

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

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Key Takeaways

- Nationwide, 7.2% of renter households and 1.4% of owner households lived in overcrowded housing amid the pandemic during the period from August 19 - to December 21, 2020. Inland Empire had significantly higher overcrowding rates than national averages: about 13.2% of renters and 3% of owners lived in overcrowded homes.
- For both renters and owners, the Inland Region ranked top 2 out of the top 15 MSAs in terms of the proportion of households living in overcrowded homes.
- Large racial and ethnic disparities in overcrowded housing existed during the pandemic. 1 in 5 Hispanic renters in the Inland Region experienced overcrowding while fewer than 1 in 20 White renters lived in overcrowded homes during the second half of 2020.
- In the Inland Region, the likelihood of renters experiencing housing insecurity (defined as not catching up on rent payments and having low confidence in paying rents/mortgages for the following month) is more than double that of owners: 12.2% vs. 5.5%.
- Households experiencing overcrowding were more likely to miss rent or mortgage payments and had lower confidence in making timely subsequent payments. For instance, 1 in 5 renter households living in overcrowded housing experienced housing insecurity, while the number for renter households not living in overcrowded housing was 1 in 10.
- In the Inland Region, 1 in 2 renters who were not caught up on rent perceived they were likely to be evicted, while only about 1 in 10 homeowners not caught up on mortgage considered themselves likely to be foreclosed on.
- The Inland Region had the lowest percentage of households that substituted some or all of their typical in-person work with telework among the top 15 MSAs: 1 in 3 homeowners and 1 in 4 renters made the transition.
- We further observe a negative relationship between overcrowding and starting telework due to the pandemic in the Inland Region.

Safe and decent housing is a necessity to fight the pandemic. One of the essential non-pharmaceutical interventions for COVID-19 is social distancing, which is however difficult to implement in overcrowded housing. Transmission is associated with living in crowded conditions that make it difficult for people to distance themselves when sick. A recent study found that overcrowded housing even increases the risk for COVID-19 mortality (Varshney, Glodjo, and Adalbert, n.d.) In addition to increasing COVID-19 infection and mortality risk, living in overcrowded housing may also negatively impact children's education and work performance especially since the pandemic substituted homes for schools and workplaces. Students or workers living in overcrowded situations are likely to have difficulties concentrating.

Even under normal circumstances, overcrowded housing is a serious issue that has received much attention. Residents in overcrowded homes are more likely to experience negative health outcomes (Pierse et al. 2016, Krieger and Higgins 2002, Gove et al. 1983, Evans 2003, Howden-Chapman et al. 2012, World Health Organizations 2018). For example, several studies have identified that overcrowding was positively correlated with susceptibility to tuberculosis (TB) (Irfan et al. 2017, Gyawali et al. 2012) and other respiratory diseases (Baker et al. 2013,). A positive relationship between crowding and poor mental health has also been demonstrated (Regoeczi 2008). Overcrowding has especially been demonstrated to be an important determinant of children's academic performance, behavior, and health outcomes (Solari and Mare 2013, Contreras 2019,). Children are especially vulnerable to the negative effects of overcrowding because the home is where children are socialized and learn to build relationships with others. A stressful environment, such as one that may be created by overcrowding, may have negative consequences that follow a child well into adulthood.

Economic and racial/ethnic disparities in overcrowded housing have been observed in the U.S. during normal, non-pandemic, times. The California Department of Housing and Community Development (HCD) found that low- and middle-income (LMI) households are three times more likely than households making above the area median income (AMI) to live in overcrowded homes. People from racial and ethnic minority groups are more likely than Whites to live in crowded conditions (Centers for Disease Control and Prevention, 2021). How these vulnerable groups have been faring during the pandemic is concerning given the central role of safe and decent housing in fighting the pandemic. This report is targeted at filling this gap by investigating the overcrowding status in the Inland Region and its association with housing insecurity and telework transition.

Several measures of overcrowding have been developed and adopted (Blake 2007). The U.S. Census defines an overcrowded unit as one occupied by 1.01 persons or more per room (excluding bathrooms and kitchens). Units with more than 1.5 persons per room are considered severely overcrowded. Under this Persons-Per-Room (PPR) definition, nationwide, the rate of overcrowding dramatically declined from 20% in 1940 to 4.5% in 1980, but rose to 5.7% in 2000. California was one of the states with the highest overcrowding rate - 15% in 2000, which was two and a half times the national rate (U.S. Census). Another widely used measure of overcrowding focuses on the number of bedrooms and considers a house overcrowded when more than two persons reside in each bedroom (Persons-Per-Bedroom (PPB) > 2) (Blake, Kellerson, and Simic 2007).

A zero-bedroom unit that is occupied by a one-person household is not considered overcrowded. Based on this definition and using the American Housing Survey (AHS), overcrowding was found to have declined from 3.2% in 1985 to 2.6% in 2005 in the U.S. (Blake, Kellerson, and Simic 2007).

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 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.

Data and Methodology

We use the near real-time survey, Household Pulse Survey (HPS), which is produced by the U.S. Census Bureau during the pandemic to investigate the issue of overcrowding in housing and its relationship with housing insecurity and teleworking for the period of August 19 - December 21, 2020. The HPS is designed and conducted by the Census Bureau in collaboration with multiple federal agencies such as the Department of Housing and Urban Development (HUD) and the Bureau of Labor Statistics (BLS). It is a weekly survey targeted at measuring household experiences during the pandemic to inform federal and state response and recovery planning. It contains seven phases at the time of the report preparation: Phase 1 (April 23, 2020 - July 21, 2020), Phase 2 (August 19, 2020 - October 26, 2020), Phase 3 (October 28, 2020 - March 1, 2021), Phase 3.1 (April 14, 2021 - July 5, 2021), Phase 3.2 (July 21, 2021 - October 11, 2021), Phase 3.3 (December 1, 2021 - February 7, 2022), and Phase 3.4 (March 2, 2022 - May 9, 2022).

We analyze 9 weeks of HPS's data from August 19, 2020 to December 21, 2020 (Week 13 to Week 21) as only during this period did HPS include a question about the number of bedrooms in the home which allows for the estimation of overcrowdedness. As noted by Census Bureau, these data are experimental and estimates for subpopulations may not be accurate due to small sample sizes and large standard errors.

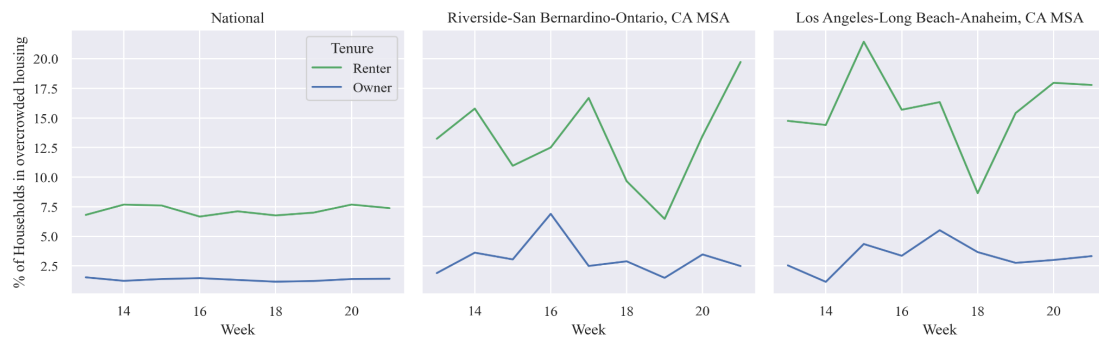
Above-National-Average Households in the Inland Region Suffered from Overcrowdedness

In this report, overcrowded houses are defined as those where more than two persons reside in each bedroom (Persons-Per-Bedroom (PPB) > 2). As mentioned, a zero-bedroom unit occupied by a one-person household is not considered overcrowded. We differentiate between renter and owner households when investigating the overcrowding status of American households amid the pandemic.

Nationwide, we observe a gap of about 5.8% between the overcrowding levels of renter and owner households amid the pandemic in the second half of 2020 (August 19 - December 21, 2020)

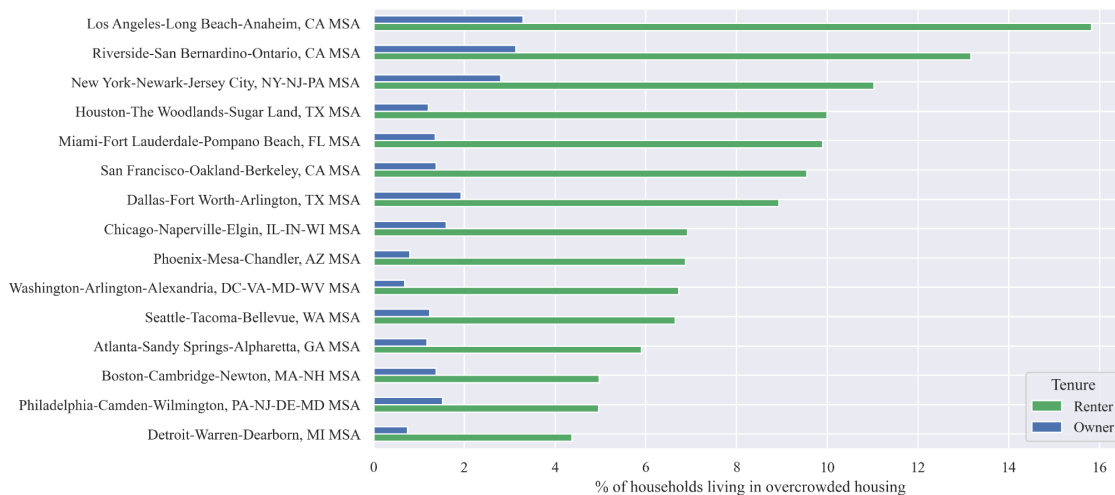
as shown in Figure 1. Overcrowding levels during this period were relatively stable. About 7.2% of renters lived in overcrowded circumstances, while only 1.4% of owners suffered from similar substandard conditions. In contrast, both renters and owners in the two MSAs in Southern California (the Inland Region and LA MSA) fared worse than the national averages. An average of 3% of owners lived in overcrowded housing in both regions while as many as 13.2% of renters in the Inland Region and 15.8% of renters in LA MSA lived in overcrowded housing.

Figure 1 Temporal trends of proportions of households who lived in overcrowded housing (August 19 - December 21, 2020)



We further rank the top MSAs based on the proportion of renters who lived in overcrowded housing in Figure 2. The two Southern California regions ranked in the top 2 for both renters and owners. New York-Newark-Jersey City (NY-NJ-PA MSA) follows in 3rd place in both categories, although the situation is largely abated for renters. Compared with LA MSA where 15.8% of renters lived in overcrowded housing, 11% of renters in the New York area lived under the same conditions. In sharp contrast, only 4.4% of renters and 0.75% of owners in Detroit-Warren-Dearborn, MI MSA lived in overcrowded housing, making the area the least susceptible to common housing challenges faced by the 15 top MSAs.

Figure 2 Top 15 MSAs ranking by the proportion of renter households who lived in overcrowded housing (August 19 - December 21, 2020)



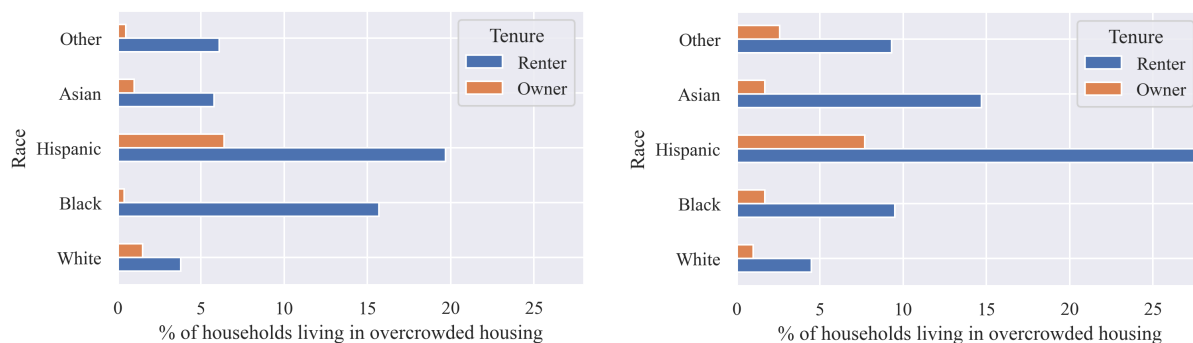
Racial and Ethnic Disparities in Overcrowding

We observed significant racial/ethnic disparities in overcrowded housing in the Inland Region and its coastal neighbor, LA MSA. Despite the fact that these two MSAs ranked top 2 among all U.S. MSAs in overcrowded housing during the pandemic for both renters and owners, some racial and ethnic groups fared even worse. For instance, in both regions, Hispanic renters were much more likely to experience overcrowding compared to the Asian, Black, White, and other populations. About 1 in 5 Hispanic renters in the Inland Region lived in overcrowded housing while more than 1 in 4 Hispanic renters in the LA region had similar experiences. Among all the renter households, non-Hispanic White renters were the least likely to be situated in overcrowded housing units in both regions. Indeed, fewer than 1 in 20 White renters lived in overcrowded homes during the second half of 2020, which is in sharp contrast to the situation of Hispanic renters.

There were also significant differences between owners and renters in Southern California. Although Hispanic owners in inland and coastal regions were more likely to live in overcrowded housing during the pandemic than any other racial/ethnic owners, they fared much better than Hispanic renters. Figure 3 demonstrates that about 6.4% and 7.7% of Hispanic owners in the inland and coastal regions, respectively, lived in such substandard housing. Even so, Hispanic owners fared much worse than other owner groups, which had overcrowding rates below 3% for both regions.

Given that the Hispanic population is the dominant racial/ethnic group in both regions (51% in Inland Counties and 45% in coastal counties), the high overcrowding rates of this group are concerning and warrant further investigation and intervention, especially during the pandemic when personal and public health relies heavily on adequate housing.

Figure 3 Overcrowded Housing by Race/Ethnicity in (a) Riverside-San Bernardino-Ontario MSA and (b) Los Angeles-Long Beach-Anaheim MSA (August 19 - December 21, 2020)



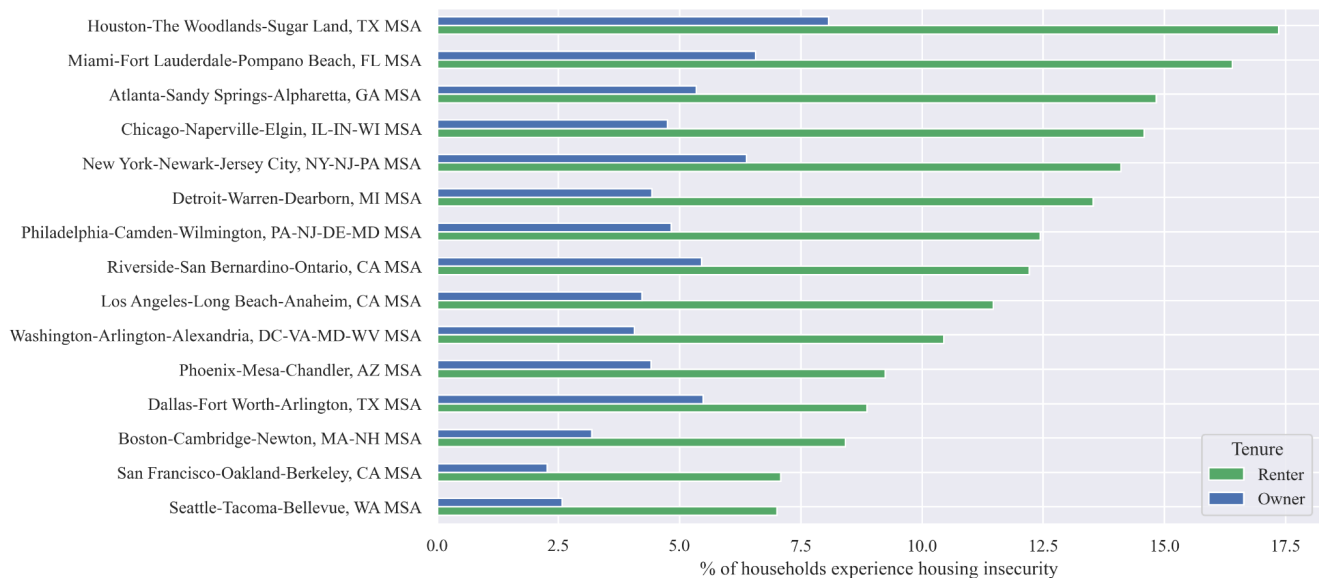
(a) Riverside-San Bernardino-Ontario MSA

(b) Los Angeles-Long Beach-Anaheim MSA

Households living in overcrowded housing are more likely to have difficulties paying rents/mortgages

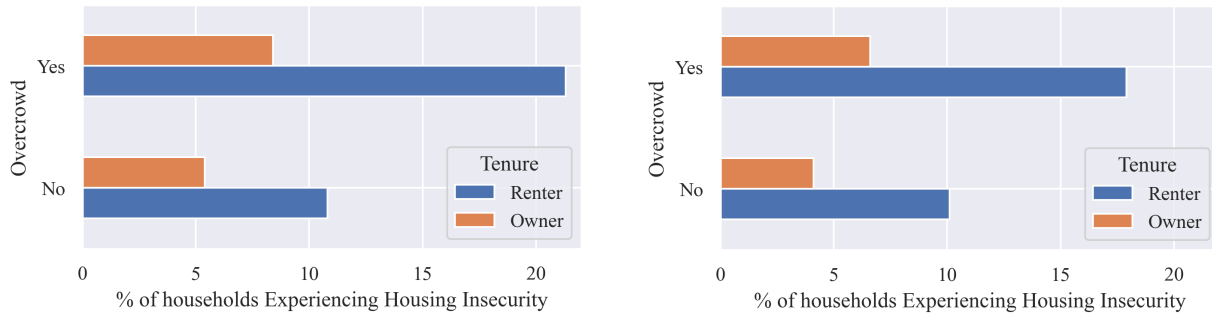
We further investigated whether households living in overcrowded housing were more likely to suffer from housing insecurity, and even eviction. Specifically, we define housing insecurity as missing past housing payments and having low confidence in paying rents/mortgages in the next month; Furthermore, we assessed whether households living in overcrowded housing were more likely to perceive a higher likelihood of being evicted/foreclosed in the next two months.

Figure 4 Top 15 MSAs ranking by the proportion of renter households who experienced housing insecurity (defined as missing housing payments and having low confidence in paying rent/mortgage next month) (August 19 - December 21, 2020)



In the Inland Region, the likelihood of renters experiencing housing insecurity is more than double than that of owners. As shown in Figure 4, 12.2% of renter households in this region were not caught up on rent payments and had low confidence in paying rents/mortgages for the following month, ranking middle (8th) among the top 15 MSAs. In contrast, 5.5% of homeowners in the Inland Region experienced such housing insecurity from August 19 to December 21, 2020, making the region rank in 5th place. Among all 15 MSAs, the worst-performing MSA in housing insecurity was the Houston-The Woodlands-Sugar Land, TX MSA, where 17.4% of renters and 8.1% of owners were not able to make housing payments. The best performing MSAs are San Francisco-Oakland-Berkeley, CA MSA and Seattle-Tacoma-Bellevue, WA MSA where about 7% of renters and fewer than 3% of owners were housing insecure.

Figure 5 Proportions of households missing housing payments and having low confidence in future payments by overcrowdedness and by tenure in (a) Riverside-San Bernardino-Ontario MSA and (b) Los Angeles-Long Beach-Anaheim MSA



(a) Riverside-San Bernardino-Ontario MSA

(b) Los Angeles-Long Beach-Anaheim MSA

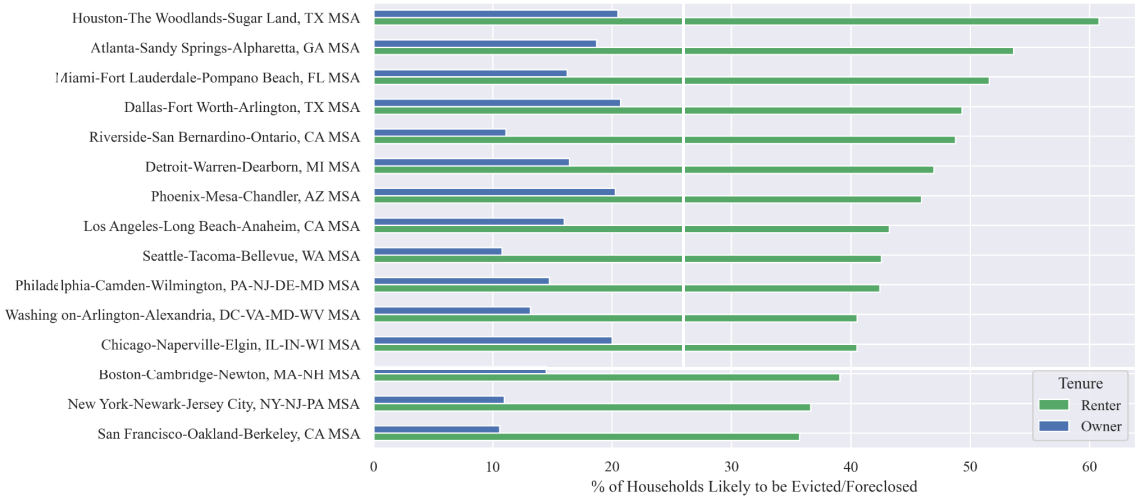
As previously discussed, many households may have no choice but to involuntarily live in overcrowded housing due to financial challenges. However, will smaller rent or mortgage payments per person translate into lower levels of housing insecurity? We look at the overall picture in the two Southern California regions in Figure 5. The patterns are consistent across regions and apply to both renters and owners alike: households living in overcrowded housing were more likely to miss housing payments and have low confidence in future payments. The gap was much larger for renter households than for owner households. In the Inland Region, 1 in 5 renter households living in overcrowded housing experienced housing insecurity, while the number for renter households not living in overcrowded housing experiencing housing insecurity was 1 in 10. For homeowners, 8.4% of those living in overcrowded housing had trouble paying their mortgage while the statistic for those not living in overcrowded housing is 5.4%. A similar trend applies to our coastal neighbor.

Overcrowding does not affect eviction likelihood

We further focus on households that were not caught up on mortgages or rents, and look at their self-assessments on their likelihood of being evicted or foreclosed within the next two months. In Figure 6, we rank the top 15 MSAs based on the proportion of renter households who thought they were somewhat or very likely to be evicted in the next two months. Again, the Houston-The Woodlands-Sugar Land, TX MSA ranked 1st in this category since 3 in 5 renters held this perspective. In contrast, San Francisco-Oakland-Berkeley, CA MSA ranked the lowest, as 1 in 3 such renters were so pessimistic about their housing prospects. The Inland Region ranked in the upper middle (5th) as about 1 in 2 renters who were not caught up on rent thought they were likely to be evicted.

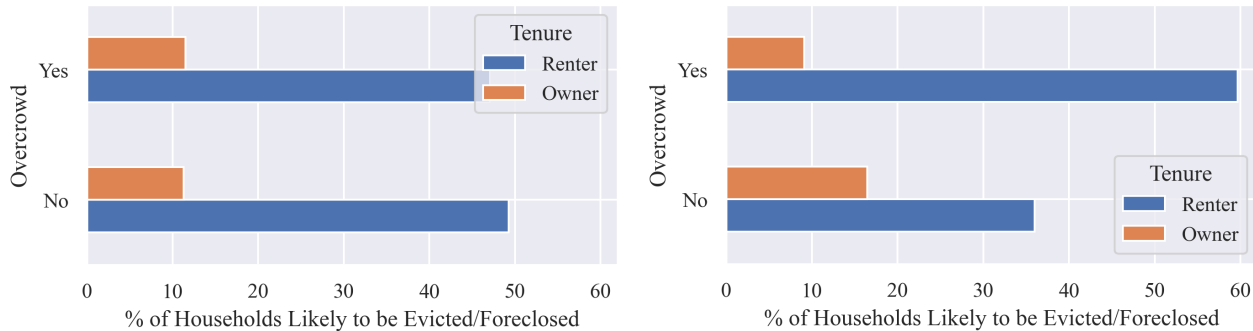
Compared with the renter households who were not caught up on housing payments, homeowners were more optimistic about their future. About 1 in 5 homeowners who already missed their mortgage payments in Dallas-Fort Worth-Arlington, TX MSA, Houston-The Woodlands-Sugar Land, TX MSA, Phoenix-Mesa-Chandler, AZ MSA, and Chicago-Naperville-Elgin, IL-IN-WI MSA considered them somewhat or very likely to be foreclosed in the next two months. And only 1 in 10 such homeowners in New York-Newark-Jersey City, NY-NJ-PA MSA, Seattle-Tacoma-Bellevue, WA MSA, and San Francisco-Oakland-Berkeley, CA MSA were pessimistic about their future. Riverside-San Bernardino-Ontario, CA MSA ranked pretty low among the top 15 MSAs in this category. Only about 11% of homeowners (not caught up on mortgage) considered themselves likely to be foreclosed.

Figure 6 Top 15 MSAs ranking by the proportion of renter households (not caught up on rent/mortgage) who thought they were somewhat or very likely to be evicted/foreclosed in the next two months (August 19 - December 21, 2020)



Having observed the positive relationship between overcrowding and housing insecurity (defined as missing housing payments and having low confidence in future payments), we are curious about whether a similar positive relationship exists between overcrowding and eviction/foreclosure likelihood. As shown in Figure 7, in our Inland Region, overcrowding does not seem to make a difference in eviction/foreclosure likelihood. For instance, out of all owners who experienced housing insecurity and lived in overcrowded housing, 11.5% viewed that they were likely to be evicted, which is not significantly different from 11.3%, the percentage of owners that did not live in overcrowded housing. In comparison, Los Angeles-Long Beach-Anaheim MSA observed a different pattern and the relationship is opposite for renters and owners. There seems to be a positive relationship between overcrowding and eviction likelihood: 59.7% of renters living in overcrowded housing considered themselves likely to be evicted, while only 36% of renters not living in overcrowded housing had similar thoughts. The relationship between overcrowding and foreclosure likelihood is negative: while 9.1% of homeowners living in overcrowded housing considered them likely to be evicted, as many as 16.5% of homeowners not living in overcrowded housing had similar thoughts.

Figure 7. Proportions of households (not caught up on rent/mortgage) who thought they were somewhat or very likely to be evicted/foreclosed in the next two months by overcrowdedness and by tenure in (a) Riverside-San Bernardino-Ontario MSA and (b) Los-Angeles-Long Beach-Anaheim MSA



(a) Riverside-San Bernardino-Ontario MSA

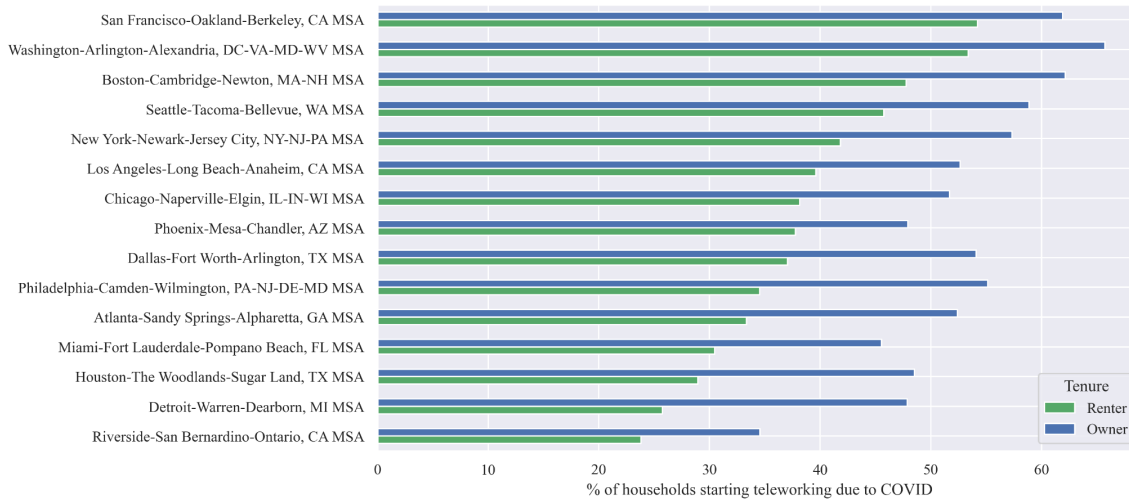
(b) Los Angeles-Long Beach -Anaheim MSA

Telework

Working from home is sometimes referred to as telework. We investigate how the pandemic has transformed the working mode of U.S. households in terms of substituting some or all of their typical in-person work for telework because of the pandemic. When the home also becomes the workplace, the issue of overcrowding becomes more relevant (Kopko et al. 2021, Natomi et al. 2022).

For each of the top 15 U.S. MSAs, more homeowners started teleworking due to COVID-19 during the period of August 19 - December 21, 2020 than renters. Riverside-San Bernardino-Ontario, CA MSA ranked at the bottom in the percentage of households substituting some or all of their typical in-person work for telework, with about 1 in 3 homeowners and 1 in 4 renters making the transition. In higher-income MSAs like San Francisco-Oakland-Berkeley, CA MSA and Washington-Arlington-Alexandria, DC-VA-MD-WV MSA, more than 1 in 2 renters started teleworking. In 10 out of 15 MSAs, more than 1 in 2 homeowners made the change of working mode, including our coastal neighbor, Los Angeles-Long Beach-Anaheim, CA MSA.

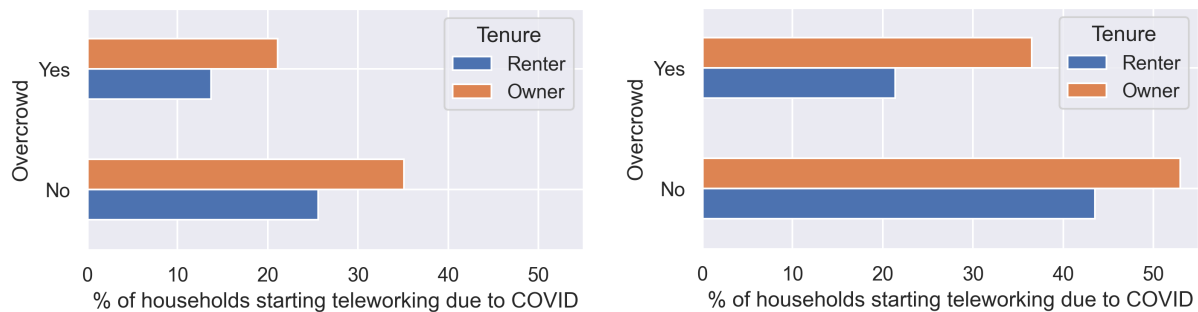
Figure 8 Top 15 MSAs ranking by the proportion of renter households starting teleworking due to COVID-19 (August 19 - December 21, 2020)



We observe a negative relationship between overcrowding and telework transition in the Inland Region as shown in Figure 9(a). For renters in Riverside-San Bernardino-Ontario MSA, 25.6% from uncrowded homes started teleworking while only half of that percentage (13.7%) living in overcrowded housing made the transition. Similarly, for owners in the Inland Region, 35.1% of those living in uncrowded homes started teleworking while 21.1% of those living in overcrowded housing made the change. The positive relationship applies to the coastal neighbor, Los Angeles-Long Beach-Anaheim MSA (Figure 9(b)), although the percentages of households transitioning to telework were higher.

There are multiple forces driving these outcomes. First, many households living in overcrowded housing might work in industries (e.g., leisure and hospitality industry) that are not conducive to remote work. Recent reports find that higher-wage workers are six times as likely to be able to work from home as lower-wage workers (Gould and Shierholz 2020, Parker 2022). Second, even though some of these households were allowed to work from home, some might choose not to do so due to the overcrowded situation at home.

Figure 9 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 in (a) Riverside-San Bernardino-Ontario MSA and (b) Los Angeles-Long Beach-Anaheim MSA



(a) Riverside-San Bernardino-Ontario MSA

(b) Los Angeles-Long Beach-Anaheim MSA

Discussion and policy recommendations

Expand COVID-19 relief to abate overcrowdedness

Many efforts have been devoted to keeping people housed during the pandemic, including various COVID-19 eviction and foreclosure moratoria and the Rental Emergency Programs. The exacerbated overcrowding issue, especially for vulnerable populations such as racial/ethnic minorities, has received less attention despite the fact that overcrowding increases the risk of COVID-19 infection and mortality. Indeed, as our results indicate, 1 in 5 Hispanic renters in the Inland Region lived in overcrowded housing during the second half of 2020, which is in sharp contrast to the situation for White renters, fewer than 1 in 20 of whom had similar experiences. Expanding the COVID-19 relief to abate overcrowdedness in housing by targeting those households who are living under such conditions or those neighborhoods where the overcrowding is prevalent will go a long way to achieve positive health outcomes and equity. Efforts could involve offering rent support to assist individuals in moving out of overcrowded households, working with communities to improve current household conditions, and increasing the availability of social housing.

Develop tools to better identify overcrowded housing that is likely to be substandard

Another important dimension of overcrowding in housing is that at times it is potentially a result of illegally modified properties. These types of housing usually pose higher safety hazards for residents (Rayman and McShane 2021). Substandard dwellings with unpermitted modifications are often implemented by property owners looking to accommodate larger populations while minimizing costs.

There are many case studies that demonstrate the tragic consequences of this malpractice (Baird-Remba 2015, Rayman and McShane 2021). For example, a house fire that started in an illegally subdivided house led to the death of one student due to insufficient entryways (Saltzman et al. 2014). Some commonly found issues exhibited by substandard housing include improper ventilation, physical deterioration, and outdated electrical systems.

The housing shortage and low wages of blue-collar jobs often push vulnerable populations to reside in substandard housing conditions to save on housing costs. When landlords choose to maximize profit over personal safety, overcrowding can become a high-risk factor for personal health and safety. Some cities have cracked down on this malpractice by looking for telltale indicators of overcrowding, such as the amount of waste produced (Webb et al. 2006), or by investigating a property's history of safety violations and complaints made by residents (Flowers 2013). We recommend jurisdictions develop and adopt better tools to identify illegally converted housing and conduct periodic/increased inspections of housing units where tenants live to stem the consequences of illegal housing modification. They might also implement education programs for both tenants and landlords that address the consequences of overcrowding. Jurisdictions might also work with legislative representatives to seek program development and funding programs that can be used to help retrofit deficient properties.

Engage in public education and support low-cost or free home inspections

Prior to purchasing a home, most homebuyers choose to hire professional home inspectors to potentially uncover major and minor issues with the house. This is not a common practice for tenants looking for a place to live. Providing education on the importance of rental property inspections will help tenants understand the safety of their homes before signing a lease. Local governments can offer low-cost or free inspections to tenants. Some jurisdictions, such as Sacramento County, already protect tenants by requiring all rental properties to comply with the Rental Housing Inspection Program (RHIP), which allows for routine inspections of housing units.

Provide diverse assistance to facilitate telework

Our results indicate a negative relationship between overcrowded housing and telework transition during the pandemic. One explanation is that some families living in overcrowded situations find it difficult to work in such an environment and involuntarily default to continue onsite work despite the higher risk of COVID-19 infection. Another is that the type of job they have precludes teleworking. 21% of those polled by the Pew Research Center say the major reason why they rarely or never work from home is that they do not have the space or resources at home to work effectively (Parker et al. 2022). Providing childcare to working parents and increasing the number of community spaces that can serve as alternative workspaces (such as libraries, recreational centers, etc.) may help residents living in overcrowded homes to afford to have the option to telework, maximize their performance potential, and better control the spread of the virus.

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