

Analyzing Rent Burden and Mobility Trends in San Mateo County*

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March, 2025

Abstract

San Mateo County, a thriving yet increasingly inaccessible region in the Bay Area, is grappling with a deepening housing crisis marked by soaring prices, a shortage of affordable options, and significant financial strain on renters. This study investigates the shifting dynamics of housing affordability and population movement over the past decade, analyzing how economic and demographic transformations have influenced residential stability. Through historical trend analysis, spatial mapping, and causal inference techniques, we address two core questions: (1) How has the rent burden and geographical mobility in San Mateo County changed over time? and (2) To what extent has geographical mobility and rent burden correlated in San Mateo County? Mobility trends reflect the tension between affordability constraints and demographic shifts, with lower-income and immigrant communities experiencing disproportionate movement. Moreover, extreme rent burdens are closely linked to increased relocation, particularly over greater distances. These findings provide critical insights into the forces driving housing instability in San Mateo County and offer a foundation for policies aimed at reducing displacement, enhancing affordability, and supporting long-term community resilience.

Source Code: <https://github.com/qianzhilie/compss>

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*This research was conducted for COMPSS 224A: *Forced Out: Decoding Housing Displacement through Data*. We sincerely thank Dr. Tim Thomas and GSI Ashutosh Tiwari for their guidance and support throughout this project.

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Introduction

San Mateo County, a prosperous Bay Area community, faces persistent housing affordability challenges that have intensified over time. Historically, California even pioneered some exclusionary housing practices—Ellis (2021) notes that many racist housing discrimination policies were “birthed in California” before spreading nationwide—and the legacy of racial exclusion and controlled growth left deep inequities in the region’s housing market. In recent decades, the county’s housing landscape has been transformed by the tech boom: the arrival of companies like Facebook and Google drove rents and home prices to unprecedented levels . The result is a severe housing crisis characterized by skyrocketing costs, a shortage of affordable units, and widespread rent burden among residents.

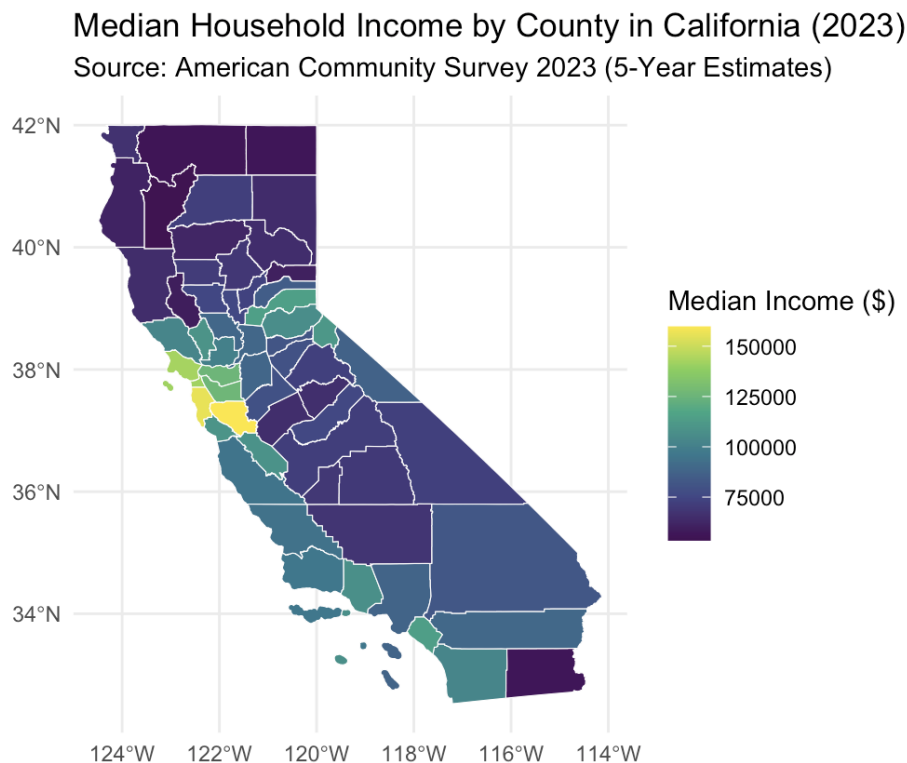


Figure 1: Median Household Income by County in California (2023)

One key issue is rent burden, as housing costs far outpace incomes. By the mid-2010s, 87% of low- and moderate-income renters in San Mateo County spent over 30% of their income on rent, far above the standard affordability threshold. This affordability squeeze has led to increased displacement and geographic mobility. Eviction rates surged (with a 59% rise in evictions for nonpayment and a 300% spike in “no-cause” evictions from 2012 to 2015) file-dk8sda1ekoxwgep1fhymij, and many families have been forced to relocate in search of affordable housing. Marcus and Zuk (2017) found that only 20% of displaced tenant households managed to stay in their same neighborhood, while fully one-third had to leave San Mateo County entirely after losing their housing. Studying the relationship between rent burden and mobility is therefore crucial: it sheds light on how housing affordability pressures are reshaping where people live, and it can inform policies to mitigate displacement and promote community stability.

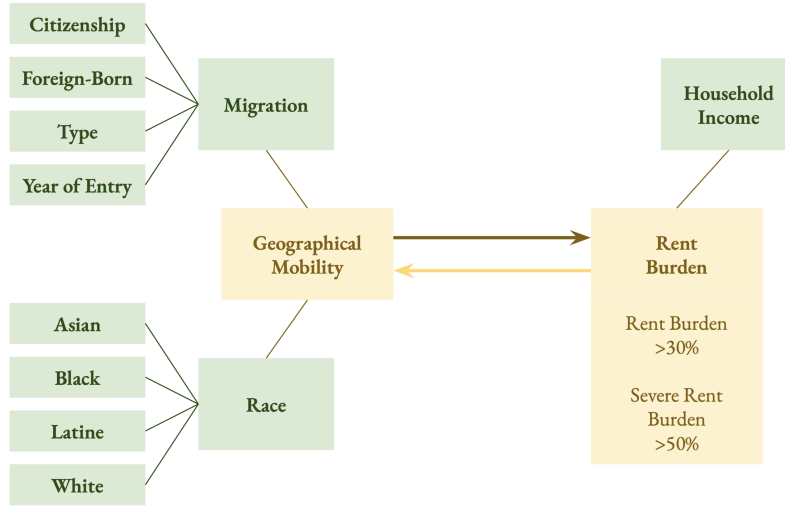


Figure 2: Research Method

Research Method

Understanding the evolution of **rent burden and geographical mobility** in San Mateo County requires a closer look at both **historical patterns** and **causal relationships**. As housing costs have surged, displacement has disproportionately affected lower-income communities and people highlight the scale of these affordability challenges. Utilizing data from the tidycensus R package, we analyze how mobility trends and racial composition have shifted over time and assess whether geographical mobility itself exacerbates or alleviates rent burden pressures. It remains crucial how mobility trends and racial composition have shifted over time and to assess whether geographical mobility itself exacerbates or alleviates rent burden pressures. By analyzing longitudinal trends and employing causal inference methods, this study aims to provide a more comprehensive understanding of how economic and demographic shifts are shaping San Mateo’s housing crisis.

Research Questions

1. **How has the rent burden and geographical mobility in San Mateo County changed over time?**

This question takes a descriptive approach, examining how race proportions and mobility trends have evolved alongside shifting rent burdens.

2. **To what extent has geographical mobility and rent burden correlated in San Mateo County?**

This question explores the correlational relationship between mobility and rent burden, using regression analysis to assess out-migration and in-migration.

Key Definitions

o better analyze rent burden, we categorize households based on the percentage of income spent on rent, as shown in Table 1.

Table 1: Definition of Rent Burden Categories

Rent Burden Category	Percentage of Income Spent on Rent
Moderately Rent-Burdened	30-34%
Severely Rent-Burdened	35-39%
Highly Rent-Burdened	40-49%
Extremely Rent-Burdened	50% or more

Hypotheses

1. Research Question 1

- H_0 : Rent burden and geographical mobility in San Mateo County have remained relatively stable over time.
- H_1 : Rent burden in San Mateo County has increased over time, leading to higher rates of geographical mobility as residents relocate in search of more affordable housing.

2. Research Question 2

- H_0 : There is no correlation between severely rent-burdened households (spending $> 50\%$ of income on rent) and rent burdens.
- H_1 : Severely rent-burdened households (spending $> 50\%$ of income on rent) exhibit higher rates of geographical mobility.

1 Historical Patterns of Rent Burden and Geographical Mobility

1.1 Rent Burden

Rent Burden Trend Comparison: 2012 vs. 2022 - Choropleth maps

Figure 3 compare the rent burden across San Mateo County in 2012 and 2022. Rent burden is defined as households spending more than 30% of their income on rent. Unlike usual expectations, the maps suggest an overall decline in rent burden over the decade. In 2012, large portions of the county—especially in the north and central areas—had higher rent burden percentages, as indicated by the darker colors. By 2022, these regions have shifted towards lighter colors, suggesting a lower share of rent-burdened households.

Notably, the southern part of the county experienced the most visible decrease in rent burden, shifting from mid-to-high percentages in 2012 to some of the lowest in 2022. This could be attributed to income growth, housing supply changes, or demographic shifts. However, some pockets of high rent burden remain, particularly in the northern areas, though they appear less widespread than in 2012.

The observed decline in rent burden challenges assumptions about a worsening affordability crisis in absolute terms. However, it does not necessarily mean that housing affordability has improved—rather, it may reflect increases in household income, shifts in population demographics, or changing housing policies over the decade. Further analysis is needed to determine

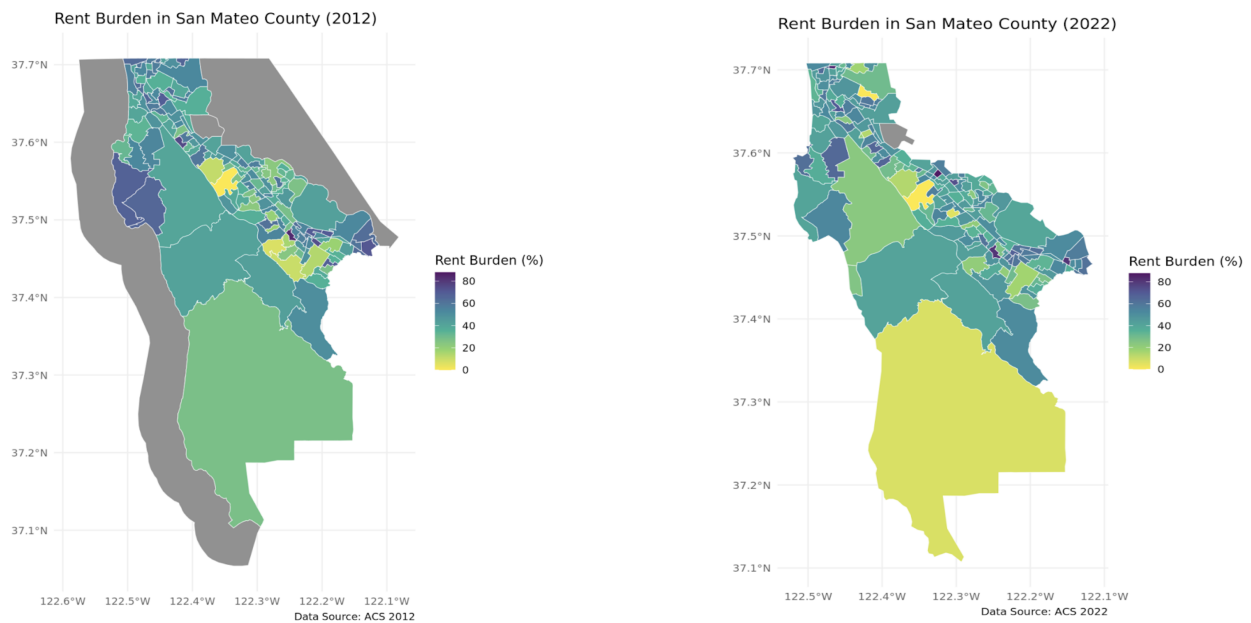


Figure 3: Rent Burden in San Mateo County

whether this decline is due to genuine affordability improvements or displacement of lower-income residents who were previously rent-burdened.

Fluctuations in mean rent burden from 2012 to 2022

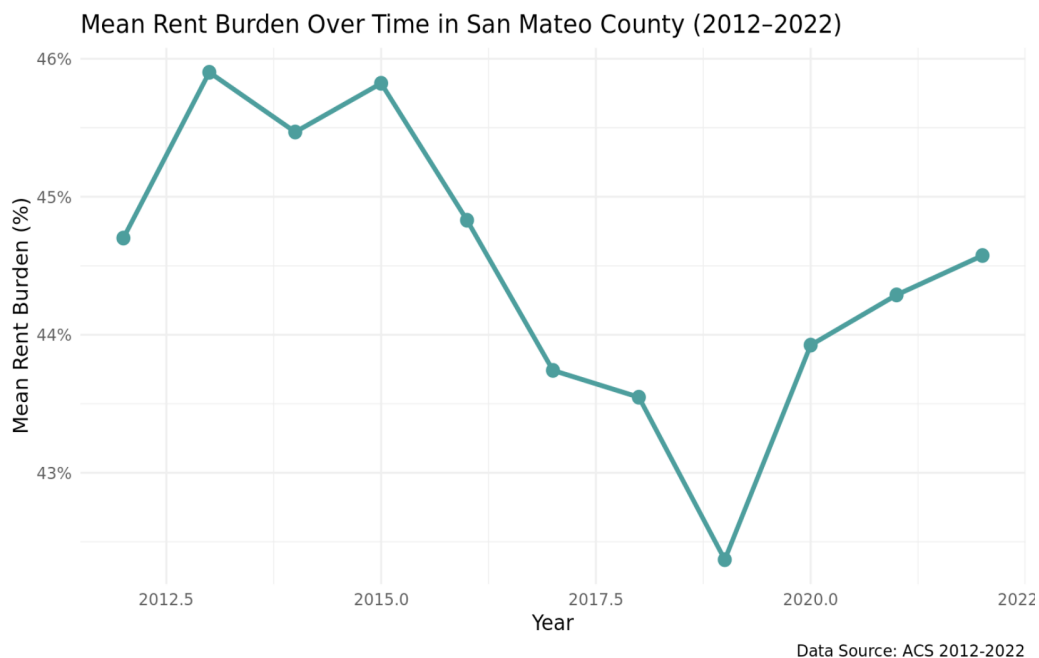


Figure 4: Mean Rent Burden Over Time in San Mateo

Figure 4 provides additional context by tracking the mean rent burden percentage over time. While the choropleth maps suggest an overall decline, the line chart reveals that rent burden has fluctuated throughout the decade rather than consistently decreasing.

From 2012 to 2015, rent burden increased, peaking in 2015, likely due to rising rental costs outpacing income growth. Between 2015 and 2019, the rent burden declined, possibly due to economic growth and improved wages. A sharp drop in 2020 aligns with pandemic-era policies, such as eviction moratoriums and rental assistance programs, providing temporary relief. However, since 2020, the rent burden has started rising again, suggesting a post-pandemic rebound in housing costs and inflationary pressures.

While the maps show a decline in rent burden from 2012 to 2022, the year-to-year trend suggests more complexity—with periods of both increase and decrease. This indicates that affordability challenges remain dynamic and should be analyzed in conjunction with demographic and economic changes in the county.

Rent Burden from 2012 to 2022

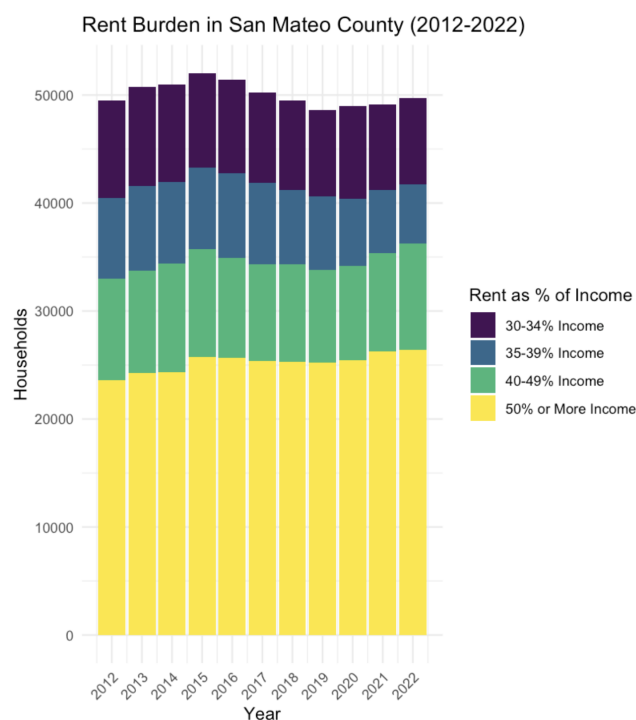


Figure 5: Rent Burden by Household Income

Figure 5 shows a significant portion of households that spend 50% or more of their income on rent, indicating a severe rent burden. There is a relatively stable distribution of proportions for different rent burden categories, remaining fairly consistent over the years, with some slight fluctuations. There is a slight decline in total households in recent years compared to earlier years (ie. 2015-2017 peak). With the high proportion of households allocating over 50% of their income to rent, it suggests there are potential affordability challenges in the region.

1.2 Mobility

Mobility Trends Comparison (2012 vs. 2022)

Figure 6 compares the mobility trends in San Mateo County in 2012 and 2022. It shows that mobility has increased in several areas, particularly in 2022 in the northern and eastern regions of the county. Certain census tracts consistently show low mobility, suggesting more stable communities. The economic and housing market shifts likely played a role in the increased

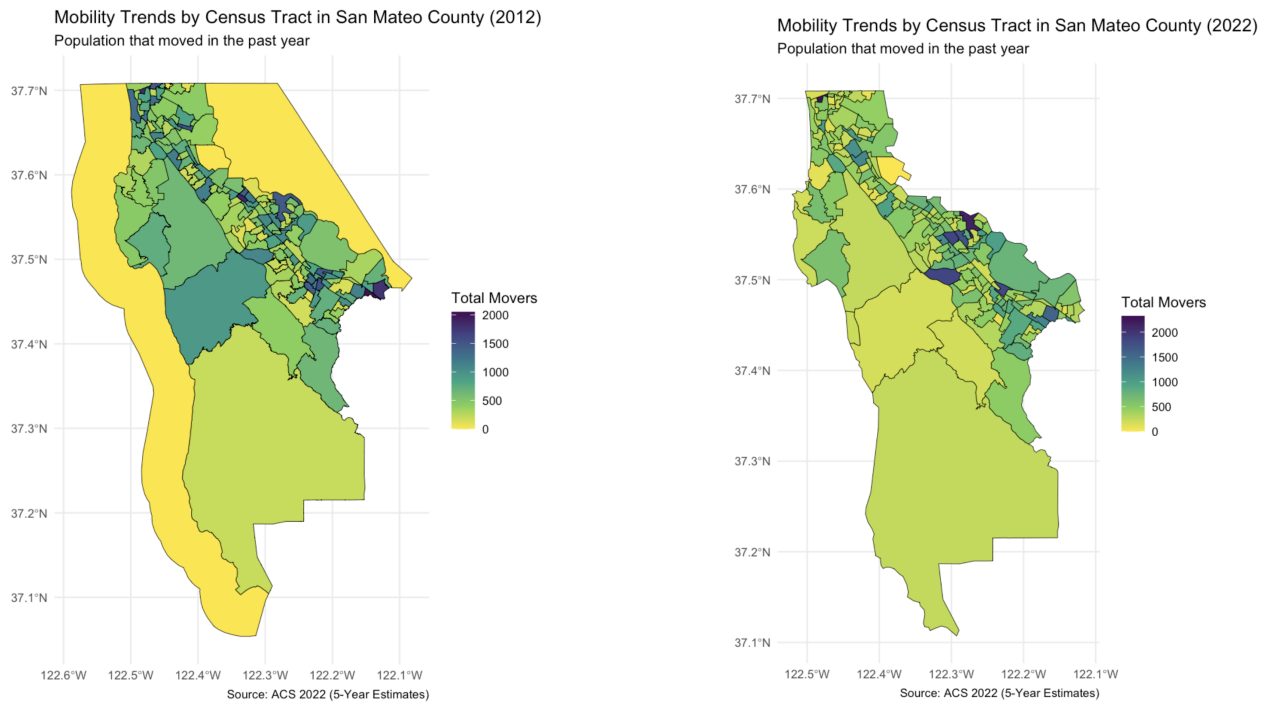


Figure 6: Mobility Trends Comparison

movement. This is consistent with the patterns of rent burden as seen in Figure 3. High rent burdens are linked to greater population mobility, particularly in urban and northern areas. Lower rent burdened areas (southern and coastal) remain stable with minimal mobility. By 2022, extreme rent burdens continue to push movement, but affordability limits the options for relocation.

Mobility by Migration Type

The mobility trends by citizenship status in San Mateo County from 2012 to 2022 show increasing movement among foreign-born movers and the total population until 2017–2019, followed by a notable decline post-2020. The initial rise suggests strong economic conditions and housing turnover, while the later decline likely reflects rising housing costs, stricter immigration policies, and COVID-19 disruptions. The sharper decline among foreign-born movers suggests additional policy and affordability barriers, potentially worsening rent burdens and reducing housing options, raising concerns about displacement and long-term affordability.

The foreign-born population in San Mateo County grew steadily from 2012 to 2019, driven by increases in both naturalized citizens and non-citizens. However, after 2019, the population plateaus and declines post-2020, likely due to stricter immigration policies, economic uncertainty, and COVID-19. The naturalized citizen population peaks around 2019–2020, then slightly declines, while the non-citizen population remains stable but trends downward. These shifts suggest reduced in-migration inflows, rising naturalization rates, or out-migration due to housing and labor constraints, highlighting the broader impact of immigration policies and economic conditions.

Migration and mobility trends also show gradual increases across all categories from 2012 to 2019, followed by a sharp decline post-2020. While the total population and those remaining in the same house increased steadily, interstate, intrastate, and international movers declined, likely due to economic uncertainty, rising housing costs, and pandemic restrictions. Notably,

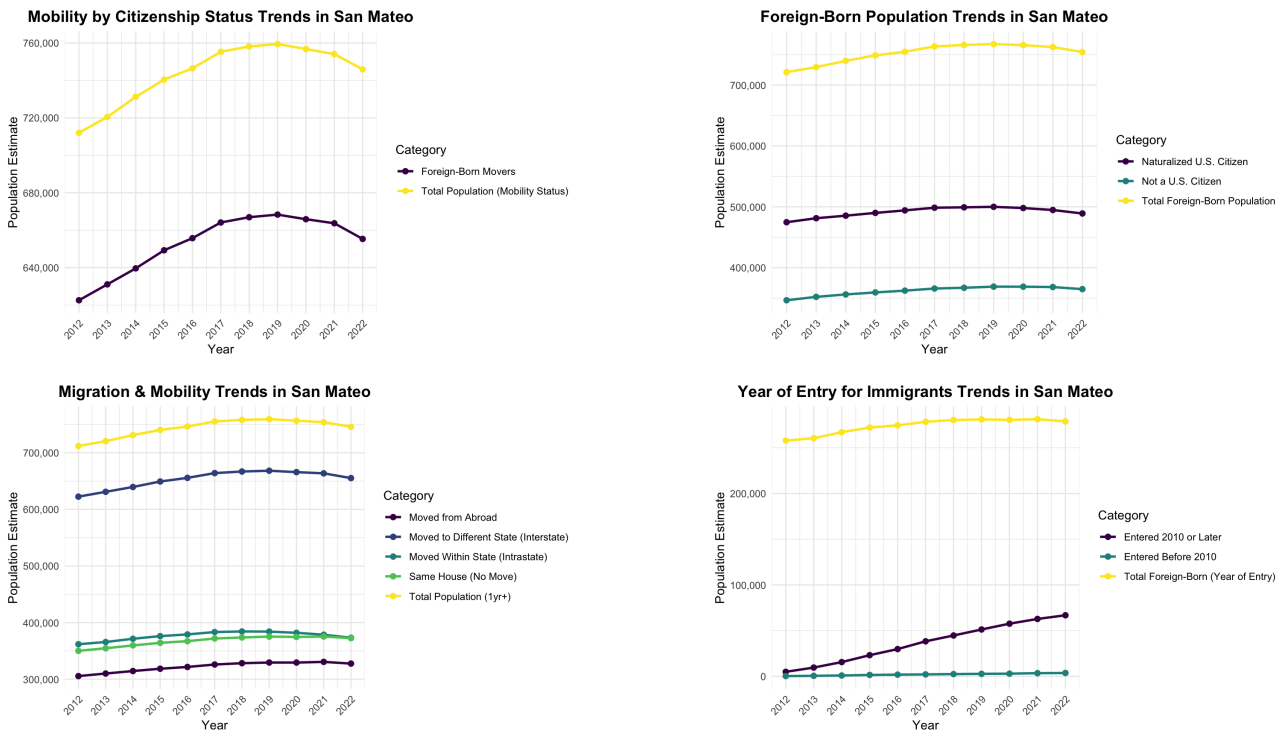


Figure 7: Mobility Trend by Migration Type

international migration dropped more sharply than domestic mobility, reflecting stricter immigration policies or fewer job opportunities for foreign-born residents. These trends suggest barriers to mobility that may be driving higher rent burdens and reduced affordability, further reinforcing concerns about displacement.

Year of entry trends for immigrants show continued growth in the foreign-born population until 2019, but a slowdown and plateau post-2020. The population of immigrants entering in 2010 or later steadily increased, whereas those who arrived before 2010 remained stable. This shift suggests that San Mateo's immigrant population is increasingly composed of newer arrivals, who likely face more challenges in securing stable housing and employment. However, the decline in migration post-2020 indicates rising barriers to long-term settlement, such as increasing rent burdens and limited mobility opportunities, further shaping the county's demographic and economic landscape.

Mobility by Race

Figure 8 shows the change in geographical mobility of the population of San Mateo County by race over the years. Asians have started to have increased mobility, moving within the county and from nearby counties. The Black population remains low, with slight growth. The geographical mobility of Latine people has declined, which suggests potential economic or housing challenges. White mobility peaked mid-decade, but has since dropped, moving from within and from out of the county. For all racial groups except the Black population, immigration from abroad remains small, but looks like a consistent factor.

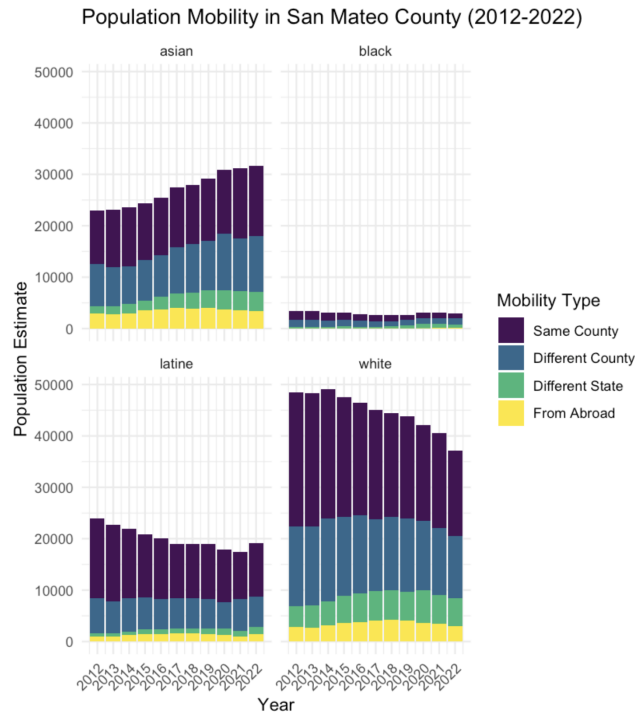


Figure 8: Caption

2 Correlation between Geographical Mobility and Rent Burden

2.1 Out-migration Analysis

Correlation Heatmap

The descriptive statistics and correlation matrix, presented in Appendix Tables 3 and 4, provide an overview of key variables related to rent burden and geographical mobility in San Mateo County.

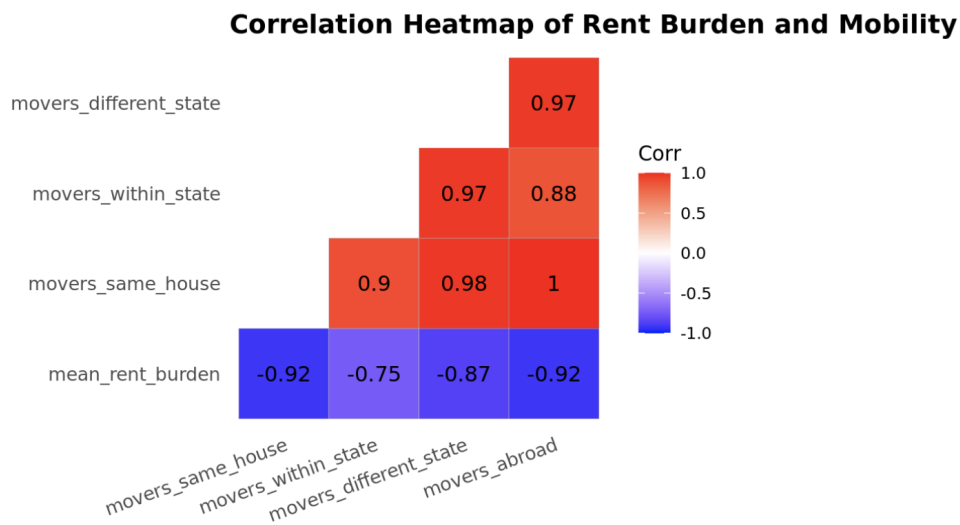


Figure 9: Correlation Heatmap

Figure 9 visualizes the relationships between rent burden and different mobility patterns. We observe several key findings:

- Negative correlation between rent burden and remaining in the same house (-0.92): Households with higher rent burdens are significantly less likely to stay in their current residence.
- Strong positive correlation among different types of movers: Mobility trends are highly correlated, with movers within the state (0.97), movers from different states (0.88), and movers from abroad (0.87) showing strong interdependencies. This suggests that factors influencing one type of mobility (e.g., within-state migration) are likely to affect other migration patterns as well.
- Moderate to strong negative correlations between rent burden and different types of movers (-0.75 to -0.92): This finding supports the hypothesis that rent-burdened households are more likely to move but does not indicate directionality (i.e., whether high rent burden causes mobility or vice versa).

While correlation does not imply causation, the observed relationships indicate that as rent burden increases, individuals are more likely to relocate, with long-distance movers exhibiting the strongest trends.

Scatter Plots of Mobility and Rent Burden

To further examine these relationships, scatter plots with regression lines were generated for different categories of mobility:

- Movers within the state ($R^2 = 0.56$)
- Movers from different states ($R^2 = 0.75$)
- Movers from abroad ($R^2 = 0.84$)

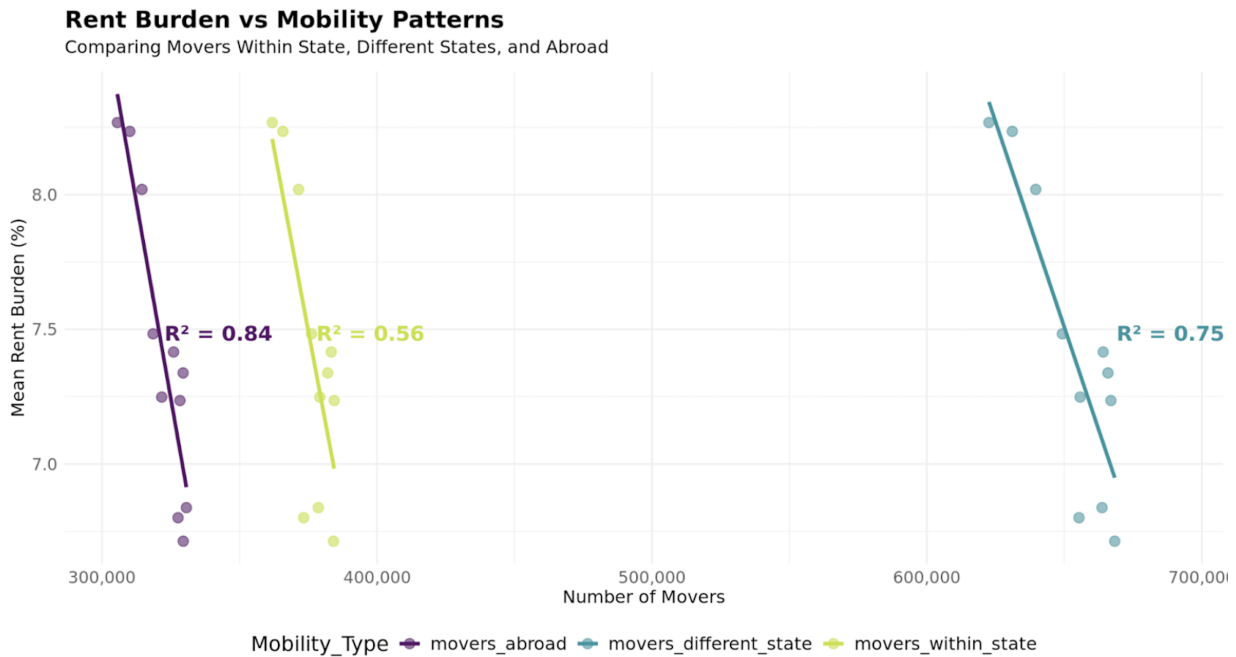


Figure 10: Rent Burden and Out-Migration Patterns

Figure 10 illustrates a clear negative relationship between rent burden and mobility trends. The higher the rent burden, the more likely individuals are to move, particularly for out-of-state and international moves. The strongest correlation is seen for international movers ($R^2 = 0.84$),

suggesting that those most affected by rent burdens are often forced to leave not only their county but potentially the country.

Interestingly, while within-state movers show the weakest correlation ($R^2 = 0.56$), the trend is still evident, indicating that even local migration patterns are influenced by rising housing costs.

2.2 In-migration Analysis

Table 2: Two-way Fixed Effects Panel Regression Results

Variable	Estimate	Std. Error	t-value	p-value
lag_ForeignBornPop	-0.006	0.007	-0.817	0.414
lag_NaturalizedCitizen	0.011	0.007	1.503	0.133
lag_NonCitizen	0.004	0.007	0.605	0.545
lag_Entered2010Later	0.020**	0.006	3.232	0.001
lag_EnteredBefore2010	-0.193***	0.041	-4.701	0.000
lag_ForeignBornMovers	0.011*	0.005	2.260	0.024
lag_MigrationWhite	0.012***	0.003	4.187	0.000
lag_MigrationBlack	-0.022*	0.010	-2.188	0.029
lag_MigrationAsian	0.013*	0.005	2.416	0.016
lag_MigrationLatinx	-0.007	0.005	-1.421	0.155
Observations	1,786			
R-squared	0.0699			
Adj. R-squared	-0.0535			
F-statistic (df = 10; 1576)	11.8428***			

Note: ** $p < 0.01$, * $p < 0.05$, *** $p < 0.001$.

Two-way fixed effects (year and GEOID) are included.

The two-way fixed effects panel regression examines how lagged migration and foreign-born population influence rent burden rates across census tracts in San Mateo County, controlling for both tract-level and year-level fixed effects.

Recent immigration is associated with higher rent burdens. Newer immigrants (entered 2010 or later) contribute to increased rent burdens (0.0198, $p = 0.001$), likely due to increased demand for rental housing. In contrast, long-established immigrants (entered before 2010) are linked to lower rent burdens (-0.1926 , $p < 0.001$), suggesting greater housing stability or homeownership.

Foreign-born movers contribute to rent burden pressures. Tracts with higher levels of foreign-born movers experience greater rent burdens in the following year (0.0108, $p = 0.024$), indicating that high residential mobility among foreign-born individuals intensifies rental market constraints.

White and Asian migration are associated with rising rent burdens, Black migration is linked to lower rent burdens. White migration (0.0121, $p < 0.001$) and Asian migration (0.0130, $p = 0.016$) both show significant positive effects on rent burden, suggesting patterns of gentrification and demographic shifts that increase housing costs. At the same

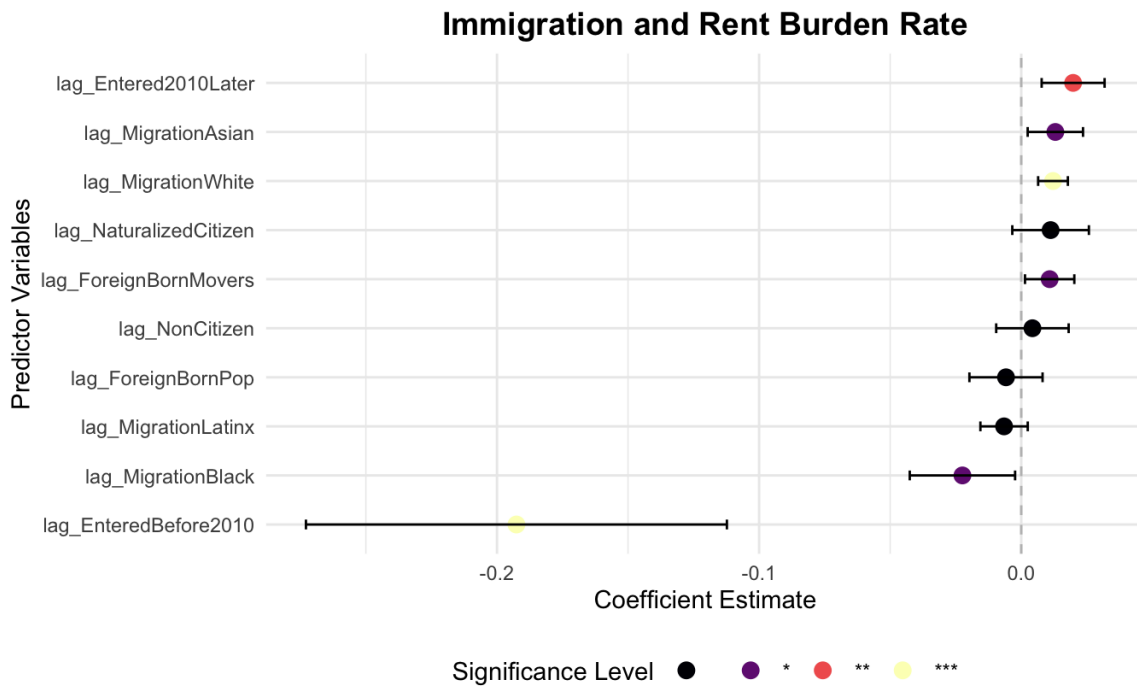


Figure 11: Panel Regression Results: In-migration and Rent Burden Rate

time, tracts experiencing higher Black migration tend to have reduced rent burdens (-0.0224 , $p = 0.029$), possibly reflecting movement into more affordable neighborhoods with less gentrification pressure. While Latinx migration does not significantly impact rent burden. The effect of Latinx migration is not statistically significant ($p = 0.155$), indicating no clear relationship with rent burden trends.

The model is statistically significant but explains limited variation. The F-statistic (11.84 , $p < 0.001$) confirms that at least one predictor significantly explains rent burden changes. However, the R^2 value (0.0699) and negative adjusted R^2 (-0.0535) suggest that other unobserved factors, such as income levels, housing supply constraints, and policy changes, play a larger role.

Findings support theories of gentrification and displacement. Higher-income White and Asian migration appears to drive rent increases, while established immigrants and Black migration are associated with lower rent burdens. Given the low explanatory power of the model, future research should explore additional economic and policy factors that influence rent affordability and displacement trends in San Mateo County.

Summary of Results

The study's results reveal significant shifts in rent burden and geographical mobility within San Mateo County over the past decade. While the overall rent burden has declined, particularly in the southern regions, this trend may not indicate true affordability improvements but rather rising incomes, demographic shifts, or the displacement of lower-income residents. Rent burden fluctuated over time, peaking in 2015, declining until 2019, and increasing again after 2020, likely due to economic shifts and post-pandemic inflationary pressures. Despite the apparent decline in overall rent burden, a substantial proportion of households still allocate more than

50% of their income to rent, highlighting ongoing affordability challenges.

Mobility patterns also reflect these affordability pressures, particularly among lower-income and immigrant communities. The study found that foreign-born residents exhibited increased mobility until 2019, followed by a sharp decline post-2020, which suggests rising affordability constraints and stricter immigration policies. Racial disparities in mobility were also evident—Latine mobility declined, indicating economic or housing challenges, while Asian mobility increased, particularly within the county and nearby areas. White mobility peaked mid-decade before declining, whereas Black mobility remained relatively low but showed slight growth. Mobility increased in northern and eastern areas of the county by 2022, aligning with high-rent burden zones, reinforcing the link between affordability challenges and displacement.

The correlation analysis further confirms the relationship between rent burden and mobility. Households experiencing higher rent burdens were significantly less likely to stay in place, with a strong negative correlation (-0.92) between rent burden and remaining in the same house. Mobility patterns were also highly correlated across different types of movers, indicating interconnected migration trends. The strongest relationship was observed among international movers ($R^2 = 0.84$), followed by out-of-state movers ($R^2 = 0.75$) and within-state movers ($R^2 = 0.56$), suggesting that those facing extreme rent burdens are more likely to relocate over longer distances.

These findings underscore the persistent challenges of housing affordability in San Mateo County and the significant role that rent burden plays in driving displacement. While some areas show a decline in rent burden, the data suggest that this may be a result of population shifts rather than genuine affordability improvements. The declining mobility of foreign-born residents post-2020 points to increasing barriers to relocation and growing financial strain. To address these challenges, policymakers should prioritize strategies that stabilize rent, enhance tenant protections, and expand affordable housing options. Without targeted interventions, the cycle of displacement and affordability pressures will continue to shape San Mateo County's housing landscape, exacerbating economic inequality and long-term community instability.

Conclusion

This study highlights the critical role of rent burden in shaping patterns of geographical mobility within San Mateo County. While the overall rent burden has shown a decline over the decade, this trend may not indicate genuine improvements in affordability but rather displacement of lower-income residents. The fluctuations in rent burden trends, particularly the increase post-2020, suggest that affordability challenges remain pressing. Mobility patterns reveal that rent-burdened households, particularly lower-income and immigrant communities, experience higher displacement rates, with long-distance moves being most prevalent among those facing extreme rent burdens.

The correlation analysis confirms a strong relationship between rent burden and increased relocation, reinforcing concerns about housing instability. The decline in mobility among foreign-born residents post-2020 further underscores the barriers to relocation and affordability challenges they face. These findings underscore the need for policy interventions that address rent stabilization, affordable housing development, and tenant protections to prevent forced displacement.

Ultimately, this study provides a foundation for policymakers to implement strategies aimed

at mitigating displacement and ensuring long-term housing affordability in San Mateo County. Addressing the structural factors driving rent burden and mobility will be key to fostering a more equitable and sustainable housing landscape in the region.

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Appendix

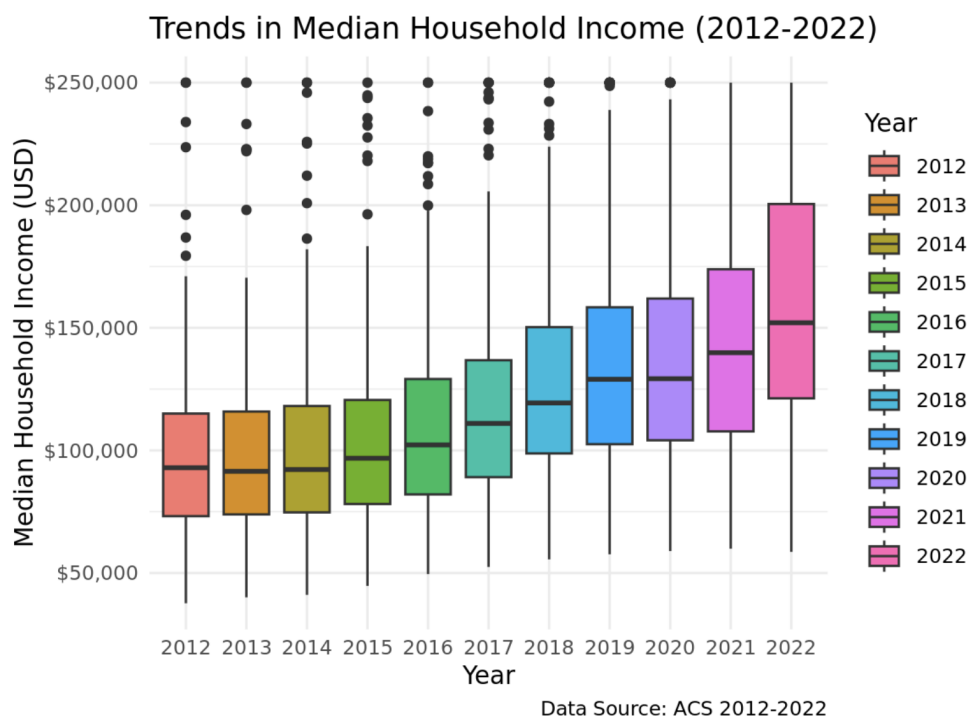


Figure 12: Trends in Median Household Income

Table 3: Descriptive Statistics

Variable	Mean	SD	Min	Max
Rent Burden	7.42	NA	7.42	7.42
Total Population	743668.8	16093.51	712040	759450
Movers (Same House)	367266.8	8913.79	350157	375428
Movers (Within State)	376402	7581.82	361883	384402
Movers (Different State)	652964.1	15642.23	622575	668337
Movers (Abroad)	321997.6	8694.20	305559	330668

Table 4: Correlation Matrix

	Mean Rent Burden	Same House	Within State	Different State	Abroad
Mean Rent Burden	1.000	-0.915	-0.748	-0.865	-0.917
Movers (Same House)	-0.915	1.000	0.903	0.982	0.998
Movers (Within State)	-0.748	0.903	1.000	0.967	0.885
Movers (Different State)	-0.865	0.982	0.967	1.000	0.974
Movers (Abroad)	-0.917	0.998	0.885	0.974	1.000