

# HOUSEHOLD CONSUMPTION EXPENDITURES IN TÜRKİYE: SOCIO-ECONOMIC DETERMINANTS, SPENDING PATTERNS, AND POLICY PERSPECTIVES\*

Türkiye’de Hanehalkı Tüketim Harcamaları: Sosyo-Ekonomik Belirleyiciler,  
Harcama Desenleri ve Politika Perspektifleri

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## Abstract

This study investigates the socio-economic determinants of household consumption in Türkiye from 2005 to 2019, using the Marshallian demand function and a negative binomial regression model to address data overdispersion. Based on a uniquely constructed dataset combining Household Budget Surveys and regional Consumer Price Index, the analysis examines how income, education, household size, and demographic structure influence spending across expenditure categories. Results show that higher-income households allocate more to discretionary goods, while lower-income groups focus on necessities. Education is a key driver of spending on housing and human capital, with a nonlinear effect. Consumption rises with age and size but later declines, reflecting life-cycle and scale effects. In-kind transfers reduce direct spending, mortgage debt limits consumption, and single-parent households face greater financial pressure, unlike extended families who benefit from economies of scale. These findings underscore the complex relationship between socio-economic factors and consumption, offering policy insights into household welfare and inequality.

## Keywords:

Household  
Consumption  
Expenditures,  
Socio-economic  
Determinants,  
Demand Function,  
Negative Binominal  
Regression,  
Consumer Behavior

## JEL Codes:

C25, D11, D12,  
I31, O52

## Öz

Bu çalışma, 2005–2019 yılları arasında Türkiye’de hanehalkı tüketimini belirleyen sosyo-ekonomik faktörleri incelemekte; veri aşırı yayılımını dikkate alarak Marshallgil talep fonksiyonu ve negatif binominal regresyon modeli kullanmaktadır. Hanehalkı Bütçe Anketleri ile bölgesel Tüketici Fiyat Endeksi verilerinin birleştirilmesiyle oluşturulan özgün veri seti, gelir, eğitim, hanehalkı büyüklüğü ve demografik yapının çeşitli harcama kategorileri üzerindeki etkilerini analiz etmektedir. Bulgular, yüksek gelirli hanelerin ihtiyari harcamalara daha fazla pay ayırırken, düşük gelirli grupların zorunlu harcamalara odaklandığını göstermektedir. Eğitim, konut ve beşeri sermaye harcamalarının belirleyicisi olarak doğrusal olmayan bir etki göstermektedir. Tüketim, yaş ve hane büyüklüğüyle birlikte artmakta ancak zamanla azalma eğilimi göstermektedir; bu durum yaşam döngüsü ve ölçek ekonomilerine işaret etmektedir. Aynı transferler doğrudan harcamaları azaltmakta, ipotek kredileri tüketimi sınırlamakta ve tek ebeveynli haneler daha fazla mali baskı yaşarken, geniş aileler maliyet paylaşımından fayda sağlamaktadır. Bulgular, sosyo-ekonomik faktörlerle tüketim davranışı arasındaki karmaşık ilişkiyi ortaya koyarak hane refahı ve eşitsizlik politikaları açısından önemli çıkarımlar sunmaktadır.

## Anahtar Kelimeler:

Hanehalkı Tüketim  
Harcaması,  
Sosyo-ekonomik  
Belirleyiciler,  
Talep Fonksiyonu,  
Negatif Binominal  
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## 1. Introduction

Household consumption expenditures (HCE) play a crucial role in shaping both short-term economic stability and long-term development by influencing key determinants of total factor productivity, such as education, health, and cultural investments. Beyond their direct impact on individual well-being, these expenditures serve as a fundamental driver of economic growth, reflecting broader socio-economic dynamics. Understanding the determinants of household spending is therefore essential for designing effective policies that promote sustainable and inclusive economic development. Türkiye presents a particularly compelling case for studying household consumption due to its dynamic economic transformation over the past few decades. Structural reforms, rapid urbanization, demographic shifts, and increasing integration into the global economy have significantly altered consumption patterns. Changes in labor market structures, income distribution, and policy interventions—such as social assistance programs and universal health coverage—have further shaped household spending behaviors. These transformations underscore the need for a comprehensive analysis that accounts for both micro-level household characteristics and macroeconomic influences.

The existing literature on HCE in Türkiye has evolved considerably over the years, reflecting both changes in data availability and methodological advancements. Early studies, such as those by Bulmuş (1980) and Tansel (1986), focused on expenditure elasticity and Engel curves, laying the foundation for later analyses. Subsequent research, including that by Şenesen and Selim (1995), and Selim (2001), and Nişancı (2002) expanded the scope by incorporating multi-year comparisons and regional variations. The introduction of the Almost Ideal Demand System (AIDS) model by Nişancı (1998), and Alpay and Koç (2002) marked a methodological shift, providing a more detailed understanding of demand elasticities. More recently, researchers have leveraged standardized and detailed Household Budget Survey (HBS) data, published annually since 2003, to examine specific consumption categories such as food Şahinli (2013), health (Yardım et al., 2010), alcohol and tobacco (San and Chaloupka, 2016; Aksoy et al., 2019), and education (Acar et al., 2016), and recreation and culture (Şengül et al., 2018; Gül, 2019). These studies highlight key socio-economic determinants of consumption, including income, education, regional disparities, and demographic composition.

Despite these contributions, gaps remain in understanding the interplay between various socio-economic factors and household expenditure decisions over an extended period. Many existing studies rely on short time spans, limiting their ability to capture structural shifts in consumption behavior. Moreover, while prior research has explored individual expenditure categories, there is a need for a holistic approach that integrates multiple determinants across different spending groups. This study aims to address these gaps by analyzing the socio-economic determinants of HCE in Türkiye between 2005 and 2019 using the Marshallian demand function. By merging data from HBS and regional consumer price indices (RCPI), this research constructs a comprehensive dataset to examine factors such as income, education, household size, and demographic composition shape spending behaviors. Another notable contribution of this research is the development of a robust demand function that systematically captures the drivers of HCE. This function establishes a solid foundation for future studies exploring causal relationships and evaluating policy interventions.

The findings reveal that income plays a crucial role in shaping household consumption, with higher earnings leading to increased spending, while in-kind assistance reduces direct

expenditure on necessities, thereby lowering overall consumption. Mortgage obligations are found to limit spending due to repayment burdens, whereas larger living spaces and advanced heating systems are linked to greater expenditures, likely driven by higher utility costs and improved financial capacity. Additionally, consumption patterns exhibit non-linear relationships with education, age, and household size. While higher education eventually leads to increased spending due to enhanced earning potential, the inverse U-shaped pattern observed with age and household size suggests that consumption growth slows and eventually declines as these factors increase. Household structure also influences expenditure, with single-parent households displaying lower spending due to financial constraints, while extended families benefit from shared resources, resulting in higher consumption. Moreover, compared to underutilized individuals<sup>1</sup>, households with more babies and children spend less due to simpler needs, whereas a larger proportion of older adults corresponds to slightly higher expenditures, likely reflecting stable incomes and increased healthcare and leisure costs. The heterogeneity of the effects of socio-economic determinants on expenditure was found via the marginal effects varying among consumption categories. In other words, changing priorities, lifestyle adjustments, and preferences shifts spending patterns.

The remainder of this paper is structured as follows: Section 2 presents the data and methodology, detailing the HBS and the econometric techniques employed in the analysis. Section 3 provides a comprehensive discussion of the empirical findings, examining the determinants of household consumption across different expenditure categories. Section 4 concludes the study by summarizing the key results, discussing policy implications, the shortcomings of the analysis and offering directions for future research.

## 2. Data and Methods

### 2.1. Data

For the analysis, the following Marshallian demand function is constructed.

$$D = f(P_x, P_y, B, H, D, I, L, C) \quad (1)$$

The Equation (1) uses  $P_x$  and  $P_y$  to represent the prices of the relevant goods and other goods, respectively, while  $B$  denotes the household's total expenditure, reflecting its budget constraint. These variables form the foundation for the demand function, enabling the calculation of income and price elasticities. The function also includes socio-economic determinants affecting household consumption, such as household characteristics ( $H$ ), demographics ( $D$ ), income conditions ( $I$ ), labor market relations ( $L$ ), and consumption preferences ( $C$ ).

HBS is the primary data source with these key features. According to TURKSTAT (2024), HBSs are crucial sources of information on the socio-economic status, living conditions, and consumption behavior of households. This study aims to compile data on consumption habits, socio-economic characteristics, labor market relations, and income conditions of

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<sup>1</sup> Underutilized individuals are referred as working-age household members who are not part of the labor force and do not fall into categories such as students, retirees, or housewives.

individuals and their households. The information gathered can be used to assess the impact of micro and socio-economic policies.

HCE are likely to be explained by variables constructed from the Individual, Household, and Consumption sub-datasets of the HBS, which are merged at the household level. RCPI published by Turkish Statistical Institute (TURKSTAT) were used to adjust nominal consumption expenditures for price effects. Due to the lack of RCPI data before 2005, HBS data from 2003 and 2004 were excluded. Additionally, HBS data for 2020 and 2021 were not included in the analysis because they could not be compiled at a comparable level due to pandemic-related restrictions.

The primary manipulation involves merging the Household, Individual, and Consumption datasets from the HBS with the RCPI data. The month the survey was conducted and the region where the responding household resides were determined by using responses to various survey questions. With this detailed information, all datasets were successfully matched, representing one of the key contributions of the analysis. This comprehensive approach effectively reveals the socio-demographic determinants of household consumption behavior, while keeping prices and budget constraints constant.

## 2.2. Marshallian Demand Function

As shown in Equation (2), the dependent variable,  $D_{rimyc}$ , is the consumption expenditure in 2003 TL prices of household  $i$  in region  $r$  in month  $m$  in year  $y$  in Classification of Individual Consumption by Purpose (COICOP) group  $c$ .

$$D_{rimyc} = HCE_{rimyc}/CPI_{rimyc} \quad (2)$$

where  $P_{myrc}^x$  is the natural logarithm of the CPI index for COICOP group  $c$  in region  $r$  in month  $m$  in year  $y$ . Food is defined as a *numeraire* product and its price is assumed to be one. All other prices are calculated as relative prices in terms of food prices by proportioning them to food prices, as specified in Equation (3).

$$RP_{myrc}^x = P_{myrc}^x/P_{food_{myrc}} \quad (3)$$

where  $RP_{rimyc}^y$  is the weighted average price of COICOP group  $c$  in month  $m$  in year  $y$  for household  $i$  in region  $r$ , calculated for all other groups except the related consumption group, based on the formulation in Equation (4). In other words, for each group, this variable transforms the analysis into a two-product structure and derives a price index for all products except the product chosen by the household when determining its consumption basket.

$$RP_{rimyc}^y = \left[ \sum_{c=11 \& c \neq n}^{c=127} \left( \frac{HCE_{ic}}{THCE_i - HCE_{in}} \right) * P_c \right] / P_{food_{rimyc}} \quad (4)$$

In studies on socio-economic factors affecting households, variables are often based on the household head's characteristics. However, this study takes a broader approach by creating variables for the entire household. Socio-economic indicators are measured as ratios comparing individuals with a given characteristic to total household members.

**Table 1. Descriptive Statistics for Socio-Economic Determinants of Household Consumption**

| Variable              | Definition                                                                                                                  | Obs.   | Mean    | Std. Dev. | Min. | Max. |
|-----------------------|-----------------------------------------------------------------------------------------------------------------------------|--------|---------|-----------|------|------|
| Household Size        | Total number of individuals in the household                                                                                | 153411 | 3.70    | 1.89      | 1    | 30   |
| Household Size Square | Square of the total number of individuals in the household                                                                  | 153411 | 17.24   | 21.52     | 1    | 900  |
| Area of Dwelling      | Area of dwelling in terms of m <sup>2</sup>                                                                                 | 153411 | 104.83  | 33.47     | 10   | 870  |
| Heating System        | Heating system of the dwelling (base category is stove)                                                                     | 153411 | 0.41    | 0.49      | 0    | 1    |
| Mortgage              | Active housing loan payment (base category is no payment)                                                                   | 153411 | 0.07    | 0.26      | 0    | 1    |
| Household Type 1      | Couples                                                                                                                     | 153411 | 0.70    | 0.46      | 0    | 1    |
| Household Type 2      | Extended Family                                                                                                             | 153411 | 0.16    | 0.37      | 0    | 1    |
| Household Type 3      | Single Parent Family                                                                                                        | 153411 | 0.12    | 0.33      | 0    | 1    |
| Household Type 4      | Other types of families                                                                                                     | 153411 | 0.02    | 0.12      | 0    | 1    |
| Early Childhood Dummy | At least one person in the household at age between 0 and 5                                                                 | 153411 | 0.26    | 0.44      | 0    | 1    |
| Early Childhood Ratio | For households with at least one individual aged between 0 and 5 years, the ratio of the number of those to household size  | 40380  | 0.28    | 0.11      | 0.05 | 0.75 |
| School-Age Dummy      | At least one person in the household at age between 6 and 14                                                                | 153411 | 0.39    | 0.49      | 0    | 1    |
| School-Age Ratio      | For households with at least one individual aged between 6 and 15 years, the ratio of the number of those to household size | 59153  | 0.33    | 0.13      | 0.05 | 0.83 |
| Over 65 Dummy         | At least one person in the household at age over sixty-five                                                                 | 153411 | 0.23    | 0.42      | 0    | 1    |
| Over 65 Ratio         | For households with at least one individual aged over 65 years, the ratio of the number of those to household size          | 34908  | 0.56    | 0.34      | 0.03 | 1    |
| Working Age Dummy     | At least one person in the household aged between 16 and 65                                                                 | 153411 | 0.92    | 0.27      | 0    | 1    |
| Household Age         | Average age of working-aged people in the household                                                                         | 141605 | 38.21   | 9.74      | 17   | 62   |
| Household Age Square  | Square of the average age of working-aged people in the household                                                           | 141605 | 1554.62 | 830.31    | 289  | 3844 |
| Male Dummy            | At least one person in household is male                                                                                    | 153411 | 0.93    | 0.26      | 0    | 1    |
| Male Ratio            | For households with at least one individual is male, the ratio of the number of those to household size                     | 142520 | 0.52    | 0.17      | 0.06 | 1    |
| Health Dummy          | At least one person in the household has health insurance                                                                   | 153411 | 0.95    | 0.21      | 0    | 1    |
| Health Coverage       | For households with at least one individual has health insurance, the ratio of the number of those to household size        | 146131 | 0.96    | 0.13      | .06  | 1    |

Two types of variables are used: dummy variables, which indicate if a household has at least one member with the characteristic, and ratio variables, representing the proportion of members with that characteristic. Both are included to capture presence (dummy) and marginal effects (ratio) of the characteristic.

**Table 2. Descriptive Statistics for Socio-Economic Determinants of Household Consumption (Continued)**

| Variable                   | Definition                                                                                                                          | Obs.   | Mean   | Std. Dev. | Min.  | Max.    |
|----------------------------|-------------------------------------------------------------------------------------------------------------------------------------|--------|--------|-----------|-------|---------|
| Employed Dummy             | At least one person in family has job in survey month                                                                               | 153411 | 0.771  | 0.42      | 0     | 1       |
| Employed Ratio             | For households with at least one person who has a job, the ratio of the number of those to household size                           | 118309 | 0.444  | 0.241     | 0.053 | 1       |
| Unemployment Dummy         | At least one person in the family seeks a job in survey month                                                                       | 153411 | 0.098  | 0.297     | 0     | 1       |
| Unemployed Ratio           | For households with at least one person who seeks a job, the ratio of the number of those to household size                         | 14978  | 0.3    | 0.155     | 0.033 | 1       |
| Student Dummy              | At least one person in the family is in education in survey month                                                                   | 153411 | 0.181  | 0.385     | 0     | 1       |
| Student Ratio              | For households with at least one person who is in education, the ratio of the number of those to household size                     | 27819  | 0.279  | 0.132     | 0.038 | 1       |
| Housewife Dummy            | At least one person in family who is at age between 15 and 65 and is housewife in survey month                                      | 153411 | 0.541  | 0.498     | 0     | 1       |
| Housewife Ratio            | For household with at least one person who is housewife, the ratio of the number of those to household size                         | 83058  | 0.312  | 0.143     | 0.045 | 1       |
| Retired Dummy              | At least one person in the family who is at age between 15 and 65 and is retired in survey month                                    | 153411 | 0.12   | 0.324     | 0     | 1       |
| Retired Ratio              | For households with at least one person who is retired, the ratio of the number of those to household size                          | 18342  | 0.409  | 0.219     | 0.038 | 1       |
| Underutilized Dummy        | At least one person in family who is at age between 15 and 65 and is in neither education nor employment in survey month            | 153411 | 0.108  | 0.311     | 0     | 1       |
| Underutilized Ratio        | For households with at least one person who is neither education nor employment, the ratio of the number of those to household size | 16592  | 0.299  | 0.167     | 0.038 | 1       |
| Workforce Dummy            | At least one person in the household participate in workforce                                                                       | 153411 | 0.804  | 0.397     | 0     | 1       |
| Workforce Education        | Average education level of people in the household that participate in workforce                                                    | 123306 | 2.668  | 1.097     | 1     | 6       |
| Workforce Education Square | Square of the average education level of people in the household that participate in workforce                                      | 123306 | 8.321  | 7.344     | 1     | 36      |
| Income Quintile 1          | Average Real Consumption Expenditure for income quantile 1 (lowest)                                                                 | 30635  | 552.8  | 497.9     | 2     | 12235.6 |
| Income Quintile 2          | Average Real Consumption Expenditure for income quantile 2                                                                          | 30681  | 730.8  | 596.6     | 10.2  | 20158.4 |
| Income Quintile 3          | Average Real Consumption Expenditure for income quantile 3                                                                          | 30695  | 899.4  | 736.2     | 21.5  | 15237.2 |
| Income Quintile 4          | Average Real Consumption Expenditure for income quantile 4                                                                          | 30702  | 1130.8 | 909.5     | 7     | 20877.9 |
| Income Quintile 5          | Average Real Consumption Expenditure for income quantile 5                                                                          | 30698  | 1825.3 | 1639.7    | 4.9   | 37161.1 |
| In-kind Assistance         | Whether the household receives in-kind assistance such as food, kindergarten, and transportation (base category is no assistance)   | 153411 | 0.568  | 0.495     | 0     | 1       |

Detailed definitions and descriptive statistics for all variables that best represent the above demand function are provided in Tables 1–2.

### 3. Empirical Strategy

To investigate the factors influencing household consumption behavior, a demand function is estimated as follows.

$$D_{rimy} = \beta_0 + \beta_1 * RP_{myr}^x + \beta_2 * RP_{myr}^y + \beta_3 * BC_{rimy} + \Phi * X_{rimy} + \gamma * C_{irmy} + \alpha + \pi + \Omega \quad (5)$$

The dependent variable in the Equation (5) is the consumption expenditure in 2003 prices made by household  $i$  in region  $r$  in month  $m$  in year  $y$ .  $BC_{rimy}$  is the consumption expenditure of household  $i$  in the region of 2003 TL prices in month  $m$  in year  $y$ . The coefficients  $\beta_1$ ,  $\beta_2$  and  $\beta_3$  are own price, cross price, and income elasticities, respectively. Independent variables of interest,  $X_{irmy}$ , a set of socio-economic determinants such as demographics, and income status. These variables capture spending patterns on consumption and the coefficient matrix ( $\Phi$ ) quantifies these relationships.  $C_{irmy}$ , added the Equation (5) to control for the effects of households' labor market situation and consumer preferences on expenditures<sup>2</sup>. Equation (5) is repeated for whole consumption expenditure and COICOP two-level breakdowns. In all these specifications, year ( $\alpha$ ), region ( $\pi$ ), and month ( $\Omega$ ) fixed effects are applied.

HCE are compiled monthly, making it unlikely that households consume all types of goods and services within a single month. As a result, the dataset contains a large number of zero values, reflecting non-consumption of certain items during the observed period. Additionally, due to the non-negativity of consumption data, econometric techniques specifically suited to handle such characteristics were adopted. After assessing the data distribution, overdispersion, where the variance exceeds the mean, was identified as a significant feature. To address this, a negative binomial regression model was employed, which is well-suited for count data with overdispersion. This approach enables a more accurate modeling of consumption behavior while accommodating the specific nature of the dataset.

### 4. Results and Discussion

Table 3 presents the results for the relationship between socio-economic variables and overall household total consumption expenditures. In this model, prices and budget constraints are excluded due to collinearity.

The main findings indicate that households receiving in-kind assistance exhibit lower consumption levels than those not receiving such support. This is likely because in-kind assistance serves as a substitute for direct expenditure, thereby reducing the overall spending of recipients compared to non-recipients, assuming all other factors remain constant.

<sup>2</sup> Labor market status (employed, unemployed, homemaker, retired, student) is controlled for to account for its potential effect on consumption. Consumption preferences are captured through dummy variables indicating spending in specific COICOP groups, controlling for their influence on demand for other categories. Results for those are available upon request.

When income quantiles are compared to the lowest income group, it is observed that higher income levels generally lead to greater consumption due to increased purchasing power. The positive coefficients of income quantiles indicate that transitioning from the lowest to the highest income quantile increases HCE by the corresponding coefficient units on the log scale. The results further indicate that households with a mortgage loan tend to spend less on consumption, likely due to the financial burden of loan repayments reducing disposable income. In contrast, households with more advanced heating systems and larger dwellings exhibit higher consumption levels. This may be attributed to increased utility costs or higher income levels that facilitate improved living conditions, thereby allowing for greater discretionary spending.

**Table 3. Socio-Economic Determinants of Overall Consumption Expenditures**

|                     |                             |                       |                         |
|---------------------|-----------------------------|-----------------------|-------------------------|
| In-kind Assistance  | -0.0470***<br>(0.00356)     | Early Childhood Ratio | -0.130***<br>(0.0413)   |
| Income Quintile 2   | 0.178***<br>(0.00521)       | School-Age Ratio      | -0.200***<br>(0.0365)   |
| Income Quintile 3   | 0.285***<br>(0.00581)       | Over 65 Ratio         | 0.175***<br>(0.0407)    |
| Income Quintile 4   | 0.397***<br>(0.00659)       | Extended-Family       | 0.0139**<br>(0.00559)   |
| Income Quintile 5   | 0.632***<br>(0.00792)       | Single Parents        | -0.0488***<br>(0.00707) |
| Workforce Educ.     | -0.0345***<br>(0.00910)     | Others                | 0.0321**<br>(-0.0163)   |
| Workforce Educ. Sq. | 0.0106***<br>(0.00136)      | Mortgage Loan         | -0.0636***<br>(0.00590) |
| Household Age       | 0.00755***<br>(0.00136)     | Heating System        | 0.0632***<br>(0.00378)  |
| Household Age Sq.   | -0.0000782***<br>(1.65e-05) | Area of Dwelling      | 0.189***<br>(0.00596)   |
| Household Size      | 0.126***<br>(0.00362)       | Health Coverage       | -0.0108<br>(0.0111)     |
| Household Size Sq.  | -0.00322***<br>(0.000230)   | Constant              | 3.794***<br>(-0.0465)   |

**Note:** Data are used from HBS conducted by TURKSTAT. Respondent’s self-reported consumption expenditures in terms of 2003 price are used as a dependent variable. Negative binominal regression models are used. Year, region, month fixed effect, labor market controls, and consumption preference controls are used. Robust standard errors are in parenthesis. Sample weights are used. \*\*\*  $p < 0.01$ , \*\*  $p < 0.05$ , \*  $p < 0.1$ .

In addition, quadratic relationships between education, age, and size with HCE are particularly notable in the results. A non-linear, positive relationship suggests that beyond a certain threshold, higher education leads to increased spending, likely due to the higher incomes associated with higher levels of education. Meanwhile, the inverse U-shaped relationship between age, household size, and expenditure indicates a diminishing marginal effect on household consumption. To be specific, as the average household age increases or household size expands, the rate of consumption growth gradually slows, eventually reaching a plateau or even declining.



When underutilized individuals are used as the reference category, the coefficients for the early childhood ratio and school-age ratio are negative. While this might seem surprising, it can be explained as follows: since underutilized individuals are at least 16 years old, their consumption bundle is more complex, including transportation, communication, and higher calorie needs compared to babies and children. In contrast, a higher ratio of older adults compared to underutilized individuals are associated with a slight increase in consumption. This suggests that older individuals may have more stable incomes, which could lead to higher expenditures on healthcare or leisure activities.

The findings regarding the effect of household types on consumption demonstrate that while extended families and other household types exhibit slightly higher consumption than couples, single-parent households have significantly lower consumption expenditure in comparison. The lower spending of single-parent households likely reflects the financial strain of managing dependent care on a single income. In contrast, the higher consumption levels of extended families may be attributed to shared resources and economies of scale, while other household types may benefit from diverse financial structures that enhance spending capacity.

In Tables 4-6, the heterogeneity of the effects of each socio-economic variable on consumption is analyzed. The impact of each determinant on overall expenditures and on sub-groups of consumption were calculated separately. The first row presents the results for total consumption expenditure, while the subsequent rows repeat similar equations for each COICOP 2-level consumption category. In the equations for sub-groups, prices and budget constraints are included to control price and income elasticities.

In Table 4, one of the most striking findings is that the negative relationship between in-kind assistance and total HCE are primarily driven by significant reductions in spending on food and non-alcoholic beverages, clothing and footwear, and communication. These subcategories suggest that in-kind assistance often substitutes for essential goods. In contrast, the positive effect on expenditures for hotels, cafes, and restaurants reflects the potential for reallocating savings from essential goods to discretionary spending. When examining the relationship between income quintiles and household consumption subcategories, the findings indicate that all subcategories, except for food and housing-related expenditures, are normal goods. Further, the only exception is alcohol<sup>3</sup> consumption, which, with an elasticity greater than one, falls into the category of luxury goods. The insignificant health expenditure coefficients suggest no strong link between income quantiles and health spending, likely due to high public health coverage. However, positive coefficients for the highest income groups indicate greater allocation to private medical expenses.

The impact of education on consumption varies across categories according to Table 4. Alcohol, tobacco, furniture and white goods spending is higher at lower education levels but declines with increasing education. Housing, utilities, and transportation expenses rise with education but stabilize at advanced levels. Clothing and footwear spending grow but plateaus at higher education levels, while health expenditure follows a U-shape. Communication, recreation, and cultural spending increase but decline at advanced levels, whereas hotel and

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<sup>3</sup> While the results are reported at the COICOP 2-digit level, additional estimations at the COICOP 3-digit level for alcohol, and tobacco products consumption have also been conducted and are available upon request.

restaurant expenses peak at moderate education. Overall, higher education shifts spending patterns, reflecting changing priorities and lifestyle adjustments.

**Table 4. Effect of Socio-Economic Determinants on Consumption Expenditures (COICOP 2 Level)**

| COICOP 2                                                           | In-kind Assist. | Income Quintile 2 | Income Quintile 3 | Income Quintile 4 | Income Quintile 5 | Workforce Educ. | Workforce Educ. Sq. |
|--------------------------------------------------------------------|-----------------|-------------------|-------------------|-------------------|-------------------|-----------------|---------------------|
| Household Consumption Expenditure                                  | -0.047***       | 0.178***          | 0.285***          | 0.397***          | 0.632***          | -0.035***       | 0.0106***           |
| Food and Non-alcoholic Beverages                                   | -0.055***       | -0.026***         | -0.038***         | -0.056***         | -0.152***         | -0.022***       | -0.0012             |
| Alcoholic Beverages and Tobacco Products                           | -0.0050         | 0.062***          | 0.113***          | 0.186***          | 0.224***          | 0.152***        | -0.0525***          |
| Clothing and Footwear                                              | -0.060***       | 0.082***          | 0.164***          | 0.210***          | 0.299***          | 0.068***        | -0.0063**           |
| Housing, Water, Electricity, Gas and Other Fuels                   | 0.010**         | -0.021***         | -0.098***         | -0.183***         | -0.281***         | 0.134***        | -0.0128***          |
| Furnishings, Household Equipment, Routine Maintenance of the House | -0.025***       | 0.128***          | 0.206***          | 0.259***          | 0.346***          | -0.065***       | 0.0072**            |
| Health                                                             | -0.025*         | -0.022            | -0.015            | 0.032             | 0.180***          | -0.134***       | 0.0182***           |
| Transport                                                          | 0.014*          | 0.186***          | 0.293***          | 0.396***          | 0.581***          | 0.176***        | -0.0195***          |
| Communications                                                     | -0.059***       | 0.135***          | 0.190***          | 0.229***          | 0.222***          | 0.231***        | -0.0311***          |
| Recreation and Culture                                             | -0.037**        | 0.189***          | 0.283***          | 0.417***          | 0.589***          | 0.188***        | -0.0117**           |
| Education                                                          | -0.131***       | 0.313***          | 0.476***          | 0.578***          | 0.745***          | 1.364***        | -0.163***           |
| Hotels, Cafes, and Restaurants                                     | 0.541***        | 0.235***          | 0.276***          | 0.343***          | 0.511***          | 0.083***        | -0.0106***          |
| Miscellaneous Goods and Services                                   | -0.0102         | 0.0790***         | 0.128***          | 0.227***          | 0.404***          | 0.102***        | -0.0107**           |

**Note:** Data are used from HBS conducted by TURKSTAT. Respondent’s self-reported consumption expenditures in terms of 2003 price are used as a dependent variable. Negative binominal regression models are used. Year, region, month fixed effect, labor market controls, and consumption preference controls are used. Robust standard errors are in parenthesis. Sample weights are used. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

Table 5 presents the results that relate to household age and size. Household spending patterns are influenced by the age composition of its members. A higher proportion of babies leads to increased expenditures on clothing, utilities, recreation, culture, and miscellaneous goods, reflecting their specific needs, while spending on alcohol, tobacco, communication, transportation, and furniture declines. Similarly, a greater presence of children results in higher spending on education, recreation, culture, and clothing, while expenditure on alcohol, tobacco, and transport decrease as these categories become less relevant. In households with more elderly individuals, spending on education, transportation, alcohol, and tobacco is reduced, whereas food and dining expenditures rise, reflecting the lifestyle and preferences of older adults.

Household consumption patterns are also shaped by the average age of its members. Spending on alcohol, tobacco, communication, and education follows a reverse U-shaped pattern, with higher expenditures in younger and middle-aged households, then declining as health concerns and reduced dependency on technology emerge. In contrast, expenditures on housing, utilities, furnishings, and household equipment follow a U-shaped pattern, increasing in older households as discretionary spending shifts toward home maintenance and comfort. Similarly, spending on hotels, cafes, and restaurants rises in later life, reflecting a greater emphasis on leisure and social experiences.

**Table 5. Effect of Socio-Economic Determinants on Consumption Expenditures (COICOP 2 Level) (Continued)**

| COICOP 2                                                                          | Early<br>Childhood<br>Ratio | School-<br>Age<br>Ratio | Over 65<br>Ratio | Household<br>Age | Household<br>Age Sq. | Household<br>Size | Household<br>Size Sq. |
|-----------------------------------------------------------------------------------|-----------------------------|-------------------------|------------------|------------------|----------------------|-------------------|-----------------------|
| Household<br>Consumption<br>Expenditure                                           | -0.130***                   | -0.200***               | 0.175***         | 0.008***         | -0.000***            | 0.126***          | -0.003***             |
| Food and Non-<br>Alcoholic<br>Beverages                                           | -0.014                      | -0.110***               | 0.100***         | 0.010***         | -0.000               | 0.091***          | -0.004***             |
| Alcoholic<br>Beverages and<br>Tobacco<br>Products                                 | -0.594***                   | -0.701***               | -0.364***        | 0.059***         | -0.001***            | 0.071***          | -0.003***             |
| Clothing and<br>Footwear                                                          | 0.222**                     | 0.660***                | -0.216**         | -0.017***        | 0.000                | 0.040***          | -0.001***             |
| Housing, Water,<br>Electricity, Gas<br>and Other Fuels                            | 0.250***                    | 0.413***                | -0.023           | -0.022***        | 0.000***             | -0.141***         | 0.003***              |
| Furnishings,<br>Household<br>Equipment,<br>Routine<br>Maintenance of<br>the House | -0.218**                    | 0.000                   | 0.112            | -0.026***        | 0.000***             | 0.024***          | -0.002***             |
| Health                                                                            | 0.204                       | -0.496***               | 0.203            | -0.002           | 0.000                | -0.071***         | 0.003***              |
| Transport                                                                         | -0.219**                    | -0.180*                 | -0.434***        | 0.004            | -0.000***            | 0.020**           | -0.001**              |
| Communications                                                                    | -0.485***                   | -0.435***               | -0.217***        | 0.022***         | -0.000***            | 0.015**           | -0.001                |
| Recreation and<br>Culture                                                         | 0.303*                      | 0.979***                | 0.177            | -0.004           | -0.000               | -0.077***         | 0.004*                |
| Education                                                                         | -0.060                      | 1.302**                 | -2.555***        | 0.191***         | -0.002***            | 0.073**           | -0.010***             |
| Hotels, Cafes,<br>and Restaurants                                                 | -0.162                      | -0.119                  | 0.228*           | -0.023***        | 0.000***             | -0.028***         | 0.002**               |
| Miscellaneous<br>Goods and<br>Services                                            | 0.953***                    | 0.050                   | -0.215           | -0.003           | -0.000               | 0.028**           | -0.002***             |

**Note:** Data are used from HBS conducted by TURKSTAT. Respondent's self-reported consumption expenditures in terms of 2003 price are used as a dependent variable. Negative binominal regression models are used. Year, region, month fixed effect, labor market controls, and consumption preference controls are used. Robust standard errors are in parenthesis. Sample weights are used. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

The inverted U-shaped relationship between household size and total consumption expenditure aligns with economic theories emphasizing economies of scale in household

consumption, where larger households can share resources and lower the marginal cost per member. However, subgroup analysis reveals varying patterns, with certain categories, such as housing, water, electricity, gas, and other fuels; furniture; healthcare; entertainment and culture; and hotels, cafes, and restaurants, exhibiting a U-shaped relationship.

Table 6 presents the results for household characteristics. The negative relationship between mortgage loans and total consumption expenditures can be attributed to the reduced likelihood of spending on rent, alongside significant cutbacks in discretionary spending (e.g., clothing, recreation, culture). It is also posited that the negative correlation with food expenditure and the positive correlation with restaurant spending are not directly linked to mortgage loans but rather indicate that mortgage payers tend to have higher income levels than non-payers.

**Table 6. Effect of Socio-Economic Determinants on Consumption Expenditures (COICOP 2 Level) (Continued)**

| COICOP 2                                                           | Health Coverage | Mortgage Loan | Heating System | Area of Dwelling | Extended Family | Single Parents | Others    |
|--------------------------------------------------------------------|-----------------|---------------|----------------|------------------|-----------------|----------------|-----------|
| Household Consumption Expenditure                                  | -0.011          | -0.064***     | 0.063***       | 0.189***         | 0.014**         | -0.049***      | 0.032**   |
| Food and Non-alcoholic Beverages                                   | 0.000           | -0.027***     | -0.089***      | -0.074***        | -0.048***       | -0.079***      | -0.075*** |
| Alcoholic Beverages and Tobacco Products                           | -0.401***       | 0.027         | -0.118***      | -0.197***        | 0.101***        | 0.058***       | 0.320***  |
| Clothing and Footwear                                              | 0.101***        | -0.064***     | -0.019*        | -0.015           | -0.038***       | 0.034*         | 0.053*    |
| Housing, Water, Electricity, Gas and Other Fuels                   | -0.025          | -0.306***     | 0.110***       | 0.153***         | 0.072***        | -0.005         | 0.092***  |
| Furnishings, Household Equipment, Routine Maintenance of the House | 0.028           | 0.079***      | 0.088***       | 0.179***         | -0.004          | -0.084***      | -0.207*** |
| Health                                                             | -0.200***       | -0.009        | -0.003         | 0.070***         | 0.132***        | -0.269***      | -0.163*** |
| Transport                                                          | 0.111***        | -0.021*       | 0.009          | 0.043***         | 0.003           | -0.262***      | -0.183*** |
| Communications                                                     | 0.034           | -0.016*       | 0.057***       | 0.033***         | -0.013          | -0.024**       | 0.013     |
| Recreation and Culture                                             | 0.005           | -0.115***     | 0.094***       | 0.086***         | 0.003           | 0.091***       | 0.098**   |
| Education                                                          | 0.255**         | -0.055        | 0.283***       | 0.476***         | -0.069          | 0.164**        | 0.042     |
| Hotels, Cafes, and Restaurants                                     | 0.108***        | 0.067***      | -0.024**       | -0.071***        | 0.018           | 0.195***       | 0.152***  |
| Miscellaneous Goods and Services                                   | -0.095**        | -0.044**      | 0.019          | -0.045**         | 0.038*          | 0.031          | -0.035    |

**Note:** Data are used from HBS conducted by TURKSTAT. Respondent’s self-reported consumption expenditures in terms of 2003 price are used as a dependent variable. Negative binominal regression models are used. Year, region, month fixed effect, labor market controls, and consumption preference controls are used. Robust standard errors are in parenthesis. Sample weights are used. \*\*\* p<0.01, \*\* p<0.05, \* p<0.1.

The positive correlation between more advanced heating systems, larger dwelling areas, and total consumption expenditure can be attributed to higher utility costs as well as discretionary spending on furnishings, household equipment, and maintenance. The modest positive coefficients associated with communication, culture, and education suggest higher income levels. Conversely, the negative coefficients for food, restaurants, alcohol, and tobacco in relation to mortgage loans and total consumption expenditure indicate that households with such housing tend to have smaller household sizes and older average household ages.

Extended families tend to spend more on utilities, healthcare, alcohol, and tobacco, reflecting the broader and more diverse needs of multigenerational households compared to couples. Economies of scale allow them to reduce their per capita food and clothing expenditure through shared meals and clothing, while their overall expenditure remains higher. In contrast, single parents, faced with financial hardship and smaller household sizes, spend significantly less in most discretionary categories. However, they allocate more money to social activities such as dining out and cultural events, and to stress-related consumption such as alcohol and tobacco. Despite financial constraints, they also prioritize spending on education for dependents. Other household types exhibit higher consumption compared to couples due to shared rent arrangements, budget-friendly but necessary discretionary spending, and lifestyle that emphasizes individual consumption such as dining out and socializing. Couples, on the other hand, tend to save more and are more likely to own homes, contributing to lower consumption expenditures.

The findings of this study align with the existing literature, confirming established relationships between socio-economic determinants and household consumption. Consistent with prior research, the results indicate that in-kind assistance is associated with a decline in spending on essential goods (see, for example, Hoynes et al., 2007; Redmond et al., 2014). Moreover, evidence suggests that households often reallocate the savings from essential expenditures toward discretionary spending, which is also consistent with the existing literature (see, for example, Tirivayi and Groot, 2010; Hasanah et al., 2023).

The relationship between income status and consumption expenditures is also in line with existing studies. The transition from the lowest to the highest income quintiles has been widely documented as leading to increased consumption. While most consumption categories are classified as normal goods, food and housing remain essential expenditures, whereas alcohol consumption is considered a luxury good (Bertrand and Morse, 2016; Kneebone and Wilkins, 2018; Dahan and Sayag, 2024). Healthcare expenditures, however, do not exhibit a strong correlation with income quintiles, although higher-income households may allocate more resources to private medical expenses (Malinowski, 2024).

Regarding housing-related expenditures, prior studies highlight a negative correlation between mortgage payments and both discretionary and essential spending, particularly on food, suggesting that financial constraints limit household budget flexibility (Caspi et al., 2024). While higher-income mortgage holders may continue spending on dining out, this suggests that income level, rather than mortgage status alone, is a key determinant of expenditure patterns. However, in Turkey, these effects appear less pronounced. The results indicate that mortgage repayments are generally lower than rental payments, which explains the negative coefficient observed in the analysis.

The link between advanced heating systems, larger dwellings, and HCE also supports previous research. Studies have shown that homes equipped with advanced heating systems typically incur higher utility costs, whereas larger dwellings are associated with increased discretionary spending on furnishings and maintenance (Fisher and Williams, 2011; Sevinç, 2023). Additionally, larger dwellings are often occupied by smaller households with an older average age, which tends to result in lower expenditures on food and other essential items (Cheshire and Forrest, 2021).

The influence of household composition on expenditure patterns has also been extensively documented in the existing literature, further supporting the findings of this research. The age composition of household members plays a crucial role in shaping consumption behavior, as evidenced by varying expenditure patterns across demographic groups (Song and Zhang, 2018; Travassos et al., 2021). Single-parent households often face financial constraints due to the burden of covering dependent care expenses with a single income, resulting in lower overall consumption (Öztürk and Boylu, 2015). In contrast, extended families benefit from shared resources, enabling higher levels of consumption (Klocker et al., 2012; Calvi et al., 2023).

## 5. Conclusion

This study has explored the determinants of HCE in Türkiye, offering a comprehensive analysis of how socio-economic and demographic factors influence spending behaviors. By utilizing the extensive dataset from the HBS and employing robust econometric techniques, the research has provided valuable insights into household expenditure dynamics across various categories.

The results indicate that income significantly shapes consumption patterns, with higher-income households allocating a larger share of their budgets to discretionary categories such as cultural activities and recreation. Conversely, lower-income households focus predominantly on essential items like food and housing. Household size and average age of household's members emerged as another critical factor, displaying a reverse U-shaped relationship with total consumption expenditure. This pattern highlights the balance between economies of scale in smaller households and rising costs in larger households due to increased demands on resources.

Education level was also found to play a pivotal role in household spending behavior. Households with more educated members tend to allocate more resources to housing, education, and cultural activities, reflecting their preferences for quality and long-term investments. In contrast, lower education levels were associated with higher expenditures on necessities and less engagement with discretionary spending categories. Additionally, household type and the presence of children and elderly members within a household influenced spending priorities, with families allocating more to education and health services, respectively.

A significant contribution of this study is the derivation of a robust demand function that captures the key drivers of HCE. This function provides a solid foundation for future research, enabling the analysis of causal relationships and the evaluation of potential interventions. Researchers can leverage this framework to conduct impact analyses, further refining our understanding of how socio-economic factors shape household behavior and laying the groundwork for evidence-based policy development.

In-kind assistance is effective in supporting low-income households without generating excessive additional demand. Expanding such assistance programs could provide targeted relief to vulnerable groups without significantly distorting overall consumption patterns. Given that essential goods such as food, rent, and utilities are identified as inferior goods, direct support in these areas for low-income households may allow them to allocate more resources toward other necessary expenditures, improving overall well-being. Households with infants and children exhibit distinct consumption patterns, with specific expenditure categories becoming more

prominent. To address long-term demographic challenges, sustained subsidies for child-related goods and services could encourage higher fertility rates by reducing the financial burden of child-rearing. Additionally, single parents face notable financial constraints in meeting certain essential needs. Providing targeted support for this group, particularly in key expenditure areas, could enhance their economic stability and contribute to broader social well-being.

**Declaration of Research and Publication Ethics**

This study which does not require ethics committee approval and/or legal/specific permission complies with the research and publication ethics.

**Researcher's Contribution Rate Statement**

The authors declare that they have contributed equally to the article.

**Declaration of Researcher's Conflict of Interest**

There are no potential conflicts of interest in this study.

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