California Housing Crisis: Exploring the Link Between Population Shifts and Housing Prices

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Introduction

California, a land of opportunity and dreams, has long been synonymous with the pursuit of prosperity and the promise of a better life. Yet, in recent years, the Golden State has suffered with both a housing crisis and an exodus of unprecedented proportions. From 2020 to 2023, California experienced a notable population decline, marking the first instance of such a phenomenon since its inception as a state in 1850[1]. This demographic shift, driven by a variable of factors including soaring living costs, remote work opportunities, family, and economic pressures, has laid bare the intricate interplay between population dynamics and housing affordability[2]. Despite this population exodus, however, housing prices haven't dropped as expected as they've stayed high or even gone up in some places. This raises a big question: Why are single-family home prices still so high in California, even when fewer people are living there? This research seeks to unravel this mystery by examining the interplay between population dynamics, homeownership rates, and housing prices, aiming to shed light on the underlying mechanisms fueling the affordability crisis.

My investigation begins by challenging prevailing assumptions and theories regarding the relationship between population size and housing prices. Instead of assuming that a decrease in population leads to lower demand and cheaper housing, I suggest that the rate of homeownership

[1]State of California Department of Finance. (2024). Estimates. Department of Finance.
[2] Who's leaving California-and who's moving in? Public Policy Institute of California.

has a bigger impact on prices, transcending demographic shifts to shape market equilibrium. To achieve this goal, a detailed analysis method called regression analysis with data from different counties between 2020 and 2023. By investigating a comprehensive array of variables, including homeownership rates, population estimates, house prices, and vacancy rates. I aim to resolve the complex interplay of elements driving housing prices in California. Through this thorough analysis, I seek to decode the complex relationships at play, providing actionable insights for policymakers and stakeholders grappling with the affordability crisis.

Significance of the Issue

From 2020 to 2023, California experienced a notable population decline. According to the California Department of Finance, the state saw a lost population for the first time since gaining statehood in 1850[3]. Along with that, California has the third highest living cost state in the United States[4]. With the high cost of living in California, residents are facing a higher barrier of accessing house ownership and increasing the income inequity. Furthermore, California has the highest housing cost in the United States[5], which will encourage residents to flee to another state to seek a more affordable living cost. Despite this population decrease, housing prices in California did not follow the expected downward trend. Instead, they remained high and, in some areas, continued to rise. This phenomenon presents a significant issue for the state and its residents. The persistent high housing prices despite a population decline inflame the cost of living crisis. Every resident in California is affected by the ongoing high housing prices. Families, young professionals, and vulnerable populations such as the elderly and disabled face

[3] State of California Department of Finance. (2024). Estimates. Department of Finance.
[4] Where it takes Americans the most (and least) time to save for a home. Forbes.
[5] Where it takes Americans the most (and least) time to save for a home. Forbes.

significant financial strain due to the skyrocketing housing prices. Additionally, businesses encounter difficulties in attracting and retaining employees due to the high living costs. To be able to recruit employees from a high cost area, they need to put on more incentives or higher salaries. And it could hurt small size businesses as they do not have much capital. While it affects millions of California residents are affected by the ongoing high housing prices. It highly impacts the lower income individuals. The California Budget and Policy Center reported that more than 30% of homeowners with mortgages were considered cost-burdened in 2017 while the housing crisis was not as worse than 2020[6]. The state also has a high homelessness rate, with over 185,00 people experiencing homelessness in 2023[7]. Residents are impacted through increased rent and mortgage payments, leading to reduced disposable income for other necessities. This can result in food insecurity, health issues, and limited access to education and transportation. High housing costs also force many to commute long distances, exacerbating traffic congestion and environmental issues. Several factors contribute to the sustained high housing prices despite the population decline. Regulatory barriers, zoning laws, and high construction costs limit new housing developments, restricting supply. Additionally, investment in real estate as a financial asset rather than for occupancy maintains high demand. High-income earners and investors, with greater financial resources, continue to drive demand for limited housing. Their ability to afford and hold onto empty properties further inflates single-family housing prices, overshadowing the purchasing power of lower-income individuals.

Although there was not much similar research related to the issue of population and housing prices. There is one study by William A. V. Clark in his work "Residential Mobility in

[6]Kimberlin, S. (2019, April). Housing burden.
[7]Mejia, M. C., & Perez, C. A. (2024, May 1). An update on homelessness in California. Public Policy Institute of California.

Context: Interpreting Behavior in the Housing Market,[8]" highlights how demographic shifts influence housing demand and supply. Research consistently shows that inadequate housing supply, regulatory constraints, and economic factors are central to the housing affordability crisis. However, I need a deeper understanding of the impact of remote work and migration patterns on housing markets. Moreover, more research is needed on the effectiveness of various housing policies and initiatives in different economic contexts.

Key policies impacting housing in California include Proposition 13, which limits property tax increases but has been criticized for reducing the revenue available for public services and creating disparities in tax burdens[9]. Senate Bill 375 requires regions to develop sustainable community strategies to reduce greenhouse gas emissions, impacting housing development patterns[10]. It could make it harder to have new houses built. The Housing Accountability Act aims to streamline housing development approvals and limit the ability of local governments to deny affordable housing projects[11]. Assembly Bill 2345, seeks to expand density bonuses for developers who include affordable units in their projects, potentially increasing the supply of affordable housing[12]. The matter could also affect potential legislation being discussed and change the aiming point from building more affordable housing to changing the structure of house ownership. Empty Homes Tax (EHT) in San Francisco was implemented on January 1, 2024, the it imposes a tax on keeping certain residential units vacant for more than 182 days in a calendar year[13].

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[8] Clark, W. A. V. (2017). Residential mobility in context: Interpreting behavior in the housing market. *Papers. Revista de Sociologia*, *102*(4), 575. https://doi.org/10.5565/rev/papers.2411
[9]California Budget Project. (1997). Proposition 13:
[10] Transportation planning: travel demand models: sustainable communities strategy: environmental review. Senate. B 375 (2007-2008).
[11] Housing Accountability Act. S.B 167 (2017-2018).
[12] Planning and zoning: density bonuses: annual report: affordable housing. A.B 2345 (2019-2020).
[13] Empty homes tax (EHT) (2023)

There are some debates around balancing the need for increased housing supply with community concerns about density, gentrification, and the impact on neighborhood character[14]. Rent control measures provide tenant protections, but opponents argue they discourage new housing development and investment. Recent statewide measures such as AB 1482 cap rent increases but are seen as insufficient by some advocates[15].

Debates continue on how to fund affordable housing initiatives, with discussions on increasing taxes on high-income earners, bond measures, and public-private partnerships. Enhancing economic stability through these measures could enable individuals to save more, invest in diverse sectors, and support local businesses, thereby stimulating consumer spending. This approach could also encourage developers to invest in targeted areas and provide incentives for building more affordable housing. Lower housing prices could help reduce homelessness by providing more accessible options for low-income individuals and families, preventing displacement due to high costs. This approach can also enhance social equity by making high-opportunity areas accessible to a diverse population, leading to more integrated communities with better access to essential resources. Stabilizing neighborhoods by lowering housing costs could prevent the displacement of long-term residents, preserving community character and the social fabric. While some argue that such measures might discourage new development, strategically lowering existing housing prices could attract long-term investors committed to community development. Exploring long-term solutions and innovative approaches remains essential. Inclusionary zoning policies, which require a portion of new housing to be affordable for low-income residents, and public-private partnerships, which facilitate collaborations

[14] California Department of Housing and Community Development. Addressing a variety of housing challenges.
[15] Tenant Protection Act of 2019: tenancy: rent caps. A.B 1482 (2019-2020).

between government and private developers to create mixed-income housing, could be some key strategies for long term solutions. Community land trusts, nonprofit organizations that obtain and hold land to ensure it remains affordable in continuance and modular housing, prefabricated units that can be constructed quickly and at lower costs, also present viable options.

Theory and Argument

The hypothesis proposed that population shifts have significantly impacted the single-family housing market. Specifically, I propose that the increase in single-family home sale prices is primarily driven by economic growth. For the purposes of this study, the single-family housing market is defined by the combination of single-family house prices and homeownership rates. Furthermore, to examine if the housing market is at its peak efficiency I will also look at the vacancy rate and compare it to single family house sale prices. This study aims to explore the relationship between population rates, home ownership rates, and single-family housing prices, and discover the correlation between those variables. As well as to investigate the housing market performance by examining the county's housing prices. The independent variables in this study are population rates, home ownership rates, and vacancy rates. Population rates refer to the total number of individuals residing in a given county, while home ownership rates represent the percentage of homes owned by residents in a given county and vacancy rates. Vacancy rates represent the percentage of all available housing units that are vacant. The dependent variables are single-family housing prices. Single-family housing prices denote the average price of single-family homes in a county.

The causal mechanisms behind these relationships are multiple. An increase or decrease in population rates typically influences the demand for housing. As more individuals move into a

county, the demand for housing units increases, and in the absence of a balanced increase in housing supply, this heightened demand drives up single-family home prices. Higher home ownership rates may indicate a stable or well off population, with homeowners investing in maintaining and improving their properties, thereby increasing the overall value of housing. Additionally, high home ownership rates can lead to reduced housing supply in the rental market, contributing to higher housing prices. The relationship between housing prices and vacancy rates can be explained by speculative investment behavior. In counties with rapidly increasing housing prices, properties may be purchased and held vacant by home owners or investors anticipating further price appreciation. This speculative holding reduces the availability of housing, driving prices even higher.

There are two main possible explanations for the phenomenon, one is economic impact and the other is storage of single family house units.

First, local economic conditions, such as employment rates and income levels, can significantly impact housing prices. Regions with robust job markets and higher median incomes may experience higher housing prices due to greater purchasing power. The regulatory environment, including zoning laws and land use regulations, can restrict housing supply, leading to higher prices. Counties with restrictive building codes or limited land available for development might see higher housing prices and potentially higher vacancy rates if new housing cannot be built to meet demand. Interest rates also play a role, lower interest rates typically make borrowing cheaper, increasing demand for housing and driving up prices.

When the economy is performing well, hypothetical investment can contribute to both higher prices and vacancy rates, as investors may buy properties expecting prices to rise and hold them off the market. Therefore, regardless of resident mobility and the number of new single-

family housing units built, the price of single-family homes has remained high. The expected mechanism suggests that despite fluctuations in population size, the single-family housing prices have remained high due to low homeownership rates. When homeownership rates are low, a larger proportion of the population has to look for rental properties or the limited number of homes available for purchase, driving up prices. This demand is driven by factors such as investment in real estate as a financial asset rather than for occupancy, and speculative buying. Higher homeownership rates could stabilize or reduce housing prices by increasing the supply of homes for sale and reducing speculative pressure.

The second possible explanation for the high housing prices is the lack of sufficient single-family housing units. To support this explanation, it will be necessary to assess how many single-family housing units California should have to adequately serve its current population. This involves calculating the housing deficit by comparing the existing housing stock with the housing needs based on population size and household formation rates. However, there is no clear suggestion of a single family house per population. It results in the differential to observe the construction rate of new single-family homes impacts the supply side of the housing market. To potentially evaluate the impact of construction rate, homeownership will be required to replace the single family house price. With the high construction rates, if homeownership rates remain low, the additional supply may not change to meet the demand, keeping prices elevated. Thus, population changes do not significantly impact housing prices as the market dynamics are more heavily influenced by homeownership rates and supply constraints. While focusing on homeownership rates, it is important to consider other factors that could influence housing prices. Housing policies and regulations, including zoning laws and tax incentives, and investment trends in the real estate market are crucial to understanding housing prices. These

factors will be controlled for in the analysis to isolate the specific effect of homeownership rates on housing prices. Also, the construction rate in California is not kept at the county level, which makes the evaluation of how the new housing unit added in the county impacts single family house sale prices harder to execute.

Research method

To examine my hypothesis, I will conduct a large-n study with a time-series analysis covering the period from 2020 to 2022. This study will involve collecting data on single-family housing prices, homeownership percentages, and vacancy rates from reputable sources such as the California Department of Finance, Zillow, and the United States Census Bureau. The data collection period is chosen because California has experienced significant population loss since 2020, and comprehensive data is available up to 2022. This analysis will be conducted at the county level, encompassing all 58 counties in California. The rationale for selecting the county level is that it allows for a detailed analysis of diverse demographic and land characteristics across different regions, providing a comprehensive understanding of the variables in question. The study will gather quantitative data to elucidate the relationships between the variables. The independent variables in this research will be population change and homeownership rate. Variables will be present as a percentage change over the years from 2020 to 2022. A correlation coefficient test will be employed to examine the variables, with results ranging from -1 to 1. A value approaching 1 reflects a strong positive correlation, indicating a direct relationship between the variables. A value close to -1 suggests a strong negative correlation, where an increase in one variable results in a decrease in the other. Values near 0 represent a weak correlation, highlighting a lack of significant linear association between the variables.

The independent variables in this study are population rates, home ownership rates, and vacancy rates. Population rates refer to the total number of individuals residing in a given county, while home ownership rates represent the percentage of homes owned by residents in a given county, and vacancy rates represent the percentage of all available housing units that are vacant. To gather the necessary data, I obtained population counts for the years 2020 to 2022 across all 58 counties from the California Department of Finance[16]. The population change is calculated by dividing the population count of 2020 by the difference between the 2022 count and the 2020 count, and then converting this value to a percentage. For homeownership rate, it is collected from the Federal Reserve Bank of St. Louis[17]. Over the vacancy rates, it was gathered from U.S. Census Bureau[18]. Both homeownership and vacancy rates are already represented as percentages. I will calculate the change by simply subtracting the 2020 rate from the 2022 rate.

The dependent variable in this study is the single-family housing prices. Data on housing prices will be sourced from Zillow Home Value Index[19], which provides comprehensive real estate data at the county level. This data will include the median sale prices of single-family homes for each year within the 2020 to 2022 period. To determine the percentage change in housing prices, I will subtract the 2020 median price from the 2022 median price, divide by the 2020 median price, and then multiply by 100.

To effectively operationalize these concepts, descriptive statistics will be employed to summarize the data, utilizing metrics like mean, median, and standard deviation to highlight central tendencies and variations. To visualize the relationships between these variables, I will use line graphs to display the percentage changes over time and examine the correlation between

[16] Estimates. Department of Finance.
[17] U.S. Census Bureau, Homeownership Rate (5-year estimate) for California 58 counties
[18] . Selected Housing Characteristics. American Community Survey, ACS 1-Year Estimates Data Profiles
[19] Housing Data. Zillow. (2024, April 22)

population changes and home ownership rates. Additionally, for vacancy rates, I will use a color-coded map to identify counties with the highest vacancy rates, offering a visual representation that can help in understanding the geographical distribution of these variables. Line graphs will provide a clear visualization of trends over time, while maps will show spatial variations and regional patterns. Pearson's correlation coefficient will be calculated to assess the strength and direction of the relationships between population change, homeownership rates, single-family housing prices, and vacancy rates. This approach will help identify temporal and geographic trends, providing a dynamic view of the data that complements the statistical measures. In addition, a regression analysis will be conducted to examine the influence of population change and homeownership rates on single-family housing prices, controlling for potential confounders such as vacancy rates and economic indicators. This regression analysis will offer deeper insights into the causal mechanisms at play.

Ensuring the reliability and validity of the measures is crucial for the accuracy of the findings. The data sources for population are only maintained as estimates, and single-family house prices are stored on real estate websites such as Zillow. While the operational definitions of population change, homeownership rates, and housing prices are standard in housing market research, ensuring validity, there are potential weaknesses that need to be considered. One major concern is the potential for missing data or inaccuracies in public records, which could introduce biases. The single-family housing data, being stored by private companies, may lack the transparency and rigorous record-keeping typically found in government databases. The absence of accessible housing sale price data from government agencies means relying solely on real estate company websites, which could create biases or manipulation since there are no other sources to verify that data.

The study's limitations are largely due to the study is focused on single-family housing sales, which limits its scope to a specific segment of the housing market. This narrow focus does not account for the dynamics of multi-family housing or the rental market. As a result, the findings reflect only a portion of the overall housing dynamics. Additionally, the study does not explore the reasons behind the population decline in California or provide insights into whether this trend will continue. To address these limitations and provide a more comprehensive analysis, future research should include data on multi-family housing sales and rental prices, as well as rental prices for single-family homes and the number of new housing units constructed. Such data would allow for a more detailed examination of the entire housing market. Furthermore, integrating economic indicators such as median income, land use for housing, and gross domestic product (GDP) would enable a deeper analysis of the external factors influencing housing prices and population trends. This expanded approach would help clarify the broader economic and demographic forces at play and provide more actionable insights for policymakers and stakeholders.

Finding

In testing for the presence of a relationship between population shifts and the single-family housing market, I found evidence to support my hypothesis. To observe the individual relationship between population shifts and single-family housing prices, I plotted the percentage change in median single-family house sale prices against the percentage change in population for California counties from 2020 to 2022. The lines on the line graph indicated a moderate positive correlation, supporting the hypothesis that population shifts are associated with changes in housing prices. And the correlation coefficient for population change and single-family house sale prices is $r = 0.415$, supporting the moderate positive correlation. Also the correlation

between population changes and single family house sale price by the line graph. Figure 1 shows that the majority of counties exhibit comparable percentage changes in single-family house sale prices and population shifts. A notable outlier is Santa Barbara County, where single-family house prices rose by 43.38%, which is 13.15% higher than the California average of 30.23%. However, Santa Barbara's population decreased by 1.18%, only slightly different from the California average decrease of 1.08%.

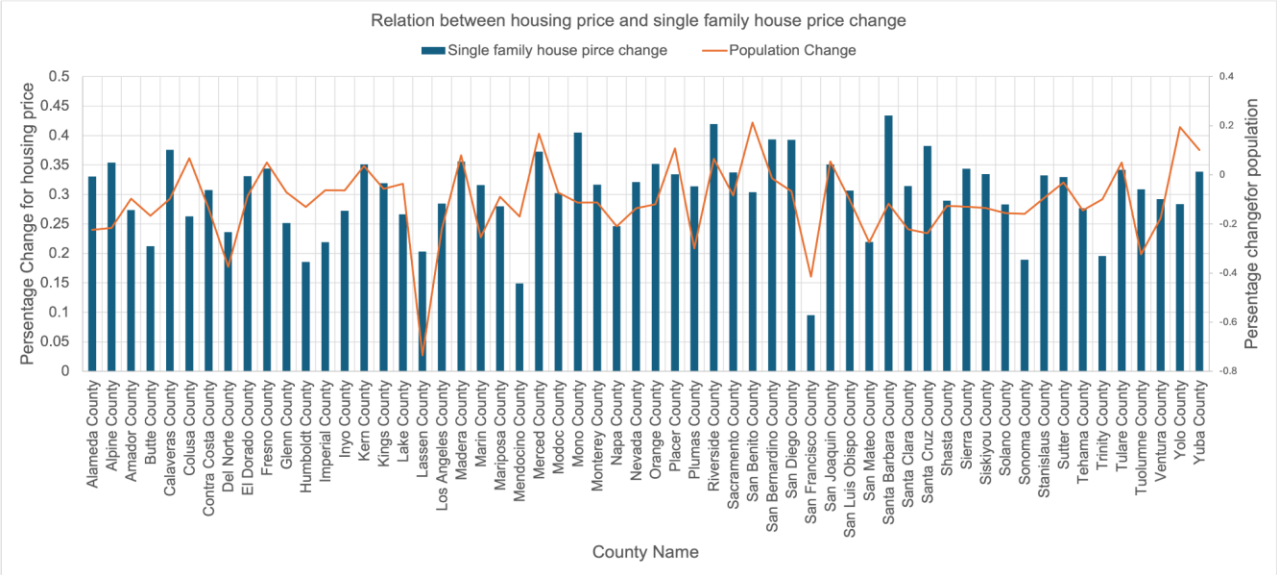

Figure 1, Relation between housing price and single family house price change

Souce: Zillow Home Value Index, State of California Department of Finance

This suggests that as population shifts occur, single-family house sale prices tend to increase moderately following the population shift trend.

In examining the relationship between homeownership rates and population shifts, I found a correlation coefficient of r = 0.170. This suggests a slight tendency for homeownership rates to increase as populations shift, although the relationship is not particularly strong. As illustrated in Figure 2, which uses a line graph format similar to Figure 1, most countries follow

this trend with some degree of variance. A significant outlier in this data is Lassen County, where the population decreased by 7.35%, a stark contrast to the state average decrease of 1.08%, resulting in a difference of 6.27%. Additionally, while California's average homeownership rate increased by 11.3%, Lassen County saw a decrease of 0.5%, resulting in a difference of 11.8%. This outlier suggests that Lassen County's housing market dynamics may be influenced by factors not reflected in the overall state trend, highlighting the need for further localized study.

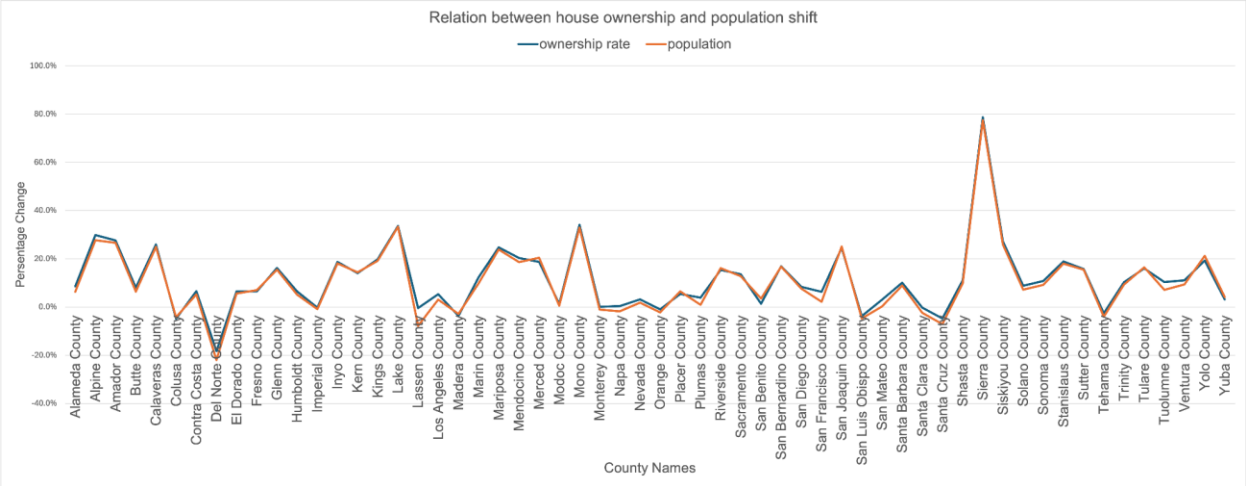

Figure 2: Relation between house ownership and population shift

Souce: State of California Department of Finance, Federal Reserve Bank of St. Louis

This implies that homeownership rates have a weak relationship with population shifts, suggesting that when residents move, they do not tend to retain homeownership, which subsequently impacts single-family housing prices in the respective counties.

Additionally, the relationship between homeownership rates and single-family house prices exhibits a weak positive correlation. With an r value of 0.201, this indicates that higher homeownership rates are associated with slightly higher single-family house prices. In Figure 3,

Sierra County stands out as an outlier. With a homeownership rate of 78.71%, it exceeds the state average by 67.41%, making it the county with the highest ownership rate in California. Regarding single-family house prices, Sierra County experienced a 34.38% increase, which is slightly higher than the state average increase of 30.23%.

Figure3 The relation of home ownership and single family house price

Souce: Zillow Home Value Index, Federal Reserve Bank of St. Louis

These observations suggest that even in counties with the highest home ownership rates, house prices continue to climb, indicating that other factors may also be influencing the housing market.

Furthermore, the analysis revealed that areas with the highest increases in vacancy rates also exhibit the highest single-family house sale prices. In Figure 4, the areas with significant increases in vacancy rates include San Francisco at 0.230%, San Mateo County at 0.225%, Glenn County at 0.152%, Alameda County at 0.120%, and Santa Clara County at 0.115%. It is notable

that four out of these five counties are situated in the Bay Area, an area already known for its high single-family house sale prices.

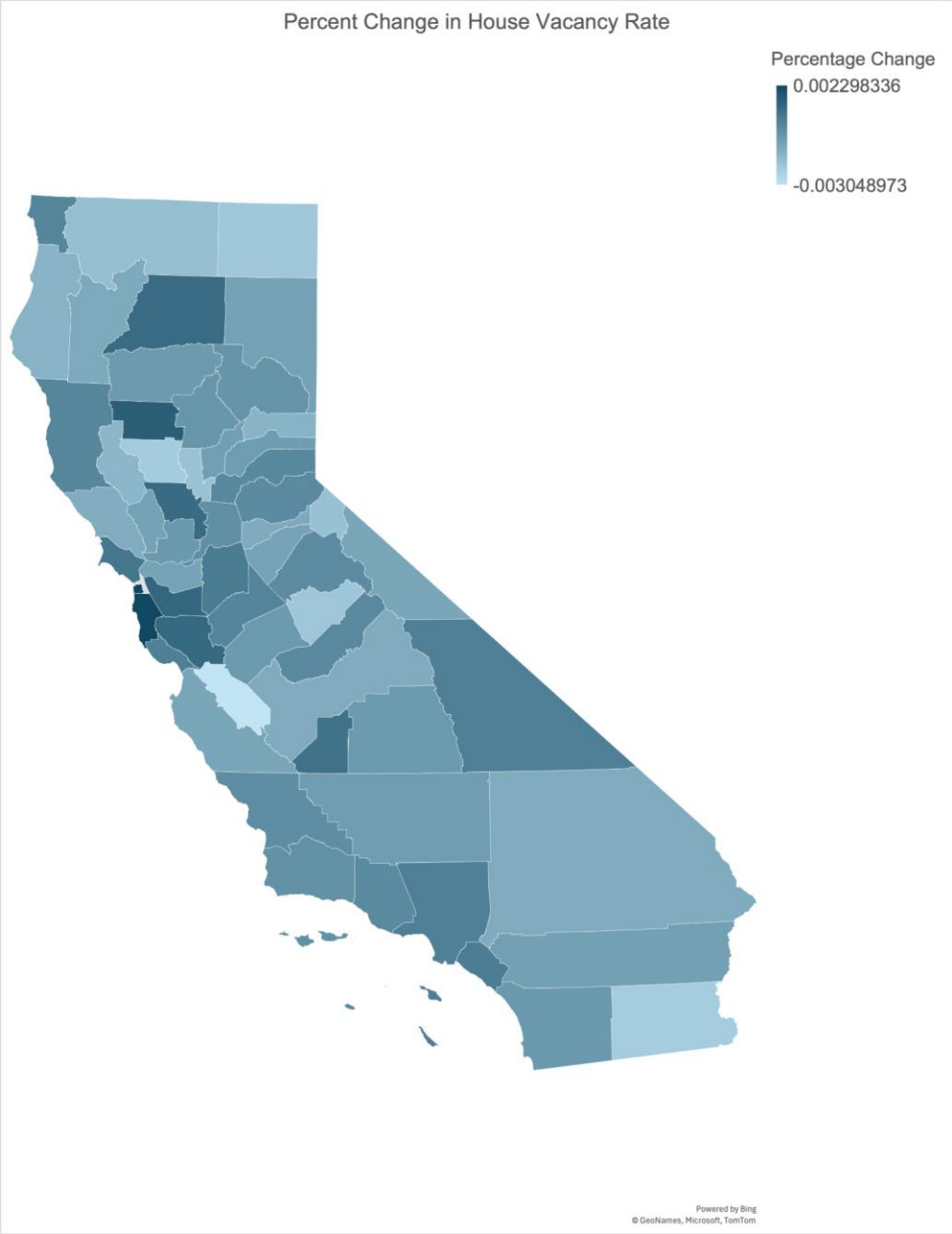

Figure 4 Percent Change in House Vacancy Rate

Souce: U.S. Census Bureau

This indicates that potential new homebuyers face significant obstacles when trying to purchase vacant houses within their counties. Despite the high vacancy rates, these areas do not experience a decrease in single-family house sale prices. This lack of price reduction could be due to owners holding vacant properties without lowering sale prices, possibly to avoid taxes or other expenses associated with maintaining empty homes. Additionally, some owners might be engaging in speculative practices, holding properties vacant in the hope that prices will continue to rise. Applying to the phenomenon in the Bay area. The Bay Area's economic environment, characterized by high incomes and a tech-driven economy, may sustain high housing prices even as vacancy rates rise.

These findings suggest that population shifts have a significant impact on the single-family housing market, particularly influencing sale prices. The weak correlation between homeownership rates and population shifts indicates that other factors might be at play, such as economic conditions or housing policies, that affect homeownership retention. The relationship between high vacancy rates and high housing prices underscores the complexity of the housing market, where speculative investment and holding costs play crucial roles. To apply this finding policymakers could consider these dynamics when addressing housing affordability and market stability. Future research could explore additional factors such as local economic conditions, regulatory environments, and investment trends to provide a more comprehensive understanding of the housing market.

Policy implication

Currently, California does not have a statewide empty house tax (EHT) or other penalties for vacant homes. However, an EHT has been implemented in San Francisco starting this year. This pioneering policy aims to address the issue of speculative vacancies, where homes are left

empty by owners waiting for property values to increase. By imposing a tax on these vacant properties, San Francisco hopes to incentivize owners to either sell or rent out their homes, thereby increasing the housing supply and potentially stabilizing or lowering housing prices. Given that San Francisco has seen the most significant increase in vacancy rates from 2020 to 2022, closely monitoring the policy's implications and its effect on vacant houses could provide valuable insights. Understanding how the EHT influences housing availability, prices, and homeownership rates in San Francisco could inform the feasibility and potential impact of extending this policy statewide.

California has prioritized building affordable housing while dismissing the efforts to reduce existing housing prices. This focus on new construction has been essential in addressing the immediate need for more housing units, especially for low-income residents. However, it has not sufficiently addressed the overarching issue of affordability in the existing housing market. Many Californians still find themselves priced out of neighborhoods where they have lived for years, as the prices of existing homes continue to rise. Addressing existing housing prices could potentially improve market efficiency by ensuring that homes are more consistently occupied and maintained. Vacant properties can lead to neighborhood decline, reducing the overall quality of life and attractiveness of communities. By encouraging occupancy, these policies could help maintain property values and community standards, benefiting both current residents and prospective buyers.

In South Korea, the government addressed a severe housing supply shortage and escalating housing prices in the 1980s by encouraging home ownership through subsidies for first-time home buyers. This approach successfully mitigated the housing crisis and increased home ownership rates. California could draw inspiration from this model to address its own

housing challenges. By subsidizing first-time home buyers, the state could prompt demand, stabilize housing prices, and enhance overall housing market efficiency. This strategy, combined with policies targeting vacant properties, could provide a comprehensive solution to California's housing affordability issues.

Moreover, a comprehensive policy approach should include revising current housing policies and regulations to facilitate the development of new housing units. Zoning laws and land use regulations that are too restrictive can hinder the construction of new homes, exacerbating supply shortages. By streamlining the approval process for new housing developments and encouraging higher-density housing where appropriate, California could increase the overall housing supply, helping to alleviate pressure on housing prices. To further support homeownership and housing affordability, California could look into tax incentives or grants for homeowners who improve their properties, particularly those that increase energy efficiency or add to the housing stock through accessory dwelling units (ADUs)[20]. These incentives would not only enhance the value of existing homes but also contribute to a more sustainable housing market. In addition to these measures, it is crucial to address the rental market. Although the study didn't cover the rental side of the housing market, the rental housing market also plays a significant role in housing affordability. Implementing rent control measures or providing tax credits to landlords who offer affordable rents could help stabilize rental prices and prevent the displacement of low- and middle-income residents.

Expanding this approach would ensure a more comprehensive strategy to tackle housing affordability issues in California, benefiting both homeowners and renters. To ensure the effectiveness of these policies, it will be essential to continue monitoring and evaluating their

[20] https://www.hcd.ca.gov/policy-and-research/accessory-dwelling-units

impacts on housing prices, vacancy rates, and homeownership rates. Policymakers could consider various strategies to address the housing market issues. An effective approach may involve a combination of solutions. By simultaneously building affordable housing, evaluating the effectiveness of the empty house tax (EHT), and encouraging homeownership, California can potentially tackle its long-standing housing problems. This multifaceted strategy could provide a more comprehensive solution, addressing both the supply and demand sides of the market and ensuring that housing remains accessible and affordable for all residents.

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