Determinants of Homeownership Among Urban Households in Iran

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1 Introduction

Housing ownership is widely recognized as a critical indicator of economic stability and social well-being. It represents a significant portion of household wealth and provides security and stability. Understanding the determinants of homeownership is vital for policymakers to design effective interventions aimed at improving housing accessibility and affordability.

In Iran, the housing market has unique characteristics influenced by various socio-economic factors. The decision to own a home is affected by household income, employment status, education, and other demographic variables. Additionally, regional disparities, such as differences between urban and rural areas, play a crucial role in homeownership patterns.

This study aims to identify and quantify the factors affecting homeownership among urban households in Iran using logistic and probit regression models. By analyzing data from the Household Income and Expenditure Survey conducted by the Iranian Statistical Center in 1400 (2021), this research seeks to provide insights into the socio-economic determinants of homeownership and offer policy recommendations to enhance housing affordability and accessibility.

The key objectives of this study are:

- To examine the influence of household characteristics, such as size, income, and employment status, on the likelihood of owning a home.
- To explore the impact of education level, marital status, and other demographic factors on homeownership.
- To analyze the regional variations in homeownership rates, particularly focusing on major metropolitan areas and Tehran.
- To evaluate the effects of government subsidies and car ownership on the probability of homeownership.

This report is structured as follows: Section 2 describes the data and key variables used in the analysis. Section 3 outlines the methodology, including the logistic and probit regression models. Section 4 presents the results of the regression analyses and marginal effects. Section 5 discusses the findings, compares them with previous studies, and highlights policy implications. Finally, Section 6 concludes with a summary of the findings and recommendations for future research.

2 Literature Review

The determinants of homeownership have been widely studied in the economic literature. Numerous factors, ranging from household demographics to broader economic conditions, have been identified as influencing the decision to own a home.

2.1 Demographic Factors

Studies such as those by Lineman, Gyourko, and Watcher (1999) and Goris, Caglayan, and Turgut (2011) have consistently found that demographic variables like age, gender, and marital status significantly impact homeownership. Lineman et al. (1999) demonstrated that older individuals are more likely to own homes due to accumulated savings and financial stability. Similarly, Goris et al. (2011) showed that marital status positively correlates with homeownership, as married couples are more likely to have dual incomes and greater financial resources.

2.2 Economic Variables

Economic factors, including income, employment status, and wealth, are crucial determinants of homeownership. Goodman (1988) highlighted the importance of stable and sufficient income for securing mortgages and making home purchases feasible. The study by Sullivan et al. (1995) emphasized that higher household income increases the likelihood of homeownership, as it enhances the ability to afford down payments and monthly mortgage installments.

2.3 Education and Employment

The role of education in homeownership has been explored by several researchers. Arbelaez, Steiner, Beccera, and Wills (2011) found that higher educational attainment increases the likelihood of homeownership, as it is often associated with better employment opportunities and higher income levels. Conversely, Spalkova and Spalek (2014) noted that extended years of education might delay entry into the labor market, thus postponing homeownership.

2.4 Regional and Housing Market Factors

Housing market dynamics and regional differences also significantly affect homeownership rates. Gyourko and Linneman (1993) pointed out that metropolitan areas with higher housing costs present more significant barriers to homeownership. Studies by Spalkova and Spalek (2014) and Goris et al. (2011) further explored how local housing market conditions, such as availability of affordable housing and regional economic conditions, influence homeownership decisions.

2.5 Government Policies and Subsidies

Government interventions and subsidies play a crucial role in shaping homeownership patterns. Research by Quigley and Raphael (2004) indicated that subsidies and tax incentives can significantly boost homeownership rates, particularly among lower-income households. The effectiveness of such policies depends on their design and the broader economic context.

2.6 Studies in the Iranian Context

In the context of Iran, studies by Asgari and Ghadiri (2013) and Gholizadeh and Khaksar (2016) have examined the factors affecting homeownership. Asgari and Ghadiri (2013) found that household income, age of the household head, and car ownership are significant predictors of homeownership. Gholizadeh and Khaksar (2016) highlighted the impact of educational attainment and employment status on homeownership, consistent with findings in other contexts.

This study builds on the existing literature by providing a comprehensive analysis of the factors influencing homeownership among urban households in Iran using recent data. By employing logistic and probit regression models, this research aims to offer detailed insights and policy recommendations to enhance housing affordability and accessibility.

3 Economic Model and Theoretical Framework

3.1 Theoretical Framework

The decision to own a home is a significant economic choice influenced by various factors. This decision can be analyzed through the framework of consumer choice theory, where households aim to maximize their utility subject to budget constraints. The utility derived from homeownership (U_h) depends on several factors, including household income, demographic characteristics, regional attributes, and housing market conditions. Households will choose to own a home if the utility from homeownership exceeds the utility from renting (U_r).

The utility functions for owning and renting can be expressed as:

$$U_h = V(X_h) + \epsilon_h \tag{1}$$

$$U_r = V(X_r) + \epsilon_r \tag{2}$$

Where X_h and X_r are vectors of observable characteristics influencing the utility of owning and renting, respectively, and ϵ_h and ϵ_r are unobservable random components. The household will choose homeownership if:

$$U_h > U_r \implies V(X_h) + \epsilon_h > V(X_r) + \epsilon_r \tag{3}$$

This can be rewritten as:

$$U^* = V(X_h) - V(X_r) + (\epsilon_h - \epsilon_r) \tag{4}$$

The decision to own a home is observed as a binary outcome:

$$Y = \begin{cases} 1 & \text{if } U^* > 0 \\ 0 & \text{if } U^* \leq 0 \end{cases} \tag{5}$$

This framework implies that the probability of homeownership is a function of the difference in utility between owning and renting, influenced by various household characteristics and external factors.

3.2 Empirical Strategy: Logistic Regression Model

The logistic regression model is appropriate for modeling a binary dependent variable, such as the decision to own a home. It assumes that the probability of homeownership follows a logistic distribution. The model can be specified as follows:

$$P(Y = 1|X) = \frac{e^{\beta_0+\beta_1 X_1+\beta_2 X_2+\cdots+\beta_k X_k}}{1 + e^{\beta_0+\beta_1 X_1+\beta_2 X_2+\cdots+\beta_k X_k}} \tag{6}$$

Where $X = (X_1, X_2, \ldots, X_k)$ is a vector of explanatory variables, and $\beta = (\beta_0, \beta_1, \ldots, \beta_k)$ are the parameters to be estimated.

3.3 Empirical Strategy: Probit Regression Model

The probit regression model provides an alternative approach to modeling the probability of homeownership, assuming that the probability follows a cumulative normal distribution. The probit model is specified as:

$$P(Y = 1|X) = \Phi(\beta_0 + \beta_1 X_1 + \beta_2 X_2 + \cdots + \beta_k X_k) \tag{7}$$

Where Φ denotes the cumulative distribution function of the standard normal distribution.

3.4 Key Variables and Hypotheses

Based on the theoretical framework and existing literature, the following key variables are included in the empirical models to explain homeownership:

- **Household Size (household_size)**: Larger households may have a greater need for stable housing, thus increasing the likelihood of homeownership. Hypothesis: Positive effect.
- **Household Income (income_in_billion)**: Higher income enhances the ability to afford a home, positively influencing homeownership. Hypothesis: Positive effect.
- **Employment Status (employment_status)**: Employment provides financial stability, positively affecting homeownership. Hypothesis: Positive effect.
- **Education Level (education)**: Higher education may lead to better employment opportunities and higher income, increasing the likelihood of homeownership. Hypothesis: Positive effect.

- **Gender of Household Head (is_female_head)**: The effect of gender on homeownership will be explored. Hypothesis: To be determined.
- **Age of Household Head (age)**: Older household heads may have accumulated savings, increasing the probability of homeownership. Hypothesis: Positive effect.
- **Marital Status (is_married_head)**: Married couples may have dual incomes, positively influencing homeownership. Hypothesis: Positive effect.
- **Car Ownership (has_car)**: Car ownership may indicate higher wealth, thus positively affecting homeownership. Hypothesis: Positive effect.
- **Housing Area (housing_area)**: Larger housing areas may be associated with homeownership. Hypothesis: Positive effect.
- **Subsidy (monthly_subsidy)**: Government subsidies may support homeownership by providing additional financial resources. Hypothesis: Positive effect.
- **Provincial and Regional Variables (is_tehran, is_metropolis)**: Living in Tehran or other metropolises may affect homeownership due to higher housing costs. Hypothesis: Negative effect.

By estimating the logistic and probit models, we aim to quantify the impact of these variables on the probability of homeownership and provide insights for policymakers to improve housing affordability and accessibility.

4 Stylized Facts and Visualization

Understanding the basic characteristics and trends in the data is crucial before delving into more complex econometric analyses. This section presents key stylized facts about the dataset and utilizes various plots and visualizations to provide a clearer picture of the determinants of homeownership among urban households in Iran.

4.1 Stylized Facts

1. **Homeownership Rate**: A significant proportion of urban households own their homes. Understanding the distribution of homeownership across different demographics provides insights into the economic behavior of these households.

2. **Household Size**: Larger households tend to have different housing needs and financial constraints compared to smaller households. Analyzing household size distribution helps in understanding its impact on homeownership.

3. **Income Distribution**: Household income is a crucial factor influencing the ability to own a home. Examining the income distribution among households provides a basis for understanding how income affects homeownership.

4. **Education Level**: Education level of the household head can influence homeownership through better employment opportunities and higher income. Analyzing the education distribution helps in understanding its role in homeownership decisions.

5. **Regional Differences**: The housing market varies significantly across different regions, especially between Tehran, other metropolises, and smaller cities. Regional analysis can highlight these differences.

6. **Subsidies and Financial Support**: The role of government subsidies in supporting homeownership is significant. Understanding the distribution and impact of subsidies can provide insights into policy effectiveness.

4.2 Visualization

To effectively communicate these stylized facts, the following visualizations are presented:

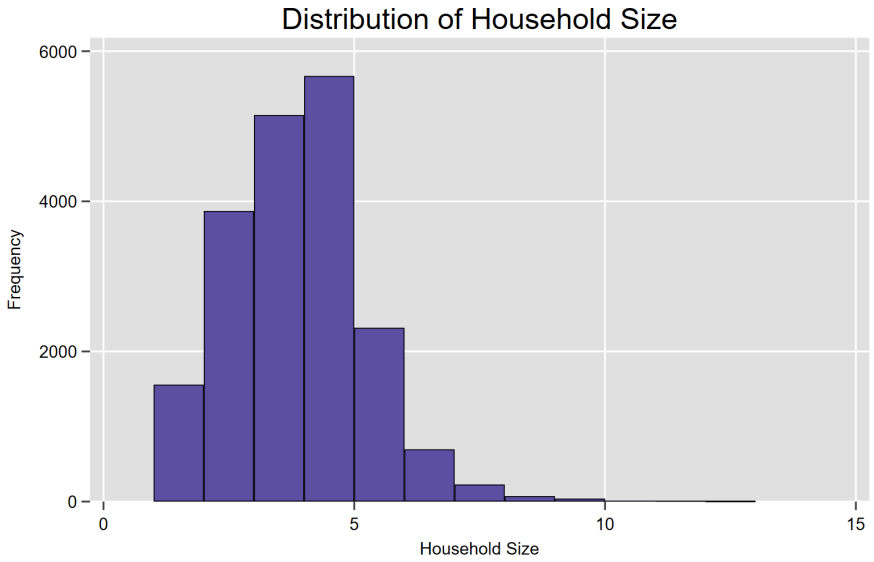

Figure 1: Distribution of Household Size

Interpretation: The distribution of household size indicates that most urban households have between 3 to 6 members. This suggests that policies targeting housing for average-sized families would address the needs of a significant portion of the population.

Interpretation: Among homeowners, the majority have 1 to 2 members contributing to the household income. This distribution reflects the typical earning structure in households that own their homes.

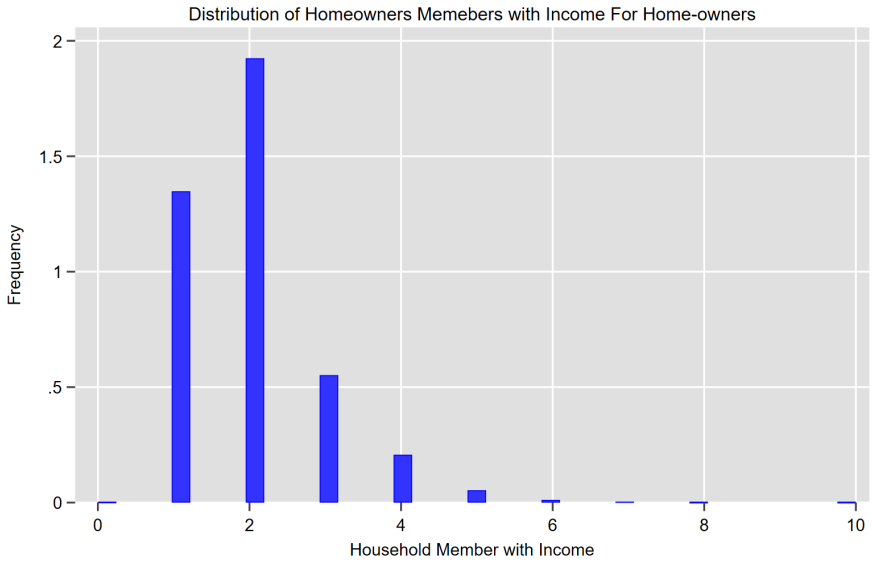

Figure 2: Distribution of Household Members with Income for Homeowners

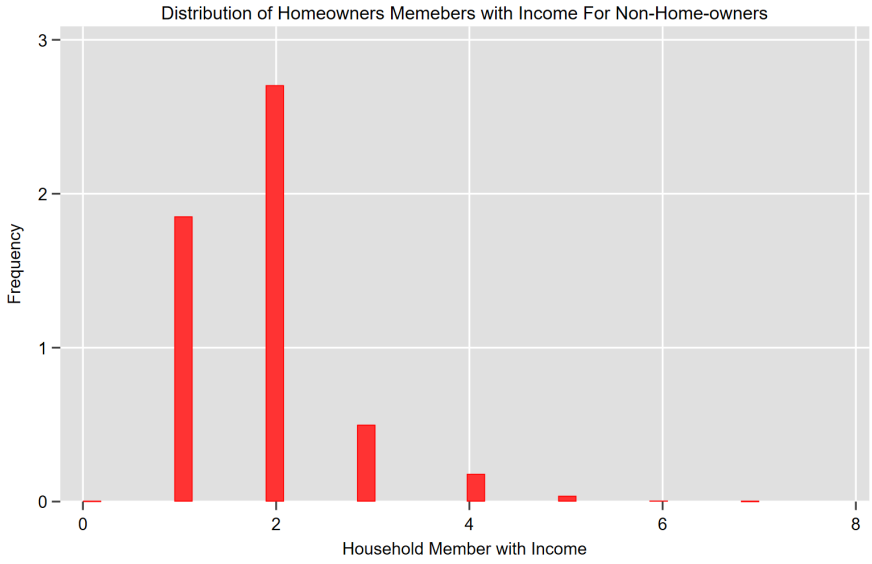

Figure 3: Distribution of Household Members with Income for Non-Homeowners

Interpretation: Non-homeowners also primarily have 1 to 2 income earners, similar to homeowners. However, there is a slightly broader spread among non-homeowners, indicating a more diverse income structure.

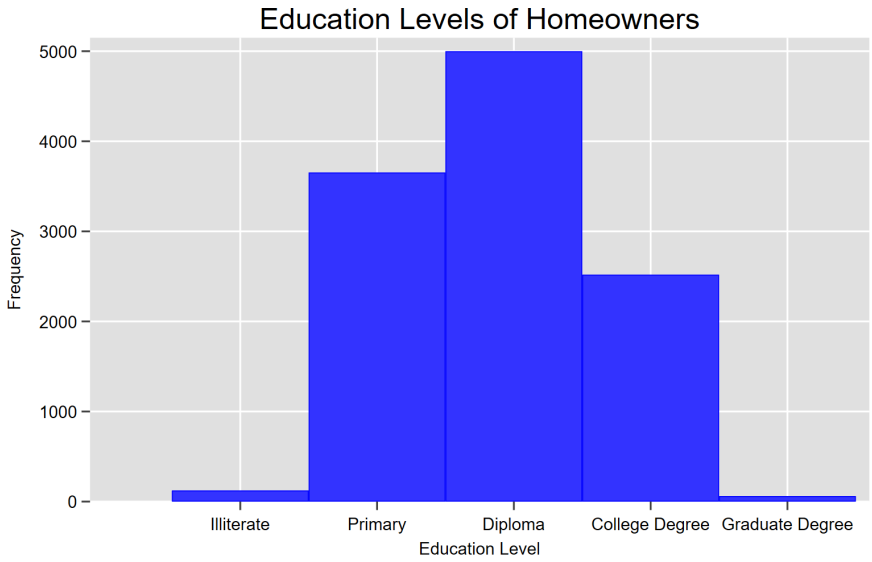

Figure 4: Education Levels of Homeowners

Interpretation: The education levels of homeowners show a concentration in diploma and primary education, with fewer homeowners holding college degrees or higher. This indicates that moderate education levels are sufficient for homeownership in this urban setting.

Interpretation: Similar to homeowners, non-homeowners predominantly hold diploma and primary education levels. However, the proportion of non-homeowners with higher education is lower, suggesting that higher education might be linked to better financial stability enabling homeownership.

Interpretation: The income distribution for homeowners is skewed, with most homeowners earning less than 10 billion Rial monthly. A small number of homeowners have significantly higher incomes, indicating income disparity among homeowners.

Interpretation: Non-homeowners also have a skewed income distribution, but with a sharper decline compared to homeowners. Most non-homeowners earn less than 10 billion Rial monthly, reflecting lower overall income levels compared to homeowners.

These visualizations provide a comprehensive view of the factors influencing homeownership among urban households in Iran and help identify key areas for policy intervention.

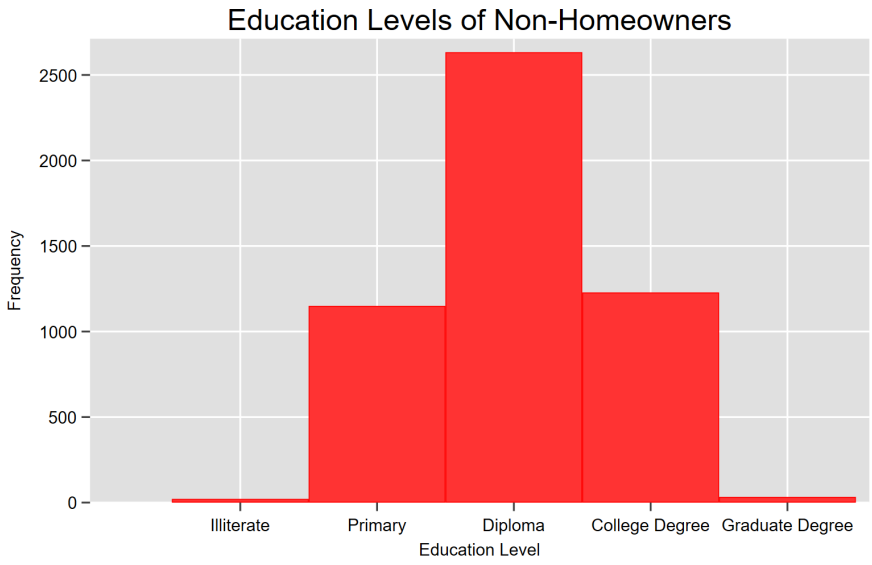

Figure 5: Education Levels of Non-Homeowners

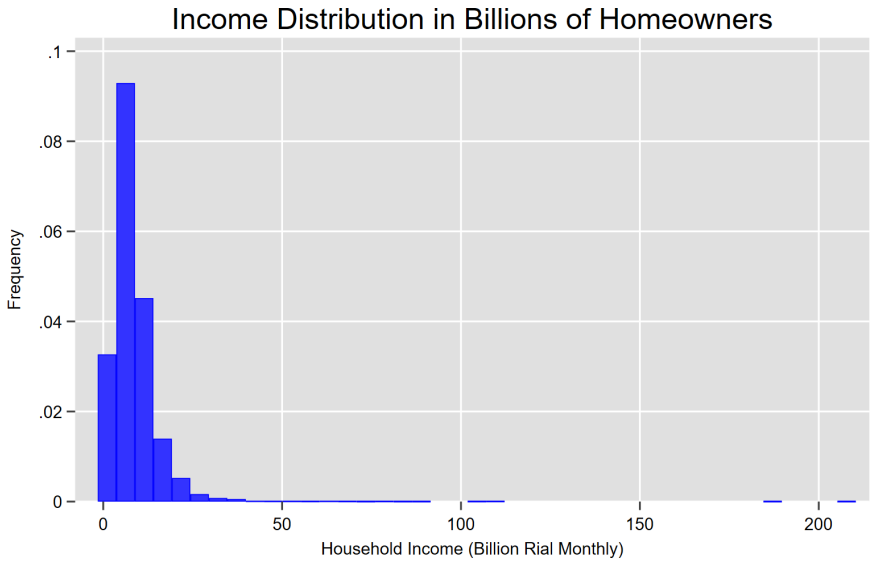

Figure 6: Income Distribution in Billions of Homeowners

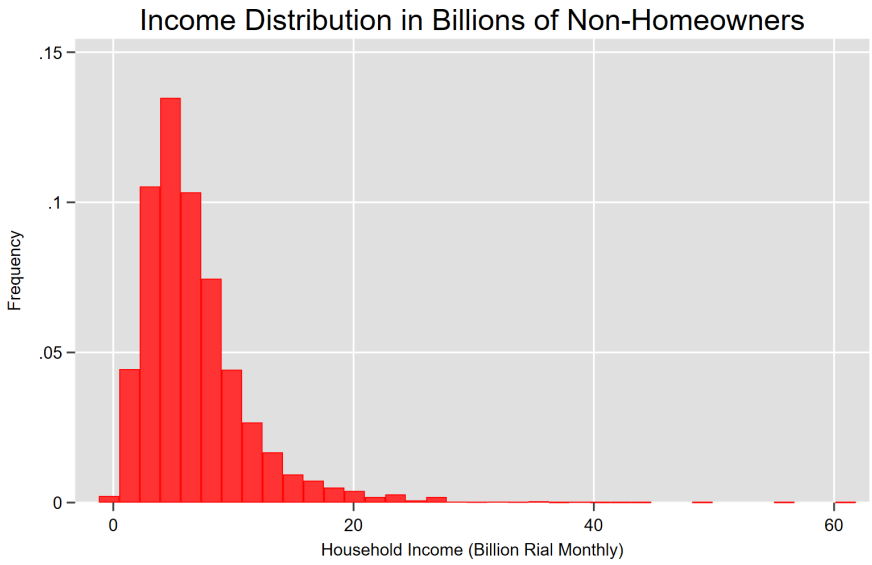

Figure 7: Income Distribution in Billions of Non-Homeowners

4.3 Logistic Regression Results

The logistic regression models were estimated using four different specifications. The first model includes household size, gender, marital status, housing area, dependency ratio, education, residence in Tehran, car ownership, income, residence in a metropolis, age, and monthly subsidy as explanatory variables. The second model replaces household income with the provincial income decile. The third model adds employment status to the second model, and the fourth model replaces employment status with a more detailed job status variable.

The results of these logistic regressions are summarized in Table 1. The coefficients indicate the log odds of homeownership associated with each explanatory variable. For ease of interpretation, we also computed the marginal effects of each variable, which are reported in Table 2.

Interpretation of Logistic Regression Results: - *Household Size:* Larger household size is associated with a lower probability of homeownership, possibly due to higher financial burdens. - *Gender and Marital Status:* Female-headed households and married heads do not show significant effects on homeownership. - *Education Level:* Higher education levels are generally associated with a lower probability of homeownership, which might be due to the higher opportunity cost of purchasing a home. - *Income and Subsidy:* Higher income and monthly subsidies significantly increase the probability of homeownership. - *Regional Factors:* Residence in Tehran and other metropolises significantly reduces the probability of homeownership, likely due to higher property prices

	Logit Model 1	Logit Model 2	Logit Model 3	Logit Model 4
Household Size	-0.107	-0.102	-0.086	-0.087
Female Head	0.007	0.029	-0.041	-0.053
Married Head	0.098	0.103	0.084	0.082
Housing Area	0.009	0.009	0.009	0.009
Dependency Ratio	-0.788	-0.777	-0.482	-0.496
Education	-0.209	-0.233	-0.235	-0.239
Residence in Tehran	-0.962	-0.640	-0.648	-0.662
Car Ownership	0.443	0.402	0.412	0.405
Income (Billion)	0.062			
Metropolis	-0.383	-0.308	-0.309	-0.308
Age	0.064	0.064	0.062	0.061
Monthly Subsidy	0.373	0.324	0.340	0.346
Provincial Income Decile		0.121	0.118	0.116
Employment Status (Unemployed)			0	
Employment Status (Employed)			-0.452	
Employment Status (Unemployed with Income)			-0.221	
Job Status (Unemployed)				0
Job Status (Employer)				-0.102
Job Status (Self-employed)				-0.352
Job Status (Public Sector)				-0.409
Job Status (Cooperative)				-0.156
Job Status (Private Sector)				-0.521
Job Status (Unpaid Family Worker)				0
Job Status (Unemployed with Income)				-0.193
Constant	-3.280	-3.252	-2.906	-2.831

Table 1: Logistic Regression Models for Homeownership

	Marginal Effects
Household Size	-0.015
Female Head	-0.009
Married Head	0.014
Housing Area	0.002
Dependency Ratio	-0.083
Education	-0.040
Residence in Tehran	-0.111
Car Ownership	0.068
Provincial Income Decile	0.019
Metropolis	-0.051
Age	0.010
Monthly Subsidy	0.058
Job Status (Unemployed)	0
Job Status (Employer)	-0.016
Job Status (Self-employed)	-0.056
Job Status (Public Sector)	-0.066
Job Status (Cooperative)	-0.024
Job Status (Private Sector)	-0.086
Job Status (Unpaid Family Worker)	0
Job Status (Unemployed with Income)	-0.030

Table 2: Marginal Effects for Logistic Models

in these areas.

4.4 Probit Regression Results

To check the robustness of our findings, we also estimated a probit model with the same set of explanatory variables as in the fourth logistic regression model. The probit regression results and marginal effects are summarized in Tables 3 and 4, respectively.

	Probit Model
Household Size	-0.052
Female Head	-0.018
Married Head	0.061
Housing Area	0.005
Dependency Ratio	-0.299
Education	-0.142
Residence in Tehran	-0.395
Car Ownership	0.247
Provincial Income Decile	0.068
Metropolis	-0.181
Age	0.035
Monthly Subsidy	0.203
Job Status (Unemployed)	0
Job Status (Employer)	-0.055
Job Status (Self-employed)	-0.199
Job Status (Public Sector)	-0.228
Job Status (Cooperative)	-0.055
Job Status (Private Sector)	-0.307
Job Status (Unpaid Family Worker)	0
Job Status (Unemployed with Income)	-0.129
Constant	-1.637

Table 3: Probit Regression Model for Homeownership

Interpretation of Probit Regression Results: The probit regression results are consistent with those from the logistic models. The marginal effects indicate similar relationships between the explanatory variables and the probability of homeownership, confirming the robustness of our findings.

Key Findings: - *Income and Subsidy:* Both logistic and probit models confirm that higher household income and receipt of monthly subsidies are strong determinants of homeownership. - *Education Level:* The negative association between higher education levels and homeownership is robust across different model specifications. - *Regional Factors:* The significant negative effect of residing in Tehran and other metropolises on homeownership is consistent in both models.

	Marginal Effects
Household Size	-0.015
Female Head	-0.005
Married Head	0.017
Housing Area	0.001
Dependency Ratio	-0.085
Education	-0.040
Residence in Tehran	-0.113
Car Ownership	0.070
Provincial Income Decile	0.019
Metropolis	-0.052
Age	0.010
Monthly Subsidy	0.058
Job Status (Unemployed)	0
Job Status (Employer)	-0.015
Job Status (Self-employed)	-0.055
Job Status (Public Sector)	-0.063
Job Status (Cooperative)	-0.015
Job Status (Private Sector)	-0.086
Job Status (Unpaid Family Worker)	0
Job Status (Unemployed with Income)	-0.035

Table 4: Marginal Effects for Probit Model

These results highlight the importance of income and regional housing market conditions in determining homeownership among urban households in Iran. Policies aimed at improving income levels and providing targeted subsidies could potentially enhance homeownership rates, especially in high-cost areas like Tehran and other major cities.

5 Conclusion

This study investigated the determinants of homeownership among urban households in Iran using logistic and probit regression models. By analyzing data from a comprehensive household survey, we aimed to identify the key socioeconomic and demographic factors influencing the probability of owning a home.

Our analysis revealed several significant findings:

- *Household Size:* Larger household size is associated with a lower probability of homeownership, possibly due to higher financial burdens and living expenses associated with supporting more family members. - *Income and Subsidies:* Higher household income and receipt of monthly subsidies significantly increase the likelihood of homeownership. This underscores the importance of financial capacity in the ability to purchase and own a home. - *Education Level:* Surprisingly, higher education levels are generally associated with a lower prob-

ability of homeownership. This may reflect the higher opportunity costs and delayed entry into the workforce associated with pursuing higher education. - *Regional Factors:* Residence in Tehran and other major metropolitan areas significantly reduces the probability of homeownership, likely due to the higher property prices and cost of living in these regions.

The consistency of our findings across both logistic and probit models reinforces the robustness of these results. These insights have important policy implications:

1. **Income Enhancement Programs:** Policies aimed at increasing household income, such as employment programs and economic development initiatives, can play a crucial role in enabling more families to achieve homeownership.

2. **Targeted Subsidies:** Expanding and targeting housing subsidies can help bridge the affordability gap, especially in high-cost urban areas where the probability of homeownership is lower.

3. **Affordable Housing Initiatives:** Developing affordable housing projects in metropolitan areas, particularly in Tehran, can alleviate some of the barriers to homeownership caused by high property prices.

4. **Educational Financial Planning:** Providing financial planning resources and support to households with higher education levels can help them balance the costs of education with long-term housing investments.

In conclusion, our study highlights the multifaceted nature of homeownership determinants in urban Iran. By addressing the financial and regional disparities identified in this research, policymakers can develop more effective strategies to promote homeownership and improve the overall economic well-being of urban households. Future research could further explore these dynamics by incorporating longitudinal data and examining the impact of recent economic policies on homeownership trends.

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