing units, defined in this section as having more than 2 persons per bedroom (PPB >2). Overcrowding has been found to contribute to the spread of respiratory diseases (Irfan et al., 2017; Gyawali et al., 2012; Baker et al., 2013) and affects mental well-being (Regoeczi, 2008). Overcrowding is also recognized as an important determinant of children's academic performance and behavior (Solari & Mare, 2013; Contreras, 2019). Furthermore, for residents, the location of the home affects the quality of socioeconomic and educational opportunities, and amenities (such as libraries, green spaces, hospitals, etc.) available and accessible to them. This is a major issue for the Inland Region, which based on the standard for overcrowdedness discussed above, is listed as the third most overcrowded MSA in the United States (Cox, 2021). However, high-opportunity areas often have higher cost-of-living standards, which ultimately excludes many low-income households from living in such areas (Spotlight on Underserved, n.d.). As a result, social mobility is much more difficult to attain for households in low income and poverty-stricken areas.

Additionally, building housing infrastructure in an unsustainable fashion has many negative effects and externalities for the greater Southern California Region. Unsustainable construction is typically characterized by the growth of far suburban or exurban areas, contributing to high congestion, urban sprawl, longer commute times, increased greenhouse gas emissions, less time at home with family, and other issues that impact quality of life. Urban sprawl is driven by a litany of factors, including housing unattainability, high housing prices, low housing

stock, and buyer preference. The general inaccessibility of affordable housing in Southern California has contributed to the "drive until you qualify" mentality for many who are looking to purchase a home (Balderrama, 2021). Automobile dependency also contributes to what some think are unsustainable transportation practices. A prime example of automobile dependency is the tendency for the state to commit billions of dollars to widen roads and freeways in order to move workers long distances from home to work in lieu of other transportation options. Unsustainable construction can increase greenhouse gas emissions; conversely, increasing residential densities around job centers coupled with improved access to effective public transportation reduces long commutes and achieves significant carbon emission savings (Seto et al., 2014). Oftentimes, energy savings accumulated by city dwellers is completely canceled out by increased energy expenditures by those in suburban and exurban areas (Sanders, 2014). Because the Inland Region has tremendous growth potential, it is imperative that future housing in the region takes sustainability issues into consideration. Policymakers should think about whether continued utilization of past planning practices will be sufficient for addressing future needs and preferences.

Incorporating environmental and social sustainability into policy is difficult, and creates increasing challenges for already developed communities. As discussed in our 2021 annual report, the need to balance many different policy factors like, issues of sustainability, infrastructure strain, and housing affordability should be at the forefront of policy making at all levels of government. Throughout Sections 3 and 4 of this report, additional consequences of unsustainable practices and unaffordability are outlined: from overcrowding and inequality to energy accessibility, and the effects of teleworking.

SECTION 3: AFFORDABILITY, EQUITABILITY, AND THE CHANGING DEMOGRAPHICS OF THE INLAND REGION

Housing cost burdens put low-income households at risk of experiencing other insecurities, such as insecurity meeting their food, energy, transportation, and medical needs. Cost burdens are only further exacerbated for those living in areas with higher costs-of-living and home values. In this section, we look at how the socio-demographic characteristics of local jurisdictions and neighborhoods are significantly associated with housing affordability and equitability. This section examines the socioeconomic characteristics of cost-burdened households residing in Riverside and San Bernardino Counties. We identify common characteristics shared by jurisdictions with high and low area median incomes (AMI), which is the household income mark at which half of the households in a given region are making above, and half are making below this income threshold. We find that the gravity of cost burdens for low- to moderate-income (LMI) households vary within the Inland Region and to some extent, depend on the socioeconomic characteristics of a neighborhood. As such, we additionally examine how the socio-demographics of the neighborhoods in the Inland Region have evolved since the 1980s.

3.1. Current Status of Housing Affordability in the Inland Region

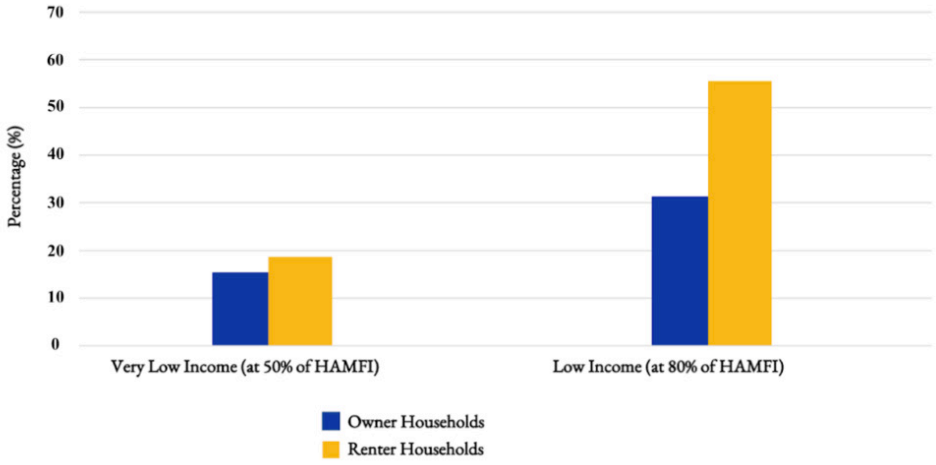
It is generally agreed upon by practitioners that a household's total housing expenditures (e.g., rent or mortgage) should not exceed 30% of that household's total gross income. Households spending more than 30% of their net income on housing are considered to be cost-burdened; households spending more than 50% of their income on housing are regarded as severely cost-burdened. Although estimates vary, across the United States nearly half of all rental households were considered to be cost-burdened in some capacity (Joint Center for Housing Studies, 2022). Nevertheless, using the 30 - 50% metric can be an oversimplification of the consequences resulting from cost burdens. Other factors, such as the relative ease or difficulty of finding affordable housing in a given location, and the transformations that neighborhoods experience with time, further complicates the implications of being cost-burdened and under-resourced.

For the purposes of this section, we define affordable housing as housing that is affordable to a particular segment of the population, and does not refer to government-subsidized or income-restricted housing. Moreover, while there are several measures that can be employed to measure housing affordability (Kutty, 2010; Hulchanski, 1995; Padley & Marshall, 2019), we abide by the housing expenditure-to-income ratio approach. The U.S. Department of Housing and Urban Development (HUD) utilizes the housing expenditure-to-income ratio approach to determine eligibility for housing programs such as subsidized housing. In order to account for differences in the cost of living, housing cost burdens are calculated relative to the AMI. HUD uses a more specific

AMI called the HUD Area Median Family Income (HAMFI) for determining eligibility. HAMFI is an adjusted median family income that includes family size, inflation, and fair market rents (FMR) into median calculations.

In 2017, Riverside and San Bernardino Counties were home to 1,335,365 households, of which 62.3% were owner households, and 37.7% were renter households (Comprehensive Housing Affordability Strategy (CHAS), 2017). According to this data, owner households tend to be upper income, with 61% having incomes that were above the 100% HAMFI threshold. In comparison, only 32% of renter households were commensurately affluent. As of 2017, only 15.5% of a typical city's housing stock was affordable to owner households that earned about 50% of HAMFI, while the percentage of affordable housing stock for owner households earning at least 80% of HAMFI increased to 31.4%. Renter households have a larger affordable housing stock available to them. The shares of housing stock affordable to renter households at 50% and 80% of HAMFI are 18.7% and 55.5%, respectively. Figure 3.1.1 summarizes the share of the housing stock in the Inland Region that is affordable to households with incomes that are 50% and 80% of HAMFI.

Figure 3.1.1 Percentage of Housing Stock Affordable to Low and Very Low Income Households in the Inland Counties (by Tenure)



Some cities have more affordable housing inventory than other cities. This becomes apparent when we rank cities by their shares of affordable housing stock. Table 3.1.1 and Table 3.1.2 identify cities with the most and least affordable housing stock for households that make below 50% of HAMFI. We provide the affordability rankings for households with incomes less than 80% of HAMFI in the Appendix. In general, cities with the lowest AMIs have more affordable housing units. For example, Needles, Barstow, and Blythe have AMIs of $34.7k, $36.6k, and $39.8k, respectively. For households earning 80% of HAMFI in these cities, more than half of the housing stock is affordable to owner and renter households. Contrastingly, the three cities with the least share of affordable housing have high AMIs. Indian Wells, Norco, and Canyon Lake had AMIs of $103.5k, $91.9k, and $89.5k, respectively. 3% of the housing stock in Indian Wells is affordable at 50% HAMFI, while 4% of Norco and Can-

yon Lake's housing is deemed affordable by the same metric. Although renter households from both socioeconomic classes follow similar trends in the shares of affordable housing stock, there are typically more affordable housing units that are appropriate for renter households than owner households. Many explanations for this trend can be proffered, including restrictive land use policy and/or the regular forces of market supply and demand.

Table 3.1.1. The 10 Cities with the Highest Share of Housing Stock that is Affordable for Households that are 50% of the HAMFI (by Tenure)

Rank	City	Owner Households (%)
1	Needles	64
2	Barstow	61
3	Blythe	40
4	Twentynine Palms	40
5	Adelanto	38
6	Hemet	35
7	Yucca Valley	32
8	San Jacinto	29
9	Calimesa	28
10	Desert Hot Springs	28

Rank	City	Renter Households (%)
1	Needles	79
2	Blythe	57
3	Barstow	56
4	Coachella	40
5	Twentynine Palms	34
6	Desert Hot Springs	30
7	Calimesa	30
8	Adelanto	28
9	Yucca Valley	27
10	Big Bear Lake	27

Table 3.1.2. The 10 Cities with the Least Share of Housing Stock that is Affordable for Households that are 50% of the HAMFI (by Tenure)

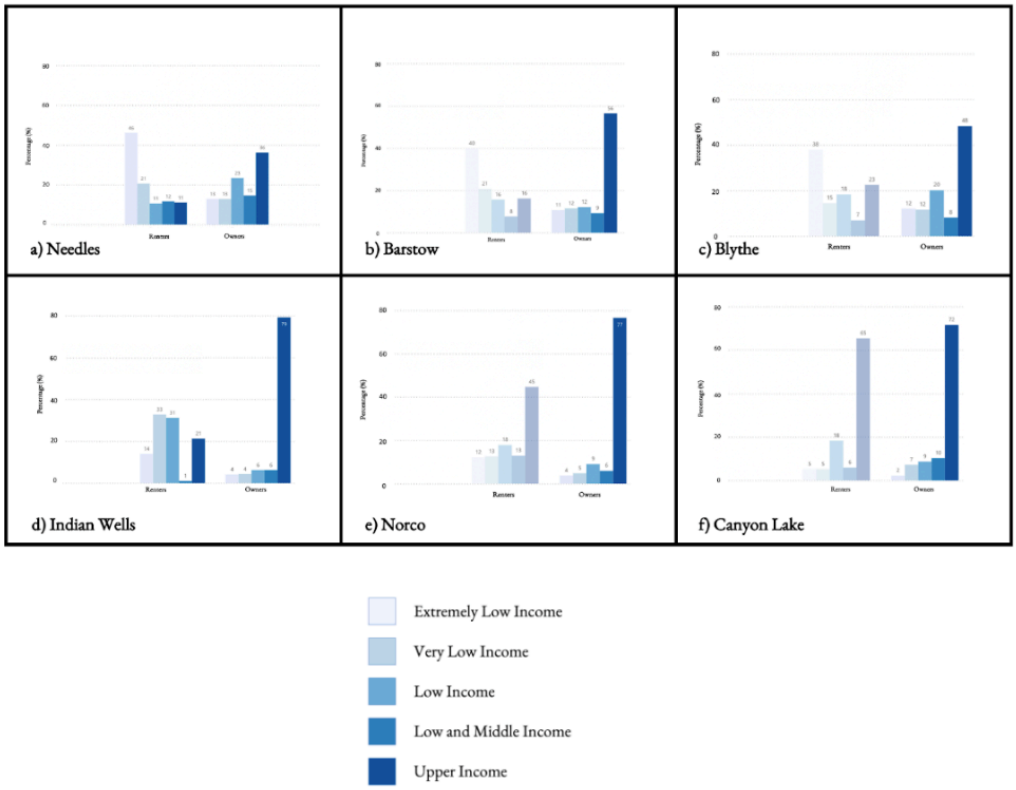
Rank	City	Owner Households (%)
1	Indian Wells	1
2	Norco	2
3	Canyon Lake	2
4	Murrieta	3
5	Temecula	3
6	Chino Hills	3
7	Fontana	5
8	Eastvale	5
9	Chino	5
10	Rancho Cucamonga	5

Rank	City	Renter Households (%)
1	Chino Hills	4
2	Rancho Cucamonga	5
3	Ontario	7
4	Corona	7
5	Temecula	7
6	Murrieta	7
7	Grand Terrace	8
8	Eastvale	8
9	Moreno Valley	8
10	Indian Wells	8

Furthermore, the income distributions of households in cities with low and high AMIs are markedly different. This trend is demonstrated by Figure 3.1.2: panels a - c demonstrate that residents from cities with low AMIs have a wider distribution of households from different socioeconomic backgrounds, whereas cities with high AMIs have far less representation from lower income groups relative to upper income groups. Moreover, the socioeconomic makeup of renters and owners in high and low AMI areas have distinct patterns; extremely low-income renters in cities with low AMIs occupy a significant share of rental units, whereas this same socioeconomic group is not well-represented in rental units in areas with high AMIs. For both high- and low-AMI communities,

the majority of owner households are from upper income groups, although cities with low AMIs tend to have more socioeconomic diversity represented in owner households than cities with high AMIs, where high-income households are overrepresented.

Figure 3.1.2. Income Distribution of Cities with Low AMIs (a - c) vs. Cities with High AMIs (d - f) by Tenure



3.2. Extent of Being Cost-Burdened

In general, income and cost burdens are inversely related: upper income households are typically not cost-burdened, while most extremely low-income households are severely cost-burdened (Figures 3.2.2 - 3.2.3). The difference in cost burdens between cities in the Inland Region displays an interesting pattern. We use Indian Wells and Needles as examples of this difference.

Low- to middle-income households in cities with scarce affordable housing options are more cost-burdened than households residing in cities with high shares of affordable housing. This divide is exemplified through the cities of Indian Wells and Needles. The overwhelming majority of extremely low-income owner households are severely cost-burdened in Indian Wells. 72.7% of extremely low-income renter households are severely burdened, and 27.3% are moderately burdened. However, extremely low-income households in Needles fare substantially better. In Needles, there is more variation in the cost-burden status for extremely low-income households: 45.2%, 32.3%, and 22.6% of extremely low-income owner households are severely, moderately, and not cost-burdened, respectively. The cost burdens of renters follow similar socioeconomic patterns.

Upper income households in cities with low housing supply tend to dominate the housing market. In Indian Wells, 79% of upper income households were owner households. This is a significantly larger share than low- to moderate-income households. Nevertheless, most upper income households in Indian Wells have no cost burdens. For example, 78.2% of owner and 83.3% of renter households have no cost burdens. In cities with minimal amounts of affordable housing, cost-burdens among upper income rent and owner households are rare. In Needles, all upper-income renter households were not cost-burdened.

Figure 3.2.1. Percentage of Cost-Burdened Owner and Renter Households in Indian Wells

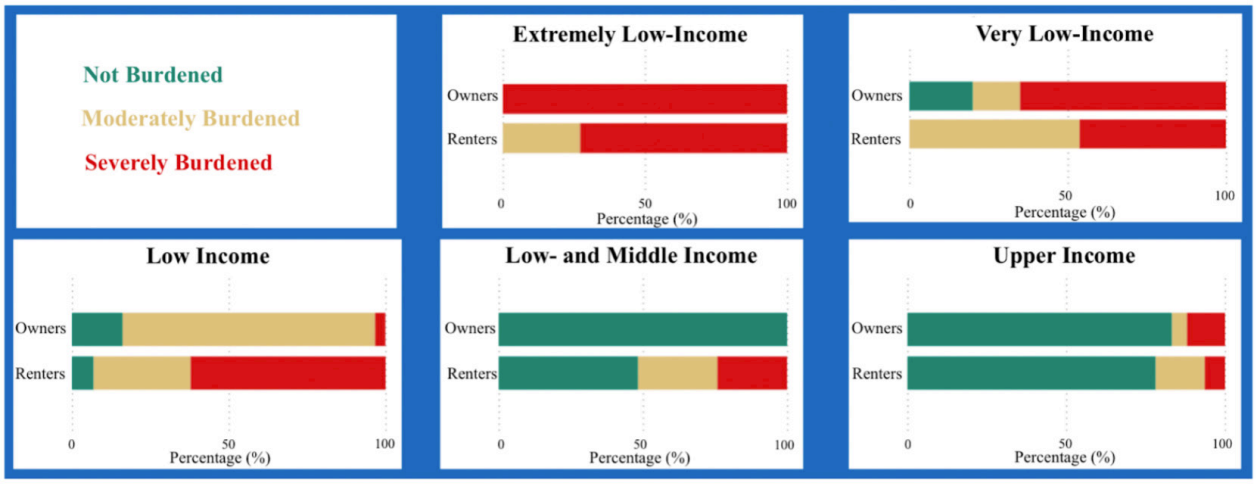
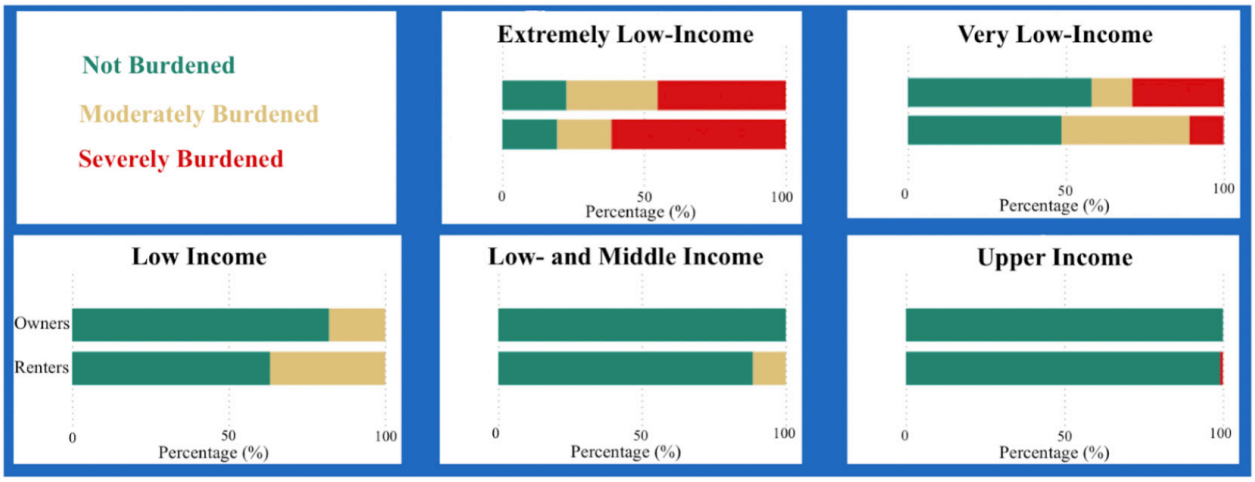


Figure 3.2.2: Percentage of Cost-Burdened Owner and Renter Households in Needles



3.3 Mismatches Between Affordability and Availability

Although low housing inventory drives up housing costs and contributes to increases in cost-burdened households (Pattillo, 2013), it is not the sole barrier to affordability. Another important dimension of affordability is having access to the existing supply of affordable homes. Low-income households may have difficulty accessing affordable housing if higher-income households choose to occupy units that may be affordable to low-income households. This occurrence may further limit the availability of affordable housing stock for low-income households. We define availability as regular vacancy or when a unit is occupied by a low-income household that can afford the housing costs. Thus, looking at both the affordability and availability will yield a more accurate picture of housing options for low-income residents. Tables 3.3.1 - 3.3.4 rank cities according to their share of housing stock that is affordable and available to renter and owner households. These rankings closely resemble that of the affordable housing stock (Tables 3.1.2 - 3.1.5), which suggests that the supply of housing plays a greater role in providing housing than the cities' affordability mismatches. Figure 3.3.1 and Figure 3.3.2 contrast the affordability mismatches seen for Needles and Canyon Lake, which are two cities that consistently ranked in the top and bottom 10, respectively, in terms of their affordable housing stock and the availability to low-income households. Rankings for all income levels can be found in our webtool.

Table 3.3.1. 10 Cities with the Highest Share of Housing Stock that is Affordable and Available for Households that are 50% of the HAMFI (by Tenure)

Rank	City	Owner Households (%)
1	Barstow	21
2	Needles	19
3	Hemet	16
4	Adelanto	15
5	Twentynine Palms	15
6	Yucca Valley	14
7	Blythe	13
8	Yucaipa	13
9	San Jacinto	12
10	Calimesa	11

Rank	City	Renter Households (%)
1	Needles	60
2	Barstow	44
3	Blythe	38
4	Coachella	31
5	Adelanto	23
6	Twentynine Palms	21
7	Desert Hot Springs	21
8	Big Bear Lake	20
9	La Quinta	18
10	Yucca Valley	18

Figure 3.3.1: Proportions of Housing Stock that are affordable and Available for Needles, CA (by Tenure and Household Income)

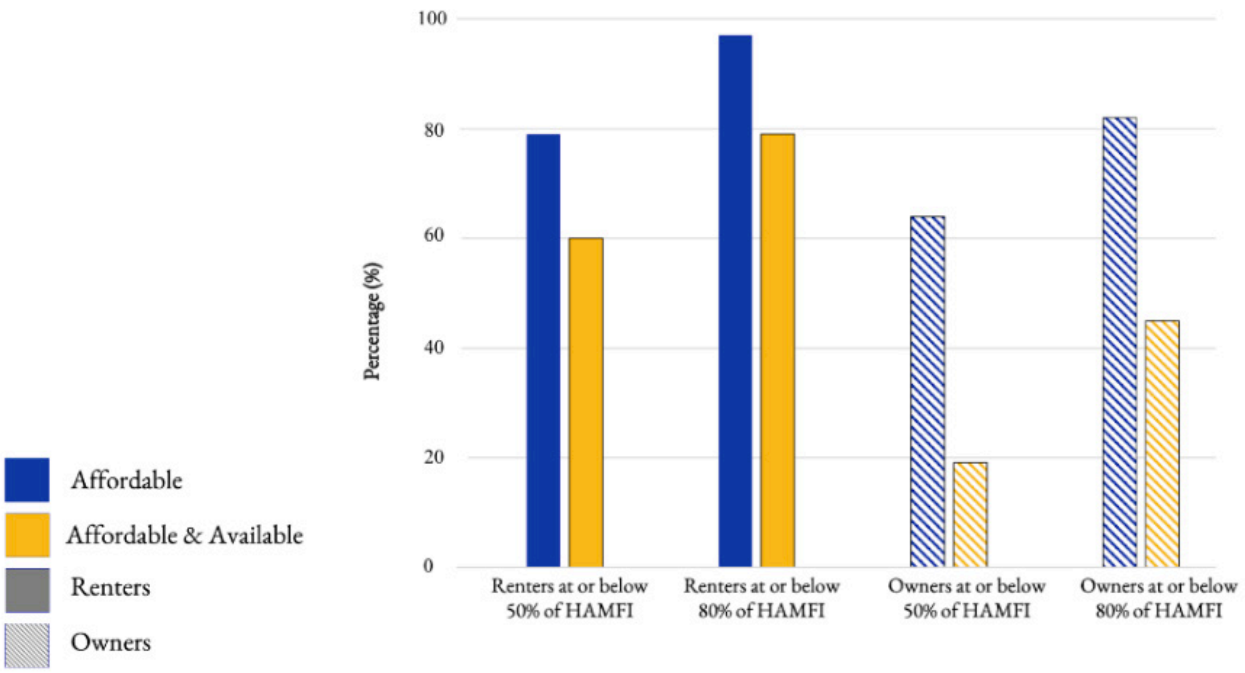
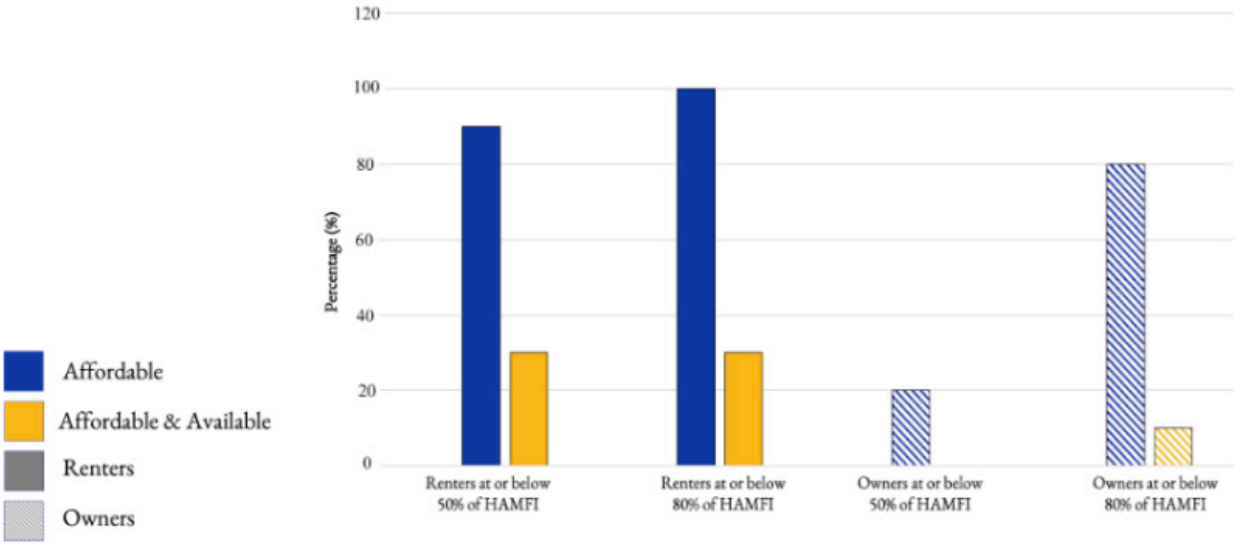


Figure 3.3.2: Proportions of Housing Stock that are Affordable and Available for Canyon Lake, CA (by Tenure and Household Income)



3.4. Neighborhood-Level Changes in the Inland Region

Neighborhoods play a vital role in influencing a person's life: the neighborhood setting often determines a resident's quality of life, health outcomes, and their ability to access opportunities in education and employment (Gingrich & Ansell, 2014; De la Roca et al., 2014; Kim & Lee, 2019). Thus, monitoring the socioeconomic changes of neighborhoods and the changing demographics may help us identify how neighborhoods are changing (e.g. whether neighborhoods are experiencing economic booms or declines, population increases and decreases, gentrification, etc.). Thus, this analysis may ultimately demonstrate how neighborhoods are hindering and/or enhancing the socioeconomic mobility of its residents.

A holistic look at the evolution of neighborhoods may help us identify key factors that elicit change. Figures 3.4.1 - 3.4.4 depict how the Inland Region's economic profile has evolved. Figure 3.4.1 depicts the socioeconomic changes the Inland Region has experienced from 1980 - 2019. The darker shades of orange indicate a high AMI for a census tract, while the lighter shades represent a lower AMI. Through the decades, although the Region has, on average, increased in wealth, wealth has become increasingly concentrated in the southwestern portion of the Inland Region. Although many explanations of this phenomenon can be presented and detailed, the push of residents from Orange and Los Angeles Counties due to high living costs is likely a contributing factor. For areas outside the southwestern portion of the two county region, many have decreased or remained at the same AMI from 1980-2019. Interestingly, during the same period, homeownership rates increased throughout both urban and rural areas, although in the southwestern region, homeownership rates increased and decreased throughout different periods. (Figure 3.4.2).

Figure 3.4.1. Spatial Patterns of Median Household Income in Neighborhoods of Inland Southern California (1980-2019)

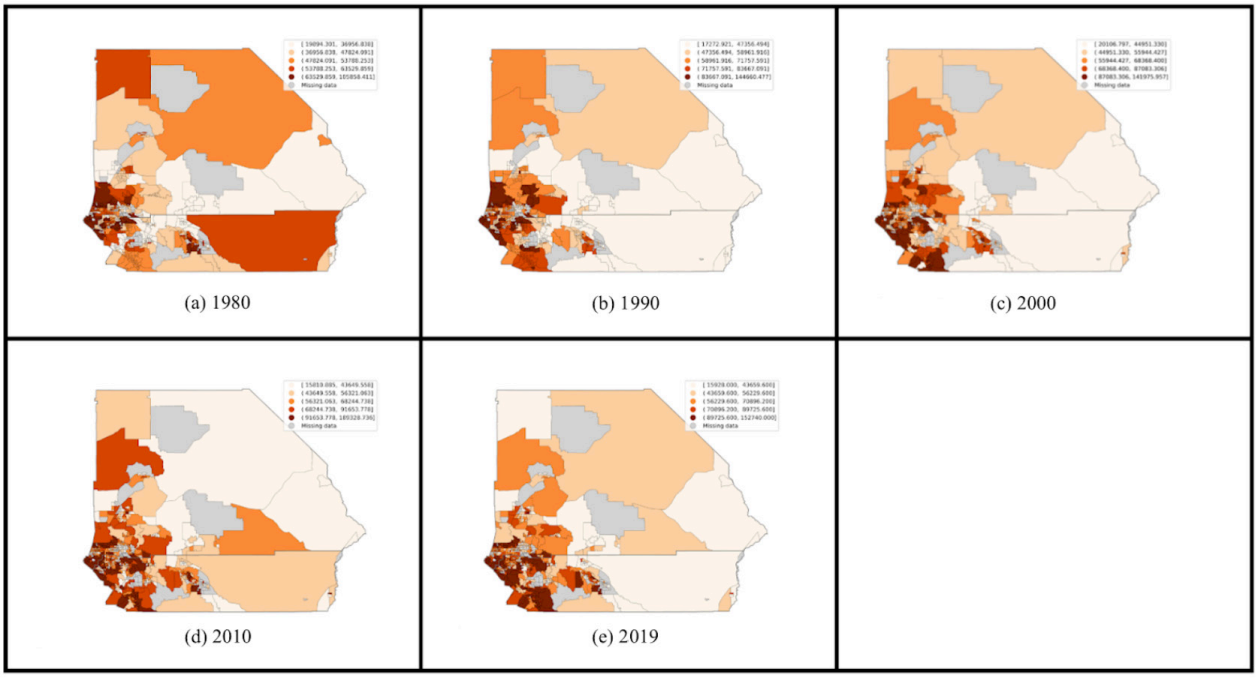


Figure 3.4.2. Spatial patterns of Homeownership Rate in Neighborhoods of the Inland Region (1980-2019)

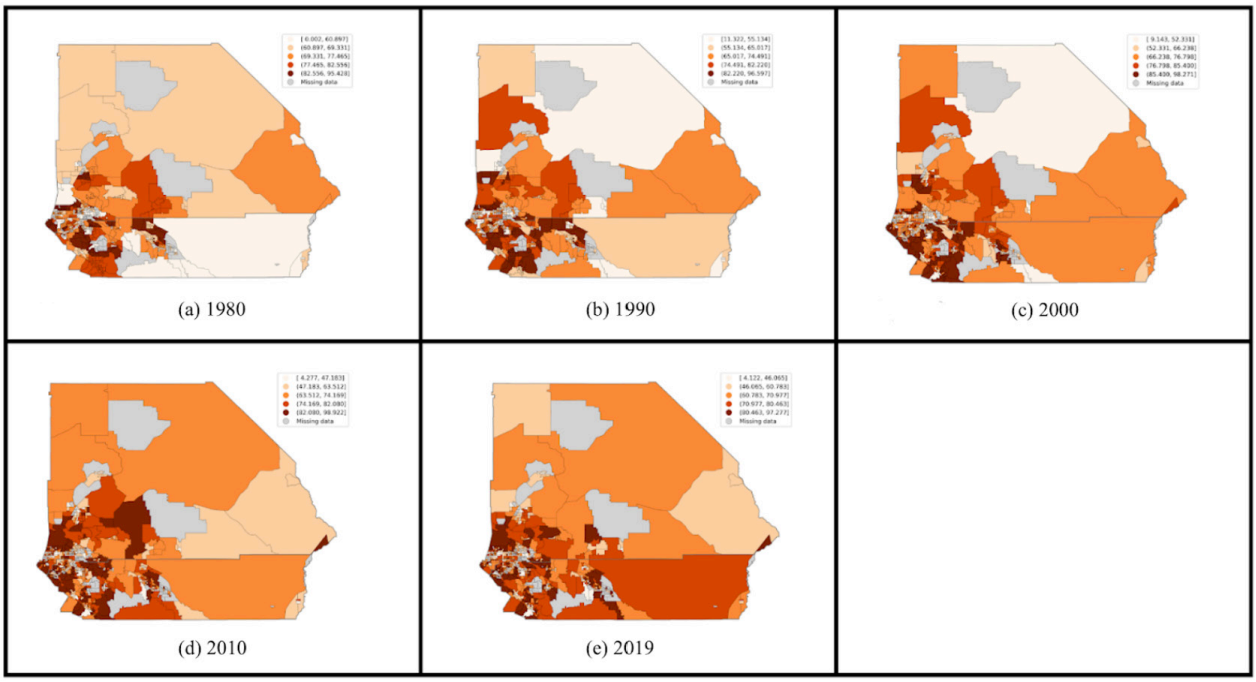
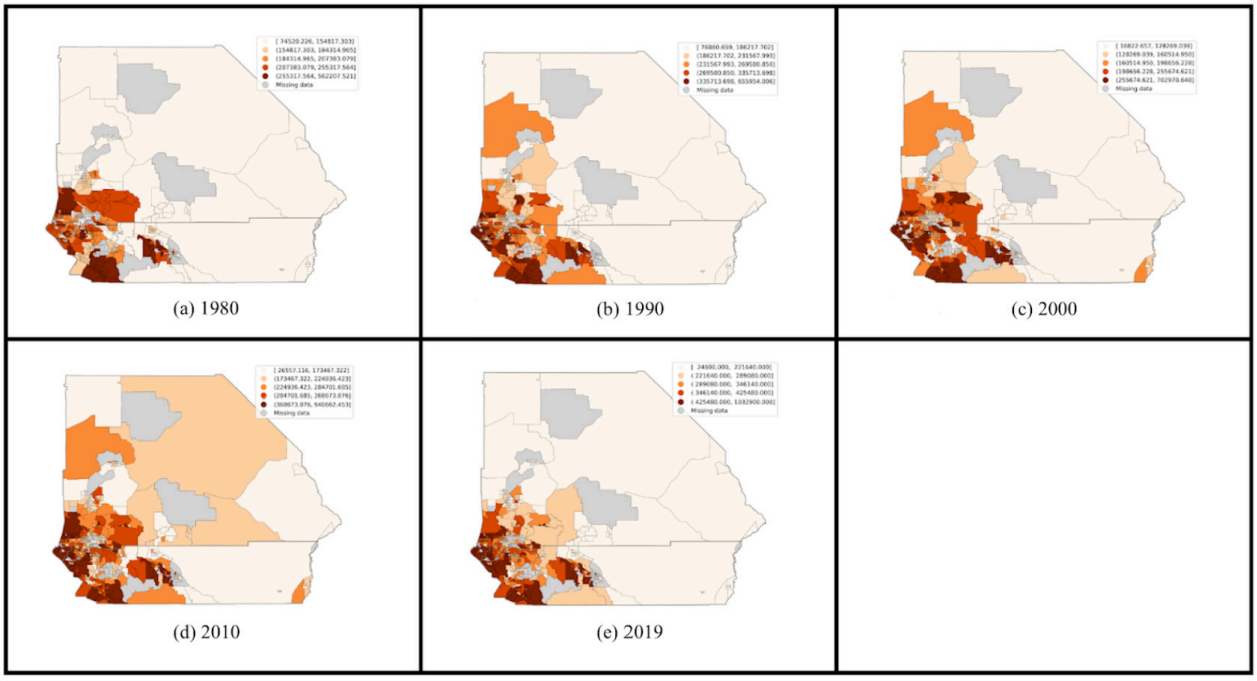


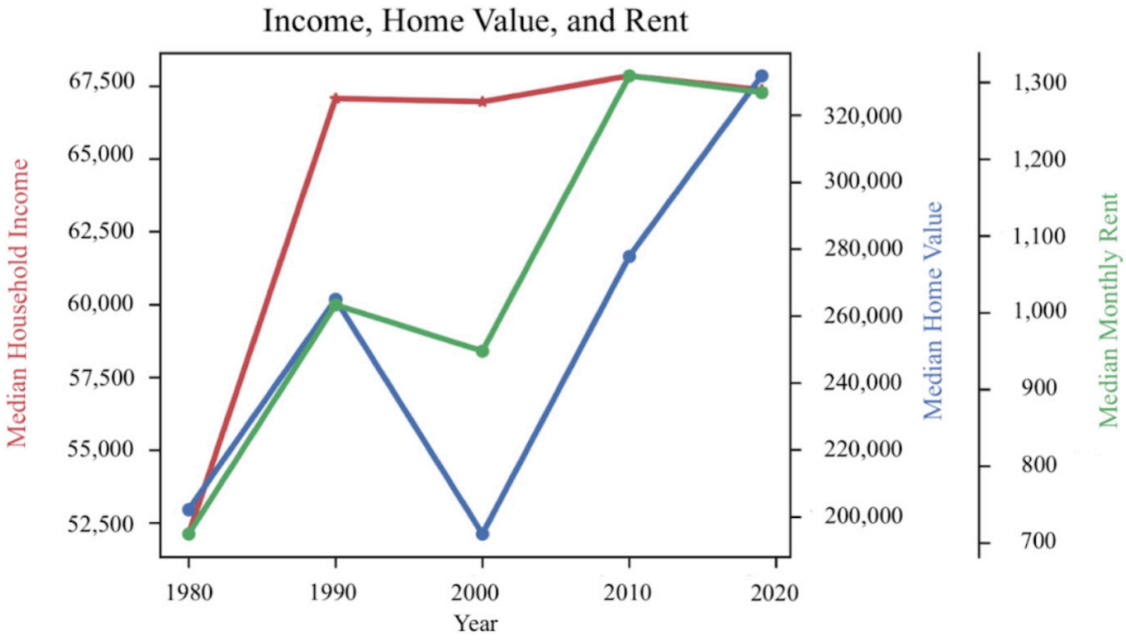
Figure 3.4.3 demonstrates that, perhaps obviously, home property values in rural areas have traditionally been lower than property values in urban areas. The southwestern region shows the greatest fluctuations in property values. Figure 3.4.3 shows that from 1990 - 2010, property values increased in the mid-western regions of San Bernardino County (Barstow and its surrounding regions). However, a comparison of home values for the same area during 2010 and 2019 (Figures 3.4.3 d and e) reveal that property values did not increase significantly in the next decade. Property values in urban areas such as Ontario, Rancho Cucamonga, Corona, and Temecula consistently have the highest property values in the Inland Region.

Figure 3.4.3. Spatial Patterns of Median Home Value in Neighborhoods of Inland Southern California (1980-2019)



The 1990s appears to have been a turning point for the Inland Region's socioeconomic characteristics and housing expenses. The most drastic changes occurred in the early 1990s, when average household incomes increased by 28.7% between 1980 - 1990. Since that period, incomes throughout the region have remained relatively stable. Property values and rental payments also increased during this timeframe, but decreased significantly from 1990 - 2000. By the year 2000, home property values had depreciated to 1980 levels, and the average monthly rent dipped below $1,000. Despite this, home values and rental rates increased during the housing boom of the early 2000s, and has been steadily increasing since then (Figure 3.4.4). Property values increased by 70.2% from 2000 - 2019.

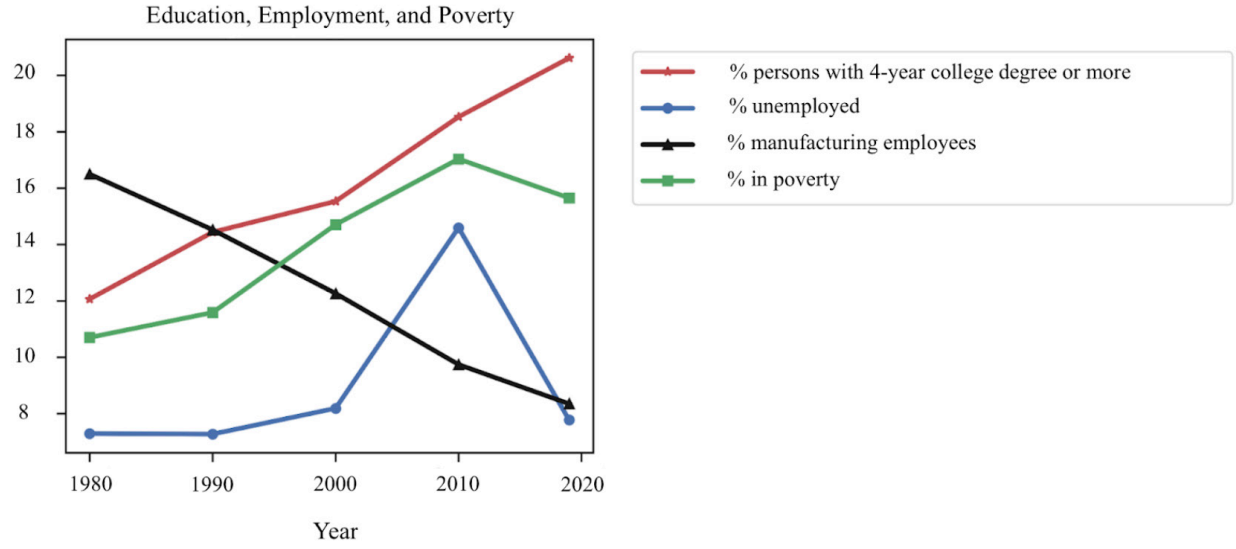
Figure 3.4.4. Average Trends in Income, Home Property Values and Rent (1980-2019)



3.5 Changing Demographics of the Inland Region

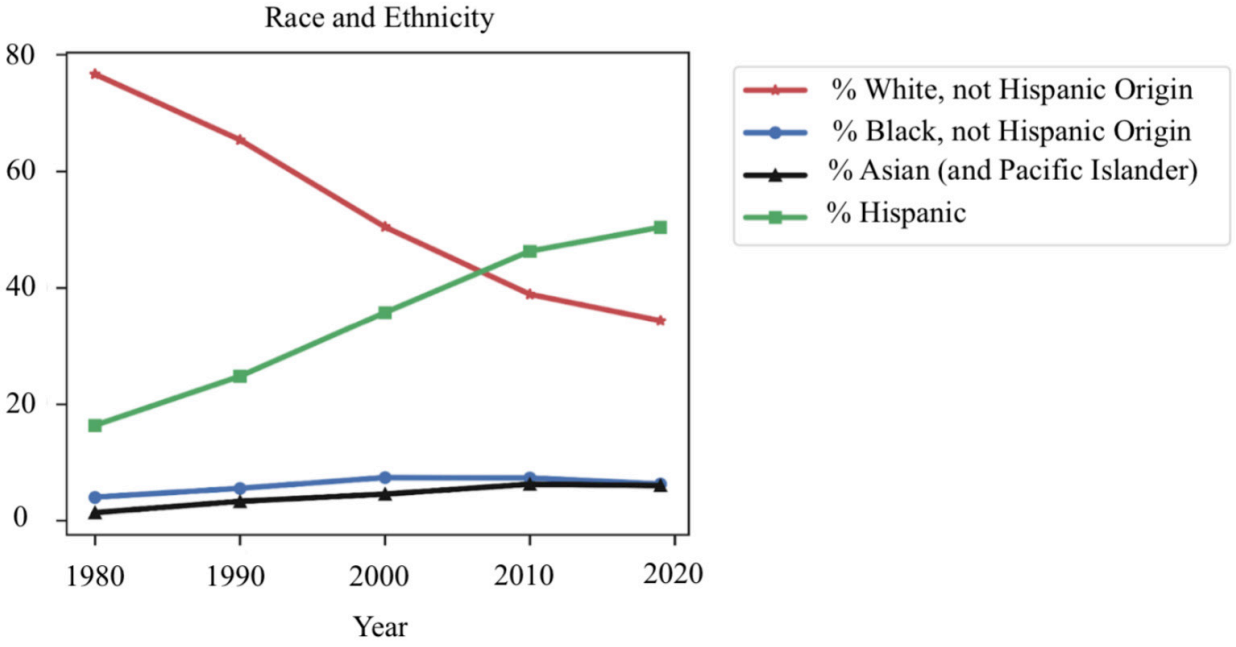
Education levels, types of available employment, and poverty rates have changed considerably with time, as depicted in Figure 3.5.1. Occupation in manufacturing steadily declined between 1980 - 2019, while the region's education levels steadily increased during this timeframe. The percentage of households in poverty increased from 11.6% to 15.6% between 1990 - 2010, but decreased steadily from 2010 to 2019. Unemployment levels have been generally stable, with the exception of the 14% peak reached during the Great Recession.

Figure 3.5.1. Average Trends in Education, Employment, and Poverty (1980-2019)



The racial/ethnic composition of the Inland Region has also undergone significant changes; while once predominantly White in the 1980s, the region is now predominantly Hispanic. The Hispanic population of the region has been steadily rising since the 1980s. Although Asian and Black populations have also increased, their growth has been more modest. As a result of these changes, the Inland Region is now a diversified region, with 35.4% of the population identifying as White, 51.9% Hispanic, 6.5% Black, and 6.2% Asian.

Figure 3.5.2. Average Trends of Neighborhood-Level Racial/Ethnic Composition (1980-2019)



3.6 Discussion and Conclusion

Although Riverside and San Bernardino Counties are part of the same metropolitan statistical area, the socio-economic conditions between cities are not necessarily homogeneous. Different socio-economic conditions, like income distributions of renters and owners, accessibility of homeownership, and available affordable housing are unique to each city. For example, as discussed in subsection 3.3, lower-income groups fare worse in cities with high AMIs, where they are more likely to be cost-burdened.

These trends, when taken as a whole, paint an impactful picture of the Region. Cost burdens, which are especially high in a variety of portions of the Region, property values, and affordable housing stock all directly and indirectly relate to the economic and social sustainability of the Inland Region. When considering the more social aspects of sustainability, policies which foster the region's rare environment of diversity are especially important. By promoting policies which create affordable housing, these policies allow the region's residents to continue to reside in this region, raise families, and contribute to the tax base. Therefore, by promoting social stability, these policies also promote economic sustainability and vitality.

However, the maintenance and retention of opportunity in terms of jobs and education is equally important to the economic sustainability and development of the region. Likewise, to promote beneficial neighborhood change in both rural and urban areas, taking into account past regional changes is equally important. Changing demographics demonstrate how the region has become a haven for minorities and those who would be severely or extremely cost-burdened elsewhere.

SECTION 4: CONTINUING EFFECTS OF COVID-19

Section 4 examines how COVID-19 has affected housing-related issues such as insecurity, overcrowding, and the transition to teleworking. Because the pandemic has made working from home a common practice, we additionally speculate if views and expectations of housing and commuting have changed.

4.1 Housing Disparities

After the onset of the pandemic, ICSD produced several reports on how COVID-19 has affected housing insecurity. This year, we expand our research on the effects of the pandemic by looking at the characteristics of overcrowded households and the economic wellness of communities. In this section, though there are several ways to define overcrowded dwellings, we use the person-per-bedroom (PPB) definition, which defines overcrowded as more than two persons residing in the same bedroom. Although overcrowding was recognized as a serious issue prior to the COVID-19 pandemic, mitigating the effects of overcrowding is increasingly crucial for both mental and physical health. Mitigating overcrowding is especially important in an era with many intersecting quality of life issues, such as low housing supply, stagnant wages, and increasing housing costs.

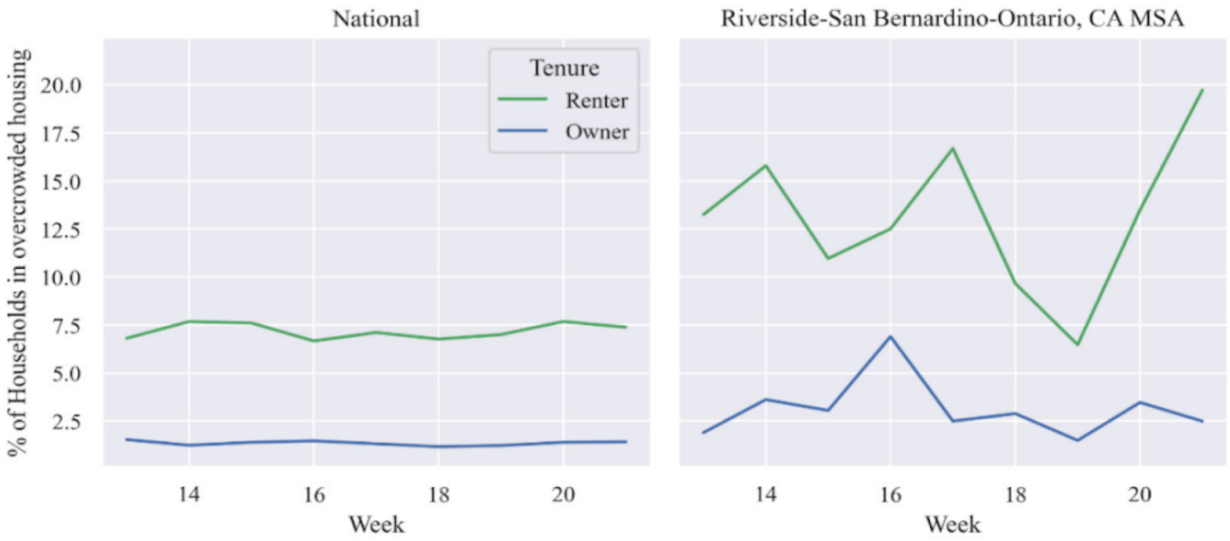
The effects of overcrowding are not distributed equally; the rate of overcrowding for very low-income households is typically three times higher than for upper-income households. Despite its overall reputation as an exurban or suburban region, the Riverside/San Bernardino metropolitan area is the third most overcrowded region in the United States (American Community Survey, 2015-2019). The Inland Region has significantly higher overcrowding rates than the national average. 13% of renters, and 3% of homeowners in Riverside and San Bernardino Counties experience overcrowding, whereas nationally, only 7% of renters and 1% of owners live in overcrowded homes (Household Pulse Survey, 2020).

Prior to the pandemic, overcrowding had well-documented negative effects on health, mental well-being, and academic and job performance (Inglis, 2015). During the COVID-19 pandemic, mitigating susceptibility to poor health and maintaining a suitable environment for work and study is more important than ever. Because overcrowding is often a result of poverty and high living costs, one way to alleviate overcrowding while additionally decreasing susceptibility to COVID-19 is to increase housing accessibility and affordability. We use the near real-time Household Pulse Survey (HPS) data from the U.S. Census Bureau to investigate issues of overcrowding, and the relationship between overcrowding, housing insecurity, and teleworking for the period of August 19, 2020 - December 21, 2020.

Nationally, we found that the percentage of overcrowding was more or less stable for both renter and owner

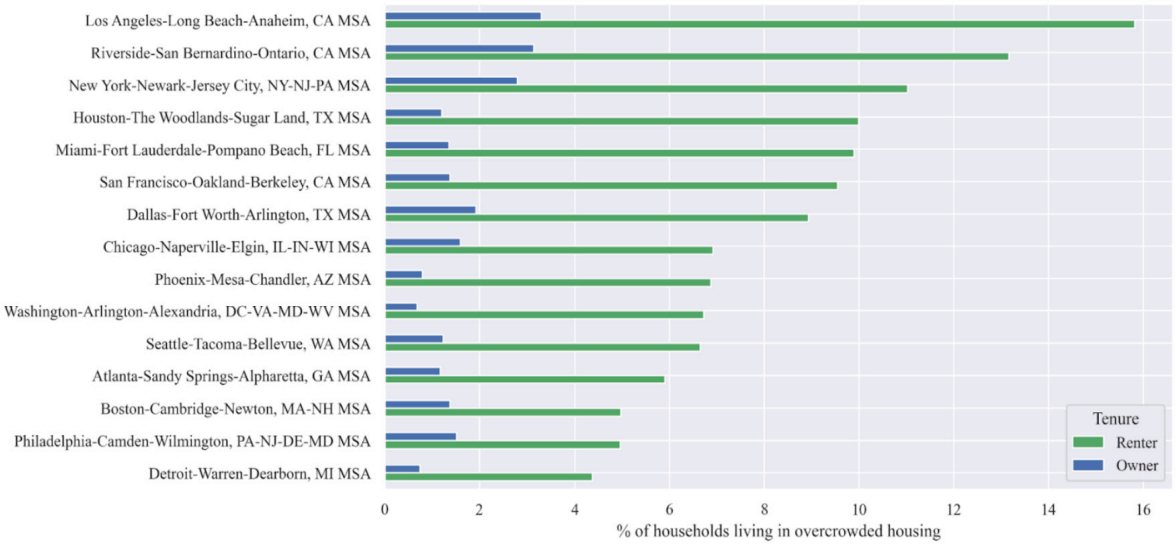
households from the examined time period (Figure 4.1.1). According to this figure, there was 5.8% more overcrowding occurring in renter households than owner households. Nationally, about 7.2% of renter households experienced overcrowding, whereas only 1.4% of owners experienced similar substandard conditions. We also found that the Riverside-San Bernardino-Ontario MSA generally fared worse in terms of overcrowding than the national averages. Overcrowding in renter households was much more sporadic than the overcrowding rates of owner households during the same time period. Overcrowding rates for rental households ranged from 7% to 20%, whereas owner households had a tighter range of 2.5% to 7.5%.

Figure 4.1.1. Temporal Trends of Proportions of Households who Lived in Overcrowded Housing (August 19 - December 21, 2020): National and Riverside-Ontario MSA



Compared with other MSAs in the nation, overcrowding in Southern California was much more prevalent in the examined period. Shown in Figure 4.1.2, both renter and owner households in the Inland Region have significant overcrowding, even surpassing areas that have well-documented high housing expenses, such as the New York-Newark-Jersey City MSA.

Figure 4.1.2. 15 Most-Populous MSAs Ranked by Share of Overcrowded Renter and Owner Households (August 19th - December 21st, 2020)



We further examine if a correlation between overcrowdedness and housing insecurity exists. Housing insecurity is defined as households who are behind on house payments and have low confidence in paying their rent/mortgage in the next month. We observe that overcrowded households are more likely to perceive or experience the threat of eviction or foreclosure. Figure 4.1.3 reveals that for both renters and owners in the Riverside-San Bernardino-Ontario and Los Angeles-Long Beach-Anaheim MSAs, overcrowded households were twice as likely to be housing insecure compared to households that were not overcrowded. 20% of overcrowded renter households were housing insecure, whereas only 10% of non-overcrowded renters were insecure. When comparing housing insecurity of overcrowded and non-overcrowded owner households, the gap was more narrow: 8% vs. 5%, respectively. Figure 4.1.3 shows that the Los Angeles-Long Beach-Anaheim MSA had similar trends in overcrowding and insecurity. However, a higher share of overcrowded renter households in the Inland Region were housing insecure.

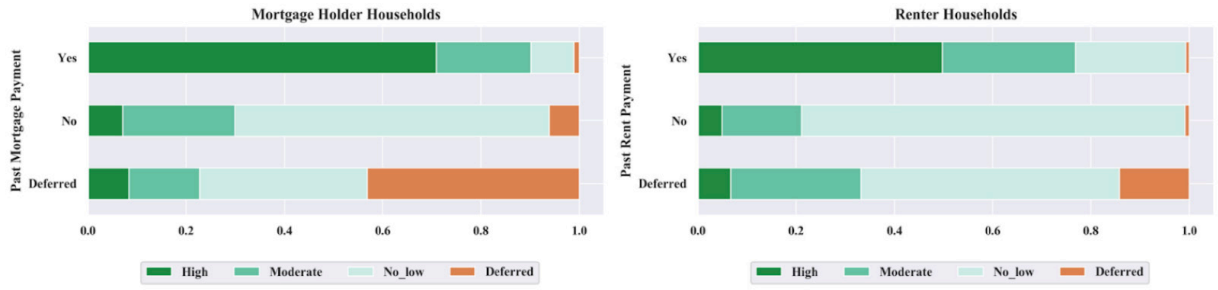
Figure 4.1.3. Proportions of Households with Missed Housing Payments and Low Confidence in Future Payments by Overcrowdedness and by Tenure, Riverside-Ontario MSA and Los Angeles-Long Beach-Anaheim MSA (August 19 - December 21, 2020)

a) Riverside-San Bernardino-Ontario MSA b) Los Angeles-Long Beach-Anaheim MSA

Over the past two years we have monitored the changing characteristics for three distinct time periods in the Inland Region: April 23 - June 2, 2020, August 19 - December 21, 2020, and February 17 – March 1, 2021. Each report utilized data from the Household Pulse Survey (HPS). Overall, we note that the onset of COVID-19 significantly increased the rate of housing insecurity. Nationally, in 2017, about 4% of owner households and 7% of renter households in the U.S. missed mortgage/rent payments within the last three months (American Housing Survey, 2017). In 2020, the rates rose sharply from 4% to 8% and from 7% to 15%, respectively (surveyed during April 23 – May 5, 2020) amid the COVID-19 pandemic. From February 17, 2021 to March 1, 2021, housing insecurity and confidence levels continued to worsen for owner and renter households alike. Roughly 10% of owner households and 19% of renter households nationwide reported that they had failed to pay their mortgage or rent for the last month[2] (Kang & Kopko, 2020).

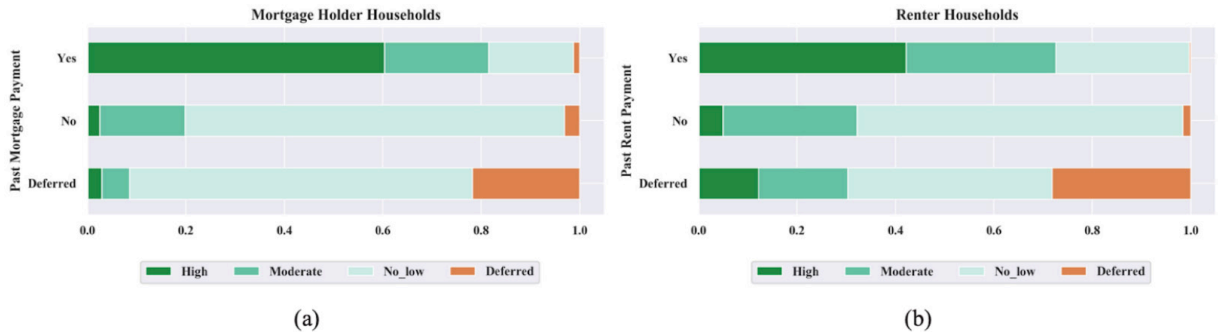
At the national level, owner households that were current with housing payments for the past month were more likely to have a high level of confidence in making their housing payment for the coming month (Figure 4.1.4). 64% of owner households had continuing high confidence, while 8.7% had low or no confidence. Renter households were less confident – only 41.5% of renter households that were current on rent had high confidence in making their next rental payment.

Figure 4.1.4. National Trends of Householders' Confidence Levels in Ability to Make Next Month's House Payment (April 23rd - June 2nd, 2020)



2 It should be noted that since Phase 2 of the HPS, the question regarding housing payment status for last month has been rephrased and not included the answer, "Payment was deferred". This answer can be considered to be subsumed under the answer of "Yes". Therefore, caution should be taken when comparing the results with the earlier ICSD report on housing insecurity amid the COVID-19 pandemic.

Figure 4.1.5. Inland Region Residents' Confidence Levels in Ability to Make Next Month's House Payments (April 23rd - June 2nd, 2020)



Comparatively, the relative confidence levels of owner households in the Riverside-San Bernardino-Ontario MSA were worse than national averages: only 60% of owner households were highly confident. Renter households' housing payment confidence level at the national and local level are essentially equivalent.

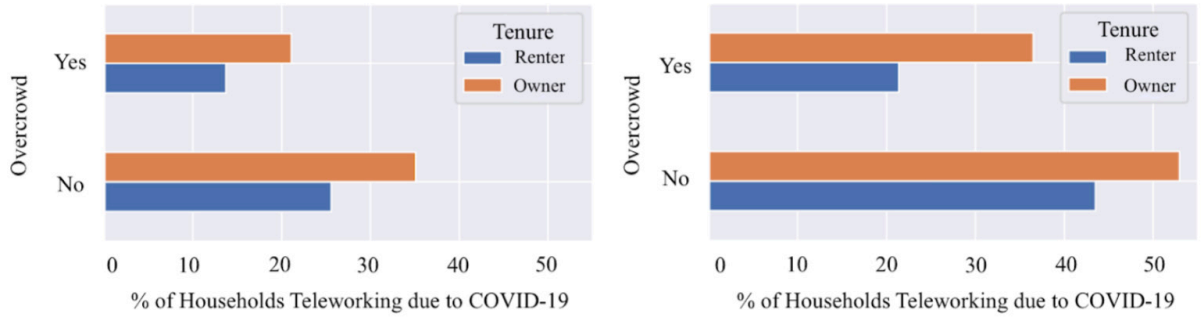
4.2. Trends in Teleworking

The gravity and danger of the COVID-19 pandemic required many businesses and schools to shift to remote work for most of all of their workforce. Over the past two years, many businesses and schools have slowly returned to in-person work, or have established hybrid work models. Many challenges can arise and affect job performance when the home becomes the workplace. These challenges are further exacerbated for those in overcrowded situations (Kopko et al., 2020; Natomi et al., 2022). Because overcrowding is prevalent in the Inland Region, the reliance on teleworking in Riverside and San Bernardino County is an issue of utmost concern due to the negative physical and mental effects of overcrowding.

When compared to the other most populous MSAs in the U.S., the Inland Region had the lowest percentage of residents teleworking from August 19 to December 21, 2020. The San Francisco-Oakland-Berkeley MSA had the largest gains in telework for the same period. Figures 4.2.1a and 4.2.1b display the shares of owner and renter households that began teleworking subsequent to the onset of the pandemic in the Riverside-San Bernardino-Ontario MSA and in the Los Angeles-Long Beach-Anaheim MSA. In these MSAs, those who began telework were overwhelmingly from non-crowded households. In the Los Angeles-Long Beach-Ontario MSA the proportion of teleworkers was significantly higher than in the Riverside–San Bernardino-Ontario MSA, regardless of tenure or overcrowded status.

There are several possibilities for the large discrepancies between the two neighboring MSAs. Many living in overcrowded housing (which is more common in the Riverside-San Bernardino-Ontario MSA) might work in industries (e.g., leisure and hospitality industry) that are not conducive to remote work. Higher-wage workers, who are more likely to live in coastal communities, are six times as likely to be able to work from home as lower-wage workers (Gould & Shierholz, 2020; Parker, 2022).

Figure 4.2.1. Proportions of Households who Substituted Some or All of Their Typical In-Person Work for Telework Because of the Pandemic, by Overcrowdedness and by Tenure



4.3. Did Small Businesses receive adequate COVID-19 Relief Aid?

Small businesses are crucial for economic viability. They comprise 99.9% of all U.S. firms, and employ 61 million (47.1%) of private-sector workers. From 2000 to 2019, small businesses created 10.5 million net new jobs, accounting for 65.1% of net new job creation in the United States. Unfortunately, the onset of COVID-19 made small businesses particularly vulnerable to financial losses. The Paycheck Protection Program (PPP), a U.S. Small Business Administration (SBA)-backed loan program, was instituted to help businesses keep their workforce employed during the COVID-19 crisis. Ultimately, roughly 11.5 million PPP loans and 7.9 million forgiveness applications were approved as of October 23, 2021. The average loan allotted amounted to $67,647. The PPP dispersed more than $500 billion within four months of enactment, becoming one of the largest firm-based fiscal policy programs in U.S. history. To better understand how the Paycheck Protection Program influenced small businesses in Riverside and San Bernardino Counties, we assess the characteristics of the small businesses that were rewarded loans, the spatial distribution of PPP loans, and the neighborhoods that received the most PPP loans.

A small business may be eligible to apply for up to two draws of PPP loans. First Draw PPP loans made to eligible borrowers qualify for full loan forgiveness if the following requirements are satisfied during the 8 to 24-week covered period following loan disbursement: 1) employee and compensation levels are maintained, 2) the loan proceeds are spent on payroll costs and other eligible expenses, and 3) at least 60% of the proceeds are spent on payroll costs. After exhausting funds from the First Draw, small businesses that previously received a First Draw PPP loan could apply for a Second Draw PPP loan. These loans qualify for full loan forgiveness if similar requirements are satisfied.

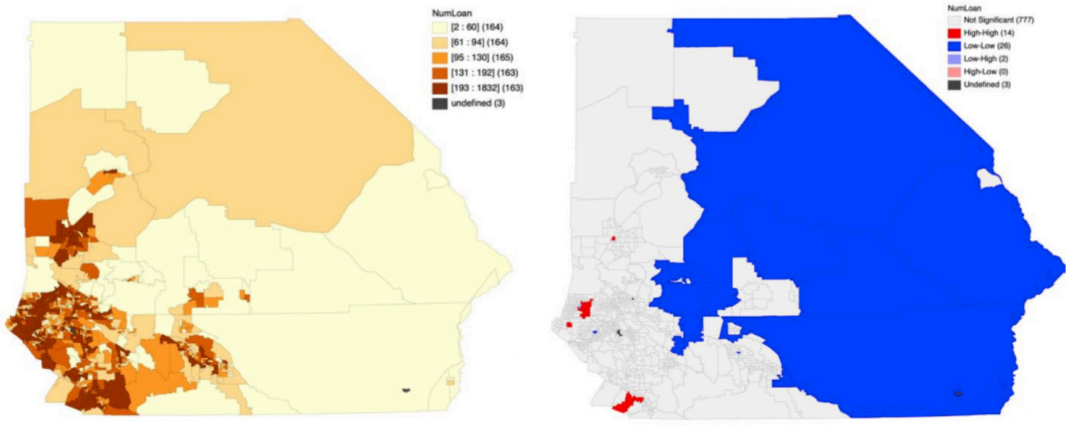
In the Inland Region, 119,540 loans worth $7.5 billion were allocated to 90,977 small businesses. 62,414 small businesses received First Draw loans, and 28,563 of the First Draw loan recipients also received Second Draw loans. The average value of the loan amount was $63,000. The largest loan amount was worth $9.8 million, and was received by the River Springs Charter School in Temecula. According to the Census Nonemployer Statistics

(NES) in 2018, 81.6% of all small businesses throughout the U.S. were nonemployers, meaning these firms did not hire employees. In the Inland Region, 59.12% of First Draw and 48.55% of Second Draw PPP loans went to small businesses that reported to only have one job position. In the First Draw, 14.21% of the loans went to businesses with only 2-4 paid employees, 24% went to businesses with 5-49 paid employees, and 2.68% went to businesses with at least 50 paid employees.

32,788 (36%) small businesses that received First Draw loans reported being in low- and moderate income (LMI) communities. A similar pattern holds for the Second Draw–out of all small businesses receiving Second Draw, about 34% reported to be located at LMI communities. The average value of loans reaching businesses in LMI communities was $68,102, which was slightly higher than the loan value ($60,656) given to recipients from other communities. Some census tracts had many small business loan recipients; only 3 census tracts had 1,000 or more loan recipients. These tracts are located in the cities of Rancho Cucamonga, Temecula, and Chino. 99.8% of the loans awarded to Rancho Cucamonga went to LMI small businesses. An opposite trend is noted for the cities of Temecula, and Chino, which had no loans awarded to small businesses located in LMI communities. The PPP loans awarded to Rancho Cucamonga, Temecula, and Chino, supported 29,590, 26,399, and 21,750 jobs, respectively. The three cities had average loan amounts of $142,185, $145,817, and $174, 049, respectively.

When considering the spatial distribution of loans, the western portion of the Inland Region received more loans than the eastern region. This, of course, could be due to population density, as the western portion of the MSA has the highest concentration of denizens. Figure 4.3.1a shows that the loans were most common in the south-western regions, as indicated by the darker orange colors. In Figure 4.3.1b, we determined hot spots in red, which represent areas where PPP loans were especially concentrated. Cold spots are represented in blue, and show the areas that had the lowest number of PPP loans.

Figure 4.3.1. Allocation of PPP Loans

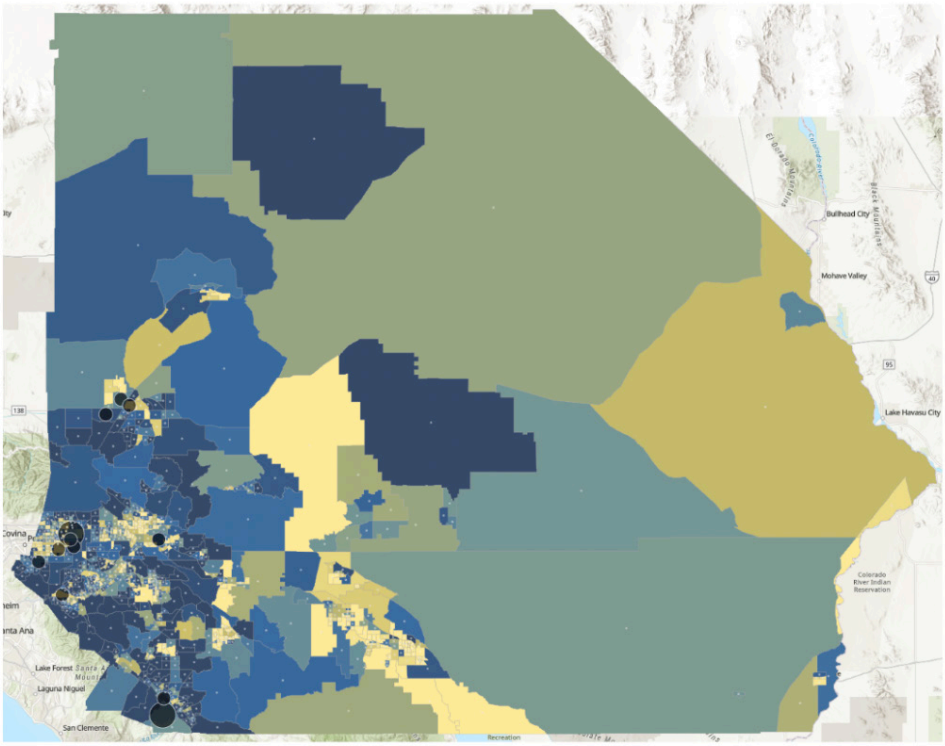


a) Total Number of PPP Loans Per Tract b) Hot and Cold Spots

Existing studies suggest that while the PPP benefited small businesses greatly and helped pay for business costs, the program was not necessarily accessible for some small businesses. This is due to a combination of opaque information about the PPP loans, and a lack of eligibility guidance. The program's "first-come, first-serve" design disadvantaged the smallest businesses. Among businesses that applied for the PPP, smaller businesses often applied later, faced longer processing times, and were less likely to have their applications approved. Additionally, many businesses were reluctant to apply due to distrust and concerns about administrative complexity and eligibility, insufficient knowledge about program conditions and application procedures, bureaucratic hassles, and difficulties establishing eligibility (Bartik et al., 2020; Fairlie & Fossen, 2021).

In addition to the PPP program and to improve disaster preparedness, the U.S. Census Bureau developed the Community Resilience Estimates (CREs) during the pandemic to identify communities where access to resources and information may effectively mitigate the impact of disasters. In total, the CREs look at 11 Risk Factors (RFs), including Income-to-Poverty Ratio, absence of household caregivers, housing crowdedness, communication barrier, unemployment, disability, health insurance, elderly, serious heart condition, diabetes, and emphysema or current asthma. When mapped, community vulnerability (which we define as having three or more of the aforementioned RFs) in the two counties, demonstrates that the spatial distribution of community vulnerability is highly variable and ranged from having very low community vulnerability (3%) to very high vulnerability (81%). Moreover, we observe that while some highly vulnerable communities in the western portions received large amounts of PPP loans, vulnerable communities in the eastern portions received relatively fewer loans. This trend becomes apparent while juxtaposing community vulnerability with the spatial distribution of PPP loans shown in Figure 4.3.1. The figure reveals that vulnerable communities in the western regions (shaded yellow areas) received more PPP loans than the eastern portions, as indicated by the relative size of the round markers.

4.3.2. Community Vulnerability (Defined by Having a Rate of 3 or More Individuals with Risk Factors) and the Spatial Distribution of PPP Loans



4.4. Discussion

In this section, we summarize our findings on how COVID-19 affected and continues to affect households. We monitor the rates of overcrowding in Riverside and San Bernardino Counties to other MSAs throughout the United States. We found that housing insecurity is more prevalent in the Inland Region compared to the Los Angeles-Long Beach-Anaheim MSA. Renters are more at risk of housing insecurity and tend to have more severe housing insecurity relative to owners. In general, renters feel less economically stable, even if they were not housing insecure during the pandemic. When comparing owners and renters that were current on housing payments, renters' confidence levels were always significantly less. Given that housing insecurity is worse in the

Inland Region than neighboring coastal counties, these findings suggest that housing insecurity is a significant challenge that needs to be addressed.

Cultivating sustainable housing development transcends meeting housing needs at the household-level. Community aspects, such as businesses that serve neighborhoods, also influence social and economic opportunities. During COVID-19, disruptions to business have had negative impacts on local communities. The resilience of small businesses are drivers for social and economic prosperity, and as such are important for the well-being of residents, maintaining employment, and providing resources and services. These factors make communities desirable areas to live in and are essential for community-driven urban development (Wang, 2022).

We additionally discuss the relationships between community vulnerability, loans awarded, and socioeconomic characteristics at the census tract level, and identified that tracts with high unemployment rates, and high density of small businesses were more likely to receive loans than areas with high community vulnerability. Moreover, we found that the three tracts that received the most PPP loans did not share similar community characteristics. However, all three tracts had low community vulnerability based on the rate of individuals with three or more RFs, and all tracts were located in non-rural areas. These findings suggest that the PPP did provide aid to a diverse range of businesses in need, but that awarded businesses were generally from high density census tracts with low community vulnerability. Hence, the loan allocation can be improved by addressing how to distribute loans to small businesses in sparsely populated areas and communities with high vulnerability.

SECTION 5: CONCLUSION AND POLICY IMPLICATIONS

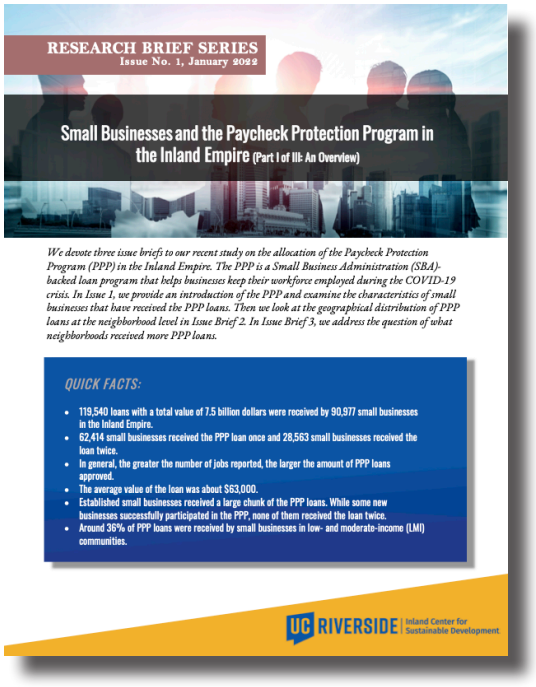
5.1: The Year in Review

This past year, ICSD's research has focused on a wide variety of policy issues including: Small Businesses and the United States Small Business Administration's Payback Protection Program, Housing Affordability in the Inland Southern California Region, the intersection of overcrowdedness, housing insecurity and COVID-19, as well as our region's increasing and diverse energy needs. Although these policy issues seem diverse, it is important to remember their interrelationships and their broad relationship to sustainability. Below you will find an overview of our research projects for the past year:

Small Businesses and the Paycheck Protection Program in the Inland Empire: A Three Part Series

Published: January - June 2022

We devote three issue briefs to our recent study on the allocation of the Paycheck Protection Program (PPP) in the Inland Empire. The PPP is a Small Business Administration (SBA)- backed loan program that helps businesses keep their workforce employed during the COVID-19 crisis. In Issue 1, we provide an introduction of the PPP and examine the characteristics of small businesses that have received the PPP loans. Then we look at the geographical distribution of PPP loans at the neighborhood level in Issue Brief 2. In Issue Brief 3, we address the question of what neighborhoods received more PPP loans.



Housing Affordability in Riverside and San Bernardino Counties

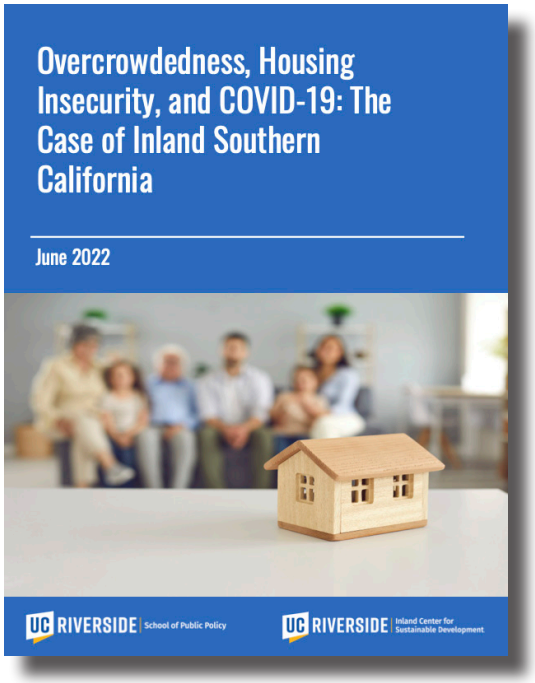
February 2022

This report summarizes Riverside and San Bernardino Counties' housing affordability from both the supply and demand perspectives at regional and local levels, identifies local jurisdictions with the greatest affordability challenges, and offers recommendations for what communities can do to alleviate shortages of affordable housing.

Overcrowdedness, Housing Insecurity, and COVID-19: The Case of Inland Southern California

June 2022

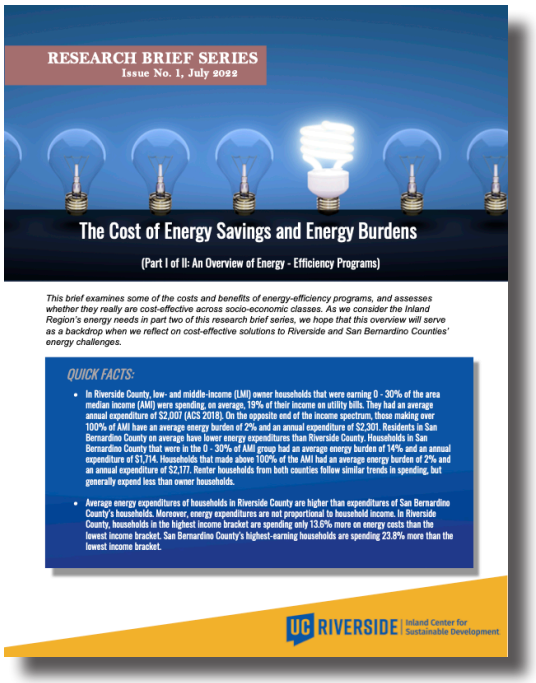
In this report, we analyze the status of overcrowded housing using the PPB measure for both renter and owner households in the Inland Region (equivalent to the Riverside-San Bernardino-Ontario Metropolitan Statistical Area (MSA)) amid the pandemic (August 19, 2020 - December 21, 2020). The relationships between overcrowding, housing insecurity, and teleworking are also investigated. This report provides evidence for the need to enhance the resilience of communities and homes and informs regional public policymaking to mitigate the risks and effects of pandemic disasters.



The Cost of Energy Savings and Energy Burdens: A Two Part Series

July - October 2022

This brief series examines some of the costs and benefits of energy-efficiency programs, and assesses whether they really are cost-effective across socio-economic classes. Part 1 gives an overview of efficiency programs available in the U.S., and reviews how cost-effectiveness of programs are measured. In Part 2 of this brief series, we focus on the Inland Region's energy needs.



5.2 Broad Themes & Looking Forward

At the onset of this report we challenged our readers to consider sustainability in a multidimensional fashion, focusing not only on the environment, but the interaction between different forms of policy, sustainability, and equity. Our research year has brought a diversity of themes in sustainability together through this report, including topics in environmental, social and zoning sustainability, economic sustainability, and energy sustainability. The interplay between different varieties of sustainability are integral for policymaking efforts and the future of the Inland Southern California Region.

A full discussion of the competing types of sustainability, including energy efficiency and environmental sustainability are included throughout Section 1 and 2 of this report. These sections provide an introduction to the many aspects of our research, and a discussion of the current legislative and policy context for current sustainability policy. Moreover, in these sections we analyze regional and local consequences of the general lack of sustainability and affordability in policy and practice.

In Section 3, we examine a diversity of social and zoning sustainability issues currently facing the Inland Region. These issues could be aptly addressed by the appropriate regional, local or state policymakers. The maintenance of housing affordability and diversity, the reduction of cost burdens, and the reduction of housing displacement equally deserve further policy research attention. The interaction between social sustainability and the promotion of environmentally sustainable housing is critical to the growth of this region.

Our discussions of the region's economic sustainability, mainly found in Section 4, examine the remaining effects of COVID-19 on the Inland Region's small business economy and housing stability. Particularly, we focused on both the region's rural and urban small business economy and the distribution of Payback Protection Program (PPP) loans. Additionally, because COVID-19 resulted in tremendous housing instability, we examine both rental and mortgage payments in the region, finding a difference in level of confidence between rental and owner households. Overcrowdedness, contributing to a variety of economic, housing, and health issues continues to be high regionally, although not distributed geographically equally.

Through our research in the coming year, we want to expand on topics found throughout this report. Specifically, our most salient research question will be: How is sustainability being advanced in the Inland Region? Additionally, we plan to focus our research on two broad themes:

1. The Inland Region's response to climate change challenges
2. Regional clean energy initiatives

Through these broad research themes, we strive to analyze and discuss the implementation of the sustainable community-related regulations, policies, and programs of local jurisdictions and their agencies. Further we seek to understand the climate change challenges facing the region and localities goals for responding, while also examining sustainability goals. We additionally plan to continue our research on sustainable energy practices by assessing clean energy program performance data (e.g. electric vehicle sales, solar energy use), and community-level socioeconomic data to report how inland jurisdictions are implementing various clean energy initiatives. This research will be supplemented by the continuation of research on the intersection of these energy programs and the reduction of cost burdens.

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SECTION 7: APPENDIX

Top 10 Cities with the Highest Share of Housing Stock that is Affordable for Households that are 80% of the HAMFI (by Tenure)

Rank	City	Owner Households (%)
1	Barstow	91
2	Needles	82
3	Twentynine Palms	79
4	Adelanto	78
5	Blythe	79
6	Yucca Valley	65
7	Desert Hot Springs	64
8	Victorville	62
9	Coachella	62
10	Hemet	59

Rank	City	Renter Households (%)
1	Barstow	98
2	Needles	97
3	Blythe	90
4	Desert Hot Springs	89
5	Adelanto	87
6	Twentynine Palms	87
7	Yucca Valley	85
8	Coachella	83
9	Apple Valley	80
10	Big Bear Lake	77

Bottom 10 Cities with the Lowest Share of Housing Stock that is Affordable for Households that are 80% of the HAMFI (by Tenure)

Rank	City	Owner Households (%)
1	Indian Wells	3
2	Norco	4
3	Chino Hills	4
4	Eastvale	5
5	Temecula	5
6	Chino	7
7	Canyon Lake	8
8	Rancho Cucamonga	8
9	Murrieta	8
10	Upland	9

Rank	City	Renter Households (%)
1	Chino Hills	8
2	Canyon Lake	10
3	Eastvale	13
4	Rancho Cucamonga	16
5	Temecula	18
6	Murrieta	23
7	Chino	23
8	Corona	26
9	Grand Terrace	32
10	Upland	32