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With its unique geography and weather, California has historically been a desirable state for many. This has allowed California to be the nation's most populous state with an economy that rivals most of the world's countries. While state growth rates slowed since the beginning of the 2000s, the state is losing population in the 2020s, which has not occurred since California was formed.¹ Other than the likely impacts of the pandemic on the population such as deaths and the restrictions on travel that decreased immigration, the state's housing shortage could be a key contributing factor to the state's population decline.

According to a survey conducted by the Public Policy Institute of California from 2019 through 2022, roughly one in three respondents have considered moving out of California.² This shows that many Californians are unsatisfied with their living conditions, which is likely fueled by the lack of affordable housing. The PPIC also found that just one in ten Californians moved out of the state from 2016 to 2020, although this percentage is likely larger when considering that the state's population is on a decline compared to the slowed population growth of those years.³

¹ Johnson, H., McGhee, E., Subramaniam, C., & Hsieh, V. (2023, October). *What's behind California's recent population decline-and why it matters*. Public Policy Institute of California. <https://www.ppic.org/publication/whats-behind-californias-recent-population-decline-and-why-it-matters/>
#:~:text=of%20this%20explainer.,California's%20population%20has%20declined%20for%20the%20first%20time, start%20of%20the%2021st%20century.

² McGhee, E., & Johnson, H. (2022, October 17). *The Politics of Leaving California*. Public Policy Institute of California. <https://www.ppic.org/blog/the-politics-of-leaving-california/>

³ Ibid, 2.

The rationale for wanting to move is likely a result of the high cost of living in the state, which relates to the shortage of housing units within the state.

Given the implications of the state's population decline, I considered the possibility that the population decline relates to the available housing within a given county. I want to focus on affordable housing as the housing shortage influences developers to build housing for those with higher incomes. So, I examine whether the number of affordable housing units influences the state's population. To do so, I am examining the percentage of affordable housing units compared to the total housing stock that was added in a county from 2018 to 2023. I will compare this to the population of the state by county to see if more (or less) affordable housing within the period affects the population of that county relative to other counties. This separation is necessary as I believe that the number of affordable housing units likely does not impact the more rural counties as much due to the disparity in population compared to the urban counties. Because the amount of deaths from COVID-19 by county is small compared to the population change, factoring these deaths will not be necessary in my study. This analysis is important as it can measure whether the state's efforts to build more affordable housing are sufficient in influencing people to stay in California.

Significance

The housing crisis does not only affect California but is a trend that extends to the rest of the United States. There is a national housing crisis, which was worsened by the increase in inflation brought about by the pandemic. Home prices in the United States are at amounts that are even less affordable than the infamous 2006 housing bubble, showing that housing

affordability has reached an all-time low.⁴ The price of homes has risen roughly 40 percent during the COVID-19 pandemic, illustrating the effect that the pandemic has had on mortgage rates. In a state such as California, the effect of the pandemic coupled with a shortage in housing has made the state less affordable than other states. The housing shortage affects not only low and middle-income residents but also the state's younger potential homeowners. The homeownership rates of younger people within California are some of the nation's youngest, with only about 30 percent of millennials being able to afford to buy a home.⁵ The price of a single-family home in California is quite alarming, as the median price of a single-family home is \$843,340 as of September 2023. If you were to put down a 20 percent down payment, you would have to pay \$168,668 upfront.⁶ Given that millennials represent a generation who are in the optimal age of home buying, this statistic illustrates the difficulty of a typical prospective home buyer as many simply cannot afford to purchase a home, questioning the availability of affordable homes given the substantial amount of people in their 30s who are unable to purchase one.

Considering that the issue of housing affects moderate-income residents, the effects on low-income Californians are even greater. Even when looking at the nation as a whole, low-income individuals are severely rent-burdened. According to the National Low-Income Housing Coalition, a full-time minimum-wage employee is unable to afford a one-bedroom apartment in

⁴ Seydl, J. (2023, November 14). *When will the crisis in U.S. Housing Affordability End-and how?*. J.P. Morgan Private Bank U.S. & Canada. <https://privatebank.jpmorgan.com/nam/en/insights/markets-and-investing/ideas-and-insights/when-will-the-crisis-in-US-housing-affordability-end-and-how>

⁵ Lopez Del Rio, K. (2023, August). *How will Californians solve the Housing Crisis?*, 4. <https://www.chapman.edu/communication/demographics-policy/how-will-californians-solve-the-housing-crisis.pdf>

⁶ McMillin, D. (2023, October 27). *Cost to buy a house in California*. Bankrate. <https://www.bankrate.com/real-estate/cost-to-buy-a-house-in-california/#how-much>

93 percent of counties within the United States, and California's rental costs are the 3rd highest in the nation.⁷ As of October 2022, only Hawaii and New York had higher one-bedroom rent estimates.⁸ While moderate-income residents are typically priced out of purchasing a home, those who are low-income cannot afford to live in an apartment on their own, which identifies the disparity in income and housing cost in not only California but the rest of the country. The housing crisis affects both renters and home buyers and is particularly disadvantageous for minimum-wage workers.

The housing crisis affects all moderate and low-income residents but especially affects minority groups. While Latinos make up the majority of California's population, they are about 45 percent less likely to be a homeowner in comparison to their white counterparts.⁹ For African Americans, the disparity is even greater at 65 percent in comparison to white Californians. These statistics represent the notion that the housing market does not support minority groups as much as white residents, adding to the difficulty that minorities have in being housed. The added cost of living in California likely adds to the difficulty, causing the large disparity and the potential for these groups to leave the state.

Background

To understand the current issue at hand, it is important to identify the history behind the lack of affordable housing. The California housing crisis began between the 1970s and 1980s,

⁷ Lopez Del Rio , K. (2023, August). How will Californians solve the Housing Crisis?, 5. <https://www.chapman.edu/communication/demographics-policy/how-will-californians-solve-the-housing-crisis.pdf>

⁸Gilligan , C. (2022, November 10). *States with the highest rents in 2022* . US News & World Report . <https://www.usnews.com/news/best-states/articles/states-with-the-highest-rents>

⁹ Ibid, 4.

with prices of housing reaching 80 percent of what was the national average.¹⁰ This is noteworthy as despite the long history of a housing crisis, the state was continually growing in population. This means that the current population decline is an unusual development, as the housing shortage has not affected the state's population growth in the past. This could be due to the state's economic opportunities, good weather, as well as high demand regardless of costs. This leaves the question of what has changed from the past to the present, which could be the added inflation that occurred during the pandemic.

It is also important to note that existing housing does not adequately support the needs of a growing population. For example, in the Bay Area during the 1980s, much of the housing that was constructed consisted of low-density projects such as single-family homes and low-density apartments.¹¹ Because low-density units take up so much space, they are inadequate when addressing a growing population in a desirable area such as the Bay Area. Because of this, there is less space to construct the higher-density units necessary to improve the housing crisis. Also referring to the Bay Area, those who live within the region are now 50 percent wealthier than they were two decades ago, which means that more people can buy expensive housing, influencing developers to build fewer affordable housing units.¹² This presents a key issue with building affordable housing units, as there needs to be a relationship between the government and a real-estate developer to build more affordable housing units due to it being much more

¹⁰Howell, A. (2016, October 11). *California housing: 40 Years of crisis and counting: Alexandra Howell*. FEE Freeman Article. <https://fee.org/articles/california-housing-40-years-of-crisis-and-counting/>

¹¹ Karlinsky, S., Wang, K., Szambelan, S. J., & Josefowitz, N. (2020). What caused the housing crisis? In K. Steen (Ed.), *What It Will Really Take to Create an Affordable Bay Area: How much housing does the region need to build to prevent income inequality from getting worse?* (pp. 6–11), 7. SPUR (San Francisco Bay Area Planning and Urban Research Association). <http://www.jstor.org/stable/resrep26076.4>

¹² Ibid, 10.

profitable for developers to build more upper-income units. There is an active effort on the state's part to incentivize developers to build more affordable housing units, as the California Department of Housing and Community Development (HCD) awards grants and loans to ensure that affordable housing and its infrastructure are built. An example of this is the Homekey program, which prioritizes developing a variety of housing types from existing infrastructure.¹³

Discovering the relationship between affordable housing units and population requires an examination of the existing policies that are meant to accommodate peoples' housing needs. An example of this is the Housing Element Law, which is designed for councils of governments to develop a Regional Housing Needs Allocation based on low-income rates and the housing needs of those within the county based on the market rate. The Housing Element ensures enough zoning for housing during a 5-8 year period, as for-profit and non-profit real estate developers should be able to locate the necessary land.¹⁴ This shows that there is an effort being made for cities and counties to provide their residents with more affordable housing and housing based on the needs of residents. If a housing element is not approved, the Builder's Remedy allows for developers to build whatever housing project they wish, so long as all of the housing units are moderate income or twenty percent of the units are low income.¹⁵ While this seems like a sufficient policy to ensure that more affordable housing units are being built, the Builder's

¹³ CA.GOV. (2024). *Grants & Funding*. California Department of Housing and Community Development. <https://www.hcd.ca.gov/grants-and-funding>

¹⁴ Ramsey-Musolf, D. (2020). The Efficacy of Allocating Housing Growth in the Los Angeles Region (2006–2014), 4-5. *Urban Science*.

¹⁵ Tobias , M., & Dillon , L. (2023, February 9). *Gimme Shelter: Can an obscure law unleash a lot more housing in California?*. SoundCloud. <https://soundcloud.com/matt-levin-4/can-an-obscure-law-unleash-a-lot-more-housing-in-california>

Remedy has only started being implemented in 2023 despite it being in legal books for decades, showing that there is still some uncertainty regarding building housing units with the policy.

Along with these measures put in place, the state has taken more recent measures to ensure that more affordable housing is being built. An example of this is SB330, which was designed to counteract the lack of affordable housing units being built. The Housing Crisis Act of 2019 “...prohibits a local agency from disapproving, or conditioning approval in a manner that renders infeasible, a housing development project for...low-, or moderate-income households...”¹⁶ The efforts made by the state show that policymakers are regulating local governments in a manner that favors housing affordability. It presents an example of the state government’s ability to regulate decisions that are typically exclusive to local governments. However, even with the Housing Crisis Act, the state still declined in population during the pandemic. This suggests that the policies in place are not achieving desirable results.

There is much debate surrounding the appropriate action that the state should take to remedy its housing crisis. As mentioned earlier, some local governments do not create housing elements in time and do not meet the state’s quota for affordable housing. A proposal for this issue would be to have the Department of Justice enforce housing laws more strictly by filing lawsuits against cities that do not meet housing quotas. This proposal was met with backlash from the League of California Cities, as the organization blames real-estate developers and the state’s unfocused and contradictory housing laws.¹⁷ Much of the debate relates to the state’s intervention in matters that are one of the few exclusive powers that local governments hold,

¹⁶Skinner. (2019, October 10). SB-330 Housing Crisis Act of 2019. California Legislative Information . https://leginfo.ca.gov/faces/billTextClient.xhtml?bill_id=201920200SB330

¹⁷ Walters, D. (2021, November 28). California housing crisis drifts toward Political War. CalMatters. <https://calmatters.org/commentary/2021/11/california-housing-crisis-political-bonta-initiative/>

which is to handle zoning and in turn convince real-estate developers to conduct business within city limits.

Local governments believe that they are unfairly blamed for the housing shortage as the state government is placing the responsibility of meeting quotas solely on local governments. As a result, the state government is assuming more control of zoning with Senate Bill 9 and 10, which allows for more multi-family housing. This has sparked outrage from city officials, who are not able to make decisions within their community.¹⁸ The relationship between a real-estate developer and a local government is important in the debate surrounding the housing shortage, but should not be the only focus. The disconnect between the state and the local government could be a key factor in why the state's population has not recovered.

What separates my research from other research on housing is the direct observation and comparison of added affordable homes and the effects it could have on the population. While prior research focuses on the housing crisis's possible impact on the population through public opinion polling and the measurement of the lack of affordability of those within the state, I have not come across a study that attempts to establish a direct relationship between affordable housing and population. Additionally, these analyses fail to take into account the state's current efforts to solve the housing crisis, which is an aspect of the issue I feel is important to examine to see whether existing policies can solve the crisis.

Theory and Argument

What impact does the addition of affordable housing have on Californian's population? I hypothesize that the number of affordable housing units that are being built should have an

¹⁸ Ibid.

impact on a county's population. Specifically, counties with fewer affordable homes being added from 2018-2022 should see larger dips in their population compared to counties that are adding more. This is because people will want to move elsewhere if they cannot find housing that meets their income needs.

By comparing the public opinion polling from the PPIC as well as the history of the housing shortage, it can be theorized that Californians are leaving the state as they are unable to afford housing, especially regarding younger prospective home buyers such as millennials. Given the inflation rate increase caused by the pandemic, it is safe to theorize that the population decline within the state has to do with an increased cost of living. And so, the increasingly worsening housing crisis within the state is sure to have been affected by this national jump in costs. However, with most states being cheaper to live in compared to California, we can attribute this population decline to the state's higher cost of living. While it is very likely that some people are simply moving to different regions, I do not believe this to be the case for the majority of Californians, given that the state as a whole is losing population. If it were relocation within the state, we would not see significant declines in the state's population, especially considering that people are still migrating to California. And so, an increase in the availability of housing that helps offset the cost of living should have a noticeable impact on the growth or decline of California's population.

However, there are factors I must consider when examining this relationship. One of these is COVID-19 death rates affecting the analysis of the state's population. While this may be true for the first year or so of the pandemic, the introduction of the vaccine and increased herd immunity should have dramatically slowed death rates, which is representative of the economy

reopening post-lockdown. Additionally, by county number of COVID-19 deaths is much lower than the observable population decline, which makes its inclusion in my study unnecessary.

Another possible explanation for the population decline of the state is the idea that the pandemic limited migration into the state, leading there to be fewer people moving into the state. Given how expensive housing is within the state, those moving in are likely higher-income and will occupy units that are not included in my analysis. Additionally, I do not believe that this lack of migration will impact my analysis as this does not directly correlate to the residents within a given county deciding to move elsewhere.

Another possible explanation is that people could be moving from the state due to them being dissatisfied with the state's politics. For example, people might decide to move due to high tax rates or because they want to move to a state that aligns more closely with their ideology. While this potential explanation is important to understand the relationship between the government and its residents, I do not believe that it is the main factor that influences people to move elsewhere. Given how costly and alienating moving elsewhere can be, it is not reasonable to assume that most people would move to another state because of political differences, especially when considering the average individual who is not particularly interested in politics.

So, when the number of affordable housing units added in a county is lower compared to other counties, the population should also be lower. To measure this small-n analysis, I averaged population data from 2018-2023 to measure the percent of population change using the California Department of Finance E-6 population data. As for the number of affordable housing units, I created a variable that measures the percentage of affordable housing added compared to the total housing stock of a county for 2018-2022 using the Affordable Housing Calculator and

Census data. I also turned the poverty rate into a percentage for each county to measure which counties would be most affected, that variable also from the Census.

Research Design and Data

To be clear, I am testing a hypothesis in which counties with fewer affordable housing units added from 2018 to 2022 will see a greater population decline compared to other counties with more affordable housing units. I will test my hypothesis using percentages as my unit of analysis, as it will streamline analyzing the connection between the number of affordable homes added and the population change.

The study is a small-n analysis of quantitative data, by which each of California's 58 counties were accounted for. While my main focus is not on rural counties, I have decided to include them as I suspect that these counties will gain population despite many of the counties not adding any affordable housing units from 2018 through 2022. I will mainly focus on more populous and higher-density counties such as those in the San Francisco Bay Area and the Los Angeles region, as I believe these counties will better model the proposed relationship. This is because these counties are likely more affected by the housing crisis than others due to the higher demand to live in these ideal locations. Additionally, these more densely populated areas will suffer from less room to build housing, so I believe these areas will be targeted more to find ways to add more affordable homes, whether it be incentivizing developers to renovate existing infrastructure or to build new units that are targeted to meet the demands of those in need. However, given how large the population sizes are, I will come up with a measurement that reflects a percentage and not just a raw number.

In addition to this, I will also compare the Bay Area and Southern California counties to counties around the Sacramento Region to test the possibility that people are moving to regions such as Sacramento as they are generally more affordable than the Bay Area and Southern California but urban enough to be attractive locations. I also wish to examine outliers and analyze why they do not follow the same trend as the other counties. This could aid me in discovering potential confounding variables that could apply to other regions of the state to explain why the findings may be inconclusive.

To test my hypothesis, my independent variable is a variable titled “Percent of Affordable Homes Added in Comparison to Total Housing Stock.” This is a percentage created from two separate data sources. The first of these is the Affordable Housing Calculator, which measures the number of affordable homes added each year by county.¹⁹ The second value in this percentage is from the Census and measures the total housing stock by county.²⁰ I divided the number of affordable homes added with the total housing stock to create a percent that should measure the amount of affordable housing added relative to the amount of housing in a given county. While not exactly an independent variable, I have also decided to include the percent poverty rate within the years that I am measuring to observe which counties would model my relationship the best.²¹ All of these measurements will include data from 2018-2022, as this provides a range of years before and after COVID-19’s major impact on data. I originally wanted to do a year-by-year analysis to analyze the addition of affordable homes for each year, but I was

¹⁹ *Affordable Housing Map & Benefits Calculator*, California Housing Partnership. <https://chpc.net/datatools/affordablehomes/>

²⁰ PolicyMap. (n.d.). Estimated number of housing units, between 2018-2022 [Map based on data from Census: US Bureau of the Census]. Retrieved March 12, 2024, from <http://www.policymap.com>

²¹ PolicyMap. (n.d.). Estimated percent of all people that are living in poverty as of 2018-2022 [Map based on data from Census: US Bureau of the Census]. Retrieved March 20, 2024, from <http://www.policymap.com>

only able to locate the total housing stock and poverty rate between 2018-2022, requiring my analysis to be focused on directly comparing counties instead of measuring the effects from year to year.

My dependent variable is titled “Percent Population Change” and measures the percent of population change from 2018-2023. This data is E-6 population data from the California Department of Finance, which includes the population from each county by year.²² I took this data and divided the data from 2023 to 2018 to measure the percentage in which the population changed within the measured time frame. It may seem unusual to measure the population from 2018 to 2023 when my independent variable measures change from 2018-2022. Still, I did this as I theorized that changes to the affordable housing stock would take a year to reflect in the population. And so, I considered this when trying to measure changes in the added affordable housing from 2022.

While the data technically exists for each county, the independent variable is impacted by the lack of affordable homes being added from some counties. Thirteen counties have not added affordable homes from 2018-2022, accounting for a sizable chunk of counties. Most of these counties are rural, except for El Dorado County and Tuolumne County. There could be some concern that this will affect my analysis in some way, however, I think this will help form a comparison between counties that have built affordable housing and those who not. Also, the measurements of the independent variable are quite low, with only one variable reaching over one percent. When comparing this to the population change, the percentage is a fair amount smaller and maybe a little more difficult to analyze, but I believe this will reveal aspects of my

²²E-6 *Population Estimates and Components of Change by County*. California Department of Finance. 2010-2021 & 2020-2023. <https://dof.ca.gov/forecasting/demographics/estimates/>

findings that are crucial to my analysis. Also, the percentages are still easily observable compared to the population change, making analysis possible as the averages between the variables are roughly a few percent of each other. As for the percent poverty rate, the data was available for all counties and easily comparable to both the independent and dependent variables, although the difference between the percent poverty rate and the independent variable is fairly significant.

As for the dependent variable, there was data available for each county given that population data is readily available. When looking at the data, the majority of it is a negative percentage. This reflects the trend of California losing its population in recent years, which supports the prior research I have done on the California Exodus. While the data is mostly concentrated in negative values, virtually all of the data is between -3.5 percent and +3.5, except for the outliers. This reveals that the percent of population change is data that is fairly consistent across the counties, revealing a few counties that have drastically different population changes in relation to the others.

The data measurements are a reliable measurement of the relationship between affordable housing and population change. The independent variable's number of affordable housing and total housing stock variables are stable measurements of the number of affordable homes added and the total amount of homes within a given county. Additionally, the poverty percentage contains data that is a quantitative measure of income trends over a period of time, allowing for sufficient insight into how many people live under the poverty line. Some aspects of the independent variable that are weaker in reliability are the lack of clarification of what the definition of affordable housing is by the Affordable Housing Calculator as well as much of the

data likely being estimates and so cannot be exactly replicated if somebody is using a different source. Additionally, my struggle to find much data on the number of affordable units added and the total housing stock did not allow me to measure the data year by year, enabling me to focus on just a set time frame.

As for the dependent variable, the percent of population change allows for a consistent measurement of population due to all of the data originating from the same source: the California Department of Finance. This will ultimately allow this test to be replicable if using the same data source. This also allows for a more standardized measurement as the California Department of Finance will collect this data using reputable means, even if it is only an estimate. However, an estimate of population is not the same as 100% accurate data, meaning that there will be inconsistencies when trying to replicate this source with data that is not from the California Department of Finance. Additionally, population change can be a result of other factors such as health crises and natural disasters, which could impact how my hypothesis is proven.

As for the validity, the use of a percent of affordable housing units compared to the total housing stock focuses more on the ratio of affordable housing that is being built, leaving out the possibility of the explanation that population size does not affect the measurement of the results. Additionally, the inclusion of the poverty rate helps support my hypothesis as it will reveal which counties should model the relationship. However, the lack of comparison between the affordable housing added and the total affordable housing stock does somewhat affect the validity, but this cannot be avoided as there is no data on the total affordable housing stock. The same can be said for the lack of an observable relationship from year to year, as the data does not exist for me to perform such an analysis.

As for the percent population change, it being a direct measurement of the shift of population allows for an accurate measurement of how the population shifted in the time frame. The data being from a reputable source such as the California Department of Finance means that the findings can be trusted to truly reflect the trends of the state. There is plenty of data from each county, which means that this data is easily available and thus likely to be more accurate. A weakness of this measurement would be the necessary non-inclusion of the year-by-year change of the population as I am not factoring in the small changes over time that could be influential in measuring the validity of a hypothesis. However, this is not possible with the lack of data when finding it for my independent variable. Also, the variable does not take into account other factors linked to population change such as deaths and seasonal migration.

Findings

My findings are inconclusive as I am unable to establish a link between the number of affordable homes added and the population change. When examining Figure 1, we can see that most of the data points on the x-axis are concentrated from 0 to 0.60 percent of affordable homes added compared to the total housing. On the y-axis, the points are mostly concentrated in the negative values, but also have a fair amount of points in the positive in which roughly the same amount of affordable housing is added compared to the population decline. Given that the number of affordable homes added is concentrated between these lower percentages of the figure as well as there not being a significant difference in positive and negative values on the y-axis, the scatterplot reveals a weak relationship between the percent of affordable homes added and whether the population increases and decreases. While some counties are outside of this relationship, I believe these to be a result of external factors that impacted the population. For

example, Lassen County added no new housing and suffered a significant population decline of slightly less than 15 percent, which could be a result of a natural disaster such as a large-scale fire due to its geographic location. The same can be stated for Butte County, as around of 1 percent of the total housing stock was affordable homes added yet the county suffered one of the largest population declines. A potential reason for this could be the Camp Fire that occurred in Paradise within the timeframe, in which a whole city was virtually wiped out and had to be rebuilt.

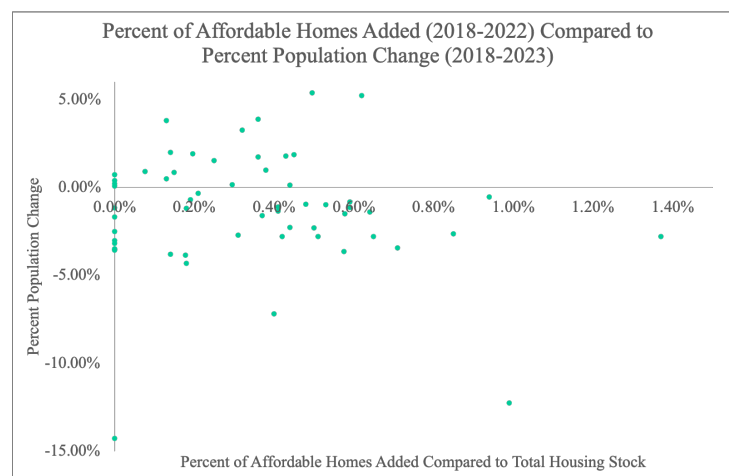


Figure 1. Added Affordable Homes and Population Change.

Sources: U.S. Census, California Housing Partnership, California Department of Finance.²³

My findings reveal that the percentage of affordable homes being added does not adequately serve the amount of people living in poverty. As we have established before, most affordable homes being added are between 0 and 0.60% compared to the total housing stock. However, the minimum percentage of people living in poverty is 5%, with most counties having

²³ *Affordable Housing Map & Benefits Calculator*, California Housing Partnership. <https://chpc.net/datatools/affordablehomes/>; *E-6 Population Estimates and Components of Change by County*. California Department of Finance. 2010-2021 & 2020-2023. <https://dof.ca.gov/forecasting/demographics/estimates/>; PolicyMap. (n.d.). Estimated number of housing units, between 2018-2022 [Map based on data from Census: US Bureau of the Census]. Retrieved March 12, 2024, from <http://www.policymap.com>

a poverty percentage between 10% and 15% (Figure 2). This shows that a significant amount of people live under the poverty rate yet a small fraction of housing being added is affordable housing compared to the total housing stock. This could suggest an underproduction of units that are high in demand, perhaps meaning that the number of affordable homes being added is insignificant in altering population change. It is also important to note that the amount of people living in poverty is likely a set income amount, which does not account for differences in the prices of homes in each county.

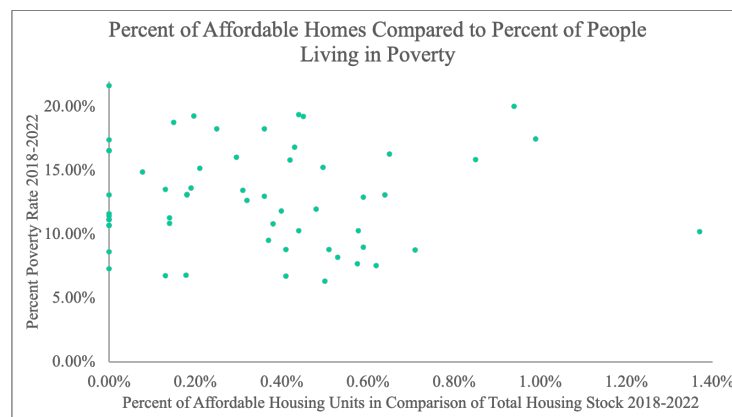


Figure 2. Percent of People Living in Poverty vs. Percent Added Affordable Homes 2018-2022. Sources: U.S. Census, California Housing Partnership.²⁴

Figure 3 supports the idea that the relationship between the independent variable and the dependent variable is virtually non-existent as the percentage of affordable homes added varies and mostly consists of smaller values while the population varies quite a bit compared to the independent variable which arguably has more variation. The graphs also reveal an important aspect of my findings, which is that rural counties certainly do not model my proposed

²⁴ *Affordable Housing Map & Benefits Calculator*, California Housing Partnership. <https://chpc.net/datatools/affordablehomes/>; PolicyMap. (n.d.). Estimated number of housing units, between 2018-2022 [Map based on data from Census: US Bureau of the Census]. Retrieved March 12, 2024, from <http://www.policymap.com>; PolicyMap. (n.d.). Estimated percent of all people that are living in poverty as of 2018-2022 [Map based on data from Census: US Bureau of the Census]. Retrieved March 20, 2024, from <http://www.policymap.com>

relationship. This is because many of the state's rural counties are in the red or darker orange, meaning either none or very few affordable units were added. However, the percent population change does not vary compared to the more populous counties that have added housing units. This could suggest that rural counties do not have as much need to build affordable homes given the lesser demand, except for the outliers of Butte County and Lassen County.

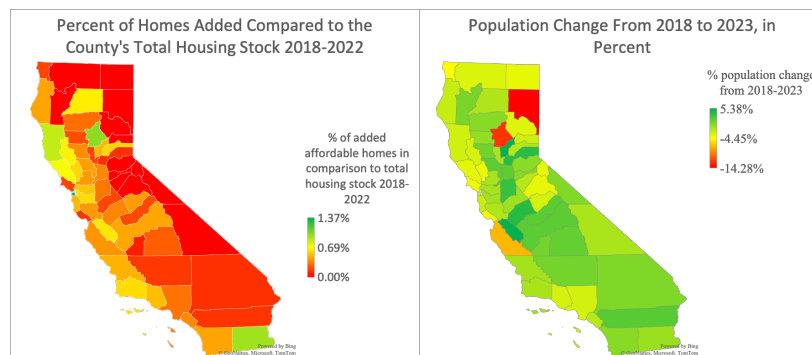


Figure 3. Comparative Map of Affordable Homes Added and Population Change.
Sources: U.S. Census, California Housing Partnership, California Department of Finance.²⁵

Figure 4 suggests that a relationship could be possible in the analysis of the San Francisco Bay Area. In this, we see counties such as Marin, Santa Clara, Contra Costa, and San Mateo building fewer housing units compared to the other counties and are seeing greater population declines than Alameda and Contra Costa and have built less housing units compared to them, even if the percentage of affordable homes added is only slightly less. San Francisco County, Sonoma County, and Contra Costa County are outliers but I believe this is due to the shift to remote work during and after the pandemic for San Francisco as well as the Kincade Fire in Sonoma County and the Glass Fire in Napa County.

²⁵ *Affordable Housing Map & Benefits Calculator*, California Housing Partnership. <https://chpc.net/datatools/affordablehomes/>; *E-6 Population Estimates and Components of Change by County*. California Department of Finance. 2010-2021 & 2020-2023. <https://dof.ca.gov/forecasting/demographics/estimates/>; PolicyMap. (n.d.). Estimated number of housing units, between 2018-2022 [Map based on data from Census: US Bureau of the Census]. Retrieved March 12, 2024, from <http://www.policymap.com>

However, the Los Angeles region and San Diego County seem to not model the same relationship. Riverside County, Orange County, Los Angeles County, and Ventura County have seen dramatic shifts in their population but have not added a noticeable amount of affordable homes to justify the dramatic population change. Additionally, San Bernardino County added a small percentage of affordable homes but experienced a greater population increase than San Diego County. As for the counties around the Sacramento Area, many counties have seen large population increases but have not built a lot of affordable housing. Sutter County and Nevada County have built more affordable housing compared to their housing stock than Placer County but are experiencing population declines when Placer County’s population dramatically rose. Perhaps the population change of counties such as Placer and Sacramento County comes from interregional travel from more populous areas such as the Bay Area in which new residents earn enough money to purchase a home in the region and are moving into these counties instead of the more rural less and developing Sutter and Nevada Counties.

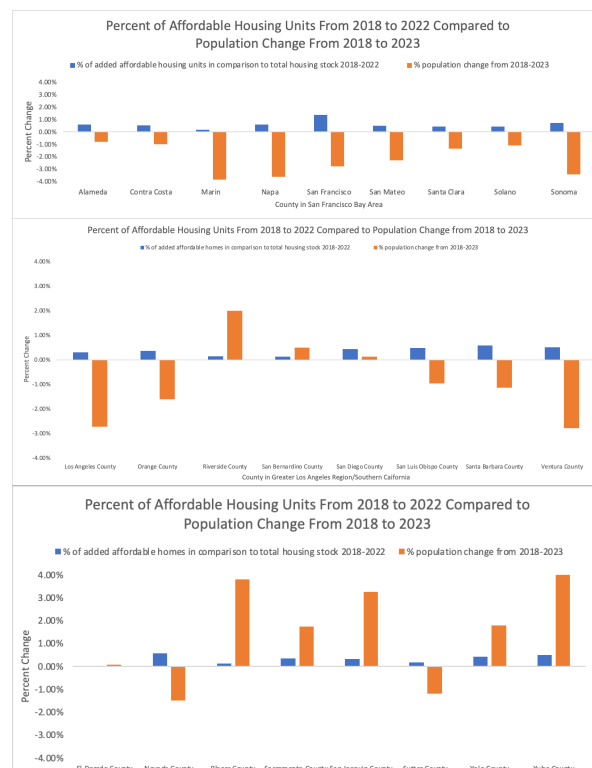


Figure 4. A Comparison Between the LA Area, the Greater SF Region, and the Sacramento Area.**Sources: U.S. Census, California Housing Partnership, California Department of Finance.²⁶**Implications

The California housing crisis is attributed to both the lack of affordable housing and the overall lack of housing within the state. While these theories are accurate in explaining the housing crisis, I am unable to establish a link between the percentage of affordable units being added compared to the percent population change. And so, my findings suggest that there is insufficient evidence to prove a direct link between affordable homes and whether people want to leave the state. While the findings in the Bay Area are promising, they are different than the rest of the counties that I have observed, suggesting that there are external factors at play that are impacting the population and not necessarily how many affordable homes a county added in a period. While my measurements were not perfect, they were consistent measurements of measuring the relationship between my independent and dependent variables given the limited data on affordable housing by county.

Perhaps my research suggests that the state's efforts to build more affordable housing are insufficient, as I revealed that the majority of counties are building a fraction of a percent of affordable homes compared to their total housing stock. This could be due to the state's poor policy implementation, as the state is notorious for not meeting deadlines and cost estimates (EX: High-speed railway project). There is also a history of developers building much fewer housing units than promised and costs exceeding the estimates, meaning that the incentives that states give oftentimes are poorly spent given the lack of regulation on the appropriation of funds.

²⁶ Ibid.

More streamlined and tighter policy as well as coordination with local governments and real-estate developers is needed to ensure that more affordable housing is built and so a relationship between my independent and dependent variables can be established.

As for the next steps of future research, the first would be to only focus on the affordable housing stock. This will allow me to see how many affordable homes are being added compared to the amount of affordable homes that exist. While this data is difficult to come by, perhaps more time would allow me to find this data to better represent the state's affordable housing needs. A year-to-year analysis would aid in measuring small changes that would reveal insights into how rises and drops in the amount of affordable housing added would affect the population. Additionally, creating variables that account for deaths and migration will help remove confounding variables that affect the validity of my research. Ultimately, more data and a closer analysis are necessary to research my hypothesis further.

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