Territorial Complexity of Housing Rental Markets in Mexico and Baja California

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Abstract. Housing is a key determinant of household well-being and territorial development. However, participation in rental housing markets varies considerably across regions, particularly in border economies characterized by high labor mobility and urban growth. This study analyzes the factors associated with household participation in rental housing markets in Mexico and Baja California from the perspective of complexity theory. Using data from the 2024 National Household Income and Expenditure Survey (ENIGH), binary logistic regression models were estimated for a national sample of 91,414 households and a regional subsample of 4,047 households in Baja California. Only 13.54% of Mexican households reported participating in the rental housing market. The results indicate that household head age and household size significantly reduce the probability of renting, whereas labor participation increases it. Household income exhibited a negative association with rental participation, with a substantially stronger effect in Baja California than in the national model. Differences were also observed regarding the influence of socioeconomic status and territorial conditions, revealing that rental market participation varies according to regional contexts. These findings support the complexity theory perspective by showing that rental housing decisions emerge from the interaction of economic, demographic, labor, and territorial factors rather than from isolated determinants. The findings provide evidence to support territorially differentiated housing policies in Mexico and other border regions.

Keywords: Rental housing, housing tenure, complexity theory, regional development, logistic regression.

1 Introduction

Housing plays a fundamental role in household well-being, social mobility, and territorial development. Beyond providing shelter, housing conditions influence economic opportunities, labor mobility, and the spatial distribution of the population. Ceriani et al. [1], argue that housing constitutes one of the most significant durable assets consumed by households because it directly affects the measurement of welfare, poverty, and inequality. Consequently, understanding the determinants of

© The Author(s) 2026
B. E. Bernal Escoto et al. (eds.), *Proceedings of the International Congress on Competitiveness and Development of MSMEs (ICCD-MSMEs 2026)*, Advances in Economics, Business and Management Research 404,
https://doi.org/10.2991/978-94-6239-779-8_22

participation in rental housing markets has become increasingly important for explaining territorial disparities in housing access and for supporting the design of more effective housing policies. Rather than representing only a physical or financial asset, access to housing should be understood as a multidimensional process shaped by the interaction of economic, social, and territorial conditions. Recent evidence further suggests that housing systems have become increasingly complex due to rapid urbanization, demographic change, and growing territorial inequalities, reinforcing the need for integrated analytical approaches to housing policy [2].

Among the different forms of housing tenure, rental housing has gained increasing importance as a consequence of urbanization, residential mobility, and labor market transformation. According to Blanco et al. [3], efficient rental markets expand residential alternatives, facilitate labor mobility, and improve household economic opportunities. Likewise, [4] argue that a well-developed rental sector enhances housing market flexibility by enabling a more efficient allocation of labor across regions. Despite these benefits, participation in rental housing markets continues to vary considerably among countries, regions, and cities, suggesting that rental decisions emerge from the interaction of multiple economic, demographic, institutional, and territorial factors rather than from a single determinant. Recent international evidence indicates that increasing housing affordability pressures and territorial disparities have reinforced the strategic role of rental markets in promoting urban resilience and reducing socioeconomic inequality [2].

Previous research has identified several factors associated with households' housing tenure decisions. Among the most frequently examined determinants are household income, the age of the household head, family size, and labor market participation. [5] argue that housing tenure results from complex household decision-making processes in which economic and demographic characteristics interact simultaneously. Similarly, [6] found that household income and regional location significantly influence the likelihood of homeownership, whereas Blanco et al. [7], demonstrated that the relationship between income and housing tenure varies across Latin American countries according to their institutional and economic conditions. More recently [8], emphasize that housing decisions are increasingly conditioned by urban accessibility, infrastructure availability, and affordability constraints, suggesting that residential choices extend beyond purely economic considerations. Collectively, this body of evidence indicates that housing tenure reflects the interaction of multiple socioeconomic and spatial dimensions rather than the effect of isolated variables.

In Mexico, [9] documents that household head age, family composition, and urban location are strongly associated with participation in rental housing markets. Nevertheless, the influence of these determinants is not homogeneous across the national territory. Housing markets operate under distinct economic, demographic, and institutional conditions that shape residential decisions differently across regions. In particular, metropolitan areas characterized by rapid urban expansion and intense labor mobility exhibit rental market dynamics that differ substantially from those observed in smaller cities and rural localities. Recent studies further indicate that

territorial inequalities, housing affordability, and uneven urban development have intensified regional differences in housing access, reinforcing the importance of territorial context in explaining rental market participation ([2] & [10]).

The territorial dimension has become a central element in understanding contemporary housing markets. Van Doorn et al. [11], argue that accelerated urbanization has intensified pressure on housing markets, particularly in metropolitan areas where employment opportunities, infrastructure, and public services are highly concentrated. Similarly, [12] explains that the spatial distribution of households is closely associated with housing market conditions and regional economic opportunities. In Mexico, [9] demonstrates that rental housing is predominantly concentrated in urban areas characterized by greater accessibility to employment, transportation networks, and public services, whereas homeownership and self-construction remain more common in rural localities. More recent evidence indicates that increasing housing affordability challenges and territorial inequalities have reinforced the importance of place-based approaches for understanding housing dynamics, emphasizing that housing markets evolve differently according to local institutional, demographic, and economic conditions [2]. Consequently, territory should not be regarded merely as the geographical setting in which housing markets operate but rather as a structural component that shapes household decisions and modifies the interaction among economic, labor, demographic, and institutional factors.

Baja California represents a particularly suitable setting for analyzing rental housing markets because it combines international labor mobility, continuous migration flows, accelerated urban growth, and deep economic integration with the United States—conditions that rarely converge simultaneously in other Mexican states. [13] describe the San Diego–Tijuana metropolitan area as a cross-border urban system characterized by the coexistence of economic integration and border control processes. Likewise, [14] explains that cross-border economic integration has profoundly transformed regional production systems, labor markets, and residential dynamics. Kopinak et al. [15], further highlight that Tijuana forms part of the CaliBaja economic corridor, where industrial specialization and international migration contribute to high levels of labor mobility. More recently, [10] argues that housing markets in Tijuana increasingly reflect processes of gentrification, cross-border demand, and residential segregation, generating pressures that distinguish the region from other Mexican housing markets. These characteristics suggest that the determinants of rental housing participation may differ substantially from those observed at the national level.

Although previous studies have identified numerous determinants of housing rental participation, most have examined these factors independently or within a single territorial context. Consequently, empirical evidence remains limited regarding how the interaction among economic, labor, demographic, and territorial factors shape rental housing participation across different geographical settings, particularly in border regions characterized by intense migration, economic integration, and high

residential mobility. This limitation restricts a comprehensive understanding of the complexity underlying rental housing markets and highlights the need for comparative analyses capable of identifying how territorial conditions modify the relationships traditionally reported in the housing literature. Addressing this gap is especially relevant for border regions such as Baja California, where the convergence of international migration, urban expansion, and cross-border economic activity creates housing dynamics that differ substantially from those observed across Mexico as a whole.

From the perspective of complexity theory, housing rental markets can be understood as adaptive systems composed of multiple interdependent actors and processes that continuously evolve through economic, demographic, institutional, and territorial interactions. [16] argues that cities function as complex systems in which urban patterns emerge from decentralized and dynamic interactions rather than from isolated causal relationships. Extending this perspective to housing studies, Thakkar et al. [17] conceptualize housing systems as complex adaptive environments in which households, developers, financial institutions, governments, and housing policies interact simultaneously to shape residential outcomes. Under this framework, rental housing participation should not be interpreted as the consequence of a single socioeconomic determinant but rather as an emergent outcome produced by the interaction of multiple dimensions operating within specific territorial contexts.

Despite substantial advances in the housing literature, most empirical studies continue to examine the determinants of rental housing participation independently or within a single geographical setting. Consequently, limited empirical evidence is available regarding how the interaction among economic, demographic, labor, and territorial factors modify rental housing participation across different territorial contexts, particularly in border regions characterized by intense migration, economic integration, and high residential mobility. This limitation restricts a comprehensive understanding of the adaptive nature of housing systems and highlights the need for comparative studies capable of identifying how territorial conditions reshape the relationships traditionally reported in housing research. Addressing this gap contributes not only to the housing literature but also to the broader discussion on territorial development and complexity science.

This study contributes to the literature in three complementary ways. First, it provides updated empirical evidence based on the 2024 National Household Income and Expenditure Survey (ENIGH) by comparing housing rental determinants at both the national level and within the border region of Baja California. Second, it simultaneously analyzes economic, demographic, labor, and territorial variables through a unified binary logistic regression framework, allowing the relative influence of these dimensions to be evaluated under different territorial conditions. Third, the findings extend the application of complexity theory to housing studies by demonstrating that rental housing participation emerges from the interaction of multiple factors whose effects vary according to regional contexts. Consequently, the study contributes to a better understanding of territorial heterogeneity in housing

markets and provides empirical evidence to support geographically differentiated housing policies.

Based on the theoretical and empirical evidence reviewed, this study aims to analyze the factors associated with household participation in rental housing markets in Mexico and Baja California from the perspective of complexity theory. Specifically, the research evaluates how economic, demographic, labor, and territorial factors influence the probability of renting a dwelling and whether these relationships differ between the national context and a highly integrated border region. Considering the theoretical framework and previous empirical evidence, the following research hypotheses are proposed:

1.1 General Hypothesis (GH)

Household participation in rental housing markets emerges from the interaction of economic, labor, demographic, and territorial factors whose effects differ between the national context and the border region of Baja California.

1.1.1 Specific Hypotheses

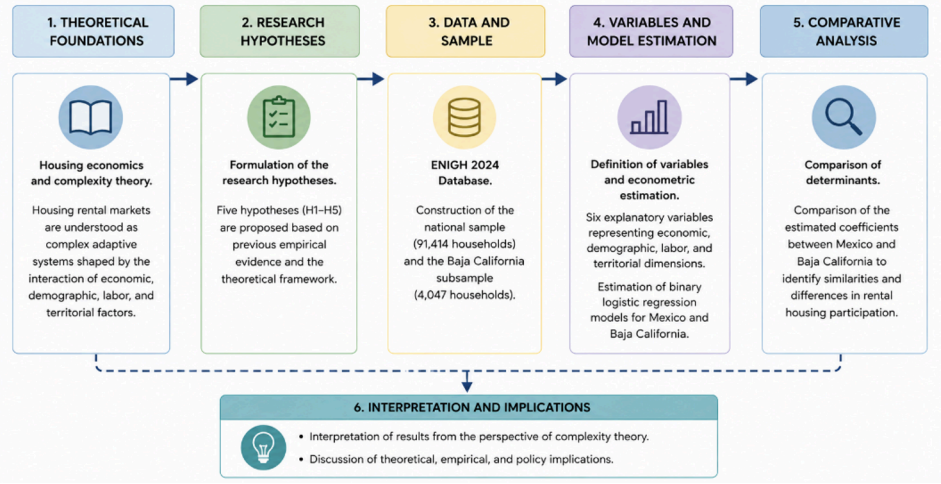
1. H_1. Household income significantly influences the probability of participating in the rental housing market.
2. H_2. Household demographic characteristics, particularly the age of the household head and household size, significantly influence the probability of renting a dwelling.
3. H_3. Household labor participation significantly influences the probability of participating in the rental housing market.
4. H_4. Socioeconomic status and locality size significantly influence household participation in rental housing markets.
5. H_5. The determinants of rental housing participation differ between Mexico as a whole and the border region of Baja California.

2 Research Method

This study adopted a quantitative, explanatory, and comparative research design to analyze the factors associated with household participation in rental housing markets in Mexico and Baja California. A quantitative approach was considered appropriate because it enables the statistical assessment of relationships between household characteristics and rental housing participation through binary response models. The comparative design facilitates the identification of similarities and differences in the determinants of rental housing participation between the national context and a highly integrated border region. Binary logistic regression is widely recommended for modeling dichotomous outcomes because it provides robust probability estimates while accommodating multiple explanatory variables ([18] & [19]).

The research followed a non-experimental, cross-sectional design based on secondary information obtained from the 2024 National Household Income and Expenditure Survey (ENIGH), without manipulating the variables under analysis. Cross-sectional designs are particularly suitable for identifying statistical associations among socioeconomic, demographic, labor, and territorial variables observed at a single point in time and constitute one of the most widely used research strategies in population-based studies [20].

Figure 1 summarizes the methodological framework adopted in this study. The research process begins with the theoretical foundations derived from housing economics and complexity theory, followed by the formulation of the research hypotheses. Subsequently, the ENIGH 2024 database was processed to construct the national and regional samples, define the analytical variables, estimate the binary logistic regression models, and compare the determinants of rental housing participation between Mexico and Baja California. Finally, the empirical findings were interpreted from the perspective of complexity theory to explain how economic, demographic, labor, and territorial factors interact to shape household rental decisions.



Note. Author's own elaboration.

Figure 1. Research Methodological Framework.

2.1 Information Source

The empirical analysis was based on data obtained from the 2024 National Household Income and Expenditure Survey (ENIGH) conducted by the National Institute of Statistics and Geography (INEGI). ENIGH constitutes Mexico's principal official household survey for analyzing income, expenditure, employment, demographic characteristics, and housing conditions, providing nationally representative information for socioeconomic research (Instituto Nacional de Estadística y Geografía [INEGI], [21]. This study specifically employed the Concentrate Hagar database,

which integrates household-level information derived from the different survey modules into a consolidated analytical dataset.

2.2 Population and Unit of Analysis

The unit of analysis consisted of households registered in the 2024 ENIGH. The national analysis included 91,414 households, while a regional subsample comprising 4,047 households located in Baja California was extracted to compare the determinants of rental housing participation between the national context and a border region.

Baja California was intentionally selected because of its high degree of economic integration with the United States, continuous migration flows, accelerated urban growth, and dynamic labor markets. These characteristics distinguish the state from other Mexican regions and make it an appropriate case for examining how territorial conditions influence housing rental decisions ([10], [13] & [14]).

2.3 Analytical Framework

The analytical framework was developed from the theoretical propositions of housing economics and complexity theory, which conceive housing rental markets as adaptive systems shaped by the interaction of multiple socioeconomic and territorial dimensions. Rather than assuming that rental participation depends on a single determinant, this perspective recognizes that household decisions emerge from the simultaneous influence of economic resources, demographic characteristics, labor market conditions, and territorial contexts ([16] & [17]).

Based on this conceptual framework, six explanatory variables were selected to represent the economic, demographic, labor, and territorial dimensions identified in the literature as key determinants of housing tenure. Variable selection followed two complementary criteria: (a) empirical evidence reported in previous housing studies and (b) the availability of consistent information within the ENIGH 2024 database. This approach ensured coherence between the theoretical framework, the research hypotheses, and the econometric specification adopted in this study.

2.4 Variables

The dependent variable was page rental, operationalized as a binary indicator that takes the value of one when the household reported positive expenditures on rental payments and zero otherwise. The explanatory variables included household current income, age of the household head, number of employed household members, household size, socioeconomic stratum, and locality size.

These variables represent the economic, demographic, labor, and territorial dimensions proposed by complexity theory as components of the housing system (see Table 1). Expected coefficient signs were derived from previous empirical evidence. Nevertheless, considering the comparative nature of the study and the distinctive

characteristics of the Baja California border region, alternative relationships were not ruled out.

Household income exhibited a highly skewed distribution and was therefore transformed using the natural logarithm. Logarithmic transformations are commonly employed in econometric analyses to reduce skewness, mitigate the influence of extreme observations, and improve model estimation ([18] & [19]). Consequently, the transformed income variable (ln income) provided a more stable representation of household economic resources while facilitating the interpretation of proportional effects.

Table 1. Variables Included in the Binary Logistic Regression Model.

Variable	Analytical Dimension	Operational Definition	Measurement Scale	Expected Sign
Dependent Variable				
Rental housing participation	Outcome	Housing tenure status (0 = owner-occupied or other tenure arrangements; 1 = rented dwelling).	Binary	—
Independent Variables				
Household current income (ln)	Economic	Natural logarithm of total household current income. The logarithmic transformation reduces distributional skewness and the influence of extreme values.	Continuous	(−)
Age of the household head	Demographic	Age of the household head, measured in completed years.	Continuous	(−)
Employed household members	Labor	Number of household members who were employed at the time of the survey.	Discrete	(+)
Household size	Family	Total number of individuals living in the household.	Discrete	(−)
Socioeconomic stratum	Socioeconomic / Territorial	Socioeconomic classification established by ENIGH according to housing conditions and characteristics of the surrounding environment.	Ordinal categorical	(+)
Locality size	Territorial	Classification of the locality of residence according to the number of inhabitants established by ENIGH.	Ordinal categorical	(+)

Note. Authors' own elaboration based on data from the 2024 National Household Income and Expenditure Survey (ENIGH).

2.5 Data Analysis Procedure

The empirical analysis was conducted in four consecutive stages. First, descriptive statistics, frequency distributions, measures of central tendency, and dispersion indicators were calculated to characterize household income and rental expenditure. The descriptive analysis revealed that only 13.54% of Mexican households reported positive rental expenditures, whereas 86.46% did not participate in the rental housing market. Second, binary logistic regression models were estimated because the dependent variable represents a dichotomous outcome. Logistic regression constitutes one of the most appropriate statistical techniques for modeling the probability of occurrence of binary events while simultaneously evaluating the influence of multiple explanatory variables ([18], [22] & [19]). Third, hypothesis testing was performed by evaluating the statistical significance, direction, and magnitude of each estimated coefficient. Household income was used to test H1; age of the household head and household size were used to evaluate H2; the number of employed household members was associated with H3; and socioeconomic stratum together with locality size were employed to assess H4. Finally, H5 was evaluated through the comparison of coefficient estimates obtained for Mexico and Baja California.

2.6 Econometric Specification

Two binary logistic regression models were estimated. The first model included the complete national sample, whereas the second considered only households located in Baja California. Both specifications incorporated the same set of economic, demographic, labor, and territorial explanatory variables to facilitate direct comparisons between territorial contexts. The general specification of the estimated model is presented in Equation (1):

$$\ln ln\left[\frac{p_i}{(1-p_i)}\right] = \beta 0 + \beta 1\left(lning_i\right) + \beta 2(edad_jefe_i) + \beta 3(ocupados_i) + \beta 4(tot_integ_i) + \beta 5(est_so \quad (1)$$

where Pi represents the probability that a household participates in the rental housing market. Binary logistic regression was selected because it appropriately models dichotomous dependent variables and estimates the probability of event occurrence as a function of multiple explanatory variables ([18], [22] & [19]).

2.7 Interpretation from Complexity Theory

The empirical findings were interpreted from the perspective of complexity theory, assuming that participation in rental housing markets does not depend exclusively on household income or individual characteristics but rather emerges from the interaction among economic, demographic, labor, and territorial factors. [16] conceptualizes cities as complex adaptive systems in which urban patterns arise from multiple decentralized interactions among social, economic, and spatial processes. Likewise,

Thakkar et al. [17], argue that housing systems evolve through continuous interactions among households, institutions, developers, public policies, and market forces.

Accordingly, binary logistic regression was employed as an econometric tool to estimate the association between household characteristics and rental housing participation, whereas complexity theory served as the interpretative framework for understanding how these multiple dimensions jointly shape housing decisions under different territorial conditions.

3 Results

3.1 Household Participation in the Rental Housing Market

Based on data from the 2024 National Household Income and Expenditure Survey (ENIGH), most Mexican households did not participate in the rental housing market. As shown in (Table 2), 79,041 households (86.46%) reported no rental expenditures, whereas only 12,373 households (13.54%) rented their dwelling.

Table 2. Household Participation in the Rental Housing Market in Mexico.

Rental Housing Status	Households (n)	Percentage (%)
Non-renter households	79,041	86.46
Renter households	12,373	13.54
Total	91,414	100.00

Note. Authors' own elaboration based on data from the 2024 National Household Income and Expenditure Survey (ENIGH).

These findings reveal a clear predominance of non-rental housing tenure arrangements within the Mexican housing system. The relatively low proportion of renter households suggests that homeownership continues to represent the predominant mechanism for accessing housing in Mexico. This pattern is consistent with the historical orientation of Mexican housing policies, which have traditionally prioritized homeownership through public financing schemes and housing subsidy programs over the development of institutional rental markets [9].

More broadly, the predominance of owner-occupied housing reflects structural characteristics shared by several Latin American countries, where public housing policies have historically emphasized property acquisition as the principal strategy for promoting household welfare and asset accumulation. However, recent international evidence suggests that expanding affordable rental housing has become increasingly important for improving residential mobility, facilitating labor market adjustment, and reducing territorial inequalities in rapidly urbanizing regions ([23] & [2]).

3.2 Descriptive Statistics of Income and Rent

Table 3 presents the descriptive statistics of the principal continuous variables included in the analysis. Household current income averaged MXN 72,273.59 per quarter, whereas the median reached MXN 55,666.18, revealing a substantial difference between both measures of central tendency. This discrepancy suggests the presence of a highly asymmetric income distribution, characterized by a relatively small proportion of households with exceptionally high-income levels.

Table 3. Descriptive Statistics of Household Income and Rental Expenditure.

Variable	Mean	Median	Std. Dev.	Maximum
Current Income	72,273.59	55,666.18	93,876.59	17,400,000
Rent	1,285.13	0.00	4,785.93	150,000

Note. Authors' own elaboration based on ENIGH 2024.

*Replace with the observed skewness value for rental expenditure if available.

Similarly, average household rental expenditure amounted to MXN 1,285.13, while the median was equal to zero because the majority of households reported no rental payments. This result is consistent with the low participation of Mexican households in the rental housing market identified in the previous section and confirms that rental expenditures are concentrated among a relatively limited segment of the population.

The descriptive analysis also revealed considerable variability in both variables, particularly household income, which exhibited pronounced positive skewness (Skewness=77.58). Such distributional characteristics indicate the presence of extreme observations that may influence conventional regression estimates. Consequently, household current income was transformed using its natural logarithm before estimating the binary logistic regression models, a procedure widely recommended for reducing skewness, minimizing the influence of outliers, and improving model stability ([18] & [19]).

Overall, the descriptive statistics provide preliminary evidence that household economic conditions and rental participation are characterized by substantial heterogeneity, supporting the use of multivariate econometric techniques to examine how economic, demographic, labor, and territorial factors jointly influence participation in rental housing markets.

The descriptive statistics provide initial evidence that households participating in the rental housing market differ from the overall household population in terms of income distribution, household composition, and labor participation. These preliminary findings suggest that rental housing decisions are unlikely to depend on a single socioeconomic characteristic, thereby supporting the estimation of multivariate binary

logistic regression models capable of simultaneously evaluating the relative influence of economic, demographic, labor, and territorial factors.

3.3 **Determinants of Rental Housing Participation in Mexico**

Table 4 presents the results of the binary logistic regression model estimated for the national sample. The model is statistically significant ($LR\chi^2$=10,721.48; p<0.001) and explains household rental participation with a Pseudo R^2 of 0.1479, indicating that the explanatory variables jointly provide a satisfactory representation of rental housing decisions. Although Pseudo R^2 values in logistic regression are typically lower than the coefficients of determination reported in linear regression, the estimated goodness-of-fit is consistent with empirical studies examining household behavior and discrete-choice models ([18] & [22]).

Table 4. Binary Logistic Regression Model for Household Rental Participation in Mexico.

Variable	β	Odds Ratio (Exp(β))	Std. Error	p-value
Household current income (ln)	-0.351	0.704	0.019	<0.001
Age of household head	0.054	0.947	0.001	<0.001
Employed household members	0.206	1.229	0.013	<0.001
Household size	-0.133	0.875	0.008	<0.001
Lower-middle socioeconomic stratum	0.514	1.672	0.036	<0.001
Upper-middle socioeconomic stratum	0.766	2.151	0.043	<0.001
High socioeconomic stratum	0.936	2.550	0.052	<0.001
Locality: 15,000–99,999 inhabitants	0.023	0.977	0.030	0.446
Locality: 2,500–14,999 inhabitants	0.591	0.554	0.036	<0.001
Locality: <2,500 inhabitants	-.373	0.253	0.033	<0.001

Note. β=logistic regression coefficient; OR=Odds Ratio (Exp(β)); SE=standard error. Odds ratios greater than 1 indicate an increase in the odds of household participation in the rental housing market, whereas values below 1 indicate a reduction in those odds. Statistical significance: ***p<.001; **p<.01; *p<.05.

The results indicate that household current income exerts a statistically significant negative effect on rental participation (β=–0.351; OR=0.704; p<0.001). Specifically, a one-unit increase in the natural logarithm of household income reduces the odds of renting by approximately 29.6%, suggesting that higher-income households are more likely to transition toward homeownership than remain in the rental market. This finding is consistent with previous research indicating that greater economic resources facilitate access to owner-occupied housing through increased savings capacity and mortgage financing ([5] & [9]).

Among the demographic variables, both the age of the household head and household size exhibit significant negative relationships with rental participation. Each additional year in the age of the household head decreases the odds of renting by

approximately 5.3% (OR=0.947; p<0.001), whereas each additional household member reduces the odds by approximately 12.5% (OR=0.875; p<0.001). These findings suggest that older and larger households tend to seek greater residential stability through homeownership or other long-term tenure arrangements.

Conversely, the number of employed household members positively influences rental participation (β=0.206; OR=1.229; p<0.001). The estimated odds ratio indicates that each additional employed household member increases the probability of renting by approximately 22.9%, reflecting the close relationship between labor market participation, residential mobility, and housing demand in urban labor markets.

Regarding the territorial variables, households belonging to higher socioeconomic strata exhibit progressively greater probabilities of participating in the rental housing market compared with households in the lowest socioeconomic category. Likewise, residence in smaller localities significantly decreases the likelihood of renting relative to metropolitan areas with more than 100,000 inhabitants, confirming the strong spatial concentration of rental housing markets in large urban centers.

Overall, the results demonstrate that rental housing participation in Mexico emerges from the combined influence of economic, demographic, labor, and territorial factors rather than from isolated determinants. This multidimensional pattern supports the theoretical assumptions of complexity theory, according to which housing decisions arise from the interaction of multiple interdependent components operating within specific territorial contexts ([16] & [17]).

3.4 **Determinants of Household Rental Participation in Baja California**

To further explore the territorial complexity of housing rental markets, a second binary logistic regression model was estimated using the subsample of households located in Baja California. Unlike the national model, this regional specification evaluates rental housing participation within a border context characterized by intense migration, cross-border economic integration, accelerated urban growth, and high labor mobility. These distinctive territorial conditions provide an opportunity to examine whether the relationships identified at the national level remain stable or vary according to regional dynamics. As presented in Table 5, the estimated model is statistically significant ($LR\chi^2$=550.87; p<0.001), confirming that the selected economic, demographic, labor, and territorial variables jointly explain household participation in the rental housing market. The overall goodness-of-fit confirms that the proposed specification adequately captures the factors associated with rental housing decisions in Baja California and provides empirical support for the analytical framework adopted in this study ([18] & [22]).

Table 5. Binary Logistic Regression Model for Household Rental Participation in Baja California.

Variable	β	Odds Ratio (Exp(β))	Std. Error	p-value
Household current income (ln)	-0.870	0.419	0.108	<0.001
Age of household head	-0.052	0.949	0.004	<0.001
Employed household members	0.444	1.559	0.069	<0.001
Household size	-0.145	0.865	0.035	<0.001
Lower-middle socioeconomic stratum	-0.320	0.726	0.130	0.014
Upper-middle socioeconomic stratum	-0.161	0.851	0.178	0.368
High socioeconomic stratum	-0.043	0.958	0.219	0.844
Locality: 15,000–99,999 inhabitants	0.578	1.782	0.228	0.011
Locality: 2,500–14,999 inhabitants	-0.265	0.767	0.255	0.299
Locality: <2,500 inhabitants	-1.339	0.262	0.126	<0.001

Note. β=logistic regression coefficient; Exp(β)=Odds Ratio; Std. Error=standard error. Odds ratios greater than 1 indicate an increase in the odds of household participation in the rental housing market, whereas values below 1 indicate a reduction in those odds. Statistical significance was evaluated at the 5% level.

Household current income remained a statistically significant determinant of rental participation, although its effect was substantially stronger than that observed in the national model ($\beta=-0.870$; OR = 0.419; $p < 0.001$). The estimated odds ratio indicates that a one-unit increase in the natural logarithm of household income reduces the odds of renting by approximately 58.1%. This pronounced effect suggests that higher-income households in Baja California transition toward homeownership more rapidly than households in the national sample, possibly reflecting the region's dynamic housing market, greater access to mortgage financing, and stronger demand for owner-occupied housing associated with cross-border economic activity ([10] & [13]).

Regarding demographic characteristics, the age of the household head continued to exhibit a negative relationship with rental participation (OR=0.949; $p<0.001$), indicating that older households are less likely to rent. Likewise, household size reduced the probability of rental participation (OR=0.865; $p<0.001$), confirming that larger households tend to seek more permanent housing arrangements. These findings are consistent with the residential life-cycle perspective and suggest that demographic factors operate similarly at both the national and regional levels.

The strongest positive effect was observed for the number of employed household members ($\beta=0.444$; OR=1.559; $p<0.001$). Each additional employed household member increases the odds of renting by approximately 55.9%, more than doubling the effect estimated for Mexico as a whole. This finding highlights the central role of labor market participation in shaping housing decisions within Baja California, where cross-border employment opportunities, industrial specialization, and high residential

mobility generate greater demand for rental housing than in other regions of the country [15].

Territorial variables also maintained statistical significance. Households belonging to higher socioeconomic strata exhibited greater probabilities of participating in the rental market, while residence in smaller localities significantly reduced the likelihood of renting compared with metropolitan areas. These findings confirm that rental housing markets remain highly concentrated in the principal urban centers of Baja California, where economic activity, migration flows, and employment opportunities are more intense.

Overall, the Baja California model demonstrates that rental housing participation is influenced by the same general dimensions identified at the national level; however, the relative importance of these determinants changes considerably within the border context. In particular, labor participation and household income exert substantially stronger effects, suggesting that housing decisions in Baja California emerge from a more dynamic interaction among economic opportunities, demographic characteristics, and territorial conditions. These results provide empirical support for the complexity theory perspective by demonstrating that the behavior of housing systems varies according to the territorial context in which households operate ([16] & [17]).

3.5 Comparative Analysis of Rental Housing Determinants in Mexico and Baja California

To further examine the territorial heterogeneity of housing rental markets, the results obtained for Mexico and Baja California were compared. Although the same set of explanatory variables was estimated in both models, their relative influence varied across territorial contexts, revealing important differences in the determinants of household rental participation. A summary of these comparative findings is presented in Table 6.

Table 6. Comparative Effects of the Determinants of Household Rental Participation.

Variable	Mexico OR	Baja California OR	Relative Effect
Household current income (ln)	0.704	0.419	Stronger negative effect in Baja California
Age of household head	0.947	0.949	Similar effect
Employed household members	1.229	1.559	Stronger positive effect in Baja California
Household size	0.875	0.865	Similar effect
Socioeconomic stratum	Positive	Mixed	Territorial variation
Locality size	Significant	Significant	Greater metropolitan concentration in Baja California

Note. The table summarizes the comparative direction and magnitude of the estimated odds ratios obtained from the binary logistic regression models for Mexico and Baja California.

Among the economic variables, household current income exhibited a substantially stronger negative effect in Baja California than in the national model. While higher household income reduced the probability of renting in both cases, the estimated odds ratio for Baja California indicates a considerably greater decline in rental participation as household income increases. This finding suggests that households in the border region transition toward homeownership more rapidly than the national average, possibly reflecting higher housing demand, stronger mortgage market participation, and greater purchasing power associated with cross-border economic integration ([10] & [13]).

Labor market participation also displayed important territorial differences. Although the number of employed household members positively influenced rental participation in both models, the estimated effect was substantially larger in Baja California. Each additional employed household member increased the odds of renting by approximately 55.9% in the border region, compared with 22.9% at the national level. This result highlights the stronger relationship between employment opportunities and residential mobility in Baja California, where export-oriented industries, international migration, and cross-border commuting generate a more dynamic rental housing market [15].

By contrast, demographic variables exhibited remarkable stability across both territorial contexts. The age of the household head and household size consistently reduced the probability of rental participation, suggesting that demographic processes associated with the residential life cycle operate similarly regardless of territorial location. These results reinforce previous evidence indicating that older and larger households tend to prioritize residential stability through homeownership or other long-term housing arrangements ([5] & [9]).

Territorial variables also revealed meaningful differences. While metropolitan areas consistently exhibited higher rental participation than smaller localities, the magnitude of these effects varied across models, reflecting the greater concentration of economic activity, labor markets, and migration flows within Baja California's principal urban centers. Likewise, socioeconomic strata exerted different effects across the two models, suggesting that the relationship between socioeconomic status and housing tenure is conditioned by local market dynamics rather than by income alone.

Overall, the comparative analysis demonstrates that the determinants of rental housing participation are not invariant across territorial contexts. Instead, their relative importance changes according to regional socioeconomic structures, labor market conditions, and urban development patterns. These findings support the central proposition of complexity theory by showing that housing rental markets function as adaptive territorial systems in which household decisions emerge from the interaction

of multiple interdependent dimensions rather than from isolated socioeconomic characteristics ([16] & [17]).

4 Discussion

The results obtained in this study demonstrate that household participation in rental housing markets cannot be explained by a single socioeconomic determinant. Instead, rental housing decisions emerge from the interaction of economic, demographic, labor, and territorial factors whose relative influence varies across geographical contexts. This multidimensional pattern supports the theoretical assumptions of complexity theory, which conceptualizes housing systems as adaptive structures shaped by the continuous interaction of multiple interconnected components rather than by isolated causal relationships ([16] & [17]).

The comparative analysis further reveals that territorial context modifies the relative importance of several determinants. While household income, labor participation, age, household size, and locality characteristics significantly influence rental participation in both Mexico and Baja California, the magnitude of these relationships differs across territorial settings. These findings suggest that housing markets respond to local economic structures, migration dynamics, urban development patterns, and labor market conditions, reinforcing the importance of adopting place-based approaches when analyzing housing tenure decisions.

4.1 Economic determinants

Household income emerged as one of the principal determinants of rental housing participation in both territorial contexts. The negative association observed between household income and rental participation suggests that increasing economic resources facilitate the transition from rental housing toward homeownership. This finding is consistent with housing tenure theory, which argues that improvements in household income increase access to mortgage financing, long-term investment, and residential stability ([5] & [9]).

However, the considerably stronger income effect observed in Baja California indicates that territorial context substantially modifies this relationship. The border region is characterized by higher housing demand, stronger cross-border economic integration, elevated land prices, and continuous migration flows, factors that intensify competition within local housing markets [10]. Consequently, income becomes a more decisive determinant of housing tenure than in the national context, reflecting the greater sensitivity of border housing markets to economic conditions.

4.2 Labor and Demographic Determinants

The findings demonstrate that labor market participation and household demographic characteristics jointly influence rental housing decisions, highlighting that housing

tenure depends not only on economic capacity but also on employment opportunities, family composition, and life-cycle dynamics.

The positive association between the number of employed household members and rental participation indicates that labor market integration promotes residential mobility and increases demand for rental housing. This relationship was considerably stronger in Baja California, reflecting the region's export-oriented economy, cross-border labor mobility, and migration dynamics, where rental housing provides greater residential flexibility than homeownership ([15] & [14]).

In contrast, the age of the household head and household size consistently reduced the probability of rental participation in both territorial contexts. These results support the residential life-cycle hypothesis, suggesting that as households accumulate economic resources and family responsibilities, they increasingly favor more stable housing arrangements, particularly homeownership [5]. The stability of these relationships across Mexico and Baja California further indicates that demographic processes are less sensitive to regional economic differences than labor market conditions.

Overall, the evidence suggests that labor market participation explains short-term residential mobility, whereas demographic characteristics shape longer-term housing trajectories. Their combined effects reinforce the dynamic nature of rental housing decisions across different territorial contexts.

4.3 **Territorial Complexity of Housing Rental Markets**

The comparative analysis demonstrates that housing rental markets function as territorially differentiated systems rather than homogeneous national structures. Although the same explanatory variables were significant in both models, differences in their estimated effects confirm that territorial context modifies the relative influence of economic, labor, and demographic factors. These findings support complexity theory, which argues that social systems evolve through the interaction of interconnected components whose behavior depends on local conditions ([16] & [17]).

The stronger effects of household income and labor participation in Baja California illustrate how border dynamics—including rapid urban growth, migration, international economic integration, and highly mobile labor markets—reshape housing tenure decisions. Consequently, rental housing participation should be understood not only as an individual household choice but also as the outcome of interactions among regional labor markets, urban development, migration patterns, and housing availability.

These findings reinforce the growing emphasis on place-based housing policies, suggesting that housing affordability and residential mobility depend increasingly on local territorial conditions rather than on national averages [2]. Accordingly, housing

strategies designed at the national level should incorporate regional differences, particularly in border areas such as Baja California, where cross-border integration substantially influences housing demand and tenure patterns.

From a policy perspective, these findings indicate that housing strategies should move beyond nationally standardized approaches and incorporate regional socioeconomic and territorial characteristics into their design. In border regions such as Baja California, where labor mobility, migration, and cross-border economic integration intensify housing demand, expanding affordable rental housing may contribute to greater residential flexibility while supporting regional economic development. Consequently, adopting place-based housing policies may improve both housing accessibility and the capacity of local governments to respond to the diverse territorial realities of Mexico ([2], [24] & [25]).

5 Conclusions

This study examined the territorial complexity of household rental markets in Mexico and Baja California by analyzing the economic, demographic, labor, and territorial factors associated with rental housing participation. The findings confirm that housing tenure decisions are influenced by the interaction of multiple dimensions rather than by a single socioeconomic factor, demonstrating that territorial context plays a key role in shaping rental market dynamics.

The empirical evidence also provides support for the proposed research hypotheses. H_1 was supported, as household income exhibited a statistically significant negative association with rental housing participation in both territorial contexts, indicating that higher-income households are less likely to rent their dwelling. H_2 was also supported because the age of the household head and household size consistently reduced the probability of rental participation, confirming the influence of household life-cycle dynamics on housing tenure decisions. Likewise, H_3 was supported, given that the number of employed household members positively affected rental participation, with a substantially stronger effect observed in Baja California. H_4 received partial support because territorial variables significantly influenced rental participation; however, the effects of socioeconomic strata differed across the regional model, suggesting that the relationship between socioeconomic status and rental housing varies according to local market conditions. Finally, H_5 was supported, as the comparative analysis demonstrated that the magnitude of the determinants differs between Mexico and Baja California, confirming that territorial context modifies the factors associated with household rental participation.

A major contribution of this research is the demonstration that rental housing determinants cannot be interpreted uniformly across territories. While the same explanatory variables remained significant in both models, household income and labor participation exerted stronger effects in Baja California, highlighting the influence of border economic integration, migration, and urban development on

housing tenure decisions. These findings reinforce the importance of incorporating territorial heterogeneity into housing market research.

From a theoretical perspective, the study extends the application of complexity theory by showing that rental housing markets operate as adaptive territorial systems in which household decisions emerge from the interaction of economic, demographic, labor, and spatial processes. This perspective contributes to a more comprehensive understanding of housing tenure beyond conventional socioeconomic explanations.

The findings also have practical implications for housing policy. The results suggest that nationally uniform housing strategies may be insufficient to address the specific conditions of border regions. Therefore, housing policies should adopt place-based approaches that strengthen affordable rental housing while considering regional labor markets, migration patterns, and urban development dynamics.

Finally, this study is subject to the limitations inherent in cross-sectional survey data and the availability of household-level variables. Future research should incorporate longitudinal information, spatial econometric techniques, and comparative analyses across additional border regions to further explain the territorial dynamics of rental housing markets.

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