An overlooked side-effect of the housing crisis may be putting Californians at increased risk from climate disasters

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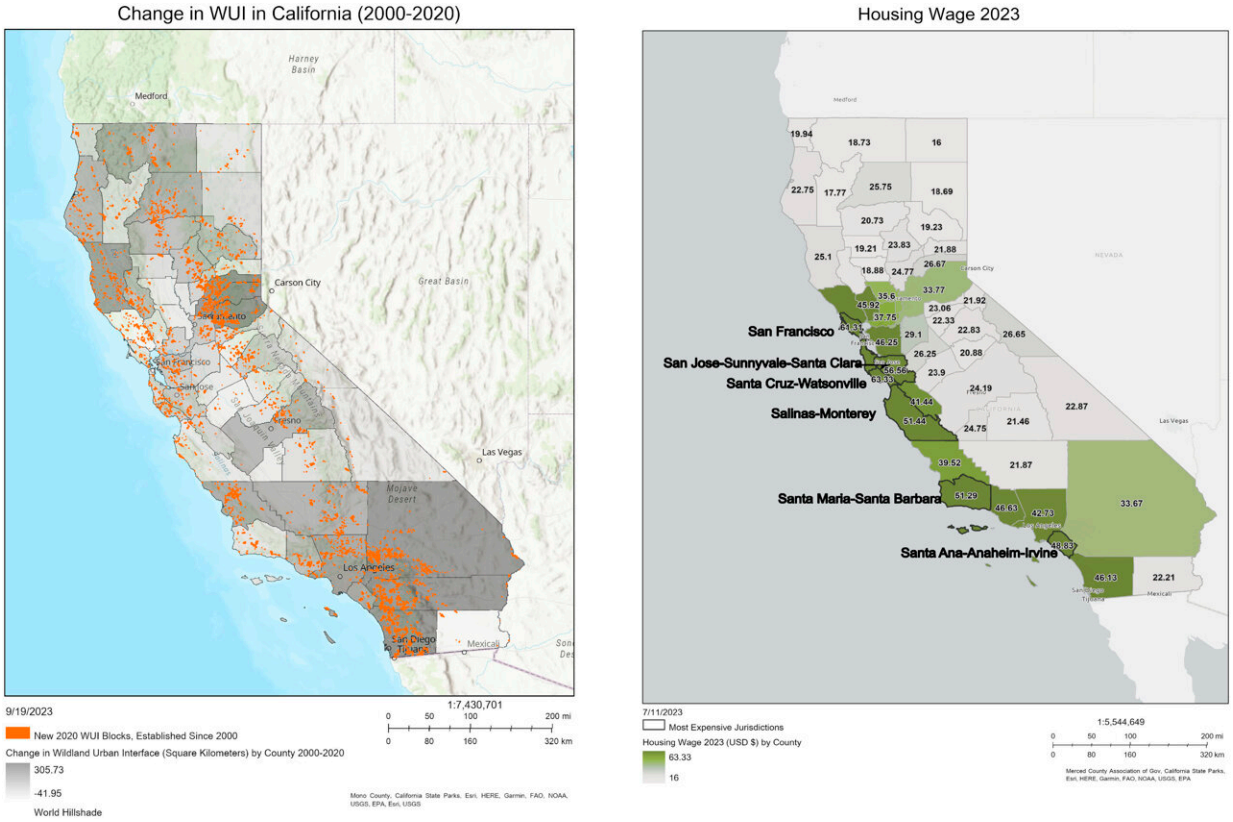

California out of reach metros 2023 and WUI growth, 2000 to 2020. The map on the Left shows 1. orange-colored polygons representing new WUI Census Blocks since 2000 and 2. magnitude of change in the WUI area (square km) in grayscale by county. The green choropleth map on the Right shows the 2023 housing wage (hourly wage necessary to afford a modest rental at HUD's fair market rent by county). The metropolitan areas that are part of the 10 most expensive in the

United States are labeled and their counties outlined. All data from National Low Income Housing Coalition (NLIHC) https://nlihc.org/oor. Credit: *Proceedings of the National Academy of Sciences* (2024). DOI: 10.1073/pnas.2310080121

In a new article appearing in the journal *Proceedings of the National Academy of Sciences*, UC Santa Cruz researchers have laid out the foundation for their highly-anticipated upcoming study of how lack of affordable housing in urban areas of California may be driving increased development in and near wildlands, leading to more severe climate change impacts.

Since the 1990s, California has led the nation in the growth of Wildland-Urban Interface (WUI) development, with more than one in three households in the state now located immediately next to or within natural areas. This proximity to wildlands puts WUI residents at higher-risk for climate-related natural disasters like fires, floods, and landslides. Extensive WUI development also makes wildfires more likely, while negatively impacting wildlife habitat and resulting in longer commutes, which increases greenhouse gas emissions.

Despite growing recognition of the serious hazards and massive scale of WUI development, the causes of this type of growth are still not well understood. UC Santa Cruz Sociology Professor Miriam Greenberg, lead author of the new article, believes that incorporating new perspectives and methods from the social sciences will help to change that.

"In the past, most approaches to studying the WUI have been from a natural systems perspective," she said. "But our research aims to demonstrate that you can't extricate these environmental and ecological dynamics from urban and housing dynamics; it's all interconnected. So we're really excited to be doing primary research that will help us

understand, for the first time, the drivers, demographics, and related dynamics of WUI growth, taking the broader context of the housing crisis into consideration."

Greenberg added that California has the unfortunate distinction of facing both the most extreme housing crisis in the United States and a rate and scale of WUI growth that is unequaled elsewhere in the country. That makes the state a particularly important laboratory for studying these issues and the potential relationships between them.

For the upcoming research, which is currently in progress, the team is using a mixed-methods approach that will include surveys and ethnographic interviews and will integrate census data with WUI mapping and ecology data. Another aspect of the study, which was not a focus of the recent article, will explore Indigenous land stewardship, habitat restoration, and prescribed burning in the context of WUI growth. The research will be conducted along California's Central Coast, one of the most unaffordable housing markets in the U.S.

The project will involve a wide range of community partners and faculty and staff across UC Santa Cruz and San Jose State, including Associate Professor of Sociology Hillary Angelo and Environmental Studies Professor Chris Wilmers, who are co-authors of the current article alongside Greenberg and UCSC Sociology graduate student Elena Losada.

The paper shares three main predictions for trends that the research team thinks they will find in the WUI. First, they believe there has been a major shift in what motivates people to move to WUI areas. While people may have historically chosen to live in the WUI because of generational ties to an area or a desire to be closer to nature, the researchers believe that housing affordability has become a main driver of increased migration to the WUI since the 1990s, as a growing number

of Californians have been priced out of urban areas due to the state's worsening housing crisis.

The demographics of this may play out differently in different types of WUI areas, which themselves are shaped by a combination of political, economic, and environmental factors. For example, WUI "interface" development that sprawls out from urban areas to the edges of wild areas is likely to be filled primarily with middle-income commuters, the researchers suspect. Meanwhile, they expect that more remote development within wildland areas—called WUI "intermix" development—will have particularly stark inequality, featuring a combination of estates for the wealthy, modest older homes, and informal, off-the-grid living, including in trailers and vehicles.

The paper argues that the rise of affordability-driven migration has likely resulted in overall growth of inequality in the WUI, and this has exacerbated the impact of environmental disasters fueled by climate change. While all residents of these communities face the same risks, differences in wealth, time availability, and knowledge of the local landscapes mean that households have very different abilities to prepare for and recover from disasters, researchers believe. As a result, newer and lower-income residents who move to the WUI primarily for affordability reasons may end up suffering disproportionately when disaster strikes.

Overall, the paper's authors anticipate that their findings will demonstrate the need to treat the affordable housing crisis as not only a major social issue, but also a significant sustainability problem that must be addressed in order to protect communities from climate change.

Tackling that challenge will require integrating planning and policy for housing and climate change at the local, state, and federal levels, as well as routinely bringing the social sciences and natural sciences together for

research on these issues, the paper says. Ultimately, the research team argues that affordable housing production and preservation and protection of tenants in urban areas are crucial actions that shape sustainability, both within cities and far beyond.

"We really need to expand the frontiers of how we think about urban sustainability, because it doesn't just end at city boundaries," said the paper's co-author, Associate Professor of Sociology Hillary Angelo. "Without enough affordable urban housing, people are being pushed to riskier areas outside of cities, and that makes cities unjust while also having terrible social and environmental impacts elsewhere. Understanding these interconnections is key to true sustainability."

More information: Miriam Greenberg et al, Relational geographies of urban unsustainability: The entanglement of California's housing crisis with WUI growth and climate change, *Proceedings of the National Academy of Sciences* (2024). DOI: 10.1073/pnas.2310080121

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