HOUSING AND LIVING ENVIRONMENT DEPRIVATION IN TURKEY

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ABSTRACT

HOUSING AND LIVING ENVIRONMENT DEPRIVATION IN TURKEY

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Housing and living environment deprivation, although being a concept that cannot be agreed upon in its definition and measurement, is generally considered the accumulation of fundamental deficiencies in housing and the living environment. This thesis states that the housing supply in Turkey does not serve the needs of the households that diversify in terms of quality, therefore it is necessary to determine the deprivation levels of housing and living environment experienced by households in varying ways. Research and analyses to be carried out on a national scale regarding the existing housing and living environments are of great importance in determining households' needs and guiding central policies. This thesis aims to examine the levels of housing and living environment deprivation in Turkey based on tenure types, regions, dwelling types, household compositions and income groups, and to reveal the extent to which different dimensions of housing and living environment deprivation vary based on regions, using data of Turkish Statistical Institute, the Income and Living Conditions Survey dated 2020. Among the examined dimensions, the effect of the income factor is observed most prominently. Although the deprivation rate is found to be higher for the tenants, no significant difference is observed between the tenants and owner-occupiers. Families consisting of a lone

parent and child are found to be more vulnerable in terms of housing and living environment conditions excluding overcrowding. It is presented that the prominent problem area throughout the country is the heating problem caused by the insulation of the house, while, a different problem area comes to the fore for each region in Turkey.

Keywords: Housing Deprivation, Housing Conditions, Quality of Housing, Quality of Living Environment

ÖZ

TÜRKİYE'DE KONUT VE YAŞAM ÇEVRESİ YOKSUNLUĞU

Güven, Aydan Ege
Yüksek Lisans, Şehir Planlama, Şehir ve Bölge Planlama
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Konut ve yaşam çevresi yoksunluğu, tanımı ve ölçümü üzerinde fikir birliğine varılamayan bir kavram olmakla birlikte, genellikle konut ve yaşam çevresindeki temel eksikliklerin birikimi olarak değerlendirilmektedir. Bu tez, Türkiye'deki konut arzının hanehalklarının çeşitlenen ihtiyaçlarına hizmet etmediğini, bu nedenle hanehalklarının farklı seviyelerde deneyimlediği konut ve yaşam çevresine dair yoksunluk seviyelerinin belirlenmesinin önem arz ettiğini öne sürmektedir. Mevcut konut ve yaşam çevrelerine ilişkin ulusal ölçekte yapılacak araştırma ve analizler, hanehalklarının ihtiyaçlarının belirlenmesi ve merkezi politikalara yön verilmesi açısından büyük önem taşımaktadır. Bu tezin amacı, Türkiye'de konut ve yaşam çevresi yoksunluk düzeylerini mülkiyet türleri, bölgeler, mesken tipleri, hanehalkı kompozisyonları ve gelir grupları bazında incelemek ve konut ve yaşam çevresi yoksunluğunun çeşitlenen boyutlarını Türkiye İstatistik Kurumu, Gelir ve Yaşam Koşulları Araştırması 2020 yılı verilerini kullanılarak ortaya koymaktır. İncelenen boyutlar arasında en belirgin olarak gelir faktörünün etkisi gözlenmektedir. Kiracılar için yoksunluk seviyelerinin daha yüksek olmasına rağmen, oturduğu eve sahip olan hanehalkları ile kiracılar arasında büyük bir fark olmadığı görülmüştür. Tek ebeveyn ve çocuktan oluşan ailelerin, konutun aşırı kalabalık olması durumu dışında, konut

ve yaşam çevresi koşulları açısından daha hassas gruplar olduğu tespit edilmiştir. Türkiye'nin her bölgesi için farklı sorun alanı öne çıkmakla birlikte, ülke genelinde en çok maruz kalınan sorun alanının evin yalıtımından kaynaklanan ısınma sorunu olduğu ortaya konmuştur.

Anahtar Kelimeler: Konut Yoksunluğu, Konut Koşulları, Konut Kalitesi, Yaşam Çevresi Kalitesi

To my parents

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CHAPTER 1

INTRODUCTION

1.1   Background

Housing is a multidimensional physical and social construction as a place of personal and family refuge, a physical shelter with the facilities and equipment it provides, and the social relationships it permits with its immediate environment (Damiens, 2020). Housing is also inherent in our urban life as a means of reproduction of social relations, a cultural artifact of the urban environment, a tool for the reproduction of labor, and a physical representation of social organization in addition to its meanings as a produced commodity and investment tool (Tekeli, 2012; Madden and Marcuse, 2021).

Housing plays a decisive role in the access of citizens to urban services, employment and infrastructure opportunities, to social capital and communities, as it determines their location in the city; thus it is an essential arena in terms of distribution of wealth and in the production of social status (Dunn and Hayes, 2000). Taken together with the income factor, it is one of the main factors that determine the accessibility of the household to resources and thus the quality of life. Besides, *home* is a representation of privacy and private life as well. Housing is, therefore, a fundamental human right, recognized by the United Nations as the right to "adequate housing" in terms of affordability, habitability, accessibility, location, and cultural adequacy, as well as the availability of services, materials, amenities, and infrastructure. It is a basic right that the dwelling provides minimum living conditions in a healthy and safe manner and that they are durable spaces (İnce et al., 2017).

The houses are increasingly seen as simply a financial investment tool and economic security by being isolated from their use value, especially as of 2008, Global Financial Crisis. Due to the prominence of exchange value, the households are transformed into surplus-value producers, that overshadows the relations and meanings established by the user, such as the quality and livability of the house and the living environment.

Recently, it is seen that the issue of the quality of housing and living environments has gained popularity, especially with the effect of the Covid-19 pandemic, which required staying at home for a long period of time. Especially in the post-pandemic period, the increase in housing sales and rental prices and the lack of livable and affordable housing are issues on the agenda all over the world. The increasing shift to remote work with the pandemic was found to account for at least half of the increase in overall housing prices in US between December 2019 and November 2021 (Mondragon and Wieland, 2022). A partial factor in the increasing demand for housing, and thus the prices, in addition to the increased need for space due to the pandemic, is also explained by the fact that housing provides high savings rates despite the negative real interest rates (Igan, Kohlscheen and Rungharoenkitkul, 2022). In addition to these factors affecting the housing demand in Turkey as in the world, factors such as rising construction costs in an inflationary environment, increasing housing demand of foreigners, and rising prices are also frequently discussed. In Turkey, the search for a reliable investment tool, rising construction costs, irregular asylum seekers, and housing sales policies to foreigners, together with the supply that cannot meet the needs, lead to a very high increase in rent and sales prices.

Rising housing prices and price volatility that points to the financialization of the housing market is linked with increased deprivation of living standards especially for tenants and low-income property owners (Dewilde, 2021).

Low levels of housing supply compared to demand or demand-supply mismatch cause housing deficit. Housing deficit can be observed in two ways: apparent and

hidden housing deficit. Hidden housing deficit refers to overcrowded, unqualified, unsafe and unstable housing, in which the quality aspect of the housing predominates (Turan, 1992). Taking into account the vacant houses in cities which are the reflections of supply-demand mismatch and the fact Turkish housing sector has a very high performance in production since 2002, it can be argued that the housing stock may be sufficient in quantity. However housing is not produced with an aim of meeting the needed quality and targeting the need groups, which supports the hidden housing deficit. Although there may be enough number of houses to accommodate the population living in the cities, the demand of the production of housing for the upper income groups instead of the needs of the lower-middle income groups leads to the emptying of the existing housing stock and the production of new housing units for the upper income groups (Alkan and Uğurlar, 2015).

The inadequacy of quality houses in line with the demand is discussed as another factor that partially explains the increase in house prices. This situation causes some households to live in houses that do not meet the minimum living standards, in unhealthy conditions and lack a qualified urban environment, while some households to pay very high prices to live in adequate housing (Ertürk, 1996; cited by: Sezer, 2011). In this case, one of the main problems regarding housing is the existing housing stock that does not serve the needs in terms of quality and affordability, in other words, the hidden housing deficit. The hidden housing deficit, constitutes additional support to the backlog housing need which refers to the total number of households who, at any given time, lack adequate housing to meet their needs in terms of housing conditions, stability, affordability and suitability (Frey, Leishman, McGreal and Young, 2020).

Besides all these issues, in Turkey, a country where earthquakes frequently turn into disasters, it is frequently emphasized that due to the risky and unqualified building stock which has been constantly legalized by the ongoing zoning amnesties since 1948, there is an urgent need for research on the quality of the existing stock in country level and for developing policy tools. However, there are limited researches

on housing conditions and the quality of the existing housing stock in Turkey in order to fully identify the conditions of the existing housing stock. (Alkan and Uğurlar, 2015).

Housing and living environment conditions are closely linked to mental, physical health and well-being of the people. A *home*, perceived as safe and intimate, develops a sense of identity and attachment and any interference of external factor limits this feeling of safety, intimacy, and control, reduces the mental and social function of the home (Kearns, et al, 2000). Therefore, housing deprivation is of great importance as it is a concept that highlights the use value of housing and helps investigating the hidden housing deficit and backlog housing need. This phenomenon, housing deprivation, is generally considered as the accumulation of insufficiencies in basic housing quality, amenities and living environment related essential items. There are various methods adopted to measure housing and living environment deprivation; nevertheless, there is not a consensus achieved regarding the most appropriate measurements to assess the housing and living environment in the literature yet.

1.2   Aim and Scope of the Thesis

The housing problem has many different quantitative and qualitative dimensions. It could not be reduced to a simple supply-demand imbalance. Housing deprivation is one of the most significant qualitative dimensions of the housing problem which also has implications for the quantiative housing problem as being the main cause of backlog housing need. There is a limited number of studies on housing deprivation or housing conditions in Turkey. However, research and analyzes regarding the existing housing and living environments are of great importance in terms of determining the needs of households and guiding central housing policies. Thus, the aim of this study is to examine the levels of housing and living environment deprivation in Turkey. This examination is done on the basis of tenure types, regions, dwelling types, household compositions and income groups. The geographical

coverage is the national and regional scale. Regions in this context are NUTS 2 regions since the data employed in this study only allows for investigations at this level. Expanding on research on housing and living environment deprivation, this thesis aimed to answer the following research questions.

RQ1: What is the level of housing and living environment deprivation in Turkey and how does this level vary based on tenure types, household composition, dwelling types, income groups and regions?

RQ2: Which problem areas stand out regarding housing and living environment deprivation across Turkey and different regions?

It is anticipated that the results of the analysis to be made in line with these questions below regarding the current housing stock will form a ground for more detailed and comprehensive research.

1.3   Data and Methods

For the purposes of this study, 2020 cross-sectional data of the Income and Living Conditions Survey conducted by the Turkish Statistical Institute is employed. The Income and Living Conditions Survey (ILCS) is the only data set which provides geographical reference while containing the necessary data for comprehensive housing studies in Turkey. Regarding the housing and living environment conditions, the data set provides information on the existence of problems such as leaky roof, damp walls, rotten window frames in the dwelling, heating problems due to insulation of the dwelling, dark rooms or insufficient light, noise, air and environmental pollution, crime and violence encountered in the immediate surrounding of the house. To assess the overcrowding phenomenon, the number of rooms and household size variables are also available. The data set provides additional variables to analyze housing and living environment deprivation on the basis of income, tenure status, dwelling types, household compositions and regions.

Although housing deprivation is covered as a phenomenon that is analyzed with various measures and methods, it is seen that the method of Eurostat is frequently referenced and adopted in related studies. According to Eurostat's definition, people are housing deprived if they live in a dwelling which is considered overcrowded while also exhibiting at least one of the housing problems including dwellings with a leaking roof, dwellings that lack bath/shower and indoor toilet or considered too dark, based on data from Statistics on Income and Living Conditions. In this thesis, unlike to Eurostat's method, households are considered as the major unit of analysis and the overcrowding factor has not been taken as a precondition for housing and living environment deprivation. By using SPSS program, in order to investigate variance of the housing and living environment deprivation based on ownership, household types, dwelling types, income groups and regions, crosstab analyses are conducted. In order to analyze the most significant determinants of housing and living environment deprivation, regression analysis is conducted. For the interregional analysis of different problem areas related to housing and living environment ArcGIS program is used.

1.4   Structure of the Thesis

In the first section, the deprivation phenomenon is discussed and expanded on the housing deprivation term. In the following sections the importance of housing and living environment and its relation with households' mental and physical wellbeing is highlighted. After varying methodologies of housing and living environment are reviewed comprehensively, the key challenges and findings are discussed. Based on the literature, it is aimed to investigate the levels of housing and living environment deprivation in Turkey based on tenure types, household composition, dwelling types, income groups and regions, and to investigate varying levels of each problem area regarding housing and living environment deprivation throughout country and based on different regions.

CHAPTER 2

HOUSING AND LIVING ENVIRONMENT DEPRIVATION

2.1   Defining Deprivation: The Difference Between Deprivation and Poverty

The concept of deprivation can be argued to be gained popularity from the poverty studies, as of the beginning of the discussions on the fact that the low-income factor only by itself was found to be an unreliable indicator in measuring the living standards. Although the terms deprivation and poverty are often used interchangeably in the literature, they have different meanings. Unlike poverty, deprivation is based on views of what elements are necessary to support an acceptable minimum standard of living, whereas poverty focuses on the adequacy of income to support a minimum standard of living (Saunders, Wong & Wong, 2014). In other words, deprivation refers to being deprived of the elements necessary for minimum living standards and therefore living under minimum living standards, while poverty refers to the situation where the total income is insufficient to meet minimum needs. The main difference between the concepts is therefore apparent as income poverty actually refers to means to achieve the quality of life and well-being whereas deprivation refers to ends by reflecting the results (Fusco, 2015). Besides, households or individuals can be deprived without being poor since being deprived of specific needs may depend on many factors other than income, such as age, gender, or social exclusion related to varying reasons (Saunders et al. 2014). However, it is stated that there are not many poverty situations that do not include any kinds of deprivation (Rowley, et al. 2021).

The Council of Europe (1984) defined the poor as individuals, families or groups whose material, cultural and social resources are so limited that they are excluded from the minimum standard of living of the society in which they live. Individuals

defined as poor in academic research generally refer to the population below a certain level of median income. However, there has been widespread criticism in poverty studies that the income factor has limits and that it cannot always accurately determine living standards, thus, studies focusing on living standards along with monetary indicators have increased (Ayala & Navarro, 2007). Along with Townsend (1979) and Sen (1980), as one of the leading theorists working on this subject, Mack and Lansley (1985) pioneered the use of non-monetary criteria in poverty studies (Nolan, Whelan and Layte, 2001). Ringen (1988) also demonstrated in his research on Sweden that low-income factor only by itself is not a reliable indicator for measuring poverty, and he reached conclusions consistent with various other studies showing that the ownership of durable goods is not particularly low at the bottom groups of the income distribution (Nolan et al., 2001). Desai and Shah (1988) in their study on Townsend's (1968-1969) data, proved that income is far from being the only or even the most essential variable on deprivation. Also, according to Fusco (2015), although researches examining the link between deprivation and income often found that high incomes are correlated with low deprivation levels, the strength of the relationship is mostly lower than expected. According to his research, the strength of the relationship is stated to be more vital for items regarding financial difficulties and weaker for the items regarding the living environment and housing conditions (Fusco, 2015).

In view of all these studies carried out regarding poverty, examining the minimum living standards and lack of essential items along with the income factor is considered a more direct and reliable approach compared to the method of identifying deprived people based on expenditures or income that is below a 'poverty line' determined (Borooah, 2008; Pérez-Mayo, 2005; Ringen, 1988). Thus, the item-based approach combining income and non-monetary indicators is widely adopted as an alternative to the monetary approach that supports deprivation analysis (Borooah, 2008). In addition, Nolan et al., (2001) in their research reassessing the poverty measure combining income and necessities, found that despite the changing expectations of necessities of the households, with an unchanged set of deprivation

items for a 10-year period covering 1987-1998 in Ireland, this approach can still detect the deprived groups in general, although it is not very inclusive.

In the literature, the fact that the elements necessary for minimum living standards express socially perceived needs, thus the role that community norms play in determining basic needs, is often emphasized (Mack & Lansley, 2018). As community norms vary depending on different geographies and cultures, income and development levels of countries are differentiating; it is highly controversial to determine the items for minimum living standards and to determine a threshold that measures deprivation level. Townsend's early work on poverty (1979) from which the literature on deprivation mainly stems, focused on lacking necessary items accepted in the society's for living a decent life while not being excluded from common living patterns, and built a scale of deprivation in order to derive a poverty threshold. Townsend has conceptualized "relative deprivation" by pointing out the "*conditions* of deprivation *relative* to others". With this perspective, Townsend argued that people are relatively deprived if they cannot access the things that are widely available in society and thus, he created a deprivation index consisting of 60 indicators regarding living standards (Yamamori, 2019).

Following Townsend's work, Mack and Lansley (1985) also developed a methodology in order to select items that are perceived as necessities by the society collected views of the people. However, Mack and Lansley (1985), proceeded with a methodology that distinguishes whether households' deprivation of certain items is caused by an enforced constraint or preference, thus developed the concept of "*enforced lack of the items*". That methodology developed by Mack and Lansley that allows distinguishing between enforced lack of items and lack of items due to preferences has also been used in European Union Statistics on Income and Living Conditions (EU-SILC) questions regarding durable goods (Guio, 2009; Eurostat Report).

Difficulties in determining a deprivation threshold and determining which items are necessary for the well-being of the individual still need to be reconciled and debated

problems. Nevertheless, the "capability approach" introduced by Amartya Sen in the mid-1980s, has also gained a wide acceptance as an alternative approach to Townsend's approach. This approach suggests focusing also on individuals' capabilities to live a good life and freedom (opportunities and processes) to pursue well-being rather than focusing on merely commodities or wealth they have. He argues that commodities do not accurately reflect the objective state of the individuals' well-being and living standards however it is also the degree to which people are able to convert goods into capabilities that matters. His idea of poverty has an absolutist core, but he also rejects that poverty is constant over time and space. Based on his definition of poverty as deprivation of the capability to have a good life, the variables are relative (Yan Xi & Ting Xuan, 2021; Rauhaut & Hatti, 2021) since different needs of the individuals will require different levels of sources in order to achieve the same standard of living (Hick, 2012).

It is emphasized that the need for a composite approach to multidimensional handling of social disadvantage has been agreed upon in recent years (Palvarini & Pavolini, 2010; Ayala & Navarro, 2007) in which housing plays a central role.

2.2   Housing Deprivation

Although there is no consensus on the definition of housing deprivation, the concept of housing deprivation is generally considered as the accumulation of deficiencies in basic housing quality, amenities and housing related essential items (Navarro & Ayala, 2007; Borg, 2014). Since deprivation can be experienced by households at very different levels and deficiencies in housing occur on a wide and varied scale (Palvarini & Pavolini, 2010), housing deprivation is considered a very complex phenomenon. It is also emphasized that it would be insufficient to deal with housing deprivation only according to objective indicators based on physical deficiencies in housing and that deprivation is a somewhat relative issue also based on subjective views of the households' needs (Townsend, 1979; Mack & Lansley, 1985).

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Ida Borg (2018) with reference to Townsend argues that upgrading housing standards in the early 19th century meant the sharing of water taps in the courtyard by wealthy Western European standards and still today, in many countries the close proximity of the water tap to the household would mean considerably better quality of living. Considering this, it can be argued that the quality of living standards becomes related to the problems commonly experienced by households living in a particular community, and thus becomes a relative phenomenon indeed.

Besides, in different geographies and cultures, there would be different deprivation indicators and even a small period of time may change these indicators significantly. For instance, before 1961, 2 or more people per room was defined as overcrowding, and after 1961 this definition changed to more than 1,5. It is stated by Townsend (1979) that these changing housing standards are significantly influenced by researches on the relationship between housing and households' health.

Recently, it is stated by many scholars that the Covid-19 pandemic has affected the relationship of households with their homes and thus the standards. Especially during the quarantine period, regarding the physical and mental health of the households, factors such as having enough space to provide social isolation, having sufficient technology in the house, the distance of the house to critical locations, having enough open space in and around the house, economic stress caused by the house has become as important as its physical conditions (Ayala et al., 2022).

2.2.1 Aspects of Housing Deprivation

Researches linking physical and mental health to housing cover a wide area in the literature. Many studies have shown statistically significant associations between poor health and poor housing/living environment conditions. Although a variety of socio-economic, environmental, lifestyle-related and cultural factors have effects on individuals' health and well-being in general, due to the large amount of time spent within home along with the financial and psychological resources spent for home

(Evans et al., 2003) housing deprivation plays a crucial role upon physical, mental and social well-being (Marsh et al., 1999). "Housing and Health Guidelines" report that has been prepared by the World Health Organization (2018), highlights the importance of improved housing conditions based on the evidence on the association between housing conditions and health, thus recommends the implementation of the policies to reduce overcrowding, low and high indoor temperatures, housing related injuries, and provide accessibility of housing for people with functional impairments.

The researches examining the relationship between the well-being of the households and housing deprivation diversify in parallel with the various aspects of the housing. Shaw (2004) draws a model conceptualizes these varying ways in which housing impacts the physical and mental health of the individuals under direct-indirect, hard-soft (material-social) aspects. According to this model, direct-hard ways include the material conditions of housing affecting physical health, whereas indirect-hard ways include income, wealth or neighborhood level conditions such as the availability of services and features of the living environment. Soft (social, meaningful) and direct ways include feelings of home, ontological security while soft-indirect ways represent social capital, household and area culture/behaviors. According to Shaw, the material impacts of housing on individuals' health have become the most widely focused aspect in the historical context since the Industrial Revolution which has dramatically impacted urban areas and living conditions. However, "soft factors" as she refers, were also apparently still in those times (Shaw, 2004).

Physical Aspects

The key physical health outcome that has been linked to housing is respiratory health, which is determined by the lung function or by the presence of respiratory disease, with cold (temperature) and dampness being stated to be the primary factors (Shaw, 2004). Significant problems such as ineffective heating systems and insulation measures or a lack of hygienic and sanitary facilities are stated to be causing the growth of mould, indoor air pollution, and emissions from building materials (Bonnefoy, 2007). Also, the inability to maintain a calm temperature in the house is

strongly linked to suffering from energy poverty (Mari-Dell'Olmo et al., 2017; Liddell & Morris, 2010); along with a variety of health problems such as depression (Liddell & Guiney, 2015), high blood pressure, respiratory conditions, and especially among the elderly, increased rates of mortality (Lloyd et al., 2008; Ormandy and Ezratty, 2012; Braveman et al., 2011). Housing conditions have significant impact on unintentional fatal injuries especially for older households according to Hernandez and Swope (2019), since dwelling's low standard physical conditions may cause injury.

Overcrowding, most commonly measured by persons-per-room ratio and is another aspect of housing deprivation that have been widely discussed, is often linked to problems such as inadequate personal space, lack of control over the environment, obstructing social interactions, requiring social receptivity, all of which may result in psychological distress, physical and mental exhaustion for many (Ruiz-Tagle & Urria, 2021) along with physical illness including infectious disease (Taylor, 2018).

Along with the most widely used measure, there are other prevalent measures of overcrowding such as: the total number of persons in a unit; the ratio of persons per in square meters/feet; and the person-to-size ratio adjusted for household composition, structure type, lot size, and so on (Blake et. al., 2007).

Table 1. *Measures and Standards of Overcrowding*

Measures and Standards of Overcrowding	
Person Per Room (PPR)	
Physical Health	Ranges from >1 - >1.50
Mental Health	Ranges from > 0,75 - >1.50
Personal Safety	Ranges from >1 - >1.50
Person Per Bedroom (PPB)	
Physical Health	>2.00
Children's Health and Education	>2.00
Unite Square Footage Per Person (USFPP)	
Generally >1 person per 165 sqft	

Sources: Blake, K. S., Kellerson, R. L., & Simic, A. (2007) and Marsh, R., Salika, T., Crozier, S., Robinson, S., Cooper, C., Godfrey, K., & SWS Study Group. (2019).

Table 1 demonstrates the generally accepted thresholds for various conditions regarding mental or physical well-being in calculations based on bedroom or room. Table 1 also shows that the overcrowding level for PPR is often accepted as greater than 1.5, whereas the standard for PPB is accepted 2 in most cases (Blake et al., 2007).

Table 2. *Overcrowding Standards According to Different Institutions*

Institution/Country	Standard
UN Habitat	>3
U.S. Census Bureau	Crowding if >1 Severe crowding if > 1.5
Canadian National Occupancy Standard	If extra bedroom is required to provide each below a bedroom; • cohabiting adult couple • lone parent • unattached household member aged 18 years or over • same sex pair of children aged under 18 years • each additional boy or girl in the household (unless there are two opposite sex children under 5 years)

Table 2 (continued)

British Bedroom Standard	Overcrowding if extra bedroom is required to provide each below a bedroom; • cohabiting adult couple • person aged over 21 years • same sex pair of children aged 10–20 years • two children aged less than 10 years • two children where one is aged 10–20 and one is aged less than 10 years • any other person aged under 21 years that is not paired under one of the preceding categories
Eurostat	Overcrowding if the household does not have at its disposal a minimum number of rooms equal to; • one room for the household • one room per couple in the household • one room for each single person aged 18 years or more • one room per pair of single people of the same gender between 12–17 years • one room for each single person between 12–17 years and not included in the previous category • one room per pair of children under 12 years

Source: *WHO Housing and Health Guidelines. Geneva: World Health Organization; 2018. Measures of crowding. Available at: https://www.ncbi.nlm.nih.gov/books/NBK535289/table/ch3.tab2/#*

Table 2 presents overcrowdings standards across various institutions or countries. As illustrated in this table, the calculations are based on room or bedroom standards. Interestingly, UN Habitat accepts the person per room ratio threshold as 3, which is much higher than the 1 or 1.5 thresholds frequently encountered in the relevant literature.

House is about more than just the physical conditions it offers to its households. As stated by many researchers, housing determines the location of the individuals in the city, and thus determines how easily households can benefit from urban services, to what extent they can relate to which social groups, and even to which jobs they may access; therefore, it also becomes one of the key factors for the physical and mental well-being of individuals.

Researches show that the availability of amenities in the living environment including adequate transportation, short distance stores with nutritious foods, and safe, pollution-free open spaces to exercise for all age groups are all associated with better health outcomes (Bravemen et al., 2011; Taylor, 2018). According to research conducted in the US, better access to supermarkets which generally tend to have various high-quality products at the lowest cost and lower access to convenience stores that sell mostly prepared, high-calorie foods with higher prices is strongly linked to healthier diets and lower levels of obesity (Larson et al., 2009). Living in close vicinity to busy highways, on the other hand, can increase the occurrence of respiratory conditions like asthma and bronchitis as well as the need for health care (Taylor, 2018). Urban planning that prioritizes driving, limits possibilities for physical activity, and discourages walking and cycling due to different factors (fear of crime, lack of connectivity etc.) is also proven to have significant negative influences on health (Saelens et al., 2003). Therefore, the compact city model that encourages physical activity with mixed land-use often considered facilitating healthier choices in the literature; however, it is also stated that density may lead to increased air pollution, heat island and noise, if not managed well (D'Alessandro and Appolloni, 2020).

Social Aspects

Since 'home' refers to more than simply a physical shelter, but also a foundation for social, psychological and cultural wellbeing, housing quality refers to more than simply quantitative and technical parameters, but also has a strong correlation with social security in both objective and subjective sense (D'Alessandro & Appolloni, 2020; Rasnaca, 2017). Housing, on the other hand, as the center of real estate capital in the financialized global economy, which is primarily provided by housing markets in parallel with the rules of demand and supply (Cittadini, 2021; Madden & Marcuse, 2021) has become an essential field in terms of power relations, distribution of wealth and in the production of social identity and status (Dunn & Hayes, 2000). As a result of increasing marketization of housing, and changing significance from its use value to exchange value, the number of livable, stable and affordable housing is gradually decreasing (Madden & Marcuse, 2021). Madden & Marcuse (2021) argue that although the effects of residential alienation as a result of excessive commodification of housing are experienced unevenly, it would be a mistake to assume that problems such as experiencing home as an insecure place and alienation are only a problem for the lowest income groups. Regardless of the income group, problems such as feeling insecure due to worries of displacement or forced move, housing-related financial strain, poor housing and neighborhood conditions negatively affect the relationship between the individual and the house and the meanings attributed to the house as a "home". Dewilde (2021) links rising housing prices and price volatility, which points to the financialization of the housing market, with increased deprivation of living standards especially for tenants and low-income property owners. High housing-related costs may result in decreased well-being through multiple mechanisms, such as forced trade-offs between housing costs and paying for other essential goods and services as health insurance, heating, medications, energy and food (Braveman et al, 2011).

Home that is perceived as safe and intimate leads to foremost psychosocial benefits. Dunn & Hayes (2000) state that a significant relationship exists between overall

house satisfaction, including dwelling and neighborhood satisfaction, identity and meaning related to living environment.

2.2.2   Measuring Housing Deprivation

"A house may be large or small; as long as the neighboring
houses are likewise small, it satisfies all social requirements for
a residence. But let there arise next to the little house a palace,
and the little house shrinks to a hut. The little house now makes it
clear that its inmate has no social position at all to maintain."
Marx, Wage, Labour and Capital (1847/1957)

Despite the fact that the right to a decent place to live is widely recognized as a fundamental component of well-being, there is not a consensus achieved regarding the most appropriate measurements to assess the extent to which households possess this right (Ayala and Navarro, 2008). Measures of housing deprivation are often explored as dependent variables in empirical studies to compare the incidences of housing quality problems for various groups or to compare alternative theories about what causes cross-national heterogeneity in such problems (Hick et al., 2022).

Researchers analyzing deprivation in general, face the constraints of dealing with the multidimensionality of the concept (Pérez-Mayo, 2005). Yet, there is a wide range of literature on multidimensional deprivation that offers a variety of methodologies that, following a thorough selection of the key indicators, can be rather easily applied to the case of housing deprivation. While some research adopt a counting approach, others suggest alternate, more complicated methods that would be applied to the observed frequencies (Ayala et al., 2022).

Trying to define the housing deprivation, just as deprivation, necessitates the identification of wide range of issues such as the requirements of the dwelling to be considered adequate, the parameters that matter, the evaluation process, the set of conditions to attain minimal state of well-being and to aggregate those into one

index. Among the encountered difficulties when developing indicators of housing deprivation, problems of setting a threshold under which basic residential needs are considered not met, heterogeneity in households' needs and changing importance given by households to the attributes, whether the lacking of the items results from choice or not and, the aggregation process to build a single index stand out to be the most commonly mentioned constraints.

Selecting Items

Most of the studies that focus on housing as one of the main dimensions where deprivation occurs include basic facilities (hot running water, heating, indoor toilet and bath), the presence of structural problems (leaky roof, damp and rot in floors, windows and doors) and overcrowding as important features. However, there are also studies that include the basic facilities and structural problems while excluding overcrowding as well as the ones that include broader dimensions (Hick et al, 2022). Mandic and Cirman (2012) for instance, along with the physical components of housing standards such as perceived lack of space, occurrence of rot in windows, doors and floors, damp and leaks, and lack of indoor toilet, also included characteristics of the environment indicated by the extent to which households' complaints concerning safety, noise, and deficiency of open areas in the living environment. Ayala, Barcena-Martín, Canto and Navarro (2022) emphasizing that the basic needs for housing have changed during the pandemic period, included dimensions such as dwelling type, security problems, pollution in the neighborhood, as well as the presence of computers and internet in the house as the housing deprivation indicators (Ayala et al., 2022). Nevertheless, most studies on housing deprivation prefer using extensive data in household surveys, income and living conditions indices provided, and generally analyze these items.

Aggregation of Items

The most commonly used approach has been the arithmetic addition of the items that the individual does not have. This approach is generally based on a zero/one

dichotomy (Townsend, 1979; Mack and Lansley, 1985; Nolan and Whelan, 1996; Federman et al. 1996) and an individual or family is considered deprived in terms of a certain item whenever the realization of the item is below the *social norm*. However, this dichotomy is criticized since deprivation is a multidimensional phenomenon that realizes in different degrees and levels rather than being an attribute that characterizes an individual in terms of its presence or absence (Betti et al., 2015).

Townsend's index (1979) which is the pioneering one in terms of measuring deprivation is constructed based on the arithmetic addition of items not present, chosen under twelve indicators based on living conditions and correlated with income. Townsend by interviewing the households of different backgrounds, investigated the housing deprivation with respect to the household type, occupational class, age, the type of tenure and the regions of UK including rural/urban/conurban distinction. In the interviews he asked respondents whether households' housing had any structural defects, carefully prompting answers on such specific questions as rising damp, damp walls or ceilings, loose brickwork or plaster, roofs which leaked, windows and doors which fitted badly or did not open or close, and floorboards or stairs which were broken and also questioned the needs expressed by respondents about housing and the problems they see as serious or/and urgent problems in order to measure the subjective experience of deprivation.

The method based on adding up the commodities was also used by Mack and Lansley (1985), who included additional conditions in order to determine the "enforced lack". According to their approach, any item regarding living standards included should be considered as a necessity by most of the households surveyed and households' lack of necessities need to be related to their income. Also, the information about the reasons behind the lack of necessities should be clearly obtained, in order to examine whether people choosing to go without or being forced into this situation. Because among those with the lowest living standards, lack of a necessity due to not wanting it may stem from very different causes from those whose choice is based on an ability to afford alternatives basically. The number of necessities that individuals choose to

go without is another main qualification, as stated by Mack and Lansley. Since the effect of lacking one or two necessities is smaller than lacking many others, the total number of necessities that individuals lack is usually of more importance than the particular necessities that they do not possess. Also, according to their study, while a significant number of the high-income groups choose to forgo one or even two necessities, merely 4 per cent choose to go without three or more (Mack and Lansley, 1985).

Arithmetic addition of the deprivation items has been criticized for implicitly imposing a serious value judgment due to the fact that it does not differentiate the weight of each item (Ayala & Navarro, 2008). An alternative approach by using a ***weighted mean*** of necessities instead of arithmetic addition has been proposed by Desai and Shah (1988) firstly. They adapted their measure to Townsend's rich data collected in years between 1968-1969 for England. Desai and Shah argued that, if relative deprivation, as suggested by Townsend, is about not being able to participate the activities, and to have the living conditions and amenities which are at least widely encouraged and approved by the communities to which individuals belong, this requires measuring the average style of living in the community first. Consumption occurrences experienced by individuals or households over a period of time gives the opportunity to measure the typical living style as well as the deviations from that life style. By analyzing the times an individual practiced consumption that comprise of set of events, the deviation from modal consumption was projected. Also, in order to capture the subjective feeling of deprivation, each incidence of deprivation has been weighted about the proportion of the total community not deprived, since one would feel more deprived if one is in the minority than if nearly half of the community is deprived. Thus, they transformed the zero/one classification of non-deprived/deprived into the *possibility* of being deprived (Desai and Shah, 1988).

Following Mack and Lansley (1985), Desai and Shah also investigated whether people do not enjoy typical living style due to lack of resources or simply a difference in taste by predicting with a regression of the realization of a certain attribute against

a vector of socio-economic characteristics. Since people, in fact, tend to adapt to their living conditions, the fact that their choices are largely dependent on the conditions they are in makes it important to conduct an "*enforced lack*" analysis by taking socio-economic conditions into account.

Various latter studies also adopted the approach in which the items or necessities regarded important by most of the population are given more weight (Ayala & Navarro, 2008). Equal weighting is criticized generally due to having evident disadvantages including its inability to distinguish between components that are thought to play distinct roles and double-counting if the informational value of two independent traits partially overlaps (Brandolini and D'Alessio, 1998). However, because of the unavailability of the data, lack of reliable basis (e.g. disagreement in social groups or public opinion in general if asked about the importance of a matter) (Mayer and Jencks, 1989) or merely due to the simplicity it offers, this approach may also be a matter of preference. An alternative to this approach is widely used (e.g. Martinetti, 2000; Desai and Shah, 1988; Palvarani and Pavolini 2010, Whelan et al. 2001 and Muffels and Fouarge, 2004) "frequency-based weighting" by which the higher weight is assigned to the deprivation that is experienced by the lowest percentage of people (Brandolini and D'Alessio, 1998). Also, Proportional Deprivation Index applied by Böhnke and Delhey (1999) offers a weighting approach in which an individual's deprivation score increases as the items the individual cannot afford increase and in line with the importance of these items in the opinion of the general population (Böhnke and Delhey, 1999).

Following Desai and Shah's study, Brandolini and D'Alessio (1998) carried out a study by adopting Amartya Sen's capability approach. In this study, which questions the practicability of the capability approach to measure living standards and thus well-being, it is theoretically examined that well-being is considered as the freedom of choosing among alternatives, namely "capability", rather than just the combination of functions that one can achieve. However, due to the facts that the capabilities are actually hypothetical situations which may never occur, current and future alternatives are quite uncertain, and the reliability of the collected information

regarding hypothetical choices is arguable, it is stated by the researchers that evaluating well-being on the basis of functionings with achievements rather than capabilities would be a better choice; besides what one can do is mostly dependent on the data available (Brandolini and D'Alessio, 1998).

Brandolini and D'Alessio (1998) also objected the deprived/non-deprived binary by arguing that the distinction between "the good state" and "the bad state" might occur in different degrees. There are two possible ways of taking into account this vagueness: one is to follow Desai and Shah's approach which specifies the distance of an attribute from the modal value which represents the social norm, the other is to apply the "*fuzzy sets theory*" which was first introduced by Zadeh (1965) and proposed for multidimensional poverty analysis by Cerioli and Zani (1990). The fuzzy sets theory based on the "membership function", interprets deprivation as a phenomenon that appears in different degrees and assumes that any value between 0 and 1 is partially a member of the set of deprived. Larger values represent higher degrees of membership (Brandolini and D'Alessio, 1998; Martinetti, 2000). Also, Martinetti (2000) adopted Amartya Sen's theoretical perspective on the capabilities and functionings, with the use of fuzzy sets theory in his study to overcome the methodological issues related to the multidimensional analysis of well-being due to the vagueness of the concept of deprivation along with well-being. Martinetti (2000) also used the weighting structure which assigns higher weight to the functionings that are reached by a wide majority of the population.

Most recently Ayala, Barcena-Martín, Canto and Navarro (2022) adopted fuzzy sets approach with the aim to examine the extent of housing deprivation confronted by households in European countries when COVID-19 lockdown measures were implemented. Their research suggested a compound measure of housing deprivation to examine whether housing conditions were significantly different among individuals within each European country just before the lockdown began. This measure, which is based on pre-Covid EUSILC data (2019), has more dimensions than the official Eurostat indicator of severe housing deprivation and since it avoids

deprived/non-deprived dichotomy, it can be used to evaluate the varying levels of housing deprivation experienced by individuals during a lockdown (Ayala et al., 2022). Determining the items, they considered the items in the official EU definition of severe housing deprivation along with some additional Covid-19 related variables that they consider might have an effect on household's well-being during a lockdown, such as the ones related to living space, technology, environmental and economic stress (Ayala et al., 2022). In order to identify the dimensions and create meaningful groups including relevant items they used factor analysis and then computed the weights. During the weighting process, just like the widely adopted process, they considered deprivation affecting a small proportion of the population more intense at the individual level and limited the influence of redundant items. Thus, score within each dimension is calculated as the weighted means of items in that dimension and the membership function for each individual for a housing dimension is determined (Ayala et al., 2022).

Using multivariate techniques including principal component analysis, factor analysis and cluster analysis is another option to create multidimensional deprivation indexes. Some studies (e.g. Maasoumi and Nickelsburg 1988; Atkinson et al. 2014; Wan and Su, 2016; Mishra, 2018) use principal components analysis (PCA) which was first proposed by Ram (1982), in order to create the linear weighted combination of the indicators. Principle component analysis is thought to be beneficial for reducing a large number of variables in the data set into a more comprehensible and coherent set of uncorrelated factors (Krishnan, 2010).

Callan et al. (1993), Layte et al. (2001), Nolan and Whelan (1996) applied **factor analysis** to a set of combined relative income and non-monetary deprivation indicators. Their findings showed that deprivation can be classified into three categories: basic needs, secondary needs and residential conditions (Pérez-Mayo, 2005; Ayala and Navarro, 2008).

Cluster analysis was used by Hirschberg, Maasoumi and Slottje (1991) which is basically a "similarity" analysis to identify distinct dimensions for multidimensional

analysis of quality of life and well-being. Also, Senior (2019) used cluster analysis by criticizing the widely used English Index of Multiple Deprivation (IMD) and suggested that similarly ranked areas that may actually differ significantly in the domains of deprivation. Senior (2019), used a hierarchical agglomerative clustering algorithm which computes the Euclidean distance between each local authority based on average scores on the 7 domains of deprivation and links two of the local authorities that have the lowest distance score repeatedly, until only one cluster remains (Senior, 2019).

Another alternative is the use of latent class models, which gained popularity especially recently. Gailly and Hausman (1984) used this statistical technique developed by Rasch (1960) that sums up a set of indicators in a multiple deprivation scale (Fusco & Dickes, 2008). Also, Pérez-Mayo (2005) proposed identifying households suffering deprivation or poverty from a multidimensional perspective based on the use of latent class models. According to Pérez-Mayo (2005), dependency relationships between categorical variables usually arise from a fundamental relationship between them and another variable, namely, the latent variable which cannot directly observed. The latent class model is a statistical technique that allows to examine the presence of latent variables from a set of explanatory and observed variables and to define a typology of analyzed households from classes (Pérez-Mayo, 2005; 2007). Using the latent class model to categorize households into different groups, Ayala and Navarro (2007) demonstrated the extent of housing deprivation throughout a certain period to investigate the persistence of the housing deprivation.

In addition to all these, regression techniques are also preferred when analyzing the primary determinants that explain the variation in housing problems (Hick, Pomati and Stephens, 2022). For instance, multilevel regression analysis is preferred by Ida Borg (2015) in her study investigating the impact of rental tenure types on housing deprivation, due to reasons such as individual observations cluster according to countries which creates dependency between the country level and the individual level, hierarchical structure of the data, and the dependent variable being

dichotomous (0 and 1) (Borg, 2015). Borg (2015) calculated housing deprivation as experiencing overcrowding and one of the following: a leaking roof/damp walls, floors, foundation or rot in window frames or floors, no bath/shower, no indoor toilet or a dwelling that is too dark, as in Eurostat's method.

Nolan and Winston (2010) in their study investigating the dimensions of housing deprivation for older people in Ireland, preferred using multiple regression techniques to address two distinct issues relevant to housing-related problems and older people (Nolan and Winston, 2010). Also, Hick, Pomati and Stephens (2022) in their study focusing on the EU's severe housing deprivation measure's subcomponents that are "overcrowding" and "problems regarding housing conditions", show by using multiple regression techniques that those subcomponents are weakly related to each other and their variation differs across nations. They also suggest that the aggregation rule of the measure substantially influences observed incidences of this problem.

In deprivation researches, problems such as the concept's having a variety of sub-components, the vagueness and subjectivity of the concept have led to various discussions and diversity of ideas on how to measure deprivation. However, since housing deprivation is a more limited phenomenon discussions of methodology do not find as wide place as deprivation. Instead, questions concerning main determinants of housing deprivation and how it varies between various social groups or political regions constitute the main discussions regarding this phenomenon.

2.2.3 Index of Multidimensional Deprivation (British Perspective)

The Index of Multiple Deprivation was developed in the UK in 2000, within the scope of the Neighborhood Renewal Strategy in order to determine the deprivation of small neighborhoods and to determine the financing programs, necessary services and funds to be transferred by the central governments according to the level and areas of deprivation by region. The small neighborhoods called Lower-layer Super

Output Areas (LSOA) have been designated to accommodate population groups of 1.500 on average.

It can be argued that, with this approach, the areas exposed to deprivation represent the total of the deprived people, therefore the development of directly individual-based policies rather than place-based can be more effective. Nevertheless, according to the literature, interventions have been made for individuals for a long time in Western European countries with the view that improving the socio-economic characteristics of individuals will bring the improvement of the neighborhood; however, it has been shown by researches that the socio-economic status of such neighborhoods remains relatively stable over time (Boje-Kovacs, Egsgaard-Pedersen, Aske and Weatherhall, 2021). Therefore, many researches often stress the importance of the individual and household aspects of deprivation, as well as the neighborhood-level effects, and indeed the coexistence of people-based and place-based policies (Deas, Robson, Wong and Bradford; 2003).

Index of Multiple Deprivation consists of 7 main domains including income deprivation (22.5%), employment deprivation (22.5%), health deprivation and disability (13.5%), education, skills, training (13.5%), crime (9.3%), barriers to housing and services (9.3%), living environment (9.3%) domains. There is no scientific or absolute method for the weight ratios of the domains specified in parentheses. (Smith, Green and Ritchie, 2018). According to the measurement results, 32.844 sub-level neighborhoods are ranked from the most deprived (1) to the least deprived (32.844) in accordance with their scores. Standard practice in government reports is to use frequency-based statistical summaries and graphs to group data across some administrative hierarchies and show how small neighborhoods are distributed by IMD decimal point (Ministry of Housing, Communities and Local Government, 2019). Most recently, the version in 2015 has been updated and applied with the same method.

Two of the 7 main domains of the Index of Multiple Deprivation, Barriers to Housing & Services Domain and Living Environment Deprivation Domain, are related to

housing and living environment, and these domains constitute 18.6% of the index. The Barriers to Housing and Services domain measures the physical and financial accessibility of housing and urban services. This indicator includes geographical barriers related to physical distance in accessing primary school, health centers, markets and residences, and broader barriers such as affordable housing, household overcrowding, homelessness caused by social-economic factors. (Ministry of Housing, Communities and Local Government, 2019).

The Living Environment Deprivation Domain is a measure of the quality of the urban environment. The indicators of this domain are divided into two sub-indicators as indoors living environment and outdoors living environment. Indoors living environment includes indicators such as poor housing conditions and housing without central heating, while the outdoors living environment includes indicators such as urban air quality and traffic accidents (Ministry of Housing, Communities and Local Government, 2019).

Although it is an innovative measurement that has been renewing itself based on criticisms since 2000, there are still up-to-date criticisms of the index (Deas et al., 2003). For instance, while the deprivation scores of sparsely populated areas are generally lower, city centers and towns seem to be the most deprived areas, and criticisms of this challenge and suggestions for the separation of rural-urban sub-regions in the context of deprivation have been made by some researchers (Deas et al., 2003; Bertin, Chevrier, Pele, Serreno-Chavez, Cordier and Viel, 2014; Radburn and Beecham, 2021). Also, there have been criticisms regarding that all region-based measurements are based on the assumption that the problems related with deprivation are experienced by the same people just because they happen to be in the same area (this phenomenon is called ecological fallacy), and that the weights of the indicators are not determined by a scientific method (Smith, Green, Whittard and Ritchie, 2018).

2.2.4 Severe Housing Deprivation Index (Eurostat Perspective)

Eurostat, based on data from EU-SILC among its set of indicators on income and living conditions monitors the incidence of a range of problems regarding housing conditions that are considered housing deprivations, such as dwellings with leaking roof, dwellings lack of bath/shower and indoor toilet or dwellings considered too dark. *Severe housing deprivation*, on the other hand, as measured by Eurostat reflects the share of the population living in a dwelling which is considered overcrowded, while also exhibiting at least one of the forementioned housing deprivation measures.

A person is considered as living in an overcrowded dwelling, according to the Eurostat calculations, if the household does not have at its disposal a minimum number of rooms equal to:

- one room for the household;
- one room per couple in the household;
- one room for each single person aged 18 or more;
- one room per pair of single people of the same gender between 12 and 17 years of age;
- one room for each single person between 12 and 17 years of age and not included in the previous category;
- one room per pair of children under 12 years of age.

According to Eurostat's above calculations, 17.5% of the EU's population lived in an overcrowded home in 2020. This rate varied widely across countries, from less than 5% in Cyprus, Ireland, Malta, and the Netherlands to over 30% in Slovakia, Croatia, Poland, Bulgaria, Latvia, and Romania. The overcrowding rate reached above 50% among some of the candidate Eastern-European countries such as 64.6%

in Montenegro, 58.1% in Albania and 52.5% in Serbia. In Turkey, the rate has been calculated as 40.0% (Eurostat, 2020[1]).

However, in Turkey, it is a matter of debate how accurate the calculation of overcrowding from a European perspective will be, due to household types and cultural norms. For instance, in Turkey, leaving the family home and settling in a a separate house usually occurs when the person has to change city due to work or university, or in case of marriage (Sarıoğlu, 2010). When these conditions are not fulfilled, the person and the family reside in the same city, even at ages over 30, separate single person household may not be formed (Sarıoğlu, 2010). While, in western countries it is common to form a private household after the age of 18 regardless of the education, work or marriage circumstances (Sarıoğlu, 2010).

Again, according to Eurostat data, the average room per person ratio in European Union countries in 2020 is 1.6. Furthermore, there were on average 2.3 persons per household in the EU in 2020. While average person per household rate is 2 within European Union countries such as Germany, Denmark, Finland and Sweden, this rate reaches 2.7 in Croatia, 2.8 in Poland and 2.9 in Slovakia where the maximum level is observed. In Turkey, on the other hand, according to Eurostat data, the average household size is 3.3 for the same year. This means that along with other differences due to cultural norms, in Turkey, more crowded households reside in the houses. Thus, a unique perspective is needed instead of the western perspective.

In the literature, there are many criticisms in the methodological context of Eurostat's material living conditions index in general, such as problems in selection of deprivation items, multidimensionality, aggregation and weighting. For instance, it is asserted that different choices and preferences may contribute to the problem that a person will appear to be more deprived the less closely their preferences match

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[1] See: https://ec.europa.eu/eurostat/databrowser/view/ilc_lvho05a/default/table?lang=en Accessed: 27.11.2022

the list of items compiled and selected in the index (Halleröd, 1995; cited by Eurostat, 2009).

It is stated that although EU-SILC questions enable distinguishing between lack of items due to choice and enforced lack of items, some people may report that they do not want things which are impossible for them to obtain while some people may feel ashamed to admit not being able to afford buying certain items (EuroStat, 2009).

2.3   Housing and Living Environment Deprivation Discussions in Turkey

Uzun (2022) states that housing policies in Turkey can be explored under four time periods by taking some turning points regarding housing policies into consideration. The first period, from 1923 to the 1960s, in which policies were rather concentrated on the housing needs of government officials, the second period between 1960s - 1980s, especially with the 1961 Constitution and Five Year Development Plan prepared as of 1962, for the inadequate housing supply as a result of rapid urbanization were prioritized, the third period of mass housing policies adopted as of the 1980s, and the last period, as of 2000s to present, urban transformation projects, which have come to the fore with incentives constitutes these four critical periods (Uzun, 2022).

It can be argued that the discussions on the quality of housing in Turkey started with the First Five-Year Development Plan, dated 1962. The accelerated urbanization rate, between years of 1950 and 1960 in Turkey, and the population living in cities, especially between 1955 and 1960, reached 31,9 per cent in 1960 with an increase of 3,4 per cent in five years, revealing the problems which created the demand for affordable housing either to be met by the private sector or the state (Özden, 2013). *Gecekondus*, which cannot reach any standard by definition, and which have been legalized by various governments with zoning amnesties since 1948, also appeared as a solution during these years (Altürk, 2021). As of 1960s, despite the regulations that were meant to have been made for low-income citizens such as the cooperatives

and build-and-sell housing presentation forms that emerged, and the Squatter Law (1966), which aimed to encourage the granting of land to citizens to meet their housing needs, lead to increased numbers of *gecekondus* (Uzun, 2022).

Although the state's role has always been limited in terms of housing production, the First Five-Year Development Plan aiming to improve the living conditions of the growing population in urban areas most efficiently due to limited resources and economic capacity, encouraged the production of smaller and affordable dwellings, and started the housing standards discussions in Turkey in late 1962 (Altürk, 2021). Thus, with the introduction of housing standards and size limitations, more units would be attained with the same amount of investment (Altürk, 2021).

According to the conclusions of the plan report, 30% of the dwellings in urban areas were determined to be uninhabitable, 30% of people lived in single-room homes in the top three cities, while person-per-room density were 2.7 on average in urban regions (Altürk, 2021). In the plan's first year, the average size of the new buildings constructed in Turkey was 100 sq m, while it was 70.5 sq m in France, 75.5 sq m in West Germany and 71.4 sq m in Austria (Altürk, 2021). However, it was not possible to observe that the housing standards have improved, especially due to the various facilities provided to the *gecekondus*, which had a high political organizing power at that time, except for the houses produced by the state or through the cooperatives that were given incentives.

In Turkey, with the abandonment of welfare state policies in the 1970s, one can argue that a comprehensive dataset on the housing stock has not been developed and no comprehensive analysis has been carried out by the state in the following years. As of these years, the housing deficit reached record levels due to the increase in land speculation and the increase in housing construction being left to the private sector (Purkis, 2016). Despite the fact that shelters that are well below the standards also counted as *houses*, the housing shortage continued as a serious problem especially for the lower and middle classes. *Gecekondus* and build-sell construction have begun to provide no solution for lower and middle-income groups (Purkis, 2016). The

build-sell housing model has gradually taken the form of a presentation for the upper classes instead, and as of the 1980s, in parallel with the economic policies adopted in the world and in Turkey, the transition to construction-oriented capital accumulation and the chronic housing deficit began (Purkis, 2016).

Housing deficit, describes the imbalance between the number of existing households and the number of houses available Keleş (1989;2015). The housing deficit is observed in two ways: the apparent housing deficit and the hidden housing deficit, which refers to overcrowded, unqualified, unsafe and unstable housing, in which the quality aspect of the housing predominates (Turan, 1992).

Discussions on the housing problem in Turkey generally develop in the center of apparent housing deficit whereas the hidden housing deficit is rather disregarded. However, the inadequacy of housing regulations, especially the lack of regulation for monitoring housing standards, the abstention of the state in housing and the various needs of households stress the need for a more comprehensive housing analysis (Gürsoy and Akıncı, 2022). Moreover, the hidden housing deficit, constitutes additional support to the backlog housing need which refers to the households who, lack adequate housing to meet their needs in terms of housing conditions, stability, affordability and suitability (Frey, Leishman, McGreal and Young, 2020). Therefore, housing supply should not only be managed through increasing the number of new buildings, but also should include policies and interventions regarding the existing housing stock based on the backlog need (Özdemir Sarı, 2019).

In Turkey, within the framework of the urban transformation programs implemented in line with the central policies as of the 2002 elections, existing residential areas, gecekondu areas, lands that are considered underused in urban areas and historical areas were subject to transformation. As a result of these policies that are applied regardless of the geographical context and changing needs, excess housing supply in city centers and the need for housing in specific regions continued to be experienced simultaneously (Kıvrak and Özdemir Sarı, 2019).

According to Turkstat (2022) data, while the number of households in Turkey increased by 4,238,758 between the years 2014-2021, it is seen that the number of dwelling units for which occupancy permits were issued between the same years has been increased by 5,958,198. Table 3 below illustrates the numbers of new building certificates, new occupancy permits issued, and total number of households between 2014-2021 in Turkey. Although, building permit statistics only cover the urban areas and do not provide any data regarding squatter housing and rural areas that are not within municipal boundaries (Özdemir Sarı, 2022), the statistics still present the excess production of housing when compared to the increase in number of households.

Table 3. *New building certificates, occupancy permits and number of households between 2014-2021*

	New Building Certificates (Number of dwelling unit)	New Occupancy Permits (Number of dwelling unit)	Total Number of Households	Annual Increase of Households
2015	897.230	732.948	21.662.260	571.185
2016	1.006.650	754.174	22.206.776	544.516
2017	1.405.447	833.517	22.676.186	469.410
2018	669.165	894.240	23.221.218	545.032
2019	319.720	738.816	24.001.940	780.722
2020	555.012	600.003	24.604.086	602.146
2021	722.576	626.904	25.329.833	725.747

Source: *Turkstat, 2022, Number of Households by Household Types and Sizes Table under the Address Based Population Registration Statistics (published in February, 2022) and Building Permit Statistics by Purpose of Use (published in August, 2022).*

According to the report of the Turkish Contractors Association dated July 2021, on the other hand, it has been calculated that there are approximately 1.5 million vacant houses in Turkey, apart from the second houses. Furthermore, according to the report of the Istanbul Planning Agency, it is stated that as of the end of 2020, there are approximately 1,800,000 independent units that do not have a registered resident and that function as residence, without including the immigrant population and the

independent units where the temporary population resides or are kept for second house purposes (IPA, 2021).

Also, taking into account the fact that many houses in Turkey that do not have occupancy permits, the housing stock may be sufficient in quantity, however housing is not produced with an aim of meeting the needs of target groups. However, it is an issue that needs to be critically examined that the housing units especially in city centers, which have become investment tools by being isolated from their use value, are mostly produced for investment purposes within the scope of luxury projects and left vacant. Therefore, although there may be enough number of houses to accommodate the population living in the cities, the housing production aiming to meet the changing demands of the upper income groups instead of the needs of the lower-middle income groups leads to the emptying of the existing housing stock and the production of new housing units for the upper income group (Alkan and Uğurlar, 2015).

The inadequacy of the housing stock that the households need is one of the factors for the increase in the sales and rental prices of the houses at the desired level in terms of quality which leads to some households to live in houses that do not meet the minimum living standards, in unhealthy conditions and lack a suitable urban environment, while some households pay very high prices to live in quality houses. (Ertürk, 1996; cited by: Sezer, 2011). In this case, one of the main problems regarding housing is the fact that the existing housing stock does not serve the needs in terms of quality and affordability. However, there are only a few studies on housing conditions and the quality of the existing housing stock in Turkey in order to fully identify the backlog need (Alkan & Uğurlar, 2015).

In relation to the housing deprivation, which is the phenomenon that this thesis focuses on, one may observe that studies have been carried out mostly proceeding with the concept of housing standards/quality as one of the sub-headings of the housing problem in Turkey. These studies are either theoretical discussions on

housing quality, or empirical ones which are often conducted with the surveys prepared and in the scale of determined regions rather than being countrywide.

In the theoretical discussions on the quality of housing in Turkey, quality-related problems can be attributed to reasons such as *gecekondus*/illegal construction or the lack of green space and infrastructure that occur as a result of dense-high construction depending on the type of the dwelling. For example, Balcı (2011) argued that issues such as the durability and utilized area of the houses, their comfort, and the suitability of the living environment, depend on the type of buildings in which the houses are located. He emphasized that it would be useful to examine these problems according to the types of houses.

Among the empirical studies, some studies question the relationship between the well-being of the people from different age groups in Turkey, based on their age and housing conditions. As an example of a research on young people in Turkey, Tokyürek (1987) conducted a thesis based on survey data to examine the housing status of high school students and its effect on health and success. In this study, the relationship between overcrowding and the situation of students sharing their room and the success at school was found to be statistically significant. Also, as a result of the survey conducted by Arpacı and Ersoy (2003) on 660 young people, consisting of low, middle and high socio-economic level secondary school students residing in Ankara, it has been determined that the age of the young person, the number of individuals in the family, the monthly income of the family, the type of the house, the number of individuals per room and the number of bedrooms in the house are adequate in cases such as young people's ability to use their room when they wish and generally using their room while they are at home, having rooms are arranged according to their wishes, and ability to convey their requests about their rooms to their families. Therefore, in this study, overcrowding threshold (the number of people per room ratio) was accepted as 1.5.

Another study, based on age, is the one was prepared by Boylu (2013) emphasizing the importance of housing conditions in improving the life quality of older people.

Uyan-Semerci et. al. (2011), on the other hand, in order to develop child well-being indicators for Turkey, by examining the case of Istanbul, conducted a research. In the research, they grouped Housing and Environment well-being indicators under three groups, which are housing problems, perception of neighborhood safety, and neighborhood resources. Furhermore, examining overcrowding as a key dimension like most indexes, by considering the unique conditions in Turkey, they included an indicator measuring whether a child had his/her own bed. They found that family economic circumstances impacted resource allocations in neighborhoods and feelings of safety, demonstrating the need to consider neighborhood-level analyses of risks and resources in addition to family-level resources in order to understand children's wellbeing properly (Uyan-Semerci et. al, 2011).

In addition to these, there are many studies investigating the perceived quality of residences by households in local levels. For instance, a study conducted by Türkoğlu (1997) measured the perceived quality of residential environments in Istanbul. In the study carried out by designing a household in planned areas and *gecekondu* areas, using factor analysis, a total of 6 factors were studied: size and physical conditions of the dwelling, accessibility to the city center, work place, market and services, availability and maintenance of social, recreational and educational services, social and physical environmental problems, climatic control of the dwelling, and satisfaction with neighbors. Significant differences were detected between neighborhoods in residents' satisfaction, while residents' satisfaction was largely determined by the size and physical qualities of the residence and the characteristics of the neighborhood such as accessibility to downtown, work place, hospital and availability of shopping and services, environmental problems. In her study on housing quality, Arpacı (2011) conducted a survey with 625 randomly selected people living in Ankara and asked their opinions on housing quality, and examined how these opinions differ according to the characteristics of households such as income level, gender, education level.

There are also studies carried out with the aim of determining housing standards and deprivation in a more comprehensive way throughout Turkey, although reasonably

limited. Based on the Income and Living Conditions Survey dated 2016, a study conducted by Arlı and Karcı (2018) revealed the variables affecting financial deprivation in Turkey by using logistic regression method, and it has been presented that the number of rooms in the household and the heating system of the household are important factors explaining the material deprivation. It has also been revealed that households with fewer rooms are more likely to experience financial deprivation (Arlı & Karcı, 2018).

Aydın (2019), has prepared a study to examine home ownership, tenancy, housing loans and housing conditions in Turkey and to present a housing quality index by emphasizing the importance of the housing quality index as well as housing price indexes related to pricing in Turkey. Emphasizing that there are limited number of studies on housing quality indicator measurements in Turkey and they are mostly at local/neighborhood level, Aydın presents a housing quality index proposal for a national need specified in his study. This study of Aydın is especially important in constituting a comprehensive analysis of the existing housing stock in Turkey and its comparison with European countries.

In his study, Aydın used the data of Income and Living Conditions Surveys (ILCS) covering the years 2006-2015 in Turkey and European Union (EU) countries. Aydın stated that the tenancy rate, which is 25-30% in Europe, is around 40% in Turkey and is relatively high. The study, which reveals an 11% difference between the lowest income group and the highest income group in terms of home ownership, among the income groups that it analyzes by dividing it into 20% income segments throughout Turkey, shows that there is no significant inequality between income groups in terms of housing ownership in Turkey. However, on the basis of the urban population alone, there is a twofold difference in home ownership between the bottom 20% and the top 20%. However, it has been argued that in the top 20%, home ownership level is at around 64% and it is also not very high when compared to EU countries.

According to Aydın's study, while the average utilized area in houses in the European Union is 96 sq m, the average is found to be 102.3 sq m in Turkey. Also, according to the study, when compared to EU countries, households in Turkey prefer to live in large houses with at least three rooms and one living room.

Emphasizing that the problems such as being unable to heat the houses due to insufficient insulation and being unable to receive enough sunlight in Turkey are relatively high compared to the European Union countries, Aydın also showed that these problems do not change significantly on the basis of 20% income groups. He also stated that only 5.8% of the population in Turkey is quite satisfied with their housing and this rate is at the level of 33.4% in the European Union.

In addition, Aydın by emphasizing that his study is the first attempt to develop the housing quality index in Turkey and that his index should be improved, gave weight to a total of 16 indicators in order of importance and scored the minimum value as zero and rated accordingly. The indicators used for the housing quality index are the type of house, the number of rooms, the area used in the dwelling, the heating system, the type of fuel, the availability of a bath/shower, the status and number of the toilet in the dwelling, independent kitchen, piped water system, hot water system, humidity problem, insulation/heating problem, lighting problem, noise problem, air and environmental pollution and crime/violence density in the environment. With the index Aydın developed, he revealed that there is no difference in extreme values in terms of housing quality between regions in Turkey, nonetheless there is a statistically significant difference in the context of income groups and rural-urban.

Akıncı and Gürsoy (2021), designed a survey using the quality indicators of several well-known housing quality assessment tools to identify the gap between housing preferences and existing conditions to reveal the housing quality of Turkish housing. They generated a housing quality indicators matrix, then surveyed with questions regarding each housing quality indicator in their assessment tool responded by 236 random people who were reached through social media platforms. According to their findings, poor physical conditions, accessibility and safety, all of which seriously

influence an individual's everyday life, are the issues where the expectations from the house are high and the deficiency is most felt.

Research overviewing housing and living conditions in Turkey for years of 2006 and 2018 conducted by Aksoy Khurami (2022), investigated and compared the percentage of households exposed to poor housing conditions and material deprivation based on tenure types, poverty status and NUTS-1 regions. In this research, poor housing conditions refer to experiencing at least 2 out of 6 problem areas related to housing. The study revealed that, although there has been an improvement in the housing and living conditions between those years, the households who does not own the houses they live in are the most vulnerable. Also, in terms of region, the share of households of South-Eastern Anatolian Region found to be larger, who are experiencing insufficient housing conditions as well as material deprivation (Aksoy Khurami, 2022).

2.4 Key Findings

Housing and living environment conditions are at extreme importance for quality of life. Quality of housing and living environment is closely linked with mental/physical health, well-being, sense of identity and safety of the people. Therefore, housing deprivation is of great importance as it is an issue that highlights the use value of housing and helps investigating the essence of the so-called housing problem.

In the literature, discussions have often been carried out either theoretically over the methods and the definition of housing deprivation, or it has been aimed to conduct an empirical study by concentrating on the main factors that determine the differences at the international or national level. Nonetheless, it has been found that some common challenges are frequently emphasized in studies on housing and living environment deprivation and are generally experienced.

One of the challenges is that the housing deprivation is the subject of central government policies and requires a comprehensive household survey on the grounds that determining it on a scale that includes comprehensive and diversified geographies will yield meaningful and accurate results. For this reason, most studies, with the exception of those conducted in Turkey, use national or European survey data if available. Therefore, one can infer that the data guide and limit the methods that studies can follow.

Since the methods followed and the dimensions examined are quite diverse, very different results can be revealed on the subject. There is still no consensus on the best method to adopt for measuring housing deprivation. Selection of the deprivation items, aggregation of the items and setting a threshold are the most challenging according to the literature, and any difference in the method adopted may result in dramatic change. Nevertheless, in case of housing deprivation items, along with the overcrowding and physical components of housing standards such as lack of space, occurrence of rot in windows, doors and floors, damp and leaks, and lack of indoor toilet, also characteristics of the environment related to safety, noise, and deficiency of open areas in the living environment are included frequently. Overcrowding is accepted as a pre-condition, as in Eurostat's severe housing deprivation calculations, in the researches conducted within Europe mostly.

The fact that some components used in most studies are out of date or that different components are more important in other communities appears to be another challenge. For example, issues such as whether a threshold for "overcrowding" should be determined according to a unique standard for the country to be determined or according to the European standard is a matter of debate; just like the issue of determining the income threshold in the poverty debate (the argument that there should be a distinction between countries with high GDP and low GDP). Alternatively, although the toilet and shower being outside the house is a very rare problem in Turkey and in the world at the present time, for households exposed to this problem it should be a more severe indicator of deprivation than the more common problem of, for instance, not being able to heat the house. In addition to

these, it may not be very meaningful to discuss the preferential deprivation situation, which is mentioned a lot in multiple deprivation discussions, within the scope of housing deprivation, because among the dimensions frequently mentioned in the literature, there does not seem to be a dimension that can be discussed as being optional under housing and living environment conditions. The reason for this can be argued that the average housing standards are dependent on more physical and concrete dimensions rather than dimensions that reflect the lifestyle, and even as mentioned before, the items related to housing deprivation are largely associated with physical and mental health by scholars.

Studies suggesting the importance of examining the components of housing deprivation separately reveal another challenge. For example, Eurofound (2016) found affordability to be fundamentally separate from concerns about housing adequacy, arguing that one did not explain the other and should be examined separately. Researchers such as Palvorini and Pavolini (2010), Nolan & Winston (2011) also revealed that there is a weak relationship between the components of housing deprivation. In addition, Guio and Maquet (2007) investigated overcrowding separately from housing deprivation and found that overcrowding had a very weak relationship with housing deprivation and material deprivation.

In addition to all these challenges, there are also important implications for housing deprivation, which are discussed from different perspectives in the literature. Researches on housing deprivation generally examine the variables associated with housing deprivation such as income, urbanization levels, homeownership levels or the level of economic development. These explanatory variables chosen usually vary depending on whether the comparison point of the study is between countries, between settlements or between different social groups.

Among the studies conducted examining explanations for variations across household types, the most significant factor contributing to material housing deprivation and overcrowding found to be is occupational class and educational level of the householder by many researchers (Townsend, 1979; Royuela, 2019; Obaco et

al., 2022). Townsend in his pioneering study on deprivation, found that households with children need more space by objective and subjective standards, whereas households with four or more children live under the worst housing conditions (Townsend, 1979). Department for Levelling Up, Housing and Communities of UK Government, also found that families with children are among the groups most at risk of certain housing problems (DCLG, 2007). The correlation of housing deprivation with age is usually found convex (Obaco et al., 2022; Nolan & Winston, 2010). Nevertheless, Navarro and Ayala (2007), who measured the persistence of housing deprivation, concluded that families with children remained housing deprived for less time. Navarro and Ayala (2004) also showed that regarding household composition, single people and divorced people have higher relative probability of some kind of housing deprivation.

Tenure types and country-level housing policies are also critical issues that is focused by many researchers. Ayala and Navarro (2004) found that households living in rented or not paying rent than those living in owned properties have higher probability of suffering from housing deprivation. The study of Mandic and Cirman (2012), on the other hand, demonstrated the high association between a housing market dependent upon high rates of homeownership and inadequate housing standards. Kemeny (1995), on the other hand, by investigating the impact of country-level housing policies on housing standards, showed that the state's provision of rental housing at various costs has the potential to reduce rents in the rental sector by creating a competitive environment and set a level for housing standards. Ida Borg (2015) confirms the negative link between the unitary rental market sector and the incidence of housing deprivation. In addition to this finding, Ida Borg also revealed in the same study that there is no relationship between GDP and housing deprivation, supporting the findings of Norris and Shiels (2007). In 2021, Guio and Borg extended this study, arguing that the most important determinant of housing deprivation is the ownership ratio, and that the size of the rental sector has lost its importance.

In Turkey, on the other hand, the most comprehensive study conducted at the country level is the study of Aydın (2019). In the mentioned study, Aydın compared the scores on the basis of regions, rural-urban distinction and income groups in line with the housing quality index he developed and determined statistically significant differences in rural-urban areas and income groups. Emphasizing that house ownership is not a sufficient condition on its own and that the conditions and quality of the houses are extremely important in terms of quality of life, Aydın emphasized that the low standard of housing is characterized as housing deprivation and that the housing without sufficient comfort affects the quality of life of people negatively. However, as he stated that the studies in this field are very few and generally at the local level (Aydın, 2019).

Moreover, Turkey, which is a country located in the earthquake zone, and within this period in which urban transformation efforts for the existing housing stock are intensified among the problems caused by climate change, rapid urbanization and migration, improvements in only the physical durability of the houses are not sufficient, but the problems such as heating system, lighting problems, air conditioning, environmental pollution should also be brought to the agenda (Aydın, 2019). This study is prepared in order to examine the housing deprivation, which is frequently emphasized that has not been studied thoroughly in Turkey as detected in the relevant literature reviews. Besides, this study, in which the perspective ignoring the phenomenon of "housing deprivation" and focusing merely on the quantitative dimensions of the housing problem is criticized, is aimed to analyze the current housing and living environment deprivation on the axis of households and regions in Turkey.

CHAPTER 3

DATA AND METHOD

In this study, housing and living environment deprivation are examined at the household level using the 2020 cross-sectional data of the Income and Living Conditions Survey (ILCS) conducted by the Turkish Statistical Institute since the survey contains a wide sample and a variety of variables regarding housing and living environment conditions as well as the variables regarding the households such as income, tenure status, household size, type of the dwelling, regions, dwelling size. Analyses are conducted using SPSS program and the results associated with regions are illustrated using ArcGIS program. Based on the research on housing and living environment deprivation, this study aimed to answer the following research questions. It is anticipated that the results of the analysis to be made in line with these questions below regarding the current housing stock will form a ground for more detailed and comprehensive research.

RQ1: What is the level of housing and living environment deprivation in Turkey and how does this level vary based on tenure types, household composition, dwelling types, income groups and regions?

RQ2: Which problem areas stand out regarding housing and living environment deprivation across Turkey and different regions?

In order to investigate the research questions above, first the items regarding housing and living environment deprivation are selected based on the literature. Some ready-made variables such as presence of a problem such as damp walls, rotten window frames, leaky roof, presence of a heating problem caused by the insulation of the house, presence of a problem such as the rooms being dark or not getting enough light, the problem of shower or toilet being located outside the house presence of a noise problem in the dwelling, from neighbors or the street, presence of air pollution,

environmental pollution or other environmental problems caused by traffic or industry in the living environment, presence of an intense encounter with crime or violence in the living environment which are provided by the ILCS and selected as indicators. Eurostat calculates severe housing deprivation as the simultaneous occurrence of overcrowding phenomenon and one of these housing related problems: no bath/shower and no indoor toilet leaking roof, or a dwelling considered too dark. Unlike Eurostat's method, while overcrowding is not accepted as a precondition, it is also calculated adopting person per room ratio as in UN Habitat's and U.S. Census Bureau's overcrowding approaches. For aggregating the items selected for housing and living environment deprivation, the arithmetic addition method is adopted and a threshold is determined based on the median value reached for the total number of problems experienced by the households country-wide as a result of frequency analysis. Figure 1 below presents the flow of the method followed within the scope of this thesis.
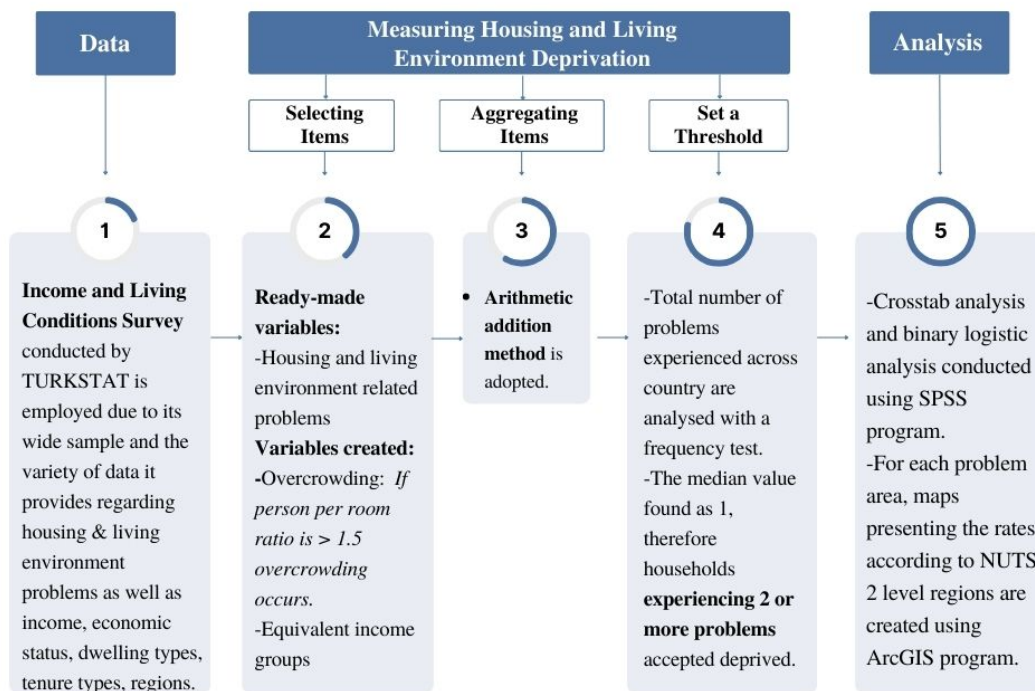
Figure 1. *Method Flow of the Thesis*

3.1 Data

This study employs Income and Living Conditions Survey (ILCS) in order to investigate housing and living environment deprivation in Turkey. This survey is not designed specifically for housing research; yet, it provides several key variables to investigate housing related issues. The geographical coverage of ILCS is whole Turkey. The population living in university dormitories, guesthouses, kindergartens, orphanages, nursing homes, special quality hospitals, prisons, barracks and army houses, defined as institutional population are excluded from the ILCS (TURKSTAT, 2021).

ILCS (2020) explanation report states that a total of 27,437 households were visited, 25,706 of these households were surveyed, and the remaining 1,731 households could not be surveyed for various reasons. It is stated that there is no use of substitution since the sample size is formed by taking into account the non-response situation. ILCS results are weighted according to the most recent population projections to generate population estimates from survey data. The weight coefficients used are calculated based on the population projections of the relevant year according to the Address Based Population Registration System (TURKSTAT, 2021).

The results of the ILCS are provided for urban, rural and NUTS 1 level regions and Turkey until 2014. Since 2014, the results are also provided for NUTS 2 level regions. Therefore, as the data dated 2020 is used within the scope of the thesis, a rural-urban distinction could not be made.

In addition, there are various categories in the survey, including housing, economic status, real estate ownership, education, income status and so on, to calculate indicators related to income, poverty, social exclusion and other living conditions.

Concerning the housing and living environment deprivation, the data set provides information about the problems such as leaky roof, damp walls, rotten window frames in the dwelling, heating problems due to insulation of the dwelling, dark

rooms or insufficient light as well as noise, air and environmental pollution, crime and violence observed in the immediate surrounding of the dwelling. Furthermore, the number of rooms and household size variables are also available to assess the overcrowding. The data set also provides additional variables to examine housing and living environment deprivation on the basis of income, tenure modes, housing types, household compositions and regions. While Eurostat considers population as the major unit of analysis, this study considers households with the assumption that all individuals living in the same dwelling unit would be affected by housing and living environment deprivation.

3.2   Method

This study examines housing and living environment deprivation empirically. For this purpose, several ready-made variables provided by the ILCS are employed. Also, some new variables are calculated using the existing ones. For instance, similar to Eurostat's method, first, a new variable is created to identify overcrowding at the household level through the calculation of person per room ratio. However, Eurostat's calculation method for overcrowding is not adopted since it has been argued to be not reflecting Turkish households' cultural features and norms. For calculations of overcrowding, *person per room ratio* has been preferred since dwelling sizes in Turkey are quite high when compared to western countries. Also, unlike to Eurostat's method, the overcrowding phenomenon has not been taken as a precondition for housing and living environment deprivation. The other variable created within the scope of this study is equivalent income groups. The variable is created by dividing household income by the square root of the household size and divided into groups of 20%. This kind of an equivalisation is usually adopted by OECD in income distribution studies.

The housing and living environment deprivation indicators are selected in line with the relevant literature. The frequency analysis conducted on the existing data, and a threshold of housing and living environment deprivation is set accordingly. In order

to investigate how deprivation level differs based on ownership, household types, dwelling types, income groups and regions, crosstab analysis is conducted. In order to analyze the most significant determinants of housing and living environment deprivation, regression analysis is conducted.

Based on the literature, it can be stated that overcrowding is generally accepted as person per room ratio > 1 in studies on western countries. In the Turkish literature, on the other hand, this threshold is generally accepted as >1.5. When both thresholds are evaluated, the following frequencies are observed.

Table 4. *Overcrowding Rate (person per room ratio > 1.5)*

	Frequency	Percent	Cumulative Percent
Not overcrowded	23509592	94.2	94.2
Overcrowded	1442255	5.8	100.0
Total	24951846	100.0	

Table 5. *Overcrowding Rate (person per room ratio > 1)*

	Frequency	Percent	Cumulative Percent
Not overcrowded	21898002	87.8	87.8
Overcrowded	3053844	12.2	100.0
Total	24951846	100.0	

As can be seen in the table above, when the person per room ratio is determined as >1.5, the population living in overcrowded houses calculated to be 5.8%. When this threshold is accepted as 1, the percentage of the households living in overcrowded houses is determined as 12.2%. Thereupon, a crosstab analysis was conducted to examine how the person per room ratio progressed between regions and to evaluate the median values. The person per room ratio in accordance with the NUTS 2 regions is examined, and the results are shown in the Table 6 below. Although the person per room ratio shows great differences in accordance with the regions, it is seen that

the average ratio is 0.74 and the median value is 0.67. While the range is quite high in some regions, it is seen that the person per room ratio reaches up to the level of 5.

Table 6. *Person Per Room Ratio Among NUTS 2 Regions*

Regions	Mean	N	Std. Deviation	Median	Minimum	Maximum	Range
TR10	.7659	4713169	.37646	.6667	.14	3.00	2.86
TR21	.6634	658364	.34429	.6667	.17	3.00	2.83
TR22	.6598	675040	.29900	.6667	.17	2.00	1.83
TR31	.6970	1520170	.38301	.6667	.20	3.00	2.80
TR32	.6639	1195994	.32877	.6667	.14	3.00	2.86
TR33	.6887	1030874	.32715	.6667	.20	2.50	2.30
TR41	.6942	1357617	.33023	.6667	.20	2.00	1.80
TR42	.7149	1181734	.35246	.6667	.17	4.00	3.83
TR51	.6159	1818362	.28750	.5000	.17	2.00	1.83
TR52	.6941	721646	.33417	.6667	.17	3.00	2.83
TR61	.7096	1107372	.35774	.6667	.17	3.00	2.83
TR62	.7442	1287997	.37856	.6667	.20	3.00	2.80
TR63	.8004	909336	.44705	.6667	.20	3.00	2.80
TR71	.6402	499374	.36663	.5000	.17	2.50	2.33
TR72	.7194	700718	.39211	.6667	.13	4.00	3.88
TR81	.6549	341472	.28339	.6667	.20	1.67	1.47
TR82	.7307	255554	.39379	.6667	.17	2.50	2.33
TR83	.7108	840290	.36853	.6667	.13	3.00	2.88
TR90	.6452	823696	.36231	.5000	.20	3.00	2.80
TRA1	.8093	278300	.41806	.6667	.20	4.00	3.80
TRA2	.9707	236360	.54524	.8000	.20	4.50	4.30
TRB1	.7247	515334	.38309	.6667	.20	3.50	3.30
TRB2	1.0356	381035	.59142	1.0000	.20	5.00	4.80
TRC1	.9089	723378	.50366	.7500	.25	4.00	3.75
TRC2	1.0461	726964	.62029	1.0000	.20	5.00	4.80
TRC3	1.0091	451698	.57588	1.0000	.20	4.00	3.80
Total	.7372	24951846	.39805	.6667	.13	5.00	4.88

However, as it is frequently stated in the literature, the square meter size of the residences in Turkey has always been larger compared to the western countries. As Aksoy Khurami and Özdemir Sarı (2022) highlight, 3-4 bedroom dwelling units consist 83% of the housing stock in Turkey whereas 1-2 person households have 61.5% share among all households. This stock-household match (*mismatch*) implies that under-occupation is expected to be a problem rather than overcrowding (Aksoy Khurami & Özdemir Sarı, 2022). In this study, taking into account the cultural norms frequently emphasized in the literature and the person per room ratio frequencies in Turkey, overcrowding threshold has been accepted as 1.5.

Selection of Indicators

The data set provides data related to problems experience in the dwelling unit including the presence of a problem such as a leaky roof, damp walls, rotten window frames in the dwelling, the presence of a heating problem due to the insulation of the dwelling, the existence of a problem such as the rooms being dark or not getting enough light, and the adequacy of the utilized area of the dwelling. These indicators include dichotomous (yes/no) data in line with households' responses. Again, regarding housing standards, indoor bath/toilet appears as an important dimension in many researches, particularly Eurostat. Although outdoor bath/toilet is not considered a widespread problem in Turkey, with the assumption that this problem, especially due to being experienced less frequently, will deprive those who experience this problem the most, it is included in the indicators of housing and living environment deprivation.

The sufficiency of utilized area of the house indicator in the data set presents whether the households find the net floor area of the dwelling sufficient or not. The utilized area adequacy indicator, unlike the overcrowding calculated in this study, questions the subjective opinion of the household. While overcrowding refers to a threshold derived from proportioning the number of people living in the household with the number of rooms, the sufficiency of the usage area questions the satisfaction of the

users based on the utilized area in the dwelling. A cross comparison of both variables (see Table 7 below) presents that 75.9% of the households living in the houses defined as overcrowded found the utilized area insufficient. However, it is also seen that 2.3% of the households who live in the houses determined as overcrowded find the residential usage area sufficient.

Table 7. *Overcrowding and Households' Satisfaction with the Utilized Area Crosstab Analysis*

		Overcrowding		Total
		Not Overcrowded	Overcrowded	
Sufficient utilized area	Yes	97.7%	2.3%	100.0%
	No	75.9%	24.1%	100.0%
Total		94.2%	5.8%	100.0%

Table 8 below presents a moderate correlation (0.30<r<0.50) between overcrowding and households' satisfaction with the utilized area of the house.

Table 8. *Overcrowding and Households' Satisfaction with the Utilized Area Correlation Analysis*

Correlations

		Overcrowding	Sufficient area
Overcrowding	Pearson Correlation	1	.340**
	Sig. (2-tailed)		.000
	N	24951846	24951846
Sufficient utilized area	Pearson Correlation	.340**	1
	Sig. (2-tailed)	.000	
	N	24951846	24951846

**. Correlation is significant at the 0.01 level (2-tailed).

The utilized area sufficiency and overcrowding is correlated on a medium level. A household consisting of single person would never be determined as living in an overcrowding house through the objective overcrowding indicator even though he

or she may find the utilized area of the dwelling insufficient. Besides the sufficiency of utilized area of the dwelling is rather subjective. It is possible that households' subjective opinions may direct the research differently by expressing a different opinion than truly considered. Also, it is not mentioned considerably among the indicators of housing deprivation in the literature; therefore, it is not included as an indicator of housing and living environment deprivation in this thesis.

Within the scope of the ILCS, there are also data on the existence of technological devices such as internet, computer and telephone at home for the convenience of housing, and the importance of these items for households has been frequently emphasized in the literature, especially during the pandemic and the post-pandemic periods (Ayala and Navarro, 2022). However, based on the related literature, it has been determined that the items that are directly related to the dwelling are generally grouped under the housing deprivation indicators, and it is seen that the items that are not directly related to the dwelling such as internet and computer access are mostly associated with income of the households. Since the relationship between income and housing deprivation will be examined in the following parts of the study, these items are not included in the scope of housing and living environment deprivation indicators, considering that items that have a stronger connection with income may mislead the results.

The data set also includes data on the presence of traffic or industry-induced air pollution, environmental pollution or other environmental problems and the presence of intense encounter with crime or violence in the environment. However, data regarding the location of the house in the city, such as the distance to the social and cultural services, market places, educational or health facilities are unfortunately not available although their importance are often emphasized. As a result, a total of 8 problem areas were determined and recoded using the SPSS program, for the deprivation of housing and living environment and recoded as shown in Table 9.

Table 9. *Selected Indicators*

Variables	Codes
Overcrowding	0-No
	1-Yes
Presence of a problem such as damp walls, rotten window frames, leaky roof	0-No
	1-Yes
Presence of a heating problem caused by the insulation of the house	0-No
	1-Yes
Presence of a problem such as the rooms being dark or not getting enough light	0-No
	1-Yes
The problem of shower or toilet being located outside the house	0-No
	1-Yes
Presence of a noise problem in the dwelling, from neighbors or from the street	0-No
	1-Yes
Presence of air pollution, environmental pollution or other environmental problems caused by traffic or industry in the living environment	0-No
	1-Yes
Presence of an intense encounter with crime or violence in the living environment	0-No
	1-Yes

Threshold

In this case, it is necessary to set a threshold for housing and living environment deprivation on the basis of the number of problems experienced by households. Nevertheless, as discussed in the literature part of the thesis, on what basis the threshold should be determined is an issue on which there is no consensus. Therefore, in this thesis, it was evaluated whether the households with a higher number of problems than the median number of problems in the region could be determined as deprived, in order to make a relative deprivation calculation by looking at the median value according to the regions first. The median problem number values in NUTS 2 regions were calculated as shown in Table 10 below.

Table 10. *Number of Problems Exposed by Households Across Regions*

Regions	N	Median	Minimum	Maximum	Range
TR10	4713169	1	0	7	7
TR21	658364	1	0	8	8
TR22	675040	1	0	6	6
TR31	1520170	1	0	6	6
TR32	1195994	1	0	6	6
TR33	1030874	0	0	5	5
TR41	1357617	1	0	6	6
TR42	1181734	1	0	6	6
TR51	1818362	0	0	6	6
TR52	721646	0	0	5	5
TR61	1107372	1	0	6	6
TR62	1287997	2	0	7	7
TR63	909336	1	0	7	7
TR71	499374	1	0	6	6
TR72	700718	1	0	6	6
TR81	341472	1	0	7	7
TR82	255554	1	0	5	5
TR83	840290	1	0	6	6
TR90	823696	2	0	6	6
TRA1	278300	1	0	6	6
TRA2	236360	2	0	7	7
TRB1	515334	1	0	7	7
TRB2	381035	2	0	7	7
TRC1	723378	2	0	7	7
TRC2	726964	2	0	7	7
TRC3	451698	2	0	7	7
Total	24951846	1	0	8	8

Throughout the country, the median value is calculated as "1" from the 8 problem areas related to housing and living environment. Looking at the total number of the problems experienced by NUTS 2 regions, it is seen that the maximum median value is "2" which is observed for TR62 (Adana, Mersin), TR90 (Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane), TRB2 (Van, Muş, Bitlis, Hakkari), TRA2 (Ağrı, Kars,

Iğdır, Ardahan), TRB2 (Van, Muş, Bitlis, Hakkari), TRC1 (Gaziantep, Adıyaman, Kilis), TRC2 (Şanlıurfa, Diyarbakır), TRC3 (Mardin, Batman, Şırnak, Siirt) regions. One method would be to set each region's median value as a threshold for that specific region. For instance, the median value for the TR62 (Adana, Mersin) region, which is "2", due to cultural differences, urbanization rate, etc., could be considered as the unique threshold for this very region, and those households who experience more than 2 problems could be considered to be relatively deprived of housing and living environment for this region. However in this case, the inequalities between regions across the country would have been overlooked, and this difference between regions would not have been emphasized.

Table 11. *Number of Problems Exposed by Households Across the Country*

Number of Problems	Frequency	Percent	Cumulative Percent
0	9103856	36.5	36.5
1	5879800	23.6	60.1
2	4759701	19.1	79.1
3	2922328	11.7	90.8
4	1449282	5.8	96.6
5	612176	2.5	99.1
6	198998	.8	99.9
7	23923	.1	100.0
8	1782	.0	100.0
Total	24951846	100.0	

Moreover, it is seen that 36.5% of the households do not have any problems regarding the housing and living environment, while 63.5% of the households experience at least one problem throughout the country.

Another issue that needs to be clarified when determining the threshold for deprivation of housing and living environment is whether the households that only experience problems regarding environment do not experience any housing related

problems can be counted as housing and living environment deprived. For instance, if a household only experiences two problem areas such as noise and crime rate, but does not encounter any problems regarding the physical characteristics of the house, can the household still be defined as housing and living environment deprived?

In this thesis, the provision of minimum standards to meet the social, economic and cultural needs of the households living in the environment where their house is located is also included as one of the core indicators of the house and living environment quality, and an analysis has been made that evaluates all indicators together, assuming that the standards of the environment in which the house is located are at least as intrinsic to the meaning of the house as the physical features of the house. Furthermore, according to the calculations only 3.8% of the households experienced two or more environmental problems and did not experience any negative effects on the physical condition of the house. In another words, 96.2% of the households who experience at least 2 problems regarding the environment also experience at least 1 problem regarding the physical conditions of the house.

Therefore, within the scope of the study, the simultaneous observation of 2 or more problems in the occupied house of a total of eight problem areas consisting of overcrowded housing, problems related to housing and living environment was considered as deprivation without any kind of distinction of the problem areas.

Table 12. *Rate of Households Who Experience Problems Regarding Environment Only*

Problems	Frequency	Percent
No	24003326	96.2
Yes	948520	3.8
Total	24951846	100.0

After evaluating all households with respect to these conditions, households experiencing housing and living environment deprivation are determined. In this direction, a dichotomous variable (1-deprivation, 0-no deprivation) is created.

CHAPTER 4

HOUSING AND LIVING ENVIRONMENT DEPRIVATION IN TURKEY: FINDINGS AND DISCUSSION

This study investigates housing and living environment deprivation in Turkey and uses the raw data of ILCS, which was conducted by TURKSTAT in 2020, for this purpose. As discussed in the previous section, to measure deprivation of housing and living environment, a total of 8 indicators were determined from 3 sets of variables including overcrowding, problems related to housing and problems related to living environment. It is accepted that the households experiencing 2 or more of these 8 problems live in deprived conditions. First of all, it was aimed in thesis to investigate housing and living environment deprivation level throughout the country, and the varying levels based on tenure types, dwelling type, household composition, and NUTS 2 regions.

Thus, a crosstab analysis has been conducted firstly to observe the housing deprived population throughout the country.

Table 13. *Housing and Living Environment Deprivation Throughout Turkey*

	Frequency	Percent
Not Deprived	14983656	60.1
Deprived	9968190	39.9
Total	24951846	100.0

According to the results shown in the Table 13 above, housing and living deprivation is experienced by 39.9% of the households throughout the country while 60.1% of the households are classified as not deprived.

Throughout the country, deprivation of housing and living environment has been examined on the basis of ownership levels using crosstab analysis. It was expected to observe higher levels for tenants when compared to owner-occupiers. The results of the crosstab analysis are presented on the Table 14 below.

Table 14. *Housing and Living Environment Deprivation Levels by Tenure Types*

		Deprivation		
		Not Deprived	Deprived	Total
	Owner-occupier	62.6%	37.4%	100.0%
	Tenant	60.0%	40.0%	100.0%
Status	Public housing	58.9%	41.1%	100.0%
	Other	51.1%	48.9%	100.0%
Total		60.1%	39.9%	100.0%

The results show that housing and living environment deprivation is most experienced by the so-called "other", that is, the population (48.9%) who do not own a home but also do not pay rent. Following this category, it is seen that those who experience deprivation the most are those households residing in public housing with 41.1% rate, followed by tenants with 40.0%. Interestingly, however, there does not appear to be a huge difference between owner-occupier households and tenants. According to the results, 37.4% of households that reside in the houses they own suffer from housing and living environment deprivation. This rate is 2.6% lower than the rate of the population suffering from housing and living environment deprivation among tenants. The reason for this be the rural-urban distinction that could not be conducted, which is frequently emphasized in the literature. In this study, rural-urban distinction could not be made, since there is no data on which a rural-urban distinction can be made. This results may also be due to the policies of making low-income groups homeowners as a primary solution the housing problem in Turkey. Another reason may be that housing stock in Turkey does not differentiate in the production process for owner-occupancy and rental housing. Rental sector is

developed as a side effect of housing production for owner-occupancy (Balamir, 1999). Nevertheless, as of 2020, while 57.8% of the households lived in a house owned by them in Turkey, this rate was 70% in EU, which makes the ownership levels in Turkey relatively low.

Table 15. *Housing and Living Environment Deprivation Levels by 5 Ownership Status*

| | | Deprivation | | |
		Not Deprived	Deprived	Total
Ownership Status	Outright owner	60.7%	39.3%	100.0%
	Tenant	60.0%	40.0%	100.0%
	Public housing	58.9%	41.1%	100.0%
	Other	51.1%	48.9%	100.0%
	Mortgaged owner	74.2%	25.8%	100.0%
Total		60.1%	39.9%	100.0%

With the aim to be able to determine the housing and living environment deprivation in more detail in the case of home ownership, as a result of the analysis made by including the ownership conditions, it was seen that among the homeowners, the mortgaged owners were the population that experienced the least deprivation with a rate of 25.8%. However, based on the proportion of tenants and households residing in public housing exposed to housing and living environment deprivation, the conditions of the private rental sector and social housing in Turkey can be argued to be the worst.

Based on the argument made by Balcı (2011) stating that the housing and living environment problems are highly dependent on the type of buildings in which the dwellings are located, and the problems should be investigated in accordance with the building types, dwelling types and deprivation levels are also examined and shown in the Table 16 below.

Table 16. *Housing and Living Environment Deprivation by Dwelling Types*

		Deprivation		Total
		Not deprived	Deprived	
	Other	100.0%		100.0%
Dwelling type	Detached house	47.1%	52.9%	100.0%
	Semi-detached house	48.5%	51.5%	100.0%
	Flat type – 1	53.4%	46.6%	100.0%
	Terraced houses – 1	54.3%	45.7%	100.0%
	Flat type – 2	60.9%	39.1%	100.0%
	Terraced houses – 2	57.4%	42.6%	100.0%
	Flat type – 3	70.2%	29.8%	100.0%
Total		60.1%	39.9%	100.0%

Semi-detached house = Two houses, separate entrance; Flat type – 1 = Two houses, shared entrance; Flat type – 2 = 3-9 houses, shared entrance; Flat type – 3 = 10 or more houses, shared entrance; Terraced houses – 1 = 3-9 houses, separate entrance; Terraced houses – 2 = 10 or more houses, separate entrance

When the deprivation of housing and living environment is examined according to the type of dwelling (Table 16), it is seen that the households residing in the detached housing type are exposed to housing deprivation mostly. It is also seen that a smaller part of the households living in 2 or more houses with shared entrance, that are considered as "flats", are deprived of housing and living environment when compared to households living in detached or terraced houses.

Housing and living environment deprivation analysis is also carried out based on household compositions, and it was expected to observe that the households with children, especially lone parents with children would be the most deprived. However, it should be noted that, the data does not provide the detailed information regarding the number of resident children in the dwelling. The crosstab analysis is shown in the Table 17 below.

Table 17. *Housing and Living Environment Deprivation by Household Types*

| | | Deprivation | | |
		Not Deprived	Deprived	Total
Household type	One-person households	63.4%	36.6%	100.0%
	Extended-family households	51.2%	48.8%	100.0%
	Multi-person no-family households	55.9%	44.1%	100.0%
	Couple without resident children	66.6%	33.4%	100.0%
	Couple with at least one resident child	59.3%	40.7%	100.0%
	Lone parents with at least one resident child	55.5%	44.5%	100.0%
Total		60.1%	39.9%	100.0%

According to the results, which presents the deprivation levels according to different household types, households that are described as extended-family, which refers to consisting of at least one nuclear family and others, are the ones who are exposed to the housing and living environment deprivation the most with 48.8% rate. One can assume that in relatively crowded households, overcrowding would be experienced at higher levels when compared with other dimensions of housing and living environment deprivation. The following type of household that experience the deprivation the most is the nuclear family consisting of lone parents with at least one resident child. In order to clarify the effect of overcrowding on the results, an analysis is conducted by excluding the overcrowding dimension from the housing and living environment deprivation indicators.

Table 18. *Housing and Living Environment Deprivation Excluding Overcrowding Dimension by Household Types*

| | | Deprivation excluding overcrowding | | |
		Not Deprived	Deprived	Total
	One-person households	63.4%	36.6%	100.0%
	Extended-family households	56.0%	44.0%	100.0%
	Multi-person no-family households	55.9%	44.1%	100.0%
Household type	Couple without resident children	66.7%	33.3%	100.0%
	Couple with at least one resident child	60.5%	39.5%	100.0%
	Lone parents with at least one resident child	55.7%	44.3%	100.0%
Total		61.2%	38.8%	100.0%

Households that are exposed to 2 or more problems among the 7 problem areas are presented in the Table 18 above. According to the new results, the household type that experiences the problems in terms of the dwelling's physical conditions and housing environment the most is the nuclear family consisting of lone parents with at least one child. Following this type of household, it is seen that households consisting of multi-person no-family households are the second most housing and living environment deprived. The least deprived household type is couple without resident children, with 33.3% rate, according to the results. The results demonstrate that, even when the overcrowding's effect is ignored, the deprivation levels of households consisting of multi-person no-family and nuclear family consisting of lone parents with at least one resident child are pretty much close. To be able to infer the effect of the children precisely, however, is not assumed to be possible due to

lack of detailed explanation of the categories of extended-family households and multi-person no-family households.

Another variable that is frequently associated with housing deprivation in Turkey and the world literature is the membership in income groups. Housing and living environment deprivation rate of the population examined according to 20% equivalent income groups is presented in Table 19 below.

Table 19. *Housing and Living Environment Deprivation Level by Income Groups*

		Deprivation		Total
		Not Deprived	Deprived	
Percentile Group of Income	Lowest	46.4%	53.6%	100.0%
	Low	54.7%	45.3%	100.0%
	Medium	59.5%	40.5%	100.0%
	High	65.7%	34.3%	100.0%
	Highest	73.9%	26.1%	100.0%
Total		60.1%	39.9%	100.0%

As seen in the Table 19, 53.6% of the lowest 20% income group households are deprived of housing and living environment. It is seen that deprivation decreases as income groups rise to the top. However, it is seen that 26.1% of the highest 20% income groups are also deprived of housing and living environment, which indicates quite high percentage, meaning that even in the highest income group in Turkey, approximately 1 out of 4 households experience housing and living environment deprivation.

Table 20 and Figure 2 demonstrate the results based on NUTS 2 level regions. The results show that the deprivation rate is particularly high in Eastern Blacksea Region and Southeastern Anatolia. TR33 region (Manisa, Afyon, Kütahya, Uşak) on the other hand, is the region where the housing and the living environment deprivation is experienced at the lowest level with the percentage of 18.6%. In TR62, TR90, TRA2, TRC1 and TRC3 regions more than 50% of the households is housing and

living environment deprived while in TRB2 and TRC2 this rate exceeds 60%. When looked at the deprivation percentages in the largest three cities of Turkey, it is observed that the rates in İstanbul (TR10) with 46.1% and İzmir (TR31) with 44.4% are quite high. However, in Ankara (TR51), the level is relatively low with 24.4% rate.

Table 20. *Housing and Living Environment Deprivation Levels by NUTS 2 regions*

NUTS 2 regions	Deprivation		Total
	Not Deprived	Deprived	
TR10	53.9%	46.1%	100.0%
TR21	69.9%	30.1%	100.0%
TR22	73.7%	26.3%	100.0%
TR31	55.6%	44.4%	100.0%
TR32	66.0%	34.0%	100.0%
TR33	81.4%	18.6%	100.0%
TR41	62.1%	37.9%	100.0%
TR42	68.6%	31.4%	100.0%
TR51	75.6%	24.4%	100.0%
TR52	78.3%	21.7%	100.0%
TR61	61.5%	38.5%	100.0%
TR62	49.0%	51.0%	100.0%
TR63	51.8%	48.2%	100.0%
TR71	68.5%	31.5%	100.0%
TR72	61.7%	38.3%	100.0%
TR81	62.1%	37.9%	100.0%
TR82	71.5%	28.5%	100.0%
TR83	59.6%	40.4%	100.0%
TR90	47.9%	52.1%	100.0%
TRA1	61.6%	38.4%	100.0%
TRA2	42.7%	57.3%	100.0%
TRB1	67.8%	32.2%	100.0%
TRB2	38.2%	61.8%	100.0%
TRC1	44.0%	56.0%	100.0%

Table 21. (continued)

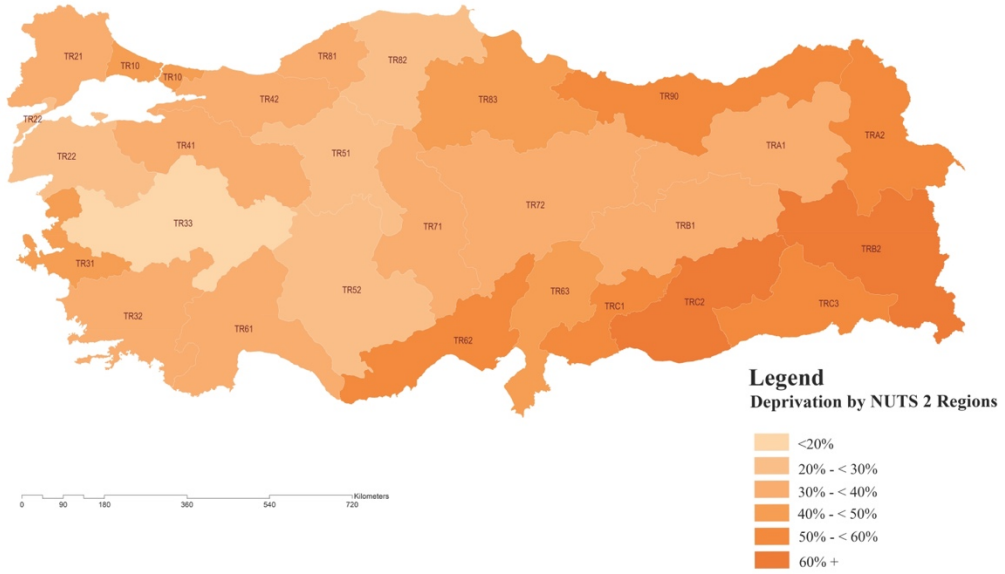| TRC2	38.9%	61.1%	100.0%
TRC3	45.3%	54.7%	100.0%
Total	60.1%	39.9%	

Figure 2. *Housing and Living Environment Deprivation Levels by NUTS 2 Regions*

When looked at the Figure 2, TRB2 (Van, Muş, Bitlis, Hakkari), and TRC2 (Şanlıurfa, Diyarbakır) regions, where deprivation of housing and living environment deprivation is experienced by most of the population with rates above 60%, come to the fore. Nonetheless, according to the Building and Housing Quality Survey published by TURKSTAT in December 2022, while the average rate of households living in buildings and houses built after 2001 in Turkey is 47.6%, the rate is 61.5% in TRB2 region and 59.6% in TRC2 region as of 2021. On the other hand, surprisingly for the TRC33 region, where the deprivation rate is particularly low, the rate of households living in houses built after 2001 is 41.0%, which is below the average. These results emphasize the importance of monitoring the newly built houses in detail in terms of quality.

In order to investigate the significant factors of the housing and living environment deprivation in Turkey, since the deprivation is a dichotomous variable (0=not deprived, 1=deprived) a binary logistic regression analysis was conducted. The variables, that investigated separately in the previous discussions were intended to be investigated together to discuss about their contribution levels to the deprivation phenomenon.

The variables included in the equation consist of the type of dwelling, residents residing in the first three largest cities of Turkey, household composition, percentile groups of income, size of the house and the tenure status. As categorical variables, the type of the dwelling is recoded as households residing in flats (=0) and the reference category, detached or terraced houses (=1); households residing in Ankara, İstanbul, İzmir (=1) and as reference category households residing in the other regions (=0); household composition consisting of single household (=1), extended families (=2), multi-person no family households (=3), couple with at least one child (=4), lone parent with at least one child (=5), and as reference category couple without children (=0); and tenure status is coded as rent (=1) and public housings (=2) and others as reference category including homeowners and the ones that do not pay rent (=0). These reference categories were determined in line with the crosstab analysis, thus, the categories that were observed to have a lower possibility of being deprived of housing and living environment are selected to be able to observe and compare the predictors' weight more clearly.

The variable regarding the size of the house is included as a continuous variable, in order to observe the size's effect on the housing deprivation levels in order to test the assumption of it would have a negative effect.

The full model containing all predictors is statistically significant, $\chi2 = 2,179,798.962$ p=0.00, indicating that the model is able to distinguish between households that are deprived and not deprived. The model as a whole explained between 8.4% (Cox and Snell R square) and 11.3% (Nagelkerke R squared) of the variance in deprivation status, and correctly classified 65.2% of cases.

Table 22. *Binary Logistic Regression*

	B	S.E.	Wald	df	Sig.	Exp (B)
Type of the dwelling:Detached or terraced (ref: flat)	.599	.001	317087.034	1	.000	1.820
Residents in Ankara, İstanbul, İzmir (ref: other regions)	.337	.001	112058.445	1	.000	1.403
Household composition (ref: couple without children)			373132.888	5	.000	
Single household	.009	.002	31.889	1	<.001	1.009
Extended families	.783	.002	211999.183	1	.000	2.188
Multi-person no family households	.477	.004	16253.076	1	.000	1.611
Couple with at least one child	.505	.001	156467.604	1	.000	1.657
Lone parent with at least one child	.524	.002	68127.145	1	.000	1.689
Percentile Group of Income (ref: highest)			404192.296	4	.000	
Lowest	.896	.002	402285.592	1	.000	2.449
Low	.609	.001	349813.932	1	.000	1.838
Medium	.465	.001	173056.767	1	.000	1.592
High	.250	.001	104493.316	1	.000	1.283
Size of the house	-.010	.000	435975.361	1	.000	.991
Tenure Status (ref: owner-occupier and other)			3656.788	2	.000	
Rent	.050	.001	2469.783	1	.000	1.051
Public housing	.168	.004	1991.257	1	.000	1.183
Constant	-.518	.002	46625.894	1	.000	.596

According to the results, the odds ratio for households residing in detached or terraced houses indicate that these households are 1.82 times more likely to experience housing and living environment deprivation compared to the residents of

the flats. Households that are residing in Ankara, İstanbul and İzmir are 1.40 times more likely to be deprived than in any other regions in Turkey.

Within the household composition variable, the specified compositions are compared with the households consisting of couple without children, since this category have the least possibility to be deprived according to the crosstab analysis. The binary logistic regression model also demonstrates that single households have a slightly higher odds ratio, and 1.009 times more likely to be deprived. Extended families, on the other hand, are 2.19 times more likely to be deprived than the couples without children. It can be stated that, extended families including at least one nuclear family and others, are more likely to be experiencing housing and living environment deprivation. Following this type of households, lone parent with at least one child category is the second category to be more likely to be deprived with 1.69 odds ratio. Even though there cannot be observed quite significant differences between the odds ratios, lone parents with at least one child have higher probability (1.69) to be deprived than the couple with at least one child (1.66) and multi-person no family households (1.61) when compared to the reference category. Yet, each of those three categories increase the possibility of being housing and living environment deprived in considerable levels.

The probability of the lowest income group households to be deprived is 2.45 times more likely than the highest income group households according to the model. The odds ratio of housing deprivation increases as the income group of households decreases.

The size of the house is observed to have an odds ratio smaller than 1, indicating a negative relationship with housing and living environment deprivation. However, its effect is quite low; a unit increase in the size of the house results in 0.01 decrease in chance of deprivation.

When looked at the tenure status category, it can be observed that the odds ratio of households residing in public housing is 1.183 times higher than the households residing in the house owned by them and the households not paying any rent.

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However, the odds ratio is relatively low for tenants, which means tenants in the private rented sector does not differentiate much with respect to their housing and living environment deprivation compared to owner-occupiers and others.

The results presented by the model are compatible with the crosstab analysis and as expected. It can be stated that the income group has a strong influence on housing and living environment deprivation. Households consisting of extended families also appear as a category that should be considered more vulnerable in terms of deprivation. However, there is no significant difference between the tenants and the owner-occupiers, and more detailed studies are needed on this issue. As a matter of fact, with the crosstab analysis, it is observed that the deprivation levels of those who live in a house where they do not pay rent are also moderately high. Although it is assumed that these rates result from a lack of data regarding the households residing in gecekondus and regarding the distinction of households living in rural areas, more detailed studies are needed to investigate the backgrounds.

When the households living in the first three big cities of Turkey are compared with those living in other regions, it is seen that the probability of being deprived of the households living in the three big cities is 1.40 times more likely than the households living in all other regions of Turkey. However, based on the literature, it can be argued that the problems experienced by households regarding housing and living environment may arise in different ways in different geographies as well as in different types of housing. Thus, a more detailed investigation of the dimensions is conducted based on the country level and based on NUTS 2 regions and presented in the next section of the thesis.

4.1 Dimensions of Housing and Living Environment Deprivation

In order to determine the dimensions standing out among the indicators of housing and living environment deprivation in Turkey, all the dimensions have been analyzed with frequency tables first.

One of the investigated dimensions of housing and living environment deprivation is overcrowding. While compiling the data and determining the overcrowding threshold, person per room ratios were examined within NUTS 2 regions. How overcrowding differs by regions, however, has not been analyzed. Therefore, a crosstab analysis was conducted to see the level of the overcrowding dimension across the country and to examine how it varies between regions.

As presented in Table 4, the overall percentage of households experiencing overcrowding in their dwelling in Turkey is 5.8%. Figure 3 and Table 23 below shows the overcrowding rates of the regions.
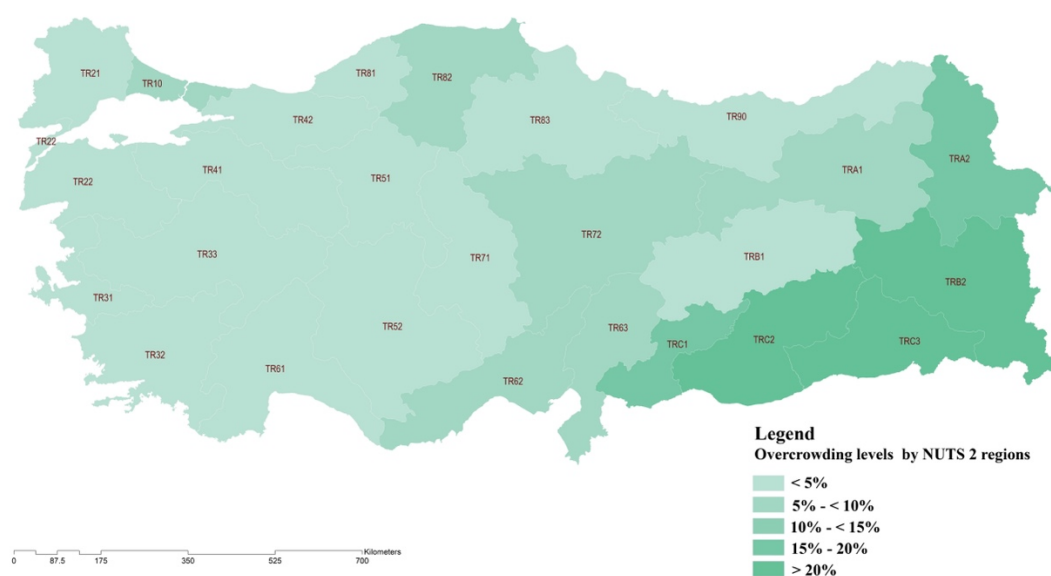

Figure 3. *Overcrowding by NUTS 2 regions*

Table 23. *Overcrowding Rate by NUTS 2 Regions*

NUTS 2 Regions	Overcrowding		Total
	Not Overcrowded	Overcrowded	
TR10	94.4%	5.6%	100.0%
TR21	97.1%	2.9%	100.0%
TR22	97.3%	2.7%	100.0%
TR31	96.3%	3.7%	100.0%
TR32	97.2%	2.8%	100.0%
TR33	97.1%	2.9%	100.0%
TR41	96.2%	3.8%	100.0%
TR42	96.9%	3.1%	100.0%
TR51	98.1%	1.9%	100.0%
TR52	97.1%	2.9%	100.0%
TR61	96.0%	4.0%	100.0%
TR62	94.7%	5.3%	100.0%
TR63	91.2%	8.8%	100.0%
TR71	96.5%	3.5%	100.0%
TR72	94.5%	5.5%	100.0%
TR81	98.9%	1.1%	100.0%
TR82	92.7%	7.3%	100.0%
TR83	95.2%	4.8%	100.0%
TR90	96.4%	3.6%	100.0%
TRA1	92.9%	7.1%	100.0%
TRA2	81.4%	18.6%	100.0%
TRB1	95.9%	4.1%	100.0%
TRB2	77.8%	22.2%	100.0%
TRC1	84.6%	15.4%	100.0%
TRC2	77.9%	22.1%	100.0%
TRC3	78.1%	21.9%	100.0%
Total	94.2%	5.8%	

As observed in Table 4, the overall overcrowding rate across the country is 5.8%, which can be interpreted as quite low. Figure 3 and Table 23 illustrates the varying

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levels of the overcrowding problem according to different regions in Turkey. It is observed that this problem is particularly high in Southeastern Anatolian regions along with some part of the Eastern Regions such as TRB2 (Van, Muş, Bitlis, Hakkari), TRC2 (Şanlıurfa, Diyarbakır), and TRC3 (Mardin, Batman, Şırnak, Siirt). Although this situation allows an interpretation that it may be caused by cultural norms, it is observed that it is well above the country's average and there are large differences with the rates in other regions. When the ratios are examined respectively, it is seen that only TRA2 (Ağrı, Kars, Iğdır, Ardahan) and TRC1 (Gaziantep, Adıyaman, Kilis) regions are in the range of 15-20%, and that the 10%-<15% percent range is not observed at all following this ratio, and the following ratio decreases to the levels of 5%-<10%. These rates highlight an obvious disparity between regions that cannot be interpreted solely on the basis of cultural differences.
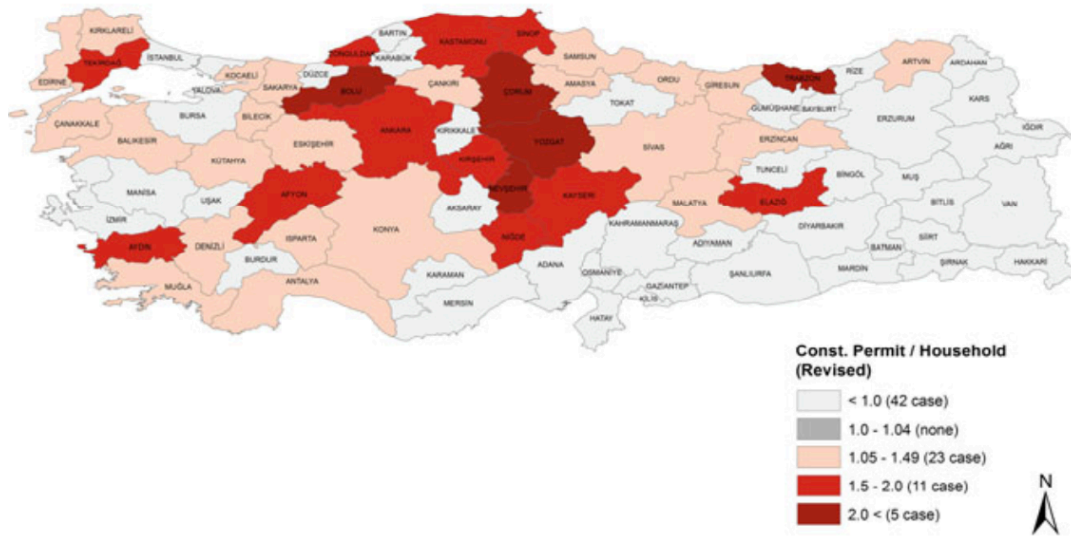
Figure 4. *Geography of shortage and excess production in Turkey: 2014. Source: Prepared by Özdemir Sarı (2019).*

Figure 4 above, prepared by Özdemir Sarı (2019) based on TURKSTAT (2018c, d) and Undersecretariat of Housing (2002), shows that the regions where overcrowding rates are high are also the regions where authorized housing production is also mostly low. Based on this overlap it can be argued that, since the housing production

concentrates in certain regions, other regions experience deprivation in terms of concealed housing and dwelling size, reflecting in overcrowding phenomenon.

Table 24 below shows the frequency of the problem of shower or toilet located outside the house. According to the table, the possibility of a household residing in Turkey to be experiencing this problem is quite low, with 3.7% rate. However, Figure 5 reveals a completely different side of the problem based on regions.

Table 24. *The problem of shower or toilet located outside the house*

	Frequency	Percent	Cumulative Percent
No	24034684	96.3	96.3
Yes	917163	3.7	100.0
Total	24951846	100.0	
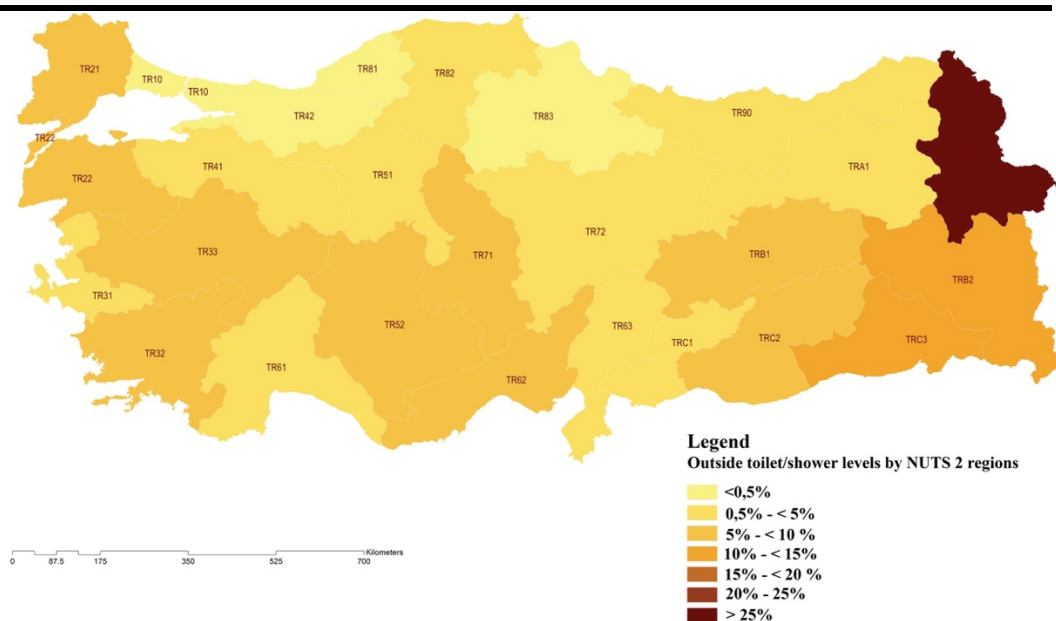
Figure 5. *The problem of shower or toilet located outside the house by regions*

Looking at Figure 4, one can argue that the existence of such a problem in the country, in general, is quite low however one region immediately attracts attention. Particularly in Istanbul, its surroundings and in the western Black Sea regions this rate is around 0.5%. Nevertheless, this rate for the TRA2 (Ağrı, Kars, Iğdır, Ardahan)

region is 25.3%. TRC3 (Mardin, Batman, Şırnak, Siirt) follows this region with a rate of 13.6% and TRB2 (Van, Muş, Bitlis, Hakkari) at 10.3%. The figure presents that the 15%-25% per cent range is not observed across the country, thus illustrating the vast disparity between the TRA2 region and the rest of the country.

Table 25 below illustrates the frequency of a heating problem caused by insulation. There is 34.2% possibility of experiencing this problem according to the table.

Table 25. *Presence of a heating problem caused by the insulation of the house*

	Frequency	Percent	Cumulative Percent
No	16437322	65.9	65.9
Yes	8514525	34.1	100.0
Total	24951846	100.0	

According to Eurostat data, in 2020, 7.4 % of the EU population was unable to keep their home adequately warm. Among the EU Member States, this percentage ranges from 1.5 % in Austria to 27.5 % in Bulgaria. When compared to EU countries, it can be observed that the population of Turkey experiencing the heating problem is considerably high.

Figure 6 below shows the level of the problem of heating due to insulation of the house based on regions.
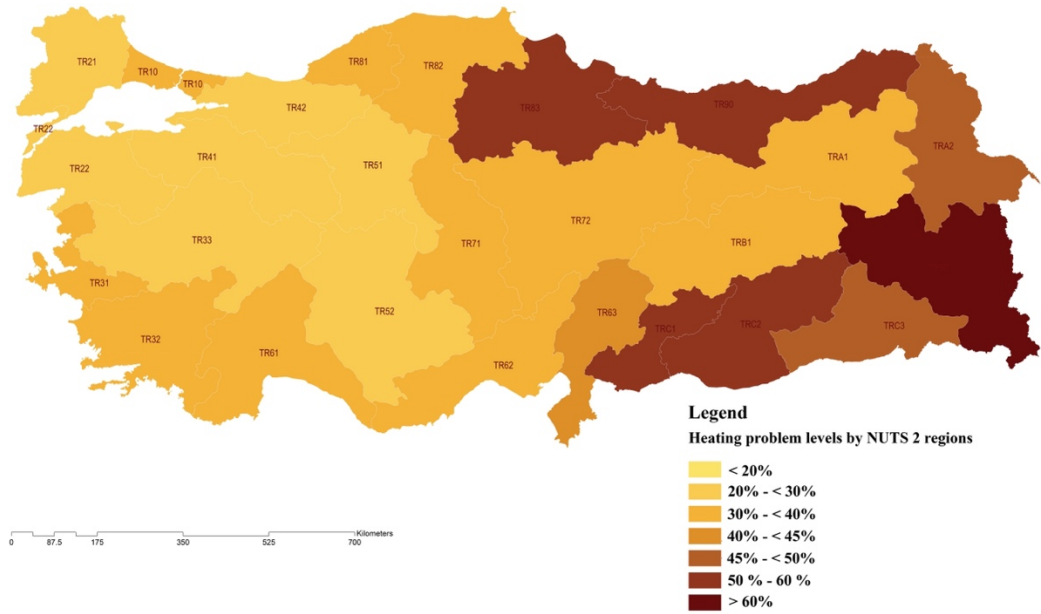
Figure 6. *Levels of heating problem caused by the insulation of the house by regions*

Based on Figure 6, it can be observed that the rates of experiencing heating problem related to the insulation problem of the house increases in the eastern regions of Eastern Anatolia, the eastern and middle regions of the Black Sea Region and of Southeastern Anatolian Region. In TR83 (Samsun, Tokat, Çorum, Amasya), TR90 (Trabzon, Ordu, Giresun, Rize, Artvin, Gümüşhane), TRC1 (Gaziantep, Adıyaman, Kilis), TRC2 (Şanlıurfa, Diyarbakır) these percentages exceed 50% while in TRB2 it exceeds 60% of the population with 64.4%.

Table 26 below illustrates that 15.6% of the households are exposed the problem of the rooms being dark or not getting enough light.

Table 26. *Problem of the rooms being dark or not getting enough light*

	Frequency	Percent	Cumulative Percent
No	21057203	84.4	84.4
Yes	3894644	15.6	100.0
Total	24951846	100.0	

Figure 7 below, represents the distribution of the rates of the dark room problem based on regions. It can be observed that the highest proportion of households experiencing this problem is in TRC1 (Gaziantep, Adıyaman, Kilis) with 32% rate. TRC1 is followed by TRC2 (Şanlıurfa, Diyarbakır) with 29.6%, TRA2 (Ağrı, Kars, Iğdır, Ardahan) with 25.6% and TR10 (İstanbul) with 20.4% rates.
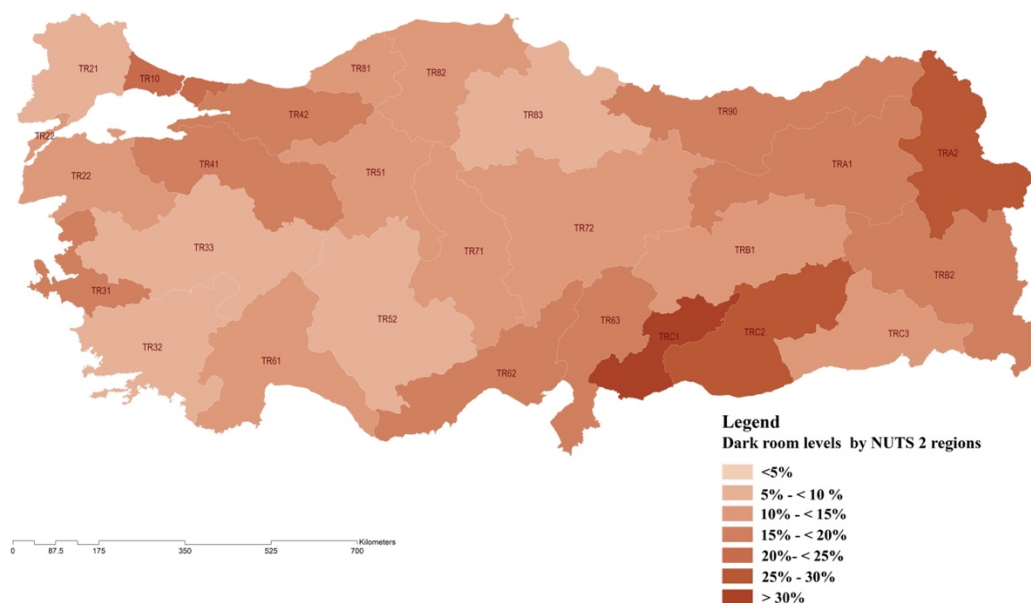

Figure 7. *Dark rooms or not getting enough light levels by regions*

Table 27 below shows the frequency of presence of a problem such as damp walls, rotten window frames or leaky roof across the country. It is observed that 32.1% of the households suffer from at least one of these problems.

Table 27. *Presence of a problem such as damp walls, rotten window frames, leaky roof*

	Frequency	Percent	Cumulative Percent
No	16938110	67.9	67.9
Yes	8013737	32.1	100.0
Total	24951846	100.0	

Figure 8 below illustrates the varying levels of the presence of damp walls, rotten window frames, leaky roof etc. based on regions. Although it is seen that this problem is experienced at certain rates in almost every region, it is observed that in TRC2 (Şanlıurfa, Diyarbakır) half of the households with 50% level and in TRC3 (Mardin, Batman, Şırnak, Siirt) region, more than half of the households are exposed to this problem with the rate of 53.9%.
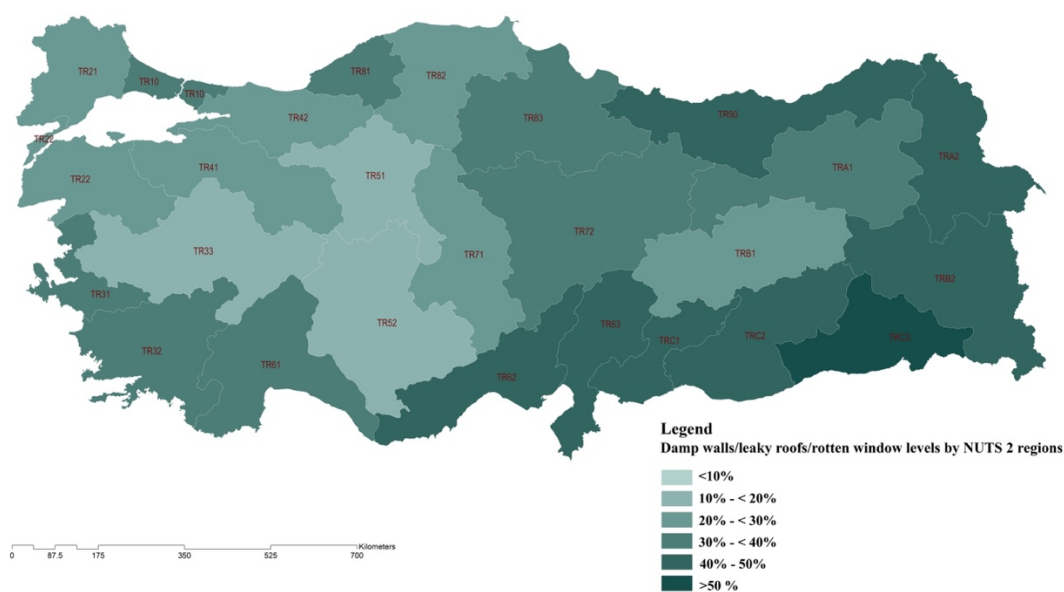

Figure 8. *Damp walls, rotten window frames, leaky roof problem levels by regions*

Table 28 shows that 9.4% of the households across the country reports the existence of an intense encounter with crime or violence in the living environment.

Table 28. *Presence of an intense encounter with crime or violence in the living environment*

	Frequency	Percent	Cumulative Percent
No	22604336	90.6	90.6
Yes	2347511	9.4	100.0
Total	24951846	100.0	

Figure 9 illustrates that an intense encounter with crime or violence in the living environment is mostly experienced in TR10 (İstanbul) with the rate of 22.2%. TR31 (İzmir) follows İstanbul with the rate of 12.6% and TR21 (Tekirdağ, Edirne, Kırklareli) with 12.3%.
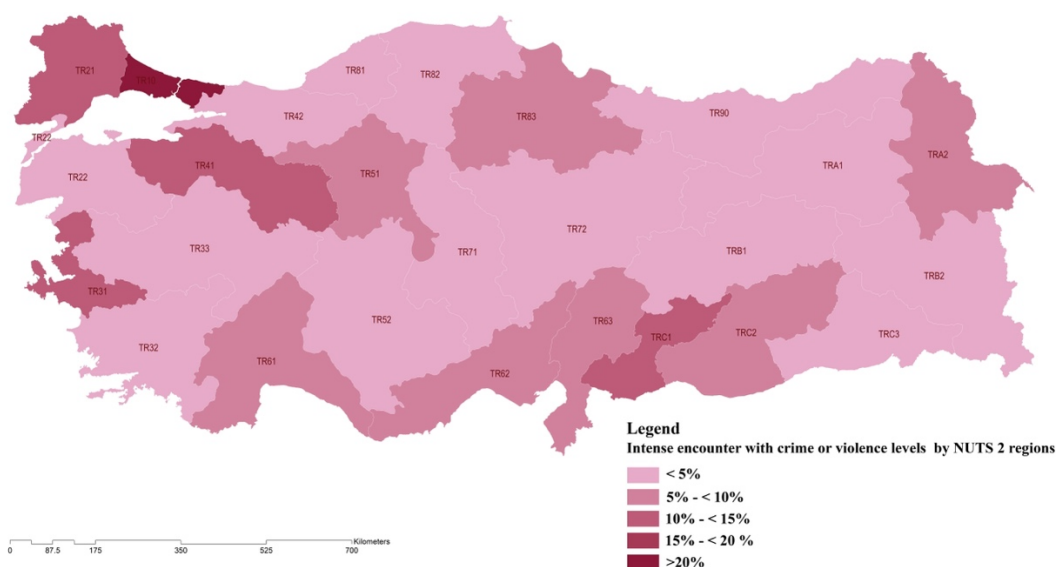

Figure 9. *Intense encounter with crime or violence in the living environment*

Table 29 shows the frequency of the households experiencing pollution problems including air and environmental pollution or other environmental problems caused by traffic or industry in the living environment across the country. According to the results, 21.3% of the households in Turkey experience a pollution problem in the living environment.

Table 29. *Presence of air pollution, environmental pollution or other environmental problems caused by traffic or industry in the living environment*

	Frequency	Percent	Cumulative Percent
No	19645108	78.7	78.7
Yes	5306738	21.3	100.0
Total	24951846	100.0	

Figure 10 shows that pollution or other environmental problems are experienced by households in TR31 (İzmir) more widely, with a 35.5% rate. TR62 (Adana, Mersin) follows İzmir with a rate of 33.3%. TR33 is the region where the least proportion of households is exposed to this problem, with a rate of 3.9%. It can be interpreted that since this problem is caused rather by traffic or industry in the living environment, an association can be established with the rate of urbanization. However, a more detailed analysis is necessary.
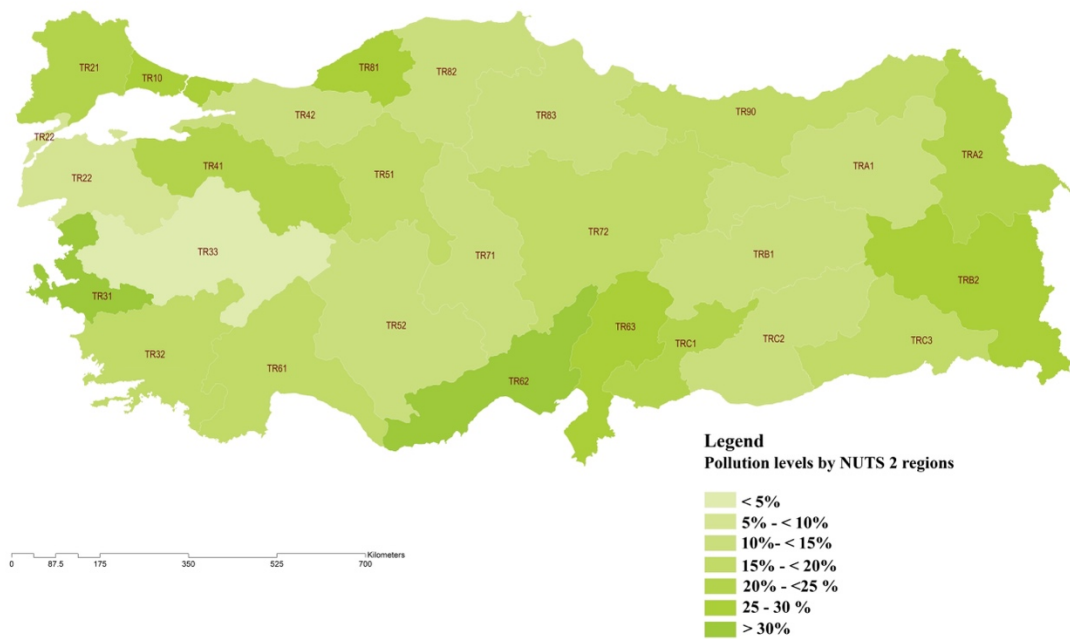
Figure 10. *Air pollution, environmental pollution or other environmental problem levels by regions*

Table 30 shows the frequency of the reported noise problem in the dwelling, from neighbors or the street by the households throughout the country. According to the results 15.9% of the households reported the presence of such a problem.

Table 30. *Presence of a noise problem in the dwelling, from neighbors or from the street*

	Frequency	Percent	Cumulative Percent
No	20988519	84.1	84.1
Yes	3963328	15.9	100.0
Total	24951846	100.0	

The percentages of the households reported a noise problem based on the regions are illustrated in Figure 11. According to the figure, this problem is experienced by the the households in TR10 (İstanbul) more widely, with a rate of 26.5%. İstanbul is followed by TRC1 (Gaziantep, Adıyaman, Kilis) with a rate of 22.1% and TR31 (İzmir) with a rate of 22% and TR62 (Adana, Mersin) with 20%.
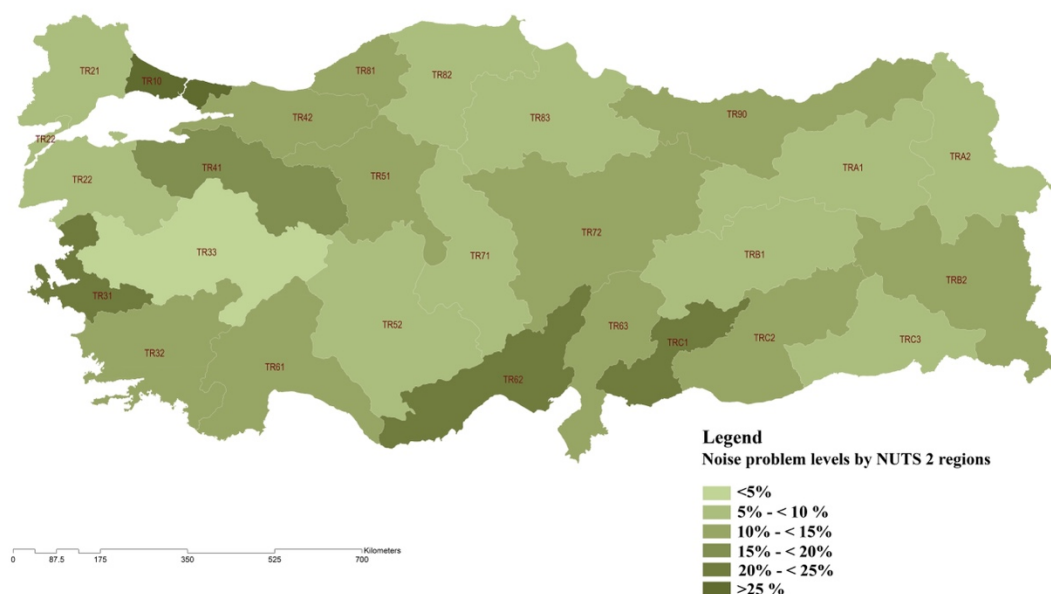
Figure 11. *Noise problem levels in the dwelling by regions*

In summary, each of the selected problem areas related to housing and living environment deprivation is observed to different degrees in different regions. Many of these can be associated with the rate of urbanization, and can also be examined in more detail by different dimensions such as cultural norms, industrialization rate, and demographic situation.

However, the analyses show that the heating problem arising from the insulation of the house is above the level of EU countries with a rate of 34.1%, and the rates of exposed households are considerably higher in the eastern regions of Eastern Anatolia, the eastern and middle regions of the Black Sea Region and of Southeastern Anatolian. Heating problem is followed by the presence of problems such as damp walls, rotten windows or leaky roofs with a rate of 32.1% as the second most common problem area nationwide. The fact that the ratio of the pollution and other environmental problems caused by industry and traffic is around 21.3%, shows that approximately one-fifth of the households in Turkey is exposed to these problems. Although the least experienced problem area nationwide is the shower/bath located outside the house, this dimension should not be ignored, since, it has been observed that 25.3% of the households exposed to this problem in the TRA2 region covering the provinces of Ağrı, Kars, Iğdır and Ardahan, meaning that, almost one out of 4 households are living in houses that do not have shower/toilet inside.
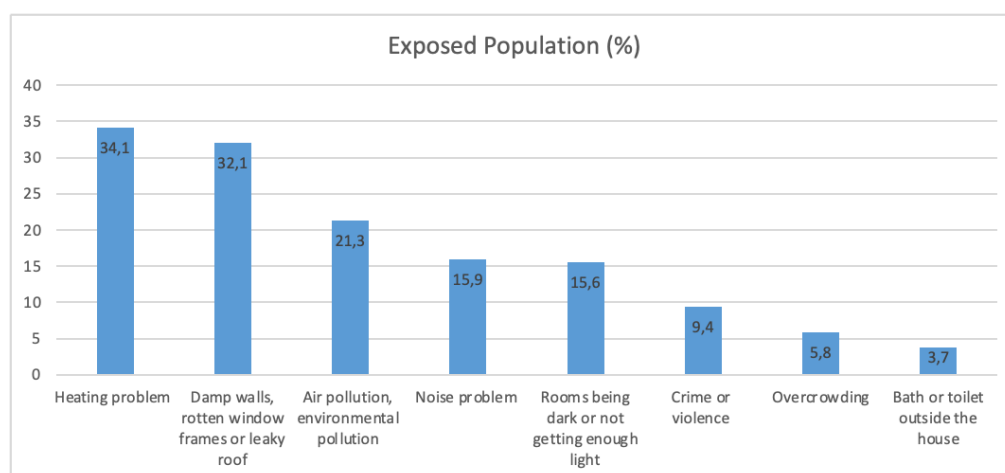

Figure 12. *The Percentages of Problem Areas Experienced by Households Throughout the Country*
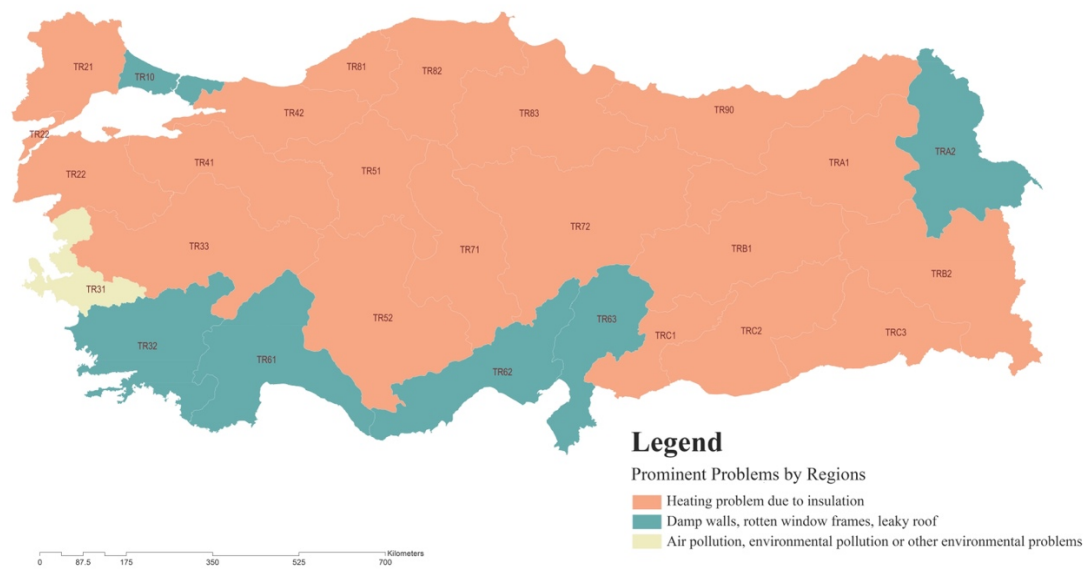
Figure 13. *Prominent Problems Experienced by Households According to Regions*

CHAPTER 5

CONCLUSION

5.1   Summary and an Overview of the Findings

First, this thesis has investigated the significance of housing and the living environment as one of the main factors that affect the well-being and quality of life of households. Based on the literature, the association of the accessibility of households to the resources in the cities, jobs, education, health and cultural facilities has been emphasized and also the association of housing conditions and living environment with mental and physical health has been reviewed.

The fact that housing and living environments are increasingly become isolated from their use values and transformed into means of investment in Turkey and the world has been identified as a problem in this thesis. It was emphasized that this problem was intensely experienced by households, especially with the covid-19 pandemic, which required staying at home for a long time. Thus the relationships between living environments and mental and physical health were strongly practiced. It has also been emphasized that the housing problem, frequently brought to the agenda in Turkey, especially around problem areas such as urban transformation and housing shortage, does not consist only of quantitative dimensions. It is also necessary to analyze the existing housing stock's quality and prioritize the renewal of the existing stock along with the need-based housing production. This thesis aims to highlight that the data and analyses that will form the basis of these policies in Turkey are quite limited. The research questions of this thesis, which is planned to be a prelude to more detailed research, were determined under the phenomenon of housing deprivation, which is defined in the world literature as the accumulation of

deficiencies in basic housing quality, amenities and living environment-related essential items.

In the subsequent parts of the study, researches on housing and living environment deprivation have been compiled, different methodologies used concerning this phenomenon and their results have been reviewed. It has been observed that the variations in the methods adopted to measure housing and living environment deprivation led to quite different results. Since meaningful results and analyzes are achieved mostly when this phenomenon is examined at the scale of countries and regions, it has been determined that as comprehensive and detailed data as possible is needed. Thus data restricts or guides the study in line with its availability.

As highlighted in the literature section of the thesis, many researchers found the most significant factor contributing to housing deprivation found to be is occupational class and educational level of the householder (Townsend, 1979; Royuela, 2019; Obaco et al., 2022). The correlation of housing deprivation with age is usually found convex (Obaco et al., 2022; Nolan & Winston, 2010) and it was also emphasized that families with children are among the groups most at risk of certain housing problems (DCLG, 2007) whereas, some researchers (Ayala and Navarro, 2004) found higher relative probability levels for single people and divorced people to be housing deprived. The study of Mandic and Cirman (2012), demonstrated the high association between a housing market dependent upon high rates of homeownership and inadequate housing standards. Aydın (2019) also emphasized that ownership is not a sufficient factor and that a significant difference cannot be detected within the scope of the housing quality index he developed. He also determined statistically significant differences in rural-urban areas and income groups regarding housing quality.

In line with the key findings from the literature, this thesis first aimed to investigate the levels of housing and living environment deprivation in Turkey based on tenure types, household composition, dwelling types, income groups and regions. Then, among those variables, it was aimed to compare the better predictors of housing and

living environment deprivation. It was also aimed to investigate varying levels of each problem areas regarding housing and living environment deprivation throughout country and based on different regions.

All of the predictors included in the model investigating factors affecting the incidence of deprivation were found to be significant. Among these variables are; household income, household composition, type of house, tenure status, size of the house and residing in the three biggest cities of Turkey. It was observed that the probability of housing deprivation increases as the income group of households decreases, and the probability of the households in the lowest income group being deprived of housing and living environment is higher than the households of the highest income group. It was also observed that households consisting of extended families have a higher probability of being housing and living environment deprived. A significant difference in terms of housing and living environment deprivation could not be detected between owner-occupier households and tenants. It was also observed that the deprivation levels of "other" typed households referring to those who live in a house where they do not pay rent, are quite high. Although it is assumed that these rates result from a lack of data regarding the distinction of households living in rural areas, more detailed studies are needed to investigate the backgrounds. In terms of dwelling type, living in flats was found to reduce the probability of housing and living environment deprivation.

Aydın (2019) did not detect a large inequality between regions in terms of housing quality, however when the variables of housing and living environment deprivation were examined with a different method adopted in this study, it was found that there was slightly more than 40% difference between the region with the least deprived population and the region with the most deprived population, and that is considered as a significant difference. Also, it has been observed that different problem areas for housing and living environments among the regions come to the fore. For example, regions that do not appear to be in a relatively critical situation in terms of housing deprivation, in general, stand out by showing much higher rates than other regions in terms of households experiencing certain problem areas.

According to the results, the housing and living environment deprivation rates of the eastern parts of the Black Sea Region and Southeastern Anatolia are exceptionally high. TR33 region, including the cities of Manisa, Afyon, Kütahya, and Uşak, on the other hand, is the region where the housing and the living environment are experienced at the lowest levels. The analyses showed that the most experienced problem area is a heating problem arising from the insulation of the house throughout the country, and the rates of exposed households are especially higher in the eastern parts of Eastern Anatolia, the eastern and middle parts of the Black Sea Region and Southeastern Anatolian.

In nationwide heating problem with 34.1% is followed by problems such as damp walls, rotten windows or leaky roofs, with a rate of 32.1% as the second most common problem area. The rate of pollution and other environmental problems is around 21.3%, which shows that approximately one-fifth of the households in Turkey are exposed to these problems. Although the least experienced problem area nationwide is found to be the shower/bath located outside the house. Nonetheless, this dimension should not be ignored since it has been observed that 25.3% of the households exposed to this problem in the TRA2 region covering the provinces of Ağrı, Kars, Iğdır and Ardahan.

5.2   Housing and Living Environment Deprivation: Implications for Housing Policies

Depending on the findings of this thesis, it is possible to highlight several housing policy implications in relation to housing and living environment deprivation. For instance, depending on the finding that almost 225 thousand households in the country are experiencing more than six problems regarding housing and living environment deprivation (see Table 10), the dwelling units occupied by these households could be considered substandard and be a target for redevelopment policies. These kinds of cases where problems related to housing and living

environments are concentrated should be considered in housing need calculations of the country under the backlog housing need.

Moreover, the findings of this study show that regional variation of deprivation is a significant issue. If it was possible to investigate the variation of deprivation at the provincial level, the results would probably show that variation is also valid for provinces. In this sense, spatial variation of housing and living environment deprivation among different housing submarkets should lead to differentiation of policy and targeting of resources. For instance, housing policies aimed at the production of social housing, rehabilitation of existing housing stock, and redevelopment could produce better results if the variation of deprivation is considered while designing these kinds of policies. The recent countrywide social housing project, for instance, could provide more efficient outcomes if directed to the Eastern and Southeastern regions of the country where deprivation is concentrated (see Figure 2). Similarly, developing some quick-fix solutions, such as the provision of rehabilitation and maintenance credits or construction material support to cope with damp walls, rotten window frames and leaky roofs and to target these kinds of supports to regions where these problems are prominent (see Figure 13) could ensure a relatively quick and efficient improvement in the households' quality of life.

On the other side, this study shows that different household groups or dwelling types suffer more from housing and living environment deprivation. In this context, housing policies could consider giving priorities to low-income households, extended families, lone parents and couples with at least one child, particularly for housing assistance kind of supports.

In Turkey, especially since 2010, urban transformation interventions have gained momentum with the 73rd Article of Municipality Law No. 5393 and Law No. 6306 on the Transformation of Areas Under Disaster Risk. On the other hand, TOKİ has broad authority in terms of conducting various types of housing and living environment deprivation-related projects such as maintenance-repair, infrastructure,

disaster housing, restoration, and housing production for low-income groups. Therefore, it is of great importance to conduct the comparison of the urban transformation areas announced by the relevant laws and the realized projects within the regions where the households experiencing high rates of housing and living environment deprivation are concentrated, in terms of determining the need for backlog housing and monitoring the success of the policies implemented.

5.3   For Further Studies

Within the scope of this thesis, there are some limitations confronted. The biggest challenge has been regarding the scope of the existing data. Along with the lack of the urban-rural distinction, although the data regarding the individuals, such as general health situation, age or socio-economic background, is available, the information regarding the head of the household is not existent, which means that there is no reference to being able to link this information to houses. This deficiency necessitates developing a methodology to investigate the relationships between these variables.

Other important issues are worth investigating in detail, such as the age of the buildings in which the households reside and their status in terms of housing and living environment deprivation; the vacancy of the dwelling and its situation in terms of housing and living environment deprivation. It is, however, challenging to determine the vacant building's situation when pretty much all the determinations can be conducted based on household surveys. The information regarding the age of the building inhabited is not provided within the ILCS; the year in which the dwelling was owned or started to be inhabited by households is available only. This thesis showed that (see Figure 2), regions where deprivation of housing and living environment are most common with rates above 60%, are also the regions where houses and buildings are mostly built after 2001 and the stock is relatively new. In the region where, on the other hand, the deprivation rate is the lowest, the rate of households living in houses and buildings built after 2001 is below the average.

These results emphasize the importance of monitoring the newly built houses in detail in terms of quality. By using the existing variable, the years in which the dwelling is owned or started to be inhabited are divided into five periods and the deprivation rates are examined below. The periods were chosen by taking into account the "Law on Building Inspection" dated 29.06.2001, "Regulation on Water Insulation in Buildings" dated 27.10.2017, and "Turkey Building Earthquake Regulation" dated 18.03.2018.
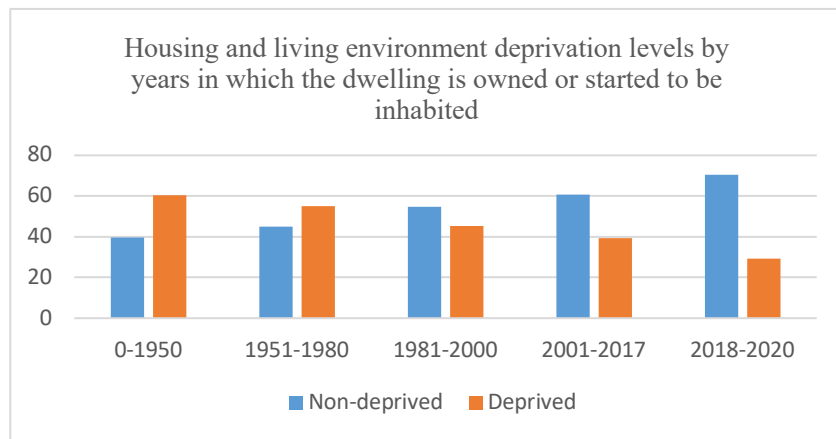
Figure 14. *Housing and living environment deprivation levels by years in which the dwelling is owned or started to be inhabited*
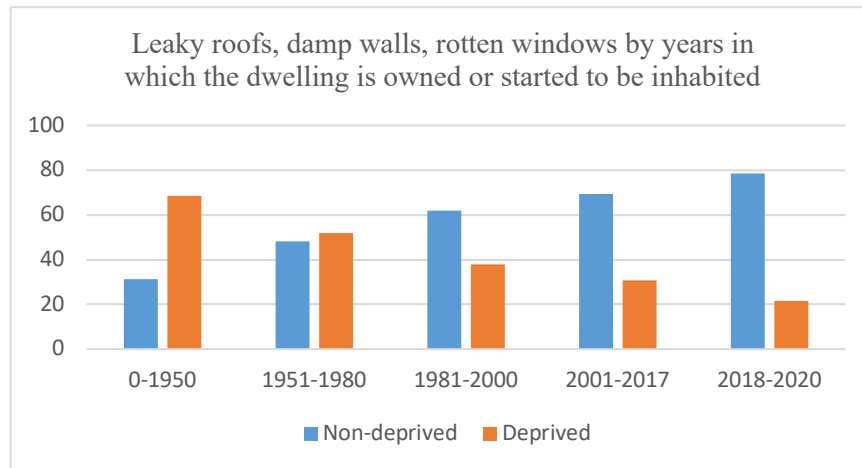

Figure 15. *Leaky roofs, damp walls, rotten windows by years in which the dwelling is owned or started to be inhabited*

Deprivation levels, in general, are observed to be decreasing as the year in which the dwelling is owned or started to be inhabited approaches the present day. An apparent decrease can be observed in the levels of leaky roofs, damp walls and rotten windows between 1950-2020. However, it is essential to underline that the proxy variable used instead of the age of the building should not be relied upon.

This thesis gains importance in the context of the limited study on the quality of the existing housing stock in Turkey. In addition, it also makes this thesis valuable that the housing and living environment conditions in Turkish literature are primarily associated theoretically with the factors such as housing type, income level of households, household composition, tenure status, living metropolitan cities, utilized area of housing, and housing and living environment deprivation were examined in detail by adopting a rather empirical approach. It is considered that this thesis contributes to the literature by addressing the housing problem in Turkey in terms of quality and not only at the national level but also by comparing the deprivation of housing and living environment conditions among regions with all the dimensions determined. Nevertheless, by emphasizing the limitations and deficiencies encountered in the preparation process of the thesis, it was aimed that the thesis would be a prelude to future studies in the field of housing and living environment deprivation.

Along with considering all the limitations in future studies, it is also important to develop or adopt different methods. As can be seen, different methodologies reveal different results in terms of housing and living environment deprivation, thus having the potential to expose ignored or vaguely mentioned problem areas.

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APPENDICES

A. The Population Exposed to Each Housing and Living Environment Problem Area Based on NUTS 2 Regions

Table A.1. The Population Exposed to Each Housing and Living Environment Problem Area Based on NUTS 2 Regions

	Overcrowding	Damp walls, rotten window frames, leaky roof	Heating problem	Rooms being dark	Shower/toilet located outside	Noise problem	Pollution	Crime or violence
TR10	5.6%	30.7%	30.6%	20.4%	0.1%	26.5%	29.2%	22.2%
TR21	2.9%	28.4%	20.6%	8.7%	6.3%	9.9%	21.1%	12.3%
TR22	2.7%	24.7%	29.5%	11.1%	7.0%	7.3%	8.5%	2.9%
TR31	3.7%	30.9%	33.6%	16.2%	3.0%	22.0%	35.5%	12.6%
TR32	2.8%	33.8%	31.0%	5.7%	7.9%	14.1%	16.5%	3.4%
TR33	2.9%	19.2%	20.1%	5.6%	7.8%	3.4%	3.9%	1.2%
TR41	3.8%	25.8%	29.9%	15.4%	1.3%	19.9%	24.9%	11.9%
TR42	3.1%	26.3%	27.3%	18.9%	0.0%	14.4%	14.2%	3.9%
TR51	1.9%	15.9%	20.5%	13.2%	0.6%	13.1%	16.1%	6.9%
TR52	2.9%	19.8%	21.6%	8.7%	6.5%	7.5%	13.1%	2.9%
TR61	4.0%	39.2%	32.8%	10.4%	2.4%	14.1%	18.9%	6.0%
TR62	5.3%	43.2%	36.2%	19.4%	5.9%	20.0%	33.3%	9.6%
TR63	8.8%	43.0%	40.8%	18.0%	4.2%	13.6%	29.1%	7.2%
TR71	3.5%	22.9%	34.6%	13.4%	9.7%	9.8%	11.4%	3.3%
TR72	5.5%	32.8%	34.9%	12.4%	2.7%	12.9%	18.6%	4.1%
TR81	1.1%	32.4%	39.5%	14.0%	0	13.0%	25.2%	3.7%
TR82	7.3%	29.2%	32.1%	12.1%	1.3%	7.6%	10.7%	2.8%

Table A.1. (continued)

TR83	4.8%	36.2%	53.8%	8.4%	0.4%	7.4%	11.6%	5.1%
TR90	3.6%	45.7%	53.0%	18.2%	2.9%	14.9%	18.5%	4.1%
TRA1	7.1%	34.4%	39.5%	15.3%	3.8%	7.2%	15.0%	2.8%
TRA2	18.6%	47.7%	46.3%	25.6%	25.3%	8.6%	23.4%	5.5%
TRB1	4.1%	29.0%	36.2%	10.5%	5.4%	6.5%	13.1%	3.4%
TRB2	22.2%	49.1%	64.4%	16.0%	10.3%	10.7%	28.4%	2.2%
TRC1	15.4%	42.3%	52.3%	32.0%	4.0%	22.1%	21.0%	12.0%
TRC2	22.1%	50.0%	57.0%	29.6%	8.6%	12.6%	13.1%	7.9%
TRC3	21.9%	53.9%	49.0%	10.8%	13.6%	8.6%	20.0%	2.3%
Total	5.8%	32.1%	34.1%	15.6%	3.7%	15.9%	21.3%	9.4%

B. Thesis Permission Form