

**THE USE AND EFFICIENCY OF HOUSING STOCK IN
TURKEY**

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ABSTRACT

THE USE AND EFFICIENCY OF HOUSING STOCK IN TURKEY

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Although efficient use of stock is an important issue of housing economics and policies, there is very little research on the subject in Turkey. This study aims to investigate the stock efficiency in Turkey by measuring the degree to which the housing stock matches household size. Distributions between dwelling units and the households in terms of their size are investigated for this purpose. The stock is studied within three zones of occupational density: “comfort, overcrowding and underoccupation”, according to international occupancy standards. The findings reveal that the rapid rise in underoccupation in the stock is the dominant character of housing in Turkey, which is a result of housing system producing larger and larger dwellings despite the declining average household size in the country. The analyses in the province center level show that there are great differences between the western and eastern parts of the country. Reasons of overcrowding and underoccupation are also investigated by means of regression analysis. Tenure, income level and proportion of gecekondü emerge as the most effective variables in explaining the differentiation of overcrowding and underoccupation across province centers.

Keywords: Stock Efficiency, Housing Use, Occupancy Standards, Occupational Density, Overcrowding, Underoccupation.

ÖZ

TÜRKİYE’DE KONUT STOKUNUN KULLANIMI VE VERİMLİLİĞİ

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Bu çalışmada farklı büyüklükteki hanhalklarının oturdukları konut büyüklüklerine göre dağılımları incelenerek Türkiye kentsel konut stokunun verimliliği araştırılmıştır. Uluslararası standartlar açısından uygun hanhalk-konut eşleşmesi ‘konfor’, bunun altı ‘yığılma’ ve üzeri ‘seyrelme’ durumu olarak tanımlanmıştır. DİE tarafından hazırlanan nüfus sayımı verilerinin kullanıldığı çalışmada şu sonuçlara varılmıştır: Türkiye’de stokun kullanımına ilişkin uzun dönemli gözlemler seyrelme eğiliminin güçlü olduğunu göstermektedir. Bunun başlıca nedeni ülkede gittikçe küçülen hanhalklarına rağmen konut sisteminin gittikçe daha büyük yüzölçümlü birimler üretmesidir. Bu durum hem konut sistemindeki eşitsizliğin, hem de bir kaynak israfının görüntüsüdür. İl merkezleri bazındaki analizler ülkenin batısı ile doğusu arasında keskin bir ayrım olduğunu ve batı illerinin seyrelme, doğu illerinin ise yığılma ile öne çıktığını göstermektedir. İl merkezleri arasındaki farklılaşmaların sebeplerini inceleyen regresyon analizi ise, konut kullanım yoğunluğunu belirlemede nüfusla ilgili değişkenlerden ziyade kiracılık, gelir düzeyi ve gecekondü oranları gibi değişkenlerin etkili olduklarını göstermiştir.

Anahtar Kelimeler: Stokun Verimliliđi, Hanehalkı Konut Standartları, Konut Kullanım Yođunluđu, Yiđilma, Konfor, Seyrelme

To My Father

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CHAPTER 1

INTRODUCTION

1.1 Definition of Efficiency

The concept 'efficiency' is defined in the dictionary as "*the state of being efficient, being able to perform duties well and producing a desired or satisfactory result*" (Oxford Advanced Learner's, 1987). Therefore, in an efficient housing stock, each unit must be fulfilling its function in the most effective form in terms of its qualitative and quantitative capacity. In other words, efficiently used housing stock reflects a situation where there is no excess or unused capacity of stock left, and needs of the households are answered.

1.2 Measuring efficiency

It is not easy to measure the efficiency of stock empirically or calculate in terms of proportions or percentages because it is a multidimensional attribute. It includes the attributes belonging to the stock, as well as to the households. Therefore, we can study the components of stock efficiency under two main topics:

1. Stock characteristics
2. Household characteristics

Stock characteristics are the qualitative and quantitative aspects of the composition of the stock in a country, such as the typology of housing, tenure, average dwelling size, age, the production methods and performance, level of rents, etc. These are all interrelated attributes that affect efficiency of housing.

Household characteristics determine the housing need and affordability. Household size, type and membership, mobility, life cycle stages, economic activity and occupation, income, and preferences are the household characteristics in some way related with efficiency of housing stock.

To sum up, the stock has physical, technological, economical capacities; also the households have different needs, preferences, incomes etc. and the efficient use of stock depend on how these different attributes fit and synchronize each other.

In many studies made in different countries and concerning the efficiency of stock, the physical capacity of a dwelling unit and the size of the household occupying it are considered as a tool for measuring the stock efficiency. In this approach, the principle criterion is the distribution of households to different size of dwellings.

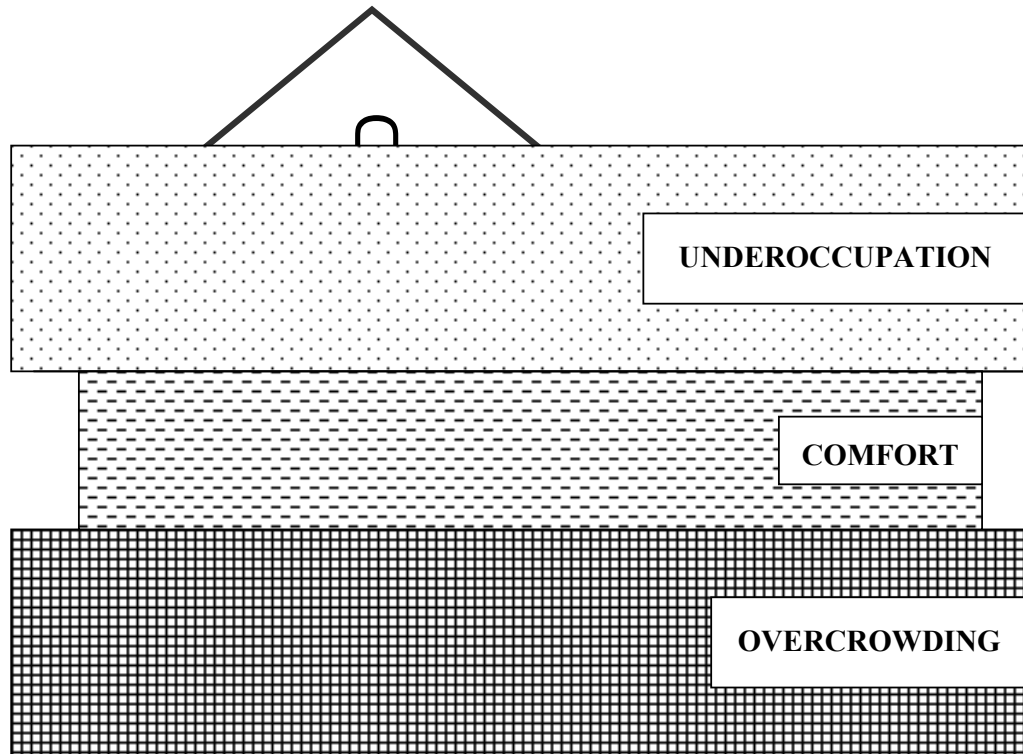
In Turkey, Balamir (1975, 1996) carried out many studies using this criterion. In this method, the degree to which the housing stock matches household structure is measured through making a distribution between the dwelling units and the households in terms of their size. By taking into account the size of the dwelling (number of rooms) and the size of the household (number of the household members), households (stock) are separated into three zones of occupational density:

- Overcrowding
- Comfort
- Underoccupation (under-utilization)

In this decomposition, the households are grouped in terms of their housing standards. The first situation reflects the appropriate distribution of dwellings to the households, and the other two indicates a mismatch between the households and the dwellings. In other words, comfort zone covers the households that are in optimum housing consumption according to their needs, overcrowding indicates the high-density occupation, and underoccupation is the low-density occupation of

the dwellings. These three levels of occupation density are conceptualized in Figure 1.1 below.

Figure 1.1: Housing standard and occupation density.



As stated before, comfort zone covers the households in optimum housing consumption. In this point, comes the question “what is the optimum consumption for housing?”

1.3 Optimum Housing Consumption

Households may consume housing in changing amounts according to their tastes, preferences and income. It is necessary to emphasize that, the consideration of this study is not to examine the budget efficiency of households by focusing on how

they distribute their income to housing. The major consideration of this study is to examine the use efficiency of the total housing stock in the light of a normative housing standard which determined according to internationally accepted norms. These norms, which are changeable by time, will be discussed in this part of the study by citing approaches in different countries.

As mentioned above, the main attribute affecting housing consumption is the household size, type and structure. Among these, household size is the simplest to measure; therefore it is the most commonly used variable.

A major conceptual vehicle used in explaining changes in the household size is the household life cycle. Households experience different housing need and preferences at different stages of life cycle stages according their changing demographic characteristics, from formation phase to dissolution. Wells and Gubar (1966) define stages in terms of the age of the youngest child, while Duvall (1971) defines them in terms of the schooling level/age of the oldest child (McLeod and Ellis, 1982). Basically, in family formation, pre-child, child-rearing and post child stages the family size is constant; in child-bearing stage it is increasing and in child-launching it is decreasing (Sabah et al, 1969).

If we look at housing systems and policies of different countries, we can say that there is not much variation in optimum housing standards determined by life cycle stages in different countries.

1.3.1 Occupational Standards in UK

The definition for 'bedroom standard' in English Housing Policy (Department for Transport, Local Government and the Regions) is such:

Bedroom standard is used as an indicator of occupation density. A standard number of bedrooms is allocated to each household in accordance with its age/sex/marital status composition and the relationship of the members to one another. The definition of the bedroom standard used in government surveys is that there should be one bedroom for each:

- i. *married/co-habiting couple;*
- ii. *other person aged 21 and over;*
- iii. *pair of adolescents aged 10-20 of the same sex;*
- iv. *pair of children aged under 10; and*
- v. *unpaired child/adolescent (DTLR, 2002)*

In England, besides the bedroom standard, the other most commonly used measure of density of occupation for which data are available on a regular basis are the average number of persons per room. If this ratio is not equal to one, the household is in an inappropriate dwelling.

1.3.2 Occupational Standards in Australia and Canada

To give an example of another country, Australian Department of Family and Community Services defines the occupancy standard for public housing as follows:

Table 1.1: Occupancy standard for Australian public housing

Household type	Dwelling size required
Single adult	2 bedrooms
Couple with no children	2 bedrooms
Sole parent or couple with 1 child	2 bedrooms
Sole parent or couple with 2 or 3 children	3 bedrooms
Sole parent or couple with 4 or more children	4 bedrooms
Group (2 adults)	2 bedrooms
Group (3 adults)	3 bedrooms
Group (4 or more adults)	4 bedrooms

Source: 1996-97 Public Housing Performance Indicator Data Collection, Housing Assistance Act 1996 Annual Report

Similarly, according to Canadian National Occupancy Standard (NOS), which sets a specific number of bedrooms for each household based on its size and consumption, a three person household composed of a couple and one child requires a two-bedroom dwelling (CMHC, 1992).

According to above information related to different countries' housing systems, we can say that if the dwelling size (number of rooms) is equal to or one room less than the household size, appropriate housing is obtained for the household.

As stated above, more sensitive explanations can be brought on the subject by considering the age-sex of the children, and family relationships of household members, but this is a sufficient level in adopting life cycle concept in the analysis of housing consumption. Housing (or bedroom) standard depending on the household and dwelling size is used firstly for its simplicity, but secondly because it is the same measure used by the censuses in both Turkey and many other countries, which will allow comparisons to be made.

1.4 The Two Types of Mismatch

As stated before, when the occupation standard is compared with the actual number of rooms available for the sole use of the household, the differences point out the two types of 'mismatch' or 'lack of fit' between the household and the dwelling: overcrowding and the underoccupation.

1.4.1 Overcrowding

Overcrowding in the housing stock covers the households below the optimum housing standards. It indicates the high density housing occupation. There is no single generally accepted definition of overcrowding and there is a range of possible measures which could be used. Also, some countries define overcrowding in two levels according to its magnitude, such as basic overcrowding and severe overcrowding (England), or moderate overcrowding and high overcrowding (Australia).

In the English housing system, the basic overcrowding measure used in government surveys is based on the numbers of households where either the average number of persons per room is greater than 1 or there are fewer bedrooms than the bedroom standard. The severe overcrowding measure covers those households where either the average number of persons per room is greater than

or equal to 1.5 or there are two fewer bedrooms than the bedroom standard (DTLR, 2002).

In the paralleling Australian approach, moderate overcrowding is defined as where a household occupies a dwelling where there is one bedroom less than is needed to satisfy the occupancy standard (Table 1.1). High overcrowding is defined as where two or more additional bedrooms are needed to satisfy the occupancy standard (Housing Assistance Act 1996 Annual Report).

Similarly, in the Canadian approach, a household is deemed to be living in crowded accommodation if its dwelling has fewer bedrooms than prescribed by the NOS (CMHC, 1992).

1.4.2 Underoccupation

At the opposite end of the scale, there is underoccupation in the stock, or with its other name in some countries ‘under-utilization’. It is sourced by the households that have more rooms than the determined optimum standards. These households have excessive housing consumption and they are in low-density occupation.

In the Australia’s housing policy, underutilization is defined as where there are two or more bedrooms in the dwelling than needed to satisfy the occupancy standard (Housing Assistance Act 1996 Annual Report). Australia is the country that the most intensively experiencing mismatch arguments in the last few decades.

Australians are well-housed, and this high standard of housing, which is partly a result of the government policy to improve Australia’s housing, has itself become subject to debate as to whether it creates problems of efficient stock use. This debate is known as the ‘mismatch argument’, and resulted from declining average household sizes and a large stock of detached three bedroom dwellings. Especially the small households (old people and young families) are subjected to the mismatch argument and cited as ‘under-occupiers’ (Batten, 1999).

1.5 The Aim of the Study

In this study, the main goal is to investigate the efficiency of housing stock in Turkey with its determinants, consequences and historical progress. As a principle difference from the previous studies, housing efficiency is also examined in the level of provinces other than the national scale. In this way, the local or regional similarities and differences in housing efficiency in Turkey are identified.

It is necessary to emphasize that, the consideration of this study is not to examine the budget efficiency of households by focusing on how they distribute their income to housing. The major consideration of this study is to examine the use efficiency of the total housing stock in the light of a normative housing standard which determined according to internationally accepted norms.

The subject of housing efficiency is an approach that emerged within the 19th century, and gained peak importance and obtained some tools of application in the welfare state context, with regulations supporting the health, security, education and housing of labor. It can be considered that today housing efficiency started to loose importance and have shrinking application domain in today's postmodern world, which exhibits fairly deregulated and market based characteristic.

However, as revealed in the following parts of the study, the significance of the subject is not limited with the context and period of welfare state. In even the most market-dominant countries today, such as US, local and central governments are carrying on their regulatory role in the housing market. Moreover, in countries like Turkey, where the economy is structured on the rent sourced value sharing, the subject of efficiency worth extra consideration as having importance in producing policies of housing. There are additional reasons related with distribution of production and population in countries like Turkey.

1.6 Data

Several databases as discussed below from the State Institute of Statistics (SIS) concerning the characteristics of the households and the characteristics of stock are used in this study.

1.6.1 Regular Census of Populations

In this study, the main source of data is the population censuses which are the most regular and comprehensive surveys regarding the social, demographic and economic characteristics of population of Turkey and the characteristics of housing.

In Turkey, regular data on quality and quantity of population had been collected since the first population census after the declaration of The Republic, which was carried out in 1927. The population census which had been carried out from this year to 1990 once in every five years has been started to be carried out decennially after 1990. The fourteenth and the latest population census was conducted on 22nd October 2000.

However, it is also difficult to use data from census of populations in a time series analysis of efficiency, because the data is not homogeneous. A variable existing in a census may not exist for the following. For example, the variable ‘number of rooms of the dwelling’ is not available in the census of 1990 and 1980, although it is available for years 2000, 1985, 1975, and 1970. As an other example, the data of 1970 population census is not decomposed for provinces in contrast with the following; or the distribution of households in different size to the dwellings in different size are decomposed for homeowners and tenants in contrast wity any other following census. These examples show the difficulty of making time series analysis in Turkey.

As a result of mentioned constraints, the analysis in this study covers the years 1970, 1985 and 2000 in national scale, so that represents the last thirty years of the country in 15 years periods; and 1985 and 2000 in provinces level.

1.6.2 Household Income and Expenditure Survey

Household Income and Expenditure Surveys, which are conducted by SIS at irregular intervals and in a varied scope, are among the most important sources to gather information on socio-economic structures, living conditions and consumption patterns of households in Turkey.

In this study, raw data from 1994 Household Income and Expenditure Survey is used. The urban part of the survey covering 18.217 households is drawn from the whole data. Besides information on household income and consumption patterns, the survey includes information on household characteristics such as age, occupation, size, education etc. and on stock characteristics such as typology of housing, number of rooms, neighborhood, rent, date of construction etc. Processing the raw data gave the chance to obtain diversified analysis on the subject.

However, it is also necessary to note that these surveys are not specifically designed for housing related analysis. It would be more meaningful to use data from a housing oriented survey, including quantitative information on the household composition, housing need, preferences and expectations etc.

1.6.3 Building Construction Statistics

Data related with the volume of the housing production is drawn from the Building Construction Statistics collected by SIS. SIS has been collecting the statistical information about building construction since 1954. The information is obtained from construction permits and occupancy permits issued by municipalities and Directorates of Public Work and Settlement. The results have been published in quarterly bulletins.

1.6.4 Building Census

The construction statistics compiled by SIS according to licenses reflect the development in authorized building stock in Turkey. The Building Census provide information on the illegal building stock as well as legal developments. The latest Building Census had been carried out between April and September 2000 by SIS.

2000 Building Census had been applied to buildings located inside “boundaries of 3212 municipalities” and “in other areas outside of frontiers of those municipalities but under their responsibility”.

1.7 Methodology

The principle method of the study is measuring the degree to which the housing stock matches household structure through making a distribution between the dwelling units and the households in terms of their size according to international occupancy standards. By taking into account the size of the dwelling (number of rooms) and the size of the household (number of the household members), the households (stock) are separated into three zones: comfort, overcrowding and underoccupation.

After denoting the level of the efficiency of housing stock in Turkey, the analysis is also processed for each province in order to detect local and regional differences and similarities.

The analysis on both the national and the provinces basis are made in time series from 1985 to 2000 in order to investigate the historical change and development of the subject.

The main variables are the ‘number of rooms of the dwelling’ and the ‘household size’. As mentioned above, these variables are used to calculate the level of the efficiency of housing stock in Turkey. In order to comment on the findings and determine their reasons, many other variables related with the stock and the

households such as ‘population’, ‘population change’, ‘level of migration’, ‘number of housing units produced’ etc. are operated.

The structure of the study covering the national scale (Chapter 3), the aim in each step of the analysis and the related illustrative data contributing to these steps is indicated in the form of a flowchart in Figure 1.2 below.

Figure 1.3 includes a flowchart that displays the structure of the part of the study in the scale of geographical regions and province centers. These analyses constitute the fourth chapter of the study. Similar with Figure 1.2, it also shows the related illustrative data contributing to each step identified.

Figure 1.2: Flowchart indicating the structure of the analysis in the national level (Chapter 3) and related illustrative data in each step

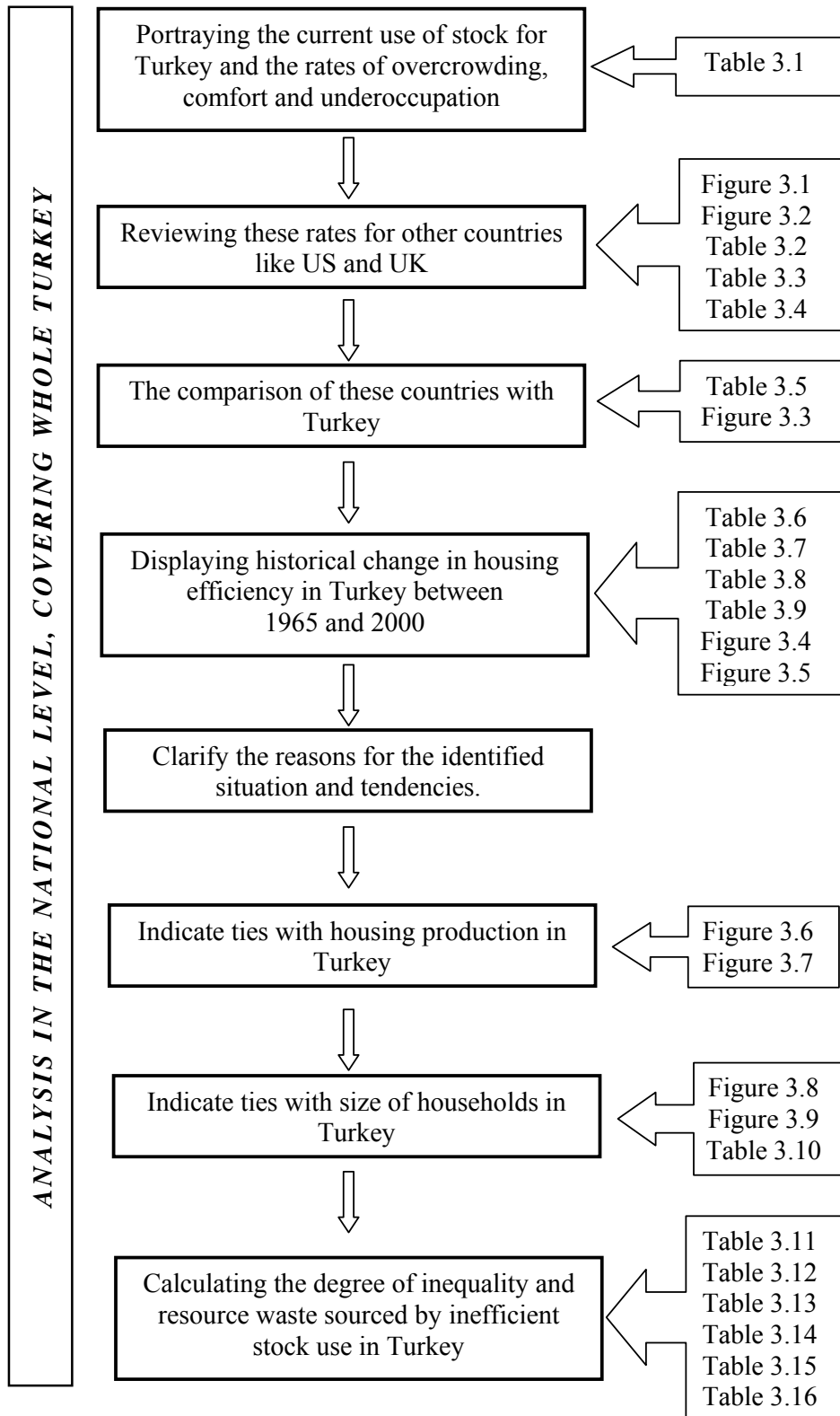


Figure 1.3: Flowchart indicating the structure of the analysis in the regional and provincial levels (Chapter 4), and related illustrative data in each step

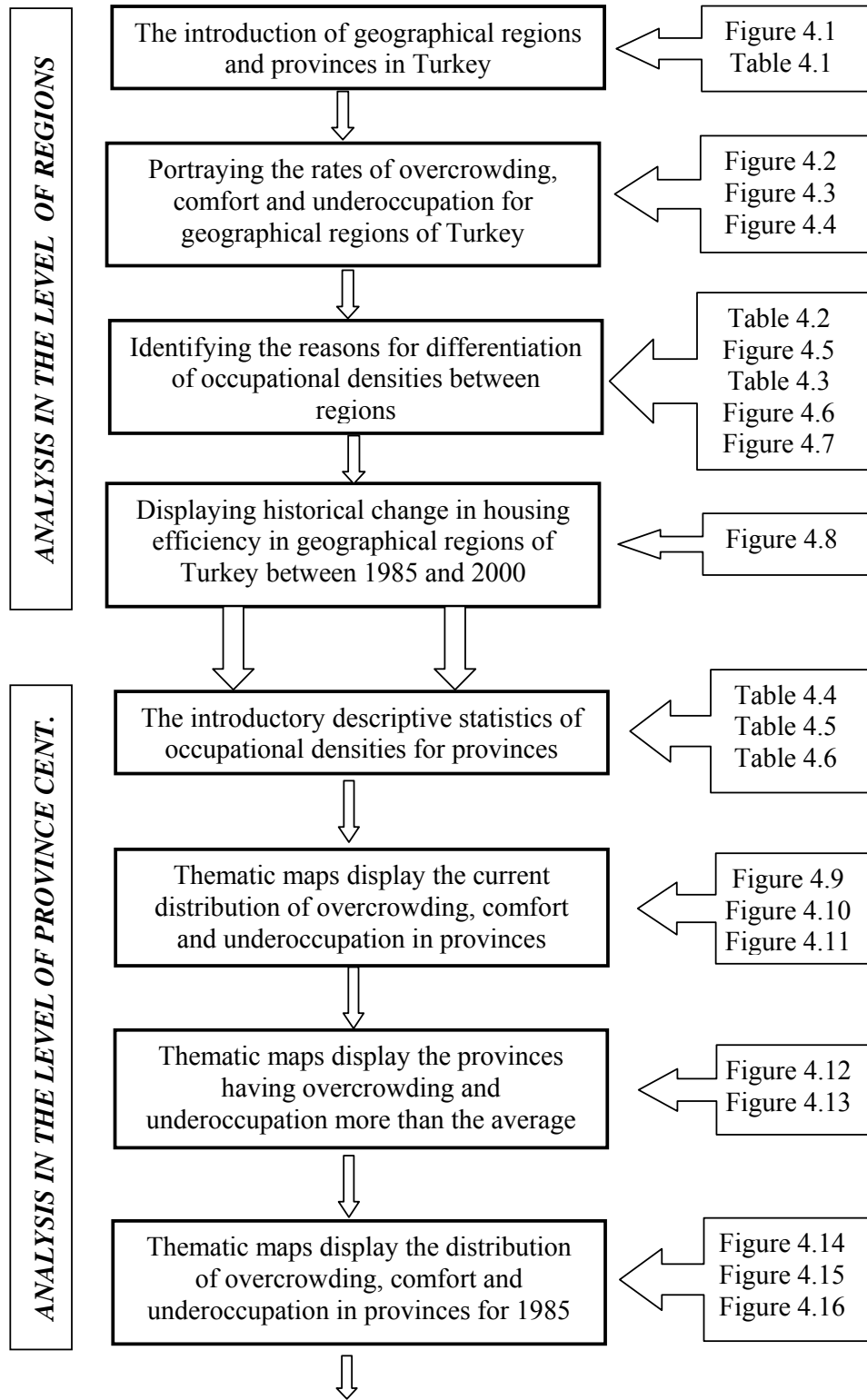
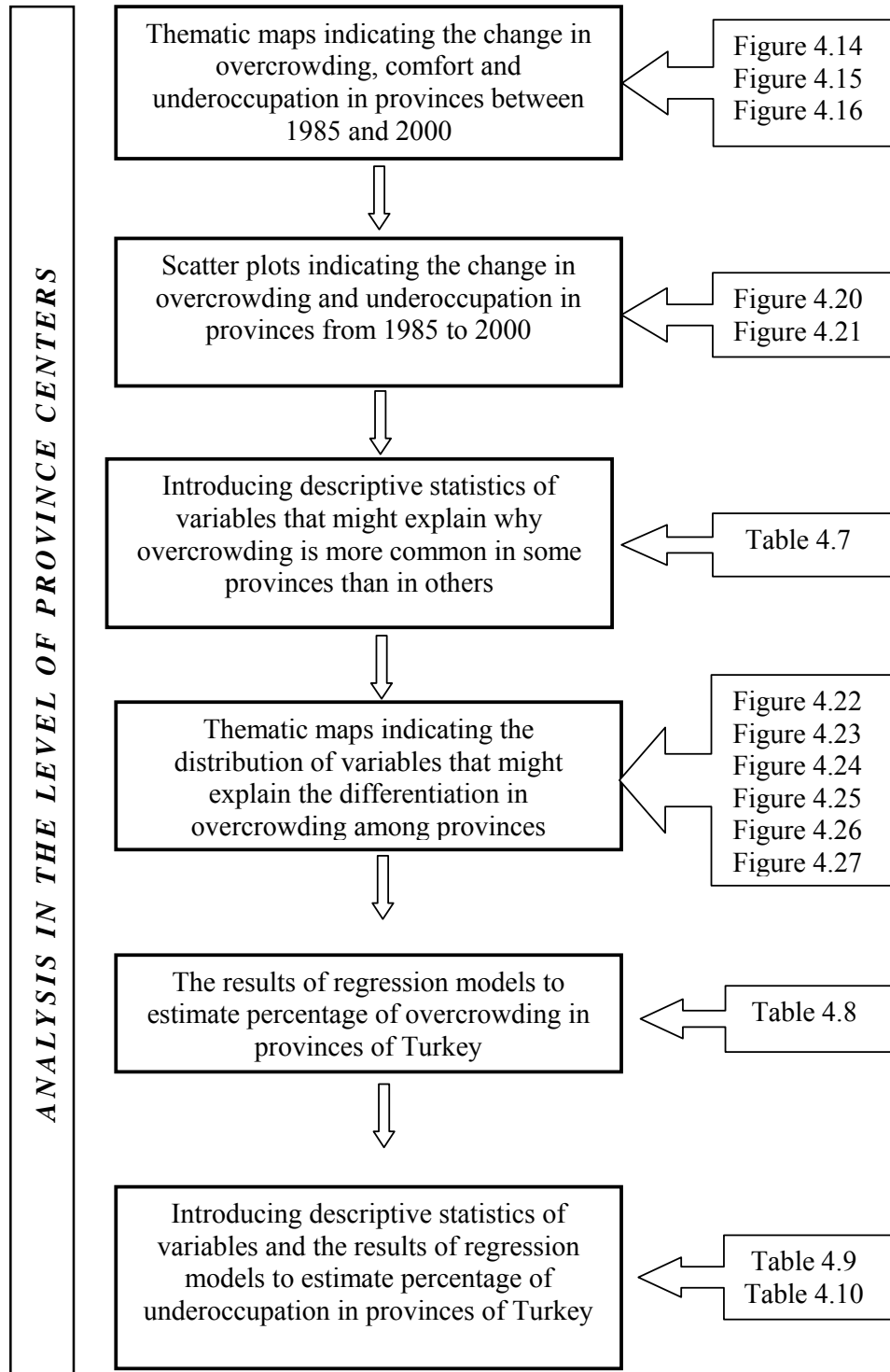


Figure 1.3 (cont.): Flowchart indicating the structure of the analysis in the regional and provincial levels (Chapter 4), and related illustrative data in each step



CHAPTER 2

A REVIEW OF LITERATURE ON HOUSING USE AND EFFICIENCY

There is not much literature dealing with housing use and efficiency. Although housing stock is a national asset and it is formed by using limited resources of the environment and the society, research on housing efficiency is not as voluminous as other housing related issues.

2.1 Definitions

In this part, the definitions of the related terms such as efficiency concept, overcrowding and underoccupation are identified.

2.1.1 Efficiency Concept

Efficiency of housing depends on how much the households fit to their housing units. Efficient housing implies a system where all needs of the individuals are satisfied and no resources are wasted. In an inefficient housing stock, there are at one side households who are in insufficient housing according to their needs, and at the other side there are households consuming much more housing compared to their need. In both situations there is a mismatch between the dwelling unit and the household occupying it. Therefore, housing inefficiency is a result of two contrasting mismatches, overcrowding and underoccupation, both of which are housing problems.

2.1.2 Overcrowding

Residential overcrowding has long been considered as an important housing problem. Households occupying smaller dwellings according to their need are overcrowded in their dwellings. A 'residential stress' or 'room stress' stems if the dwelling unit does not fit the residential needs of the household.

Although not certainly identified, many studies support the fact that the effects of overcrowding are deleterious to people's physical and mental health (Myers, Baer, Choi, 1996). Therefore, it takes place in the housing policy in many countries.

2.1.3 Underoccupation

Underoccupation depends on over-consumption of housing according to need. Underoccupier households are in low-density occupation. They are not negatively affected in mental or physical terms, however their excess consumption of housing cause wasting social and national resources.

To sum up, overcrowding is a result of housing consumption below the need and has some individual negative effects. On the contrary, underoccupancy is housing consumption more than the need and it causes waste of resources.

Because efficiency of housing depends on how much the households fit to their housing units, we should investigate the characteristics of the housing and the characteristics of the households effective on the efficiency of stock.

2.2 Determinants and Indicators of Housing Efficiency

The determinants of stock efficiency can be studied under two main topics:

1. Stock characteristics
2. Household characteristics

2.2.1 Stock Characteristics

Stock characteristics are the qualitative and quantitative aspects of the composition and structure of the stock in a country, such as the typology of housing, tenure, vacancy rates, average dwelling size, age, the production methods and performance, level of rents, adequacy of plumbing, presence of physical defects etc. These are all interrelated attributes that affect efficiency of housing.

a. Characteristics of the Housing Unit

Since efficiency of housing depends on the fit between the dwelling size and the household size, housing stock must be enough diversified to satisfy needs of different groups in the society. This is both related with housing ensuring different affordability options and presenting different physical aspect in size, type etc.

In the literature, there is the dominance of demographic explanations and the weak importance of housing market conditions on explaining efficiency of housing. However, this is a result of the fact that the literature consider the developed countries such as UK, US and do not focus on developing countries like Turkey.

In Turkey for example, one of the main reasons for the inappropriate distribution of dwellings to households is the undiversified housing stock (dominantly composed of large dwellings) and the housing production providing larger and larger dwellings (Balamir, 1996).

Many researchers (Clark and Onaka, 1983; Coupe and Morgan 1981) agree that the size of the housing unit is the most significant aspect of housing in explaining residential mobility. The difference between the actual number of rooms and the required number of rooms according to family size reveals the occupational density of the household. If there are not enough rooms, it is called as 'room stress' or 'room shortage' in the literature.

b. Vacancy and Turnover

Unless some dwellings are unoccupied, no household movement can occur and therefore stock efficiency could not be obtained. A certain level of vacancy is both desirable and inevitable to reach equilibrium in a housing stock.

Turnover concept is used with vacancy information to predict the rate at which a group of households waiting to be housed can be accommodated. The normally functioning of a housing market assumes approximate equality between the number of departures and the number of and the number of admissions during a period of time, so that the the number of vacant units remains unchanged.

2.2.2 Household Characteristics

Household characteristics determine the housing need and affordability. Household size, type, and membership, mobility, life cycle stages, economic activity and occupation, income, preferences, ethnicity are the household characteristics in some way related with efficiency of housing stock.

It is not easy and true to make comments about the effect of these variables on housing efficiency because it is a complex issue. For example, in general we would expect lower-income households to exhibit more overcrowding than those with higher incomes do, because lower-income households have more trouble finding affordable housing, forcing them to occupy smaller-sized units than they would otherwise prefer. However, Myers, Baer and Choi (1996) found in their research that there is a very strong causal role of race/ethnicity and year of immigration on overcrowding in US. Also, according to their study the effect of housing market conditions such as vacancy rates are very weak in explaining overcrowding than expected.

The main characteristics used in calculating efficiency in many studies are the 'number of rooms' and the 'household size', because these are physical attributes and easy to measure. By comparing these variables, some analysis can be made about efficiency of the housing system.

a. Life Cycle Stages

As families progress through the life cycle they generate different needs for housing. Life cycle stages are the main determinant of the household size. They represent the changing demographic characteristics of a household as it progresses from initial formation to dissolution.

Rossi (1955) formulated that housing need is largely arises from changes in the life cycle stages of the household. According to McLeod and Ellis (1982), life cycle stages also affect the financial position and therefore the housing consumption of a family.

There are different divisions of life cycle stages in different stages. According to Sabagh et. Al (1969), these stages normally include,

1. Marriage (family formation),
2. Pre-child (constant size),
3. Child-bearing (increasing size),
4. Child-rearing (constant size),
5. Child-launching (decreasing size)
6. Post child (constant size)
7. Widowed (family dissolution)

In the child-bearing and child-rearing stages, in which the need for housing space and extra rooms, the overcrowding is probable to experience. Oppositely, in the pre-child, child-launching and post child stages, underoccupation is more common due to the decreasing need for housing space.

b. Tenure

Tenure is effective on housing use due to different factors. First of all, it is effective on the mobility process which is the main tool for the family to adjust housing consumption and achieve an appropriate dwelling.

Reviewing the literature on the residential mobility, we can say that tenants are more likely to move than home owners because they have fewer financial and psychological barriers against relocating. According to Jones (1981), costs of moving can extremely be expensive and he separated these costs into three:

1. Information costs: The costs of gathering necessary information resulted from the complexity of the product, the decentralized structure of ownership and spatially diffused nature of the system,
2. Transaction costs: The time consuming and costly institutional processes, such as the formal conveyance. In comparison these costs are higher for buyer and seller than renter.
3. Upheaval and Psychic costs: Very important costs due to changing place, neighbors or even furniture in moving to furnished accommodation.

Especially transaction costs are higher for home owners and this may negatively effect moving action. Therefore we may think that renters are more likely to be in appropriate occupation. However, Myers, Baer and Choi (1996) show that the renters are more prone to overcrowding than homeowners in United States. This is a result of the fact that households shift homeownership at the last stages of their lifecycles and they are underoccupiers at these stages due to their decreasing family size.

Both duration of residency and home ownership increase bonding to a residential community. Home ownership provides social and psychological security and is more likely initially to represent a commitment to an area as it entails a high financial investment (Shumaker and Stokols, 1982).

c. Age

Age is an indicator of life cycle stages. Similarly, it is effective on housing need and therefore housing efficiency of the household. Also, age is the best predictor

of household relocation. Generally, as people grow older, they are less likely to change residence.

According to Myers, Baer and Choi (1996), young adults are much more likely to be overcrowded than are older ones in US. Their study reveal that among renters the peak incidence of crowding is at ages 35 to 44, the period when family sizes are likely to be largest.

d. Race/Ethnicity

Concepts like race and ethnicity are important depending on the fact that they also carry different ethnic and cultural aspects of the household. There is a very strong causal role of race/ethnicity and year of immigration on overcrowding in US. The highest rates of overcrowding are found among recent immigrants and among ethnic groups Hispanic and Asian households. These groups have exhibited very high rates of overcrowding even at income levels twice the median. Clark, Deurloo and Dieleman (2000) explain this by stating that new immigrants in US have higher fertility and larger family sizes. Also, they have very low financial opportunities. On the other hand, Myers, Baer and Choi (1996) emphasize the presence of a cultural preference, or at least a tolerance, for close and dense household living for these groups.

e. Income

The ability to satisfy differentiating needs for housing is clearly dependent on income. In general, we can expect lower-income households to exhibit more overcrowding due to their affordability problems for appropriate dwelling, and higher income groups reveal more underoccupancy due to their power to reach larger dwelling than their need.

However, Myers, Baer and Choi (1996) found in their study that overcrowding rates do not clearly drop until households exceed 200 percent of the poverty level. Clark, Deurloo and Dieleman (2000) state that, the amount of space used by households reflects varying income levels. There is a relationship between

housing consumption and the general increase in affluent households. Even if on average US households consume more housing space over time, those in low-income deciles may still experience room-stress in significant numbers.

2.3 Indicators of Housing Need

According to many countries' housing policies, the strongest determiner of the housing need is the household size.

In US housing system, persons per room (PPR) value is used to measure the density of people in their housing. According to Myers, Baer and Choi, (1996), the crowding indicator, PPR, is objective, but the use of a particular PPR as an overcrowding standard is a subjective evolution. Because they are subjective, overcrowding standards have changed over time, and the process by which they are established is rarely described. It appears to be based on assumptions about national income distributions, assessments of the nation's housing quality, and prospects for the future (Baer, 1976). The conventional standard applied by local and federal governments in 1940 was >2.00 PPR, but it was lowered to >1.50 PPR by 1950, and down to >1.00 PPR by 1960.

In English housing, besides using PPR, a bedroom standard is defined according to the household size and composition. According to the report of the 2000/2001 Survey of English Housing carried out by the National Center for Social Research, a separate bedroom is allocated to each married couple, any other person aged 21 or over, each pair of adolescents aged 10 - 20 of the same sex, and each pair of children under 10. Any unpaired person aged 10 - 20 is paired, if possible with a child under 10 of the same sex, or, if that is not possible, he or she is given a separate bedroom, as is any unpaired child under 10. This standard is then compared with the actual number of bedrooms available for the sole use of the household, and differences give whether the household is crowded or underoccupied or not.

The above examples denote that the criteria on standards of housing may change according to the country, depending on the economic level and wealth, existing conditions of housing stock, future expectations and even culture. Also, these standards are not stable and change over time, since the related conditions of the country is dynamic.

2.4 Debate on the Legitimacy of Housing Policy Limiting or Intervening Housing Consumption of Households

As stated before, since the effects of overcrowding are deleterious to people's physical and mental health (Myers, Baer, Choi, 1996), it is considered as a housing problem in many countries' housing policy. Also, depending on this fact, many countries took up making housing standards of households increasing as an objective. These explanations clarify the consideration of overcrowding as a housing problem. However, is housing underoccupancy which is on the other side of the scale really a problem? This debate is worth more identification.

The aim of housing supply must be satisfying housing needs of all families or individuals in the society. Therefore, if an appropriate dwelling is supplied for all households in a country, than there is not a housing problem. However this measure is very tight because it is conceptualizing housing only with its function of providing shelter. It is more correct to say that, if the housing is supplied in a country for everyone at the level at least meeting the need or over, than it is nonsense to talk about a housing problem. However, this explanation excludes excess consumption of housing. Unless there is no limitation for consumption of goods other than housing in a society, limiting merely housing consumption by government policy is not meaningful (Tekeli, 1996).

Housing is a shelter that protects human from outer effects and provides privacy. However, it is at the same time a good being produced and consumed. As well as other market goods, human feel pleasure in consuming housing. Moreover, they feel more pleasure than many other goods because housing is a prestige symbol and an indicator of the level of the member in the society. Because of this, it is inevitable that increases in the family income are reflected to housing

consumption. The idea that considers consumption of a bigger or higher standard housing or more dwellings such as summer, mountain or camping house by an household depends on this acceptance (Tekeli, 1996).

Here we also need to say that, with the dominancy of ‘flat ownership’ relations in Turkey, these functions of housing other than shelter are gained very much importance. In this process which emerged at mid 1960s, the use and cultural value component of the dwellings are suppressed and exchange value gained primary importance (Balamir, 1975, 1996).

According to Tekeli (1996), a society can consider excess consumption of housing as a problem, due to different reasons. If there is a contrasting situation in the society such that one group is consuming housing more than their need, while another was at the insufficient consumption, than, as a result of the ‘equity’ considerations, excess housing consumption is dealt as a housing problem. If restricting the housing consumption of a family brings about the consumption of other goods other than housing, than, there is no justification of a policy involving restricting the housing consumption of the family. However, this approach needs further investigation.

First of all, in order to accept this statement, the substituting goods, which are housing and non-housing goods, are all must be produced in market conditions. However, we definitely know that housing production is often supported by low-interest crediting or government subsidies. Public resources are anyway used in the production of housing.

Secondly, increasing housing consumption does not substitute and decrease the consumption of other goods. The dwelling is the site for the storage, use and enjoyment of consumer goods. Therefore, we can strongly say that increasing housing consumption brings about rises in the consumption of other goods and in a consuming world the dwelling takes on ever-increasing significance (Tekeli, 1996; Forrest and Williams, 2001).

Another differentiating aspect of housing from other goods in the market is that housing is a necessity for a healthy and a humanely life. Sheltering in sufficient and healthy conditions is one of the human rights. Therefore, as we can not defend underoccupation because of above factors put forward by Tekeli (1996), we can also not support overcrowding caring some portions of society satisfying needs of housing in unhealthy and insufficient conditions.

2.5 Housing Efficiency in Different Housing Systems

Housing use and stock efficiency is dealt with differently in different countries' housing systems. Depending on the national politics, while some countries focus on reducing overcrowding, some others aim to tackle with underoccupation.

2.5.1 United States of America

Overcrowding is a concern of housing policy in USA since the turn of the century. From the very beginning up through the 1960s, it is used as an indicator of substandard housing. Although it declined sharply in recent periods, overcrowding is continued to be considered as an important indicator when targeting housing subsidies. Under the Community Development Block Grany Legislation of 1974, overcrowding was weighted 25 percent in the formula for determining how much funding each city was to receive. More recently, overcrowding has been one of the core indicators in estimates of “worst case needs” and it is a key consideration in the National Affordable Housing Act of 1990. (Myers, Baer and Choi, 1996).

2.5.2 Australia

In Australia, high the high standard of housing has become subject to debate as to whether it creates problems of efficient stock use. This debate is known as “mismatch argument” and depends on a belief that Australia’s housing stock is becoming “underutilized” (Batten, 1999).

According to Batten (1999), Australian housing policy contains many orthodoxies which are never totally accepted within a discourse, but are the dominant notions as such carry significant symbolic authority. One of these orthodoxies is the notion that there is a mismatch in the housing system between the available stock and the size of households to the extent that there is significant underutilization and underoccupancy of housing. The construction of the mismatch orthodoxy goes to early 1970s and it is entrenched at 1990s by participating in policy interpretations such as occupancy standards.

2.5.3 UK

In the English housing system, which is largely different from US example, the efficiency of stock is an important consideration despite the recent domination of opposite tendency.

Overcrowding is considered in distributing public housing and it is one of the main priorities. Also, the Council Authority expects to be informed the change in household circumstances in order to take them into consideration after accommodating the family (Leeds Council Housing Allocation Summary, 2002). We can say that housing efficiency is an objective in English public housing and is taken into consideration starting from dealing with the application to the periods after locating the household.

As stated before, households experience different housing need and preferences at different stages of life cycle stages. Because of this reason, efficiency of stock use in the course of time depends on either mobility of the households, or the modifiability of the size or other features of the dwelling. The former and that will be given attention here is the concept of 'residential mobility'.

2.6 Residential Mobility as a Related Issue

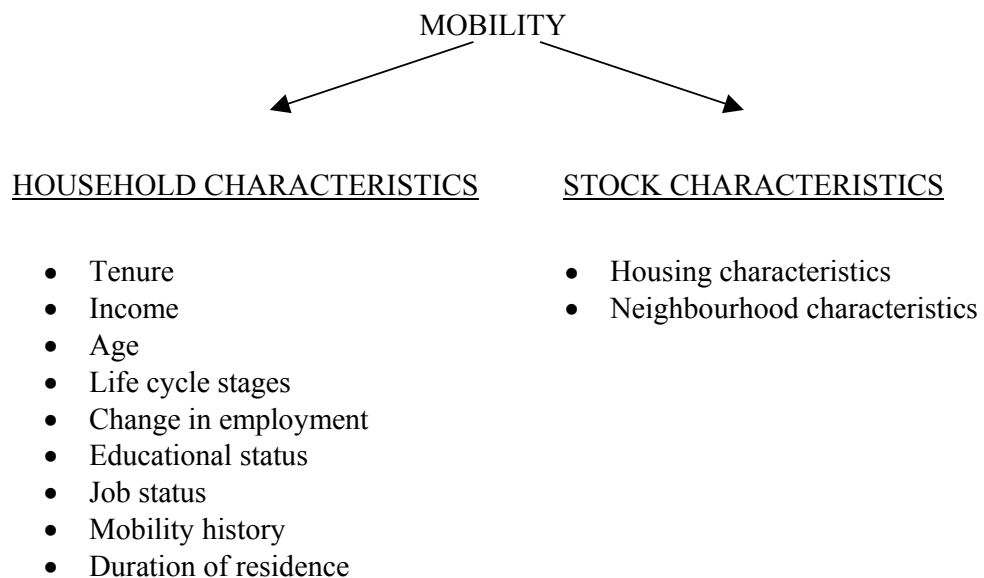
Households and the built environment surrounding them are in a continuous change. The demographic and income characteristics and the needs, preferences and aspirations of the households are not stable. On the other hand, physical stock

deteriorates, expands and the values change. Residential mobility is a process emerging due to these two dynamics of the urban environment and it is a mechanism functioning for adjusting dynamics of the households to the dynamics of the stock.

Rossi (1955) describes mobility as a major tool for the household to adjust its consumption of housing. It is expected to take households into housing that is better suited to their needs. Existing stock is used and (re)allocated through the residential movements within cities. Depending on the fact that the use of the stock is determined by the residential mobility process, it is necessary to focus on housing mobility while studying stock use and housing efficiency.

Residential (or housing) mobility is changing place of residence and relocation of households within an urban area. Whenever dwellings no longer fit the characteristics of occupants, they will move if that is not too hard and costly. Households age, alter size, switch jobs and have income changes; the housing stock deteriorates, is maintained, or improved, and exchanged or not (Strassman, 2001). Therefore, residential movement is a process, which adjusts dynamics of households to the dynamics of the physical stock. In order to reveal reasons of mobility, we need to focus on the household and housing stock characteristics.

Figure 2.1: Household and stock dynamics as reasons of mobility



2.6.1 Effects of Household Characteristics on Mobility

In the literature, the role of household characteristics such as tenure, income/employment, age, life cycle stages, education, duration of tenure and past mobility on explaining residential mobility are studied. In most of the research, life cycle, tenure, income and age are stated as more effective than other household characteristics (Clark and Onaka, 1983; Lu, 1998). We need to bring more detailed explanation on how these characteristics effect residential mobility.

a. Life cycle stages

As stated before, life cycle stages represent the changing demographic characteristics of a household as it progresses from initial formation to dissolution. Rossi (1955) stated that housing need or dissatisfaction emerges largely from changes in household the life cycle. Coupe and Morgan (1981) states that housing need depends on life cycle is necessary but not a sufficient condition for mobility and past decisions of the household must also be considered in explaining residential mobility.

Life cycle stages of households represent not only the changing demographic characteristics, but also the changing power to obtain housing. Each stage enables different income and wealth holdings. For owner-occupiers, housing demand is associated with life cycle stage. As a result, both housing need and affordability alters depending on the life cycle stages.

Changes in household life cycle generate mobility either by altering specific housing needs (too little space, need for private yard or garage etc.) or by creating or eliminating demand for an independent housing unit (household formation and dissolution) (Clark and Onaka, 1983).

b. Age

Age is an indicator of the life cycle and by this way effective on mobility. In the literature, the inverse relationship between mobility rate and the age has been

widely noted. Generally, we can say that the young are more mobile than the elderly and as people grow older, they are less likely to change residences. Shumaker and Stokols (1982) state that, between 1975 and 1979 72% of the people between the ages of 25 and 29 and 63% of the people between the ages of 20 and 24 relocated in US, which are greater than the overall mobility rate of about 40% in the same 5 year period. It is attributed to the fact that people are usually leaving homes and/or finishing college in their youth and making major changes in their lifestyles which require alternative housing arrangements (beginning a career, marrying etc.). Also, older people are more likely to live in a community, be a part of a social network and set social roots (Shumaker and Stokols, 1982).

c. Tenure

Home ownership is a tenure best suited to stability and predictability (Forrest and Williams, 2001). As stated before, tenants are more likely to move than home owners because they have fewer financial and psychological barriers against relocating. Jones (1981) separates these costs as ‘information costs’, ‘transaction costs’, ‘upheaval and psychic costs’. Theorists argue that both duration of residency and home ownership decrease mobility.

d. Income

There is not an agreement in the literature on the effect of income on mobility. When we consider housing as a produced and consumed good, than it is logical that the increase in income also brings increase in housing consumption and thus mobility. Besides, housing is an indicator for social status and increased income also increases expectations in housing. According to Coupe and Morgan (1981), relocation can occur for prestige as well as for housing need. On the other hand, increase in income may lead to homeownership and this is a negative factor on mobility. This is an example of the complexity of the household mobility.

e. Change in employment

Change in the employment of the household may necessitate relocation due to the need for reaching easier accessibility to job or moving to the place of the job. Especially the young households are likely to make long-distance moves for career opportunities. The dynamics of the labor markets are the effective in increasing mobility in US.

In Britain, it has been argued that administrative control on council housing decreases the potential household movement and this is stated as a reason for unemployment inequalities between regional labor markets in the country. The 'right to buy' policy, which means the sale of the council housing and shrinking the public stock, is supported as a solution for unemployment. However, according to Boyle (1998) the problem is the limited availability of council housing (as a result of 'right to buy' policy), rather than the problem council housing itself. Because the Local Authorities are forced to provide housing for those from the local area first of all and the space for those outside the area is limited. Increasing the numbers of council houses may be one way of opening up more of the stock to in-migrants from other areas; however this policy is nearly reverse with the Government's current perspective (Boyle, 1998).

Residential satisfaction is the key determinant of household mobility. It includes household and location characteristics as well as 'social bonds'. The more satisfied, the less likely is a person consider moving. The variables such as age, income, tenancy, duration of residence do not affect mobility directly, but indirectly by increasing or decreasing the level of subjective residential satisfaction (Lu, 1998).

2.6.2 Effects of Stock Characteristics on Mobility

The characteristics of stock can be decomposed into characteristics of the housing unit, characteristics of the neighborhood environment, and the process of 'filtering'.

a. Housing Characteristics

Characteristics of the housing unit determine the degree that the housing meets the household's residential needs. One of the main reasons for moving is the lessening of the residential stress that stems from a 'mismatch' or a 'lack of fit' between a household's residential needs and preferences and that characteristics of the current housing (and neighborhood). Such mismatches can arise from changes internal to household, including changes in its life cycle stages and social aspirations (as noted before), as well as changes that are external, including changes in the neighborhood environment. Most of the research state that, the desire for more housing space is the main reason for relocation. If the actual number of rooms provided by the dwelling is not sufficient compared to the need of the household, then this is an indicator of the 'room stress' or 'room shortage' experienced by the household. Room stress is the difference between the actual number of rooms available and the required number of rooms (Clark, Deurloo and Dileman, 2000). Required number of rooms depends on the determined housing standard of the country, like NOS (National Occupational Standard) in Canada or 'bedroom standard' in UK.

Researchers have also argued that (Lu, 1998; Stokols and Shumaker, 1982), there is a conflicting relation between the room stress and the resistance to moving. A household in stress and dissatisfied with the dwelling seeks to move, however, low satisfaction does not necessarily lead a household to realize a move. Potential movers exhibit a certain resistance to relocation because over time people become attached to their dwelling and neighborhood. Owing to this, only when the threshold for dissatisfaction has been passed, or other adjustments are impossible, will a household start a search for alternatives and evaluate these to his/her current dwelling (Lu, 1998).

Therefore, the size or area is the most effective characteristics of housing (Clark and Onaka, 1983; Coupe and Morgan, 1981). Quality or design aspects and cost considerations are less important. Change of tenure is especially important in the entry of households to home ownership.

b. Neighborhood Characteristics

Neighborhood characteristics are related with the environment and the location of the housing. Many times, it is an effective reason for mobility. However, in contrast to dwelling unit characteristics, it is not easy to measure neighborhood quality because it is a quite subjective concept. When a respondent stated preference for a 'better neighborhood', it is not clear if they hope to move into a higher income neighborhood or into a neighborhood with a different social composition. According to Clark and Onaka (1983), accessibility is an important aspect of the housing and the neighborhood.

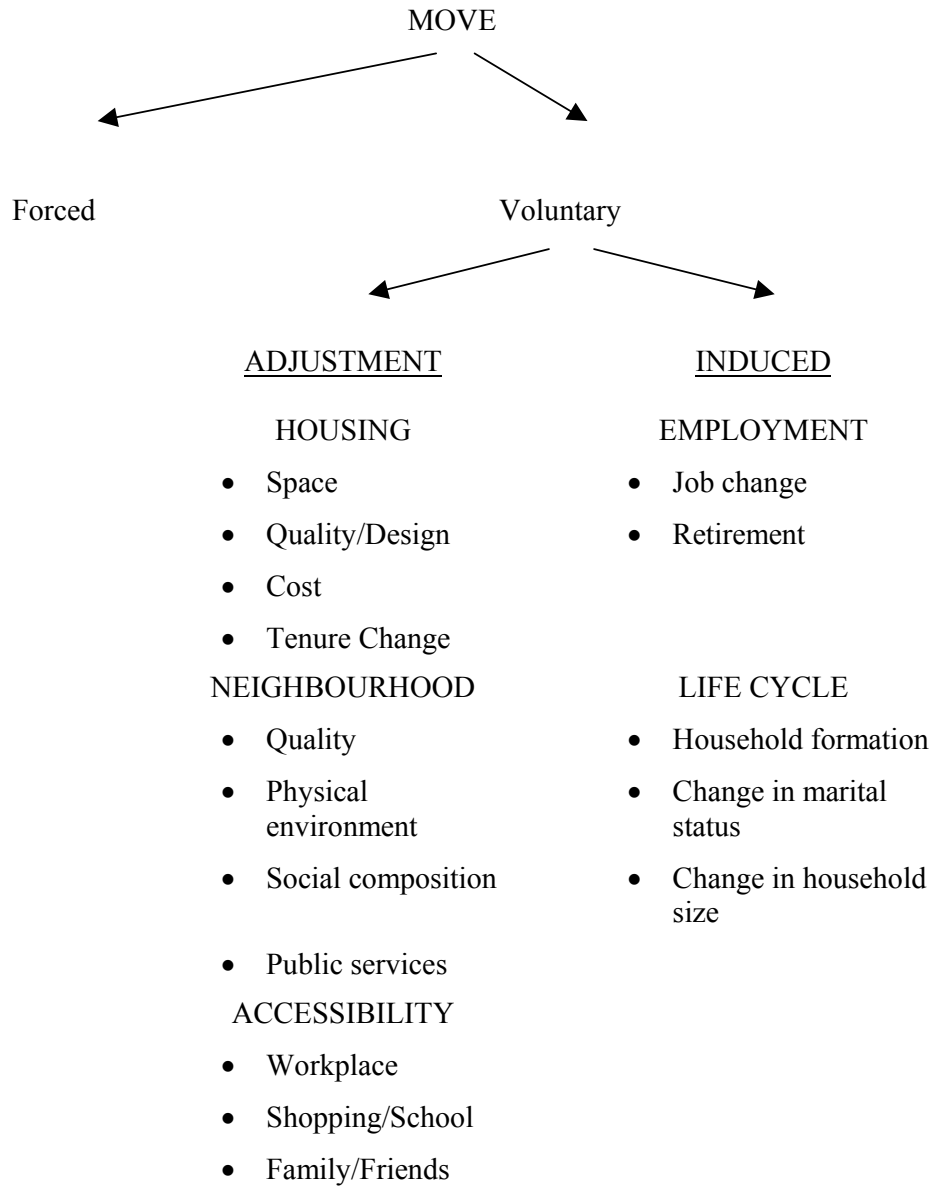
So far, the reasons for household mobility are explained depending on decomposition to dynamics of the households and dynamics of the stock. Clark and Onaka (1983) surveyed 18 studies of reasons to moving and constructed a typology of reasons for moving (Figure 2.2).

Forced moves are in voluntary moves necessitated by the events beyond the control of the household, such as eviction, destruction of the building, physical disability etc (Clark and Onaka, 1983).

Adjustment moves are intended to change the type and quantity of housing consumption. As mentioned before, space is usually the dominant factor among housing unit characteristics in decision to move. The other aspects of housing such as cost, quality and tenure are less important (Clark and Onaka, 1983).

Induced moves are associated with changes in household characteristics. Among economic characteristics, changes in employment and income can often lead to household relocation. Among demographic characteristics, new household formation, change in marital status, and change in household size are the most effective factors on household's decision to move (Clark and Onaka, 1983).

Figure 2.2: A classification of reasons for household relocation



Source: Clark and Onaka (1983)

2.6.3 Contrasting Approaches in Europe and the United States

There are major differences in mobility analysis in Europe and the United States. In US, where there are fewer government controls in housing, than in any European country, approximately 20 percent of the population change residence each year (Stokols and Shumaker, 1982). This proportion is approximately the twice of the average ratio in Europe (Strassmann, 2001).

In the 25 largest American metropolitan areas 18.8 percent of households moved in 1970, 18.9 percent in 1980, and 17.4 percent in 1990. In Dallas-Fort Worth, San Diego and Houston nearly a quarter of households moved in 1990; but in Pittsburg, Philadelphia and New York movers were only some 11 percent. There are less government controls in housing in the former eastern cities. For example, Houston had abolished all zoning controls on land use (Strassmann, 2001).

The European approach to residential mobility is more interdisciplinary than the American because of highly varied and complex government interventions in housing design, land use, finance, construction, pricing and tenure. In Europe, only Switzerland approaches American flexibility in the availability of finance for owners and protection of landlords, and annual mobility rate is 16 percent, which is substantially above Europe (Strassmann, 2001).

These examples reveal that the differences in mobility rates and approaches between Europe and the US emerge depending on the variations in the housing systems of the countries. The government controls, interventions and subsidies in housing cause decreases in the mobility rates of the households.

However, Stokols and Shumaker (1982) note that high rate of mobility in America is associated with many negative features on the community level. These are social pathology (neighborhood pathology) that occurs within highly transient societies and bring decay and crime; and secondly American society is turning into a nation of placeless and traditionless, where no strong ties are developed. In other words, Americans see mobility as a viable option and they are not motivated to invest or upgrading or maintaining communities and they are unlikely to develop strong local social ties. Besides, Strassmann (2001) determine that the best path towards welfare is not with more, but with less mobility, by inducing house owners to stay and to maintain and even to upgrade their dwellings. Mobility would fall to a level that corresponds to life cycle processes.

2.6.4 Mobility Approach in Turkey

Studies and statistics on mobility are rare in Turkey. Ayata and Ayata's (1996) research, which is primarily investigated the social relations, life styles and cultural characteristics of the residential areas in Ankara, indirectly includes some findings on mobility in Turkey. The research depends on the sample of 312 households in Ankara in different neighborhoods representing different socio-economic structures¹. The principle findings are as follows:

- Most of the households are new in their dwellings. Generally, in all neighborhoods moving is very common. Approximately, half of the population has moved to their homes in the last three years. A quarter of all households have changed residence five or more times.
- Changing residence for renters is a more common activity. That is, tenants are more likely to move than home owners.
- Mobility is mostly takes place in the similar type of the dwelling- from apartment to apartment or squatter to squatter
- The reason for relocation differs between the neighborhoods of the different socio-economy. For example, more than one third of the squatter residents point out social ties as important factors in relocation, but in Gaziosmanpaşa there is no such reasoning. The wealthier the neighbourhood, the less important the economical reasons in relocation.
- There are highly affective social considerations such as being near to parents, child care, lending money, assistance to housework. Renters are more likely to seek answer to their temporary needs such as accessibility to work, transportation opportunities etc.

According to the study, the leading reasons effective mobility are financial factors (24 %), job-related reasons (20 %), quite and peaceful environment (20 %) and social ties (17 %).

We can say that, these findings are highly related with our country's unique economical and social characteristics. Turkey, as a developing country, is different from developed countries with its weak economy and strong social ties. Owing to this, we have not confronted these factors as 'leading reasons' in the literature which formed in developed countries. Therefore, we need separately to focus on developing countries.

2.6.5 Mobility in Less-Developed Countries

In the developed countries there is a developed housing stock exists and therefore household conditions (especially life cycle stages) emerge as the main determinants of mobility.

However, in developing countries there are many differences such as:

- Economic insufficiencies
- Speculations in urban land and high demand for dwellings
- Unbalanced housing supply

In less developed countries, housing stock is in the formation phase and not completely constituted. The population is directed to the cities and as a result of this the rent for housing is continuously increasing. On the other hand, income levels of households are widely low and they have many affordability problems. There is no housing supply considering the low-income groups. Under these circumstances, households are unable to improve their housing conditions despite their high levels of mobility. Ayata and Ayata's (1996) study determining that the main factors for mobility are economical reasons is supporting this statement.

CHAPTER 3

THE CASE OF TURKEY

After discussing the different approaches of a sample of countries on the use of stock and clarifying the international occupancy standards, an analysis of stock use in Turkey is developed in this chapter.

3.1 The Use and Efficiency of Stock in Turkey

Although efficient use of stock is an important issue of housing economics and policies, there is very little research on the subject in Turkey, as well as many other aspects of housing studies. In Turkey, Balamir (1975, 1996) carried out many studies on the use of the stock and introduced some explanations about the reasons and consequences of this phenomenon.

In the method he used, which is similar with international approaches indicated before, the degree to which the housing stock matches household structure is measured through making a distribution between the dwelling units and the households in terms of their size according to international occupancy standards. By taking into account the size of the dwelling (number of rooms) and the size of the household (number of the household members), households (stock) are separated into three zones of occupational density: comfort, overcrowding and underoccupation. It is also possible to note some other studies (Geray, 1988) on the subject using 'person per room' or 'room per person' criterion. The table below concretizes these concepts and shows the occupation density in Turkey in urban areas in year 2000, by expressing the distribution of households of different size across dwellings of different size.

Table 3.1: Distribution of households of different size across dwellings of different size in centers of province, 2000 (%)

Hhs (persons)	Dwellings (rooms)								TOTAL
	1	2	3	4	5	6	7	8+	
1	0,25	0,90	2,44	1,95	0,15	0,02	0,01	0,01	5,55
2	0,17	1,40	6,29	6,32	0,50	0,07	0,02	0,02	14,20
3	0,17	1,59	8,53	9,38	0,76	0,10	0,03	0,02	19,69
4	0,20	2,04	10,84	12,79	1,16	0,17	0,05	0,03	25,91
5	0,11	1,20	6,27	7,02	0,77	0,12	0,03	0,03	14,64
6	0,06	0,60	3,03	3,40	0,43	0,08	0,02	0,02	7,11
7	0,03	0,31	1,54	1,77	0,27	0,05	0,02	0,02	3,68
8	0,01	0,14	0,68	0,77	0,13	0,03	0,01	0,01	1,62
9+	0,02	0,17	0,90	1,12	0,26	0,08	0,03	0,04	2,26
TOTAL	1,02	8,36	40,53	44,55	4,43	0,72	0,20	0,19	100
Zones of:	<i>Overcrowding: 25.35</i>		<i>Comfort: 44.03</i>			<i>Underoccupation: 30.62</i>			

Source: SIS 2003, General Census of 2000 (no. 2759) p. 242

The grey cells in the table compose the comfort zone, and include the households in appropriate housing according to internationally accepted standards. The cells below the comfort zone indicate the overcrowding and cover the households in insufficient housing (under-consumption) in terms of number of rooms compared to their needs. In contrast, the upper cells show underoccupancy, and include the households who have excessive housing consumption (over-consumption) compared to their needs. Briefly, the grey zone is optimum housing for households in different sizes, below is the high-densely used and above is the low-densely used part of the stock.

Since both the overcrowding and underoccupation zones indicate an inappropriate distribution of dwellings, we can say that in Turkey more than half of all households (56%) occupy either larger or smaller dwellings according to their needs. In other words, more than half of the housing stock in Turkey is being used ineffectively and inefficiently. Focusing on the type of the inefficiency, we can say that underoccupation, with a higher rate compared to overcrowding, is the dominant character of housing use in Turkey.

Private sector makes 90-95% of total housing investments in Turkey, and local or central government involvement in housing production and management is very

limited with almost no intervention in the markets. Before stating the differences of the stock use in other countries, we must make clear one subject that, the examples given before belong to the countries (England, Australia, Canada) where there is greater government participation and intervention in the housing system and where there is little or much public stock. Therefore, the efficient use of stock is considered more important in these countries because of the governmental structure of the housing system. The government's regulatory role is an effective factor on targeting efficiency especially in public stock.

3.2 Housing Efficiency in UK

For example in England, some priorities are described for people who are most in need of a home, and living in an overcrowded house is a reason of priority in allocation of council housing. The below figure show that Leeds City Council evaluates overcrowding together with important housing deficiencies such as homelessness, unavailability of a secure tenancy or uninhabitable accommodation.

Figure 3.1: The housing priorities in Leeds Council Housing

What do we mean by "housing priority"?

Unfortunately we can't house everyone who wants to live in a Council house. So we have to decide which people are most in need of a home. By law, we have to give priority to some groups of people. For instance:

- if we decide you are homeless,
- if you have a particular welfare or medical need,
- if you live in an uninhabitable or overcrowded house,
- if you live somewhere temporary, or don't have a secure tenancy,
- if you have a child, or are pregnant,
- if you can't find, or afford, other housing.

Source: Leeds City Council, Housing Allocation Summary, p. 3.

Other than being a priority in allocation, household size and composition is one of the main determinants of the size and type of the property that will be offered by Leeds City Council. The possible alternatives of housing are pre-determined for applicant households according to their size and composition. The evaluation is so

sensitive to household size and composition that if the applicant is pregnant she will be offered a dwelling including the new child (Figure 3.2). Also, the changes in housing circumstances of the household are also taken into consideration by the council. The birth of a child is an example of such change and it is expected to be told to the council as soon as possible (Leeds City Council Housing Allocation Policy Summary, p.4).

Figure 3.2: The size of property offered in Leeds Council Housing according to household size and composition

Size of Household	PROPERTY TYPE												Sheltered Housing	
	Bedsit / 1-Bed Flat	1-Bed House	1-Bed Bung	2-Bed Flat/ Mais	2-Bed Bung	2-Bed House	3-Bed Flat/ Mais	3-Bed Bung	3-Bed House	4-Bed House	5-Bed House	6-Bed House	Bedsit 1-Bed Flat/ Bung	2-Bed Flat/ Bung
one adult	✓	✓	✓										✓	
two adults	✓	✓	✓	✓	✓	✓							✓	✓
three adults				✓		✓	✓							
household with one child				✓	✓	✓								
household with two children - same sex under age 10 opp sex under 5				✓		✓								
household with two children - opposite sex - both between 5-10 years				✓		✓	✓	✓	✓					
household with two children - opposite sex - one or both over 10 years same sex over 10 years							✓	✓	✓					
household with three children							✓		✓	✓				
household with four children									✓	✓	✓			
household with five or more children									✓	✓	✓	✓		
one adult with staying contact to one child more than half the week				✓		✓								
one adult with staying contact to one child less than half the week				✓										
one adult with staying contact to two or more children over half the week				✓		✓	✓		✓					

If you are pregnant, most social landlords will offer you a property to include your new child.

Source: Leeds City Council, Housing Allocation Summary, p. 3.

The Leeds example illustrated above is an indicator of the fact that efficiency is one of the major considerations in English housing policy. Besides, efficiency of the stock and appropriate household-dwelling correspondence intended not only in the evaluation and locating phase, but the changes occurred during the accommodation are also taken into consideration. As a result, we must emphasize that housing efficiency is not an instant goal; on the contrary it is a continuous objective in English policy.

Under these circumstances, the percentages of overcrowding and underoccupancy by tenure in England are as follows:

Table 3.2: Overcrowding and underoccupancy by tenure in England, 2001 (%)

Tenure	Difference from the bedroom standard*				Total
	Below	At standard	One above	Two or more above	
All owners	1	15	39	44	100
All social rented sector	5	53	31	11	100
All rented privately	4	44	33	19	100
All tenures	2	26	37	35	100

Source: Office of the Deputy Prime Minister (ODPM) 2001, Survey of English Housing

* See page 4 for definition of the bedroom standard

The grey cells in the table indicate the households in appropriate housing, below is the overcrowding and above underoccupation. We can say that despite the efficiency objectives, underoccupation covering the 72% of all households is the dominant character in English housing. The objective of efficiency seems to be coming up as very low percentages of overcrowding, which is totally 2% in all tenures. In fact, it can not be considered as surprising in a housing system defining existing overcrowding as a reason of ‘housing priority’ for council housing applicants.

In order to make observations about a country having a different housing system, we have better to examine United States.

3.3 Housing Efficiency in USA

Table 3.3: Distribution of households of different size across dwellings of different size in USA, 2001 (%)

Persons	Rooms				TOTAL
	1-2	3-4	5-6	7+	
1	1,07	12,23	9,99	3,20	26,49
2	0,18	8,00	15,70	8,73	32,61
3	0,03	3,14	7,86	5,14	16,17
4	0,02	1,81	6,86	6,01	14,70
5	0,01	0,64	2,86	2,94	6,44
6	0,00	0,22	0,95	1,06	2,23
7+	0,00	0,13	0,55	0,69	1,36
TOTAL	1,31	26,16	44,76	27,77	100

Source: American Housing Survey for the United States, 2001

Table 3.4: Persons per room in USA, 2001 (%)

Persons per Room	TENURE		TOTAL*
	Owner	Renter	
0.50 or less	49,84	19,80	69,65
0.51 to 1.00	17,24	10,61	27,85
1.01 to 1.50	0,79	1,23	2,02
1.51 or more	0,13	0,35	0,48
TOTAL	68,01	31,99	100

Source: American Housing Survey for the United States, 2001

* Total number of occupied units in the survey is 106.261.000.

Table 3.3 and 3.4 give an opinion about the occupational densities in United States. American Housing Survey is conducted every year by the US Census Bureau for the Department of Housing and Urban Development to gather information on housing units and the households that occupy them in order to evaluate the effectiveness of federal housing programs and to aid in the planning of new programs.

In Table 3.4, basically, first two rows, in which the number of persons per room is below 1, refer to underoccupancy and the latter two, in which the number of persons per room is over 1 to overcrowding. [Besides, as a more detailed

approach, we can say that the first row indicates high (or severe) underoccupancy and the second moderate (or basic) underoccupancy; the third row indicates moderate overcrowding and the last high overcrowding].

In US, the very obvious character of housing use is underoccupancy, and with a proportion of 97.5%, it covers nearly all households. Of course, this proportion is lower in reality because it also covers the households in the comfort zone, but even we exclude some portion households, it is still very high and significant.

To give another example to occupation density rates in US, Clark, Deurloo and Dieleman (2000) note that, 89% of all households in US were over-consuming housing space in 1992 and this percentage was 84% in 1968. According to them, this is an expected result as a function of the growing size of the dwellings and the decrease in average household size. In 1968, only a small proportion of all households had a large surplus of rooms (four or more rooms than needed), however, a surplus of at least four rooms was true for over 30% of all households by 1992. The results reflect both the increase in affluence and decreasing family size (Clark, Deurloo and Dieleman, 2000).

Without any doubt, this very high percentage of underoccupancy in American housing is also a result of the fact that there is very few government control and intervention in American housing. Dwellings could be designed, financed, built, sold and rented with fewer government controls in US than in any European country.

3.4 Comparison of USA and Turkey in Housing Efficiency

Although we fundamentally use the distribution of households of different size across dwellings of different size in measuring occupational density in Turkey, we may process our 1994 Household Income and Expenditure Survey Data and form the same table for Turkey, in order to make comparisons between two countries.

According to Table 3.5, overcrowding (58%) is stronger than underoccupancy (42%) in Turkish housing. This tendency is highly differentiating with the US case (Figure 3.3). The opposition is related with the difference between the wealth levels of the two countries because housing systems are not very unfamiliar with each other. In both countries, there is very limited government control in the housing processes.

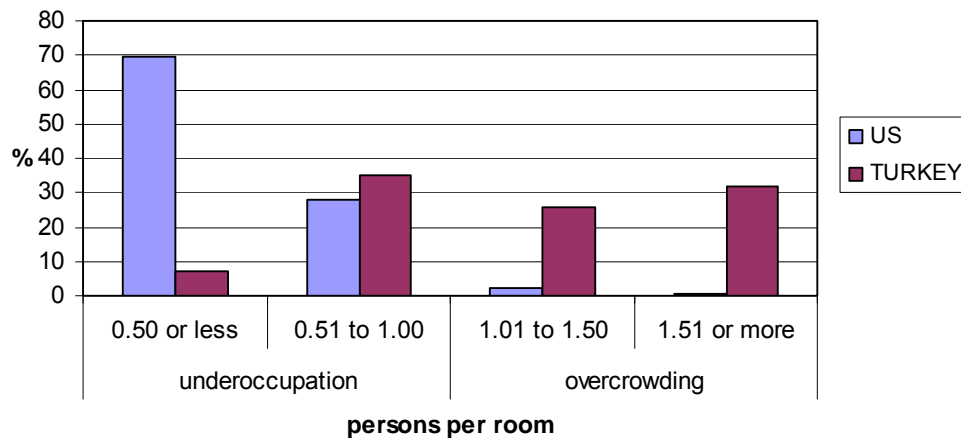
Table 3.5: Persons per room in Turkey, 1994 (%)

Persons per Room	TENURE		TOTAL *
	Owner	Renter	
0.50 or less	5,31	1,71	7,03
0.51 to 1.00	22,48	12,60	35,08
1.01 to 1.50	16,17	9,81	25,98
1.51 or more	20,78	11,14	31,92
TOTAL	64,73	35,27	100

Source: SIS 1994, Household Income and Expenditure Survey (Raw Data)

* Total number of households in the survey is 16225

Figure 3.3: Persons per room in US (2001) and Turkey (1994) (%)



Sources: American Housing Survey for the United States, 2001; SIS Household Income and Expenditure Survey in Turkey (Raw Data), 1994

As stated before, the reason for very high rates of underoccupation in American housing is the growing size of the dwellings and the decrease in average household size. The rising affluence of the US society has led to significant increases in the overall quality of housing in the US in the last decades. The average size of housing has increased quite markedly. In the 1950s, after the Second World War, the typical newly constructed house was less than a thousand square feet (approximately 93 square meters), but by the 1990s, the average was more than twice that size (Simmons, 1997). While the size of housing increased in general, with consequent implications for quality and average space per person, household size has decreased. Average household size in 1995 was approximately 2.6 persons per dwelling in contrast to more than three persons in 1970 (Clark, Deurloo and Dieleman, 2000).

Housing systems in US and Turkey are similar in many respects. In both countries, housing production is almost entirely carried out by the private sector and there is almost no government intervention. Also, there is very little governmental control in the housing markets. These similarities lead to similar tendencies of housing processes. However, the major differentiating factor is the low level of resources and wealth in Turkey. This leads to very high rates of overcrowding, as much as 23 times more compared to the US case. This can be acceptable when we consider to economic level of the two countries. The more significant issue is the level of underoccupation in Turkey when compared to US. As in US, the average family size tend to decrease in Turkey in the recent decades. However, the size of produced units is increasing despite the constraints of scarce resources (Balamir, 1975, 1982, 1996). This is only to be maintained through the evolutions and reorganizations of property ownership relations in Turkey. In this process, the use-value components of dwellings were suppressed, and it became imperative to produce larger and larger units to exploit the opportunities of maximizing exchange-values. This is particularly the case in blocks of flats, produced under legalized 'flat ownership' relations (Balamir, 1975, 1996). Turkey is not as affluent as US, and underoccupation in the stock is an indicator of social waste.

It can be considered that today housing efficiency started to lose importance and have a shrinking application domain in today's postmodern world, which exhibits fairly deregulated and market-based characteristics. However, as revealed above, the significance of the subject is not limited with the context and period of welfare state. In even the most market-dominant countries today, such as US, local and central governments are carrying on their regulatory role in the housing market.

3.5 The Historical Change in Housing Efficiency in Turkey

After stating the differences in occupation densities between Turkey and other countries, we have better focus on the historical development of occupation density in Turkey. The following four tables show the distributions of households across dwellings for the preceding periods and enable to make long-term observations for housing stock use in Turkey.

Table 3.6: Distribution of households of different size across dwellings of different size in centers of province, 1985 (%)

Hhs (persons)	Dwellings (rooms)					TOTAL
	1	2	3	4	5+	
1	0,49	1,16	2,09	1,03	0,16	4,93
2	0,42	2,25	5,47	3,11	0,41	11,66
3	0,38	2,66	7,96	4,93	0,58	16,51
4	0,42	3,55	11,22	7,63	0,93	23,74
5	0,31	2,74	8,63	5,55	0,86	18,08
6+	0,39	3,58	11,35	7,75	2,03	25,09
TOTAL	2,40	15,93	46,72	29,99	4,96	100,00
Zones of: <i>Overcrowding</i> : 39.08 <i>Comfort</i> : 41.07 <i>Underoccupation</i> : 19.86						

Source: SIS 1989, General Census of 1985 (no. 1369) p.166

Table 3.7: Distribution of households of different size across dwellings of different size in centers of province, 1975 (%)

Hhs (persons)	Dwellings (rooms)								TOTAL
	1	2	3	4	5	6	7	8+	
1	1,40	1,16	0,63	0,21	0,00	0,00	0,00	0,00	3,38
2	2,40	4,44	2,75	1,02	0,15	0,00	0,00	0,00	10,75
3	2,49	5,60	4,33	1,62	0,22	0,05	0,00	0,00	14,30
4	2,30	7,74	6,05	2,69	0,37	0,09	0,02	0,01	19,27
5	1,75	6,95	5,80	2,50	0,43	0,09	0,02	0,01	17,56
6	1,22	5,16	4,32	1,99	0,33	0,11	0,02	0,02	13,17
7	0,71	3,07	2,86	1,29	0,23	0,09	0,02	0,01	8,29
8	0,42	1,78	1,83	0,85	0,17	0,08	0,01	0,01	5,14
9+	0,60	2,29	2,80	1,57	0,43	0,32	0,06	0,07	8,15
TOTAL	13,28	38,19	31,36	13,73	2,32	0,82	0,16	0,14	100
Zones of:	Overcrowding: 61.07		Comfort: 30.46			Underoccupation: 8.46			

Source: SIS 1982, General Census of 1975 (no. 988) p. 158

Table 3.8: Distribution of households of different size across dwellings of different size in centers of province, 1970 (%)

Hhs (persons)	Dwellings (rooms)								TOTAL
	1	2	3	4	5	6	7	8+	
1	1,42	0,89	0,45	0,16	0,06	0,02	0,00	0,00	3,00
2	2,88	4,06	2,22	0,87	0,22	0,06	0,02	0,02	10,34
3	2,85	5,12	3,37	1,35	0,33	0,09	0,02	0,02	13,14
4	3,00	6,93	5,09	2,39	0,57	0,14	0,03	0,02	18,16
5	2,66	6,84	5,41	2,51	0,64	0,17	0,04	0,03	18,31
6	1,94	5,31	4,21	2,04	0,51	0,17	0,04	0,04	14,24
7	1,19	3,40	2,70	1,38	0,34	0,13	0,04	0,03	9,21
8	0,68	2,09	1,66	0,89	0,23	0,11	0,03	0,03	5,71
9+	0,72	2,37	2,33	1,51	0,50	0,28	0,08	0,11	7,89
TOTAL	17,33	37,00	27,45	13,09	3,39	1,16	0,29	0,30	100
Zones of:	Overcrowding: 63.63		Comfort: 28.47			Underoccupation: 7.90			

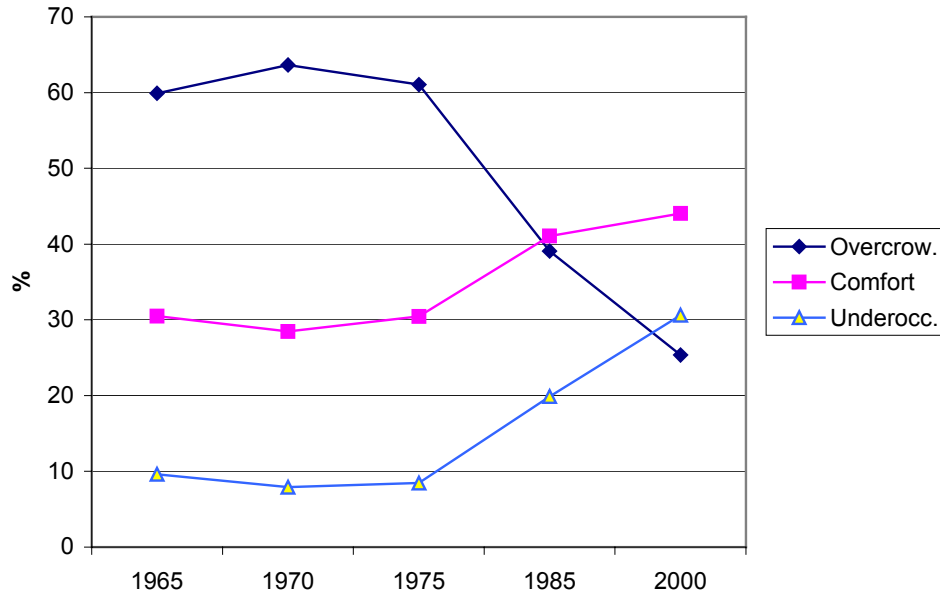
Source: SIS 1977, General Census of 1970 (no. 756) p. 217

Table 3.9: Distribution of households of different size across dwellings of different size in centers of province, 1965 (%)

Hhs (persons)	Dwellings (rooms)								TOTAL
	1	2	3	4	5	6	7	8+	
1	1,68	0,88	0,47	0,21	0,07	0,02	0,01	0,00	3,34
2	3,96	4,47	2,40	1,04	0,33	0,12	0,03	0,02	12,38
3	3,83	5,68	3,52	1,57	0,53	0,17	0,05	0,03	15,38
4	4,01	7,51	4,91	2,42	0,77	0,26	0,08	0,05	20,01
5	3,19	7,14	4,68	2,17	0,70	0,24	0,08	0,05	18,24
6	2,20	5,21	3,32	1,55	0,45	0,19	0,06	0,05	13,03
7	1,15	3,14	2,03	0,99	0,29	0,13	0,04	0,04	7,81
8	0,63	1,70	1,18	0,63	0,18	0,08	0,03	0,03	4,45
9+	0,57	1,67	1,45	0,99	0,33	0,20	0,07	0,09	5,37
TOTAL	21,22	37,39	23,97	11,57	3,64	1,41	0,44	0,36	100
Zones of: <i>Overcrowding: 59.90</i> <i>Comfort: 30.47</i> <i>Underoccupation: 9.62</i>									

Source: SIS 1969, General Census of 1965 (no. 568) p.677

Figure 3.4: Overcrowding, comfort, and underoccupation in Turkey between 1965 and 2000 (%)

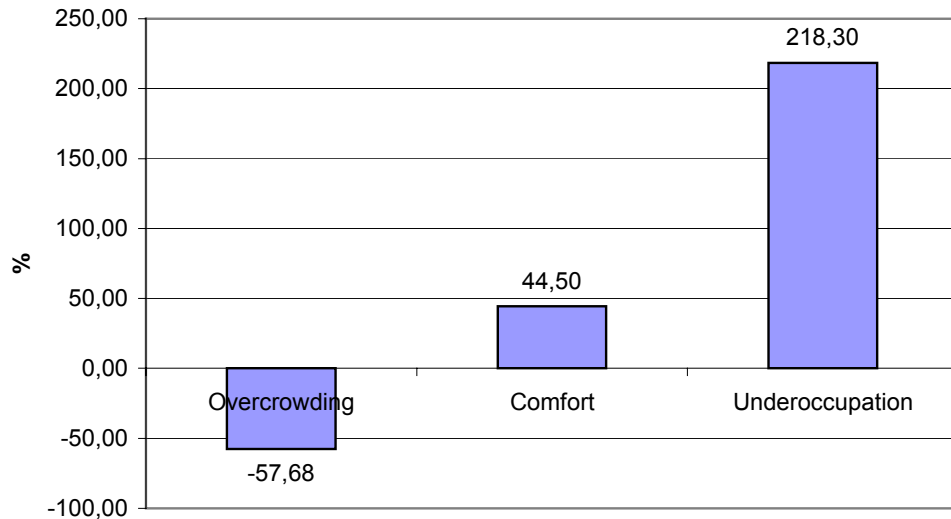


Sources: SIS 2003, General Census of 2000 (no. 2759) p. 242; SIS 1989, General Census of 1985 (no. 1369) p.166; SIS 1982, General Census of 1975 (no. 988) p. 158; SIS 1977, General Census of 1970 (no. 756) p. 217; SIS 1969, General Census of 1965 (no. 568) p.677.

Figure 3.4 summarizes the change in occupational densities in Turkey in the last 35 years and reveals the overall data represented in the three tables above.

Long term observations in the stock reveal that during the last 35 years, a 57% decrease in overcrowding and a 218% increase in underoccupation was experienced in Turkish housing (Figure 3.5). The steep increase in the underoccupation, in especially the past 25 years, is an indicator for both the scarcity of ‘appropriately designed’ housing, and a ‘social waste’. Physical stock is a national asset, and particularly in developing countries like Turkey, there are limited sources for its production and maintenance. Although underoccupation in the stock is not as significant as the British or the American case, its rapid progress seems to be leading Turkey just beside these countries in the near future. On the other hand, one thing we should again make clear is that our country is not as affluent as these developed countries. Therefore, we must devise more efficient methods concerning this issue.

Figure 3.5: Change in occupation densities (overcrowding, comfort, and underoccupation) in Turkey in centers of province from 1965 to 2000 (%)



Sources: SIS 2003, General Census of 2000 (no. 2759) p. 242; SIS 1969, General Census of 1965 (no. 568) p.677.

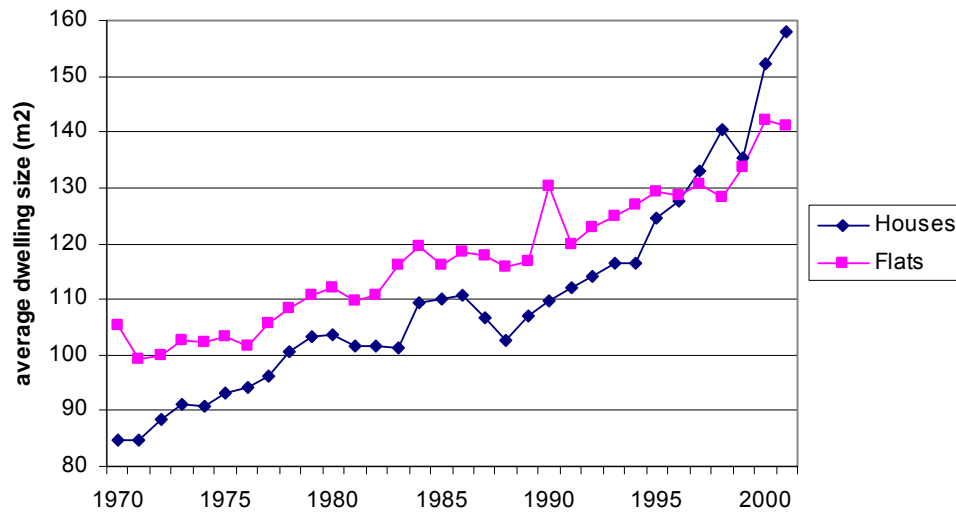
According to Balamir (1975, 1986, 1996), the reason of rapidly increasing underoccupation and inefficient stock use in Turkey is the housing production system providing larger and larger sized dwellings, ignoring all needs for smaller units. This statement deserves closer investigation and corroboration.

3.6 Housing Production in Turkey

In Turkey, self-building was the principal form of housing provision until 1950s. With the rapid rise in land prices under the effects of high rates of urbanization, pressures to raise development rights of land had increased. The legislation had to be changed to allow ownership of flats in apartments by different people. This cleared legal problems against marketing of housing produced by emerging speculative builders in the form of multi-storey apartments. The cooperatives building low-storey houses or villas before 1950s tended to produce apartment dwellings in 1960s. (Türel, 1988; 1993). High level of growth, despite low levels of GDP and scarce resources were only to be maintained through the evolutions and reorganizations of property ownership relations. In this process, the use-value component of dwellings was suppressed, and it became imperative to produce larger and larger units to exploit the opportunities of maximizing exchange-values. The result of these reorganization processes was housing extensively turning into commodity (Balamir, 1975, 1996).

In Figure 3.6, a gradual but consistent secular trend is observed in the average size of dwelling units. It is also necessary to note that the average 'house' floor areas are greater than those of 'flats' until the end of 1990s. This is a good indicator of how the production of flats has been commodified. A reverse of this situation is usually observed in European and American housing stocks, where (suburban) houses would be represented as the larger units of the stock as compared to the (inner-city) efficiency flats in high-rise blocks (Balamir, 1996). Also, the stable rise in the size of produced dwellings is highly related with the credit conditions of each period (Geray, 1988).

Figure 3.6: Average dwelling size in Turkey (1985-2000) *



Sources: SIS 2003, Construction Statistics of 2001 (no. 2749) p. 7; SIS 1998, Construction Statistics of 1996 (no. 2098) p. 2, 3, 4.

* According to construction permits

In addition, there is a shift between the average floor areas of the houses and the flats beginning from the mid 1990s. This pattern is certainly due to the increase in the demand of high-income groups in Turkey to low-storey housing. It is apparent that more and more the house type dwellings are seen in cities of Turkey. Apartments were symbols of the modern urban life in Turkey especially after 1980s. Now the situation has started to be reversed and we can say that the same statement is valid for the house type dwellings.

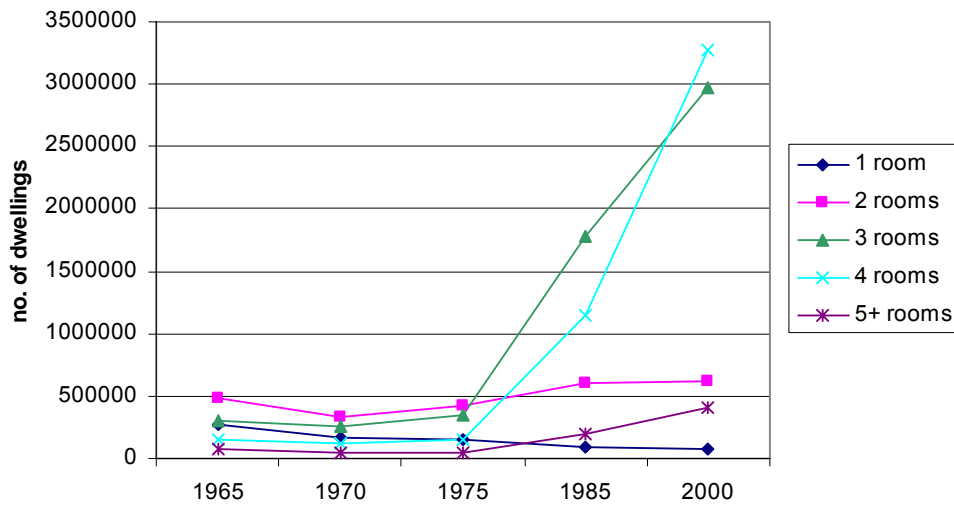
In the figure, the further acceleration in the rise of the size of produced houses in the end of the 1990s takes our explanations to recent earthquake disasters experienced in the country, especially 1999 Marmara Earthquake.

Briefly to remind, on August 17, 1999, Marmara Region was hit by an earthquake measuring 7.4 on the Richter scale. The epicenter was Gölcük and areas of peak damage include the seven provinces of Kocaeli (İzmit, Gölcük), Sakarya (Adapazarı), Yalova, Bolu, İstanbul, Bursa and Eskişehir. Over 17 000 lives were lost and more than 200 000 people remained homeless. The earthquake caused an

extensive damage in the region which is the industrial center of Turkey, the economic life in the area and in the housing stock. Besides, the earthquake affected the point of view, judgments and mentality of the society. Inevitably, these social changes had extensions in the housing sector and demand for housing.

After the earthquake, the low-storey housing became the dominant preference in wider portions of the society due to safety considerations. Many people moved from apartments and passed to the two or three storey independent dwellings. The municipalities, which have been formerly changing development plans allowing higher buildings, started to make new arrangements in urban plans allowing low-storey development. We can say that the earthquakes helped the ‘house’ type dwellings to gain the deserved interest and prestige. This is a remarkable reason for the steep increase in the curve showing the average floor area of produced houses after the end of 1990s.

Figure 3.7: Change in the number of dwellings of different size in Turkey in province centers (1965-2000)



Sources: SIS 2003, General Census of 2000 (no. 2759) p.242; SIS 1989, General Census of 1985 (no. 1369) p. 166; SIS 1982, General Census of 1975 (no. 988) p. 158; SIS 1977, General Census of 1970 (no. 756) p.217; SIS 1969, General Census of 1965 (no. 568) p. 677.

Another indicator related with the pattern of housing production would be the number of dwellings having different number of rooms (Figure 3.7). Between 1965 and 1975, stability in all size of dwellings is dominant and there are slight fluctuations in production.

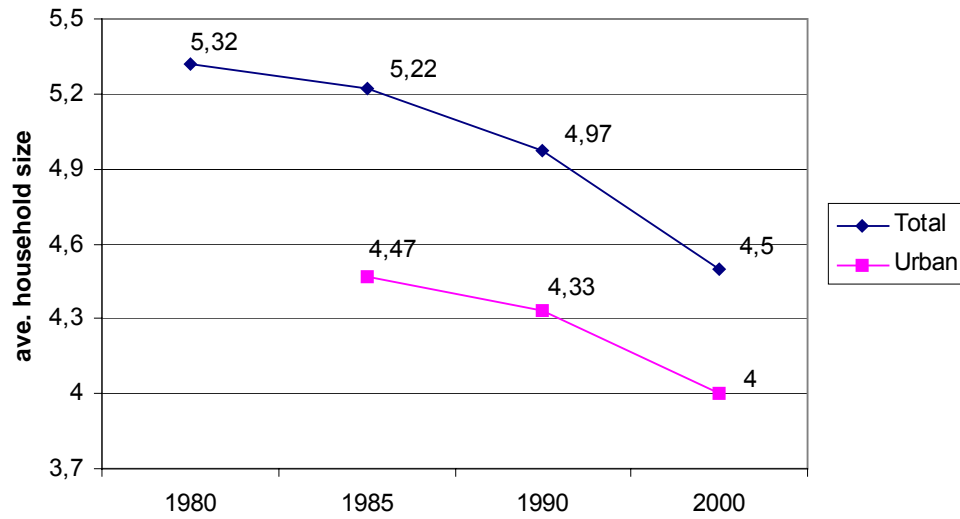
However, after 1975, a steep rise in 3, 4 and 5 and more room dwellings, a gradual rise followed by stability in 2 room dwellings, and a fall in 1 room dwellings is observed in the housing stock according to Figure 3.7.

It is obvious that housing production in Turkey provide larger and larger sized dwellings from 1985 to 2000 (Figure 3.6-3.7). The previous studies carried out (Balamir 1975, 1996; Geray 1988) show that there is the same tendency for the period from 1965 to 2000. Therefore, for almost four decades of time, average size of produced dwellings is increasing in Turkey.

3.7 Household Size in Turkey

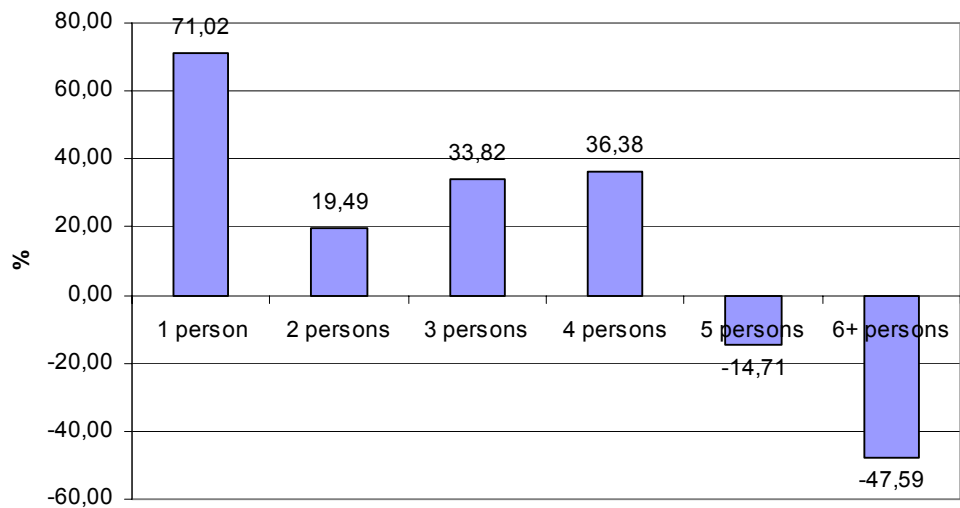
While the size of produced dwellings is increasing in Turkey, on the contrary, average household size is decreasing (Figure 3.8). If changes in the individual household sizes are investigated across time, one-person households have been the fastest growing group, at the expense of five and greater-person households (Figure 3.9). In such a scheme of households and dwellings, it is not possible to attain an appropriate distribution of housing, and efficient and effective use of stock.

Figure 3.8: Changes in the average size of total and urban households in Turkey (1980-2000, 1985-2000)



Sources: SIS 2003, General Census of 2000 (no. 2759) p. 53; SIS 1993, General Census of 1990 (no: 1616) p. 179; SIS 1989, General Census of 1985 (no. 1369) p. 159.

Figure 3.9: Rate of change in the number of households of different size in centers of provinces (1965-2000)



Sources: SIS 2003, General Census of 2000 (no. 2759) p.242; SIS 1969, General Census of 1965 (no. 568) p. 677.

A method to test this statement is assuming a perfect condition for Turkey in current household and stock structure, that there are no barriers against mobility and everyone can reach to the appropriate dwelling determined by the household size. If we imagine a hypothetical situation using 2000 Population Census data, and distribute households to appropriate dwellings according to their size (Table 3.10), the results are significant: 73% of two-person households are not accommodated and 56% of four-room dwellings are not occupied.

Households with extreme size are not accommodated in the system because the dwelling size is normally inelastic to household size after a degree and therefore this may be called as an expected outcome. However, the housing system excluding the needs for relatively smaller units and dominantly providing four-room dwellings (which are commonly called 3+1 dwellings and composed of a living room and three bedrooms) is not an acceptable matter. A diversified housing stock is necessary to answer different needs of households.

Table 3.10: A hypothetical distribution that suggests all households to reach to the appropriate dwelling

No. of persons or rooms	Households		Dwellings	
	Total	Not accommodated	Total	Not occupied
1	407.044	0	75.136	0
2	1.042.114	760.429 (73%)	613.593	0
3	1.445.234	0	2.974.185	0
4	1.901.462	0	3.269.187	1.822.530 (56%)
5	1.074.146	0	325.100	0
6	521.717	143.592 (28%)	53.025	0
7	269.862	255.172 (95%)	14.690	0
8+	284.392	270.522 (95%)	13.870	0

Sources: SIS 2003, General Census of 2000 (no. 2759), p. 242

3.8 The Degree of Inequality and Resource Waste Sourced by Inefficient Stock Use in Turkey

As we stated above, since housing stock is a national asset, inefficiency in housing and over and under-consumption of housing means wasting scarce social

and economical resources. Also, the inefficiency in a housing stock is a source of inequality at the same time depending on the existence of households consuming housing more than their need at one side and households in insufficient consumption at the other. Comparison of the housing standards of three different occupation density groups exhibits this inefficiency in empirical terms.

Table 3.11: Average per person housing space for owner-occupier and tenant urban households in different occupation density groups in Turkey, 1994 (m²)

Occ. density	OWNER OCC.		TENANT		TOTAL*	
	Ave. space (m ²)	No. of Hhs	Ave. space (m ²)	No. of Hhs	Ave. space (m ²)	No. of Hhs
Over-crowding	14.53	3.812	14.26	2.757	14.40	6.455
Comfort	24.76	4.267	24.37	1.971	24.60	7.958
Under-occupation	48.34	2.425	44.90	994	47.47	3.804
TOTAL	26.49	10.504	24.45	5.722	25.76	18.217

Source: SIS Household Income and Expenditure Survey in Turkey (Raw Data), 1994

* Includes the government houses and other types

According to Table 3.11, the average per person housing space for all tenures is 25,76 m² in Turkey. It is 25.76 for tenants and 26.49 for owner-occupiers. There are no great differences between owner-occupier and tenant households in terms of per person housing space which are 26.49 and 25.76 in turn. However, there are extreme differences in housing standards between overcrowding and underoccupier households.

Households in the comfort zone consume 24.60 m² housing space per person in Turkey and this amount corresponds optimum space for efficient, sanitary and inhabitable accommodation. The overcrowded households occupy 14.40 m² housing per person which is slightly more than the half of the optimum consumption. They experience the room stress sourced by lack of sufficient housing space compared to their need. On the other hand, there are underoccupier households in the stock whose average housing consumption is 47.47 m² per

person. This amount is nearly twice as big as the amount corresponds for comfort, and four times for overcrowding. In other words, underoccupier households consume four times of housing space that the overcrowded households are contended with. This is an indicator of the inequality in the housing stock as well as a considerable social waste. Both overcrowding and underoccupation must not be regarded as ‘acceptable’ in a housing system having consideration of justice and every individual must be incited to accommodate in an appropriate dwelling to the need.

As mentioned above, the inefficient stock use represents both inequalities in social phenomenon and waste of national resources in economic terms. The annual waste of resources sourced by inefficient stock use can be identified using the annual rent paid variable in 1994 Household Income and Expenditure Survey data.

In the survey, the monthly rent paid by the household is asked for the tenants and recorded. The same data is available for owneroccupiers and it is collected by asking the relative rent in the environment (in the same apartment or neighborhood). The data depends on a question like “If you were a tenant in this dwelling, how much rent would you be paying?” Despite the fact that it is not very certain for owners, the monthly rent paid variable enable us to make statements and analysis on the economic value of the stock and portrait loses caused by underoccupation.

The below two tables indicate the average monthly rent paid by tenant and owneroccupier households for the dwelling. As noted above, for the owners, the data is relative monthly rent stated by the household depending on the surrounding rent levels. The values are in thousand Turkish Liras (000 TL) and represent 1994 values.

Table 3.12: Average relative monthly rent would have been paid by owneroccupier households for the dwelling, 1994 (000 TL)

Hhs (persons)	Dwellings (rooms)					TOTAL
	1	2	3	4	5+	
1	245	728	1353	2158	10691	15.175
2	667	710	1540	2098	2546	7.560
3	278	811	1532	2233	2069	6.924
4	328	754	1429	1974	2246	6.730
5	300	765	1177	1666	1753	5.661
6+	377	581	996	1295	1566	4.815
TOTAL	2.194	4.349	8.027	11.424	20.871	
Zones of: <i>Overcrowding</i> : 685 <i>Comfort</i> : 524 <i>Underoccupation</i> : 2766						

Source: SIS Household Income and Expenditure Survey in Turkey (Raw Data), 1994

Table 3.13: Average monthly rent paid by tenant households for the dwelling, 1994 (000 TL)

Hhs (persons)	Dwellings (rooms)					TOTAL
	1	2	3	4	5+	
1	404	843	1286	2599		5.131
2	291	611	1065	1488	1612	5.067
3	477	652	1050	1342	1449	4.970
4	365	552	1003	1312	1160	4.391
5	375	638	895	1233	1030	4.172
6+	388	600	842	1165	896	3.891
TOTAL	2300	3896	6140	9138	6147	
Zones of: <i>Overcrowding</i> : 630 <i>Comfort</i> : 848 <i>Underoccupation</i> : 1284						

Source: SIS Household Income and Expenditure Survey in Turkey (Raw Data), 1994

Each cell in Table 3.12 and 3.13 corresponds to the average monthly rent paid by the households in that cell. The method to calculate the cost of inefficient occupation in Turkish housing stock involves the following steps:

1. Finding the worth of optimum housing consumption for each household size row.

In each row if household size, there are households in comfort zone (grey cells) and other households in inefficient occupation. The values in the grey cells indicate the average rent paid by households in an appropriate dwelling according

to their size. In each row, the multiplication of the value in the grey cell and the number of households in that cell is calculated. Then, the division of their sum to the total number of households in the grey cells in the row give the worth of optimum consumption of households in that size.

We can concretize the explanation of the method with the help of the following two tables which show the number of households in each cell.

Table 3.14: The number of owneroccupier households of different size distributed to dwellings of different size in urban Turkey, 1994

Hhs (persons)	Dwellings (rooms)					TOTAL
	1	2	3	4	5+	
1	10	52	125	81	11	279
2	12	148	623	514	69	1366
3	9	142	764	734	81	1730
4	9	184	1012	1019	135	2359
5	12	157	830	795	118	1912
6+	11	265	1196	1139	247	2858
TOTAL	63	948	4550	4282	661	10504
Zones of: <i>Overcrowding</i> : 3812 <i>Comfort</i> : 4267 <i>Underoccupation</i> : 2425						

Source: SIS Household Income and Expenditure Survey in Turkey (Raw Data), 1994

Table 3.15: The number of tenant households of different size distributed to dwellings of different size in urban Turkey, 1994

Hhs (persons)	Dwellings (rooms)					TOTAL
	1	2	3	4	5+	
1	5	21	38	21		85
2	11	91	243	179	14	538
3	11	195	607	404	33	1250
4	20	255	800	594	41	1710
5	16	163	493	390	29	1091
6+	21	180	481	331	35	1048
TOTAL	84	905	2662	1919	152	5722
Zones of: <i>Overcrowding</i> : 1971 <i>Comfort</i> : 2757 <i>Underoccupation</i> : 994						

Source: SIS Household Income and Expenditure Survey in Turkey (Raw Data), 1994

For example, according to Table 3.13, the value of monthly rent paid by 2 persons households in comfort zone is 291 (in single-room dwelling) and 611 (in two-

room dwelling) thousand TL. Also the numbers of households in these cells are 11 and 91 according to Table 16. To calculate the worth of optimum housing consumption for 2 persons tenant households, the operation is $(11*291 + 91*611) / (11+91)$, which equals to 576.5 thousand TL. Table 3.16 shows the calculated average rent values for households of different size.

Table 3.16: The worth of optimum housing consumption for households of different size in urban Turkey, 1994 (000 TL)

Household Size	Tenant	Owneroccupier
1	404,0	245,0
2	576,5	706,8
3	953,2	1419,0
4	1134,7	1702,4
5	1218,9	1677,2
6+	896,0	1566,0

Source: SIS Household Income and Expenditure Survey in Turkey (Raw Data), 1994

2. Calculating the difference between the actual level of rent and the optimum rent is the cost of inefficient occupation in the stock.

The difference between the actual level of rent and the optimum rent is calculated by subtracting the two values and multiplying with the number of households in the related cell. If we again return to our example, the worth of optimum housing consumption for 2 persons tenant households was 576.5 thousand TL. The two person households in three, four and five-room dwellings are in underoccupation and their average rent values are 1065, 1488 and 1612 (Table 3.13). There are 243, 179 and 14 households in these cells. Our operation is $(1065-576,5)*243 + (1488-576,5)*179 + (1612-576,5)*14$, which equals to 296.361 thousand TL. This operation is the same for overcrowding, in other words for cells under the comfort zone. The sum of these tabulated differences gives the monthly cost of underoccupancy and overcrowding for tenant and owneroccupier households in urban Turkey in 1994 Household Income and Expenditure Survey.

3. Distribution of findings about 1994 Household Income and Expenditure Survey to whole urban population of Turkey in 1994 and upgrade the values to the current time.

For this aim the values calculated for the sample of 18217 households expanded to total population of 1994 by direct proportioning. And these values are upgraded to 2003 values by transforming this value into dollars and multiply with the current exchange. Also these values, which are monthly, can be transformed to annual costs by multiplying by 12.

Under these circumstances, the monthly cost of underoccupancy in the sample of 18217 households in the urban housing stock is 3.07 billion TL in Turkey. Owneroccupiers constitute 2.52 billion and tenants 560 million TL of this value.

This value, which is valid for 18217 households, can be expanded to totals urban population. According to SIS 1991 Statistical Yearbook, the urban population for Turkey is 36.71 million in 1994. If the average urban household size is taken as 4.17, this population corresponds to 8.8 million households. If we directly proportionate, the bill of underoccupation to Turkish economy is 1.48 trillion TL monthly and 17.8 trillion TL annually.

The Household Income and Expenditure Survey has been carried out by SIS in equal amounts in each months of 1994. According to Central Bank of Turkey web site (www.tcmb.gov.tr), the average dollar value for 1994 was 29.848 TL and 17.8 trillion TL makes 596.35 million dollars. Therefore, using the current dollar value 1\$=1.4 million TL, we can say that the cost of underoccupation in the housing stock is 834.89 trillion TL. This amount of waste is highly considerable and urging us to take precautions on the subject.

On the other hand, there are overcrowding households in the stock who does not cause a social waste but experience stress and troubles in their dwelling. The cost of inefficiency for overcrowding therefore is not a kind of waste of resources as in underoccupation, but is an indicator of the cost of residential stress experienced

by these households. This cost can be determined by the method that is explained above and applied for underoccupation.

Under these circumstances, the monthly cost of overcrowding experienced in the sample of 18217 households in the urban housing stock is 2.47 billion TL in Turkey. Owneroccupiers constitute 2.04 billion and tenants 438 million TL of this value.

The monthly cost of overcrowding is 1.19 trillion TL and it costs 14.32 trillion TL annually. It is 479.88 million dollars annually and 671.83 trillion TL in current TL values (1\$=1.4 million TL). The overcrowding must not be viewed as a 'highly efficient case' and also excusable or natural for low-income groups. Housing policy in a country must allow equal distribution and efficient use of dwellings for the whole housing stock.

To sum up the empirical information we have attained so far:

1. The annual cost of underoccupation in the housing stock is 596 million dollars.
2. The cost of overcrowding on the other hand is 480 million dollars annually.

Therefore, the total annual cost of inefficient stock use is 1.08 billion dollars in Turkey. This is a considerable amount of waste for a developing country in economic constraints and experiencing economic crises.

CHAPTER 4

GEOGRAPHICAL DIFFERENTIATION OF HOUSING EFFICIENCY IN PROVINCES OF TURKEY

In the previous chapter, housing efficiency is analyzed in a national scale comprising whole Turkey. In this part, the province centers in the country are the focus of interest.

Turkey is a huge country with its population, geographical area and social-cultural variety. There are many differentiating elements between the west and east, south and north of the country, such as the level of wealth, climate, culture, life-styles, traditions etc. As well as many other aspects of housing, housing efficiency is expected to be shaped and differentiated depending on these factors between provinces. This chapter of the study aimed to answer the following questions and represent supporting geographical visual data produced by a GIS application.

- Where in the country overcrowding and underoccupation is greatest and lowest?
- Where it has increased/decreased the most?
- Are some cities and regions more likely to experience inefficiency than the others?
- Why some settlements have much higher indices of inefficiency?
- What features of urban areas explain their higher or lower levels of inefficiency?

4.1 Data

The data of province-based analysis still depends on the population census and is extracted from the SIS publications on the social and economic characteristics of the population for each province. The data is available for four levels (from greater scale to smaller, or from urban to rural) for each province:

1. Province total
2. Center of province total
3. Centers of district total
4. Sub-district and villages total

In this study, because the main focus of interest is the efficiency of housing stock in urban areas of Turkey, the census data on ‘center of provinces’ (level 2 above) is used. This includes the households in the municipal areas of the province centers.

The population census of 2000 and 1985 are used in time series analysis. For 1970, the data is available for total of the province, but not decomposed for the centers of province. The contacts with the SIS officials have not proved the decomposed data for province centers for 1970, due to the stated reason that the records of the census, which is 30 years ago, are not enough regular and exact for such a comprehensive decomposition. As a result, the time series analysis for province centers of Turkey reflects the last 15 years of the country.

The results of the census are being published separately for all the 81 provinces, which is the number in 2000 Population Census. In 1985, the number of provinces was 67 in Turkey. Because of this, the time series analysis covers the 67 provinces in Turkey. This may not noted as a very important deficiency because this latter-formed provinces are not very big in size and population, and they do not exhibit an extra characteristic different from the province which they formerly bounded.

4.2 Methodology

The methodology of the study in this chapter is similar with the one carried out for Turkey. The principle method is measuring the degree to which the housing stock matches household structure for each province center through making a distribution between the dwelling units and the households in terms of their size. By taking into account the size of the dwelling (number of rooms) and the size of the household (number of the household members), the households in each province center are separated into zones of comfort, overcrowding and underoccupation.

The similarities and differences between centers of provinces are aimed to be explained by considering variables such as population, population change, geographical region, type of housing produced, household size etc. The differentiations between occupational densities and these features of provinces are indicated on a map where necessary. This has been done by the process of data belonging to 81 province centers in GIS environment.

4.3 The Analysis of Housing Efficiency in Province Centers in Turkey

As stated above, Turkey can be mentioned as a heterogeneous country with its differentiating elements between the west and east, south and north, such as the level of wealth, climate, culture, life-styles, traditions etc. As well as other many other subjects, the efficiency of housing is expected to be shaped and differentiated depending on these factors between provinces. As a starting point, we may analyze the differences between the geographical regions in Turkey. The next point will be analyzing provinces individually.

4.3.1 Geographical Regions in Turkey

There are seven regions in Turkey and they have been defined (in 2000 Population Census) as Marmara, Aegean, Mediterranean, Central Anatolia, Black Sea, Eastern Anatolia and Southeastern Anatolia (Figure 4.1).

Figure 4.1: The geographical regions of Turkey



Provinces included in these regions are given in the following table:

Table 4.1: The distribution of 81 provinces to seven geographical regions in Turkey, 2000

Region	Provinces			
Marmara	Balıkesir	Bilecik	Bursa	Çanakkale
	Edirne	İstanbul	Kırklareli	Kocaeli
	Sakarya	Tekirdağ	Yalova*	
Aegean	Afyon	Aydın	Denizli	İzmir
	Kütahya	Manisa	Muğla	Uşak
Mediterranean	Adana	Antalya	Burdur	Hatay
	Isparta	İçel	Kahramanmaraş	Osmaniye*
Central Anatolian	Ankara	Çankırı	Eskişehir	Kayseri
	Kırşehir	Konya	Nevşehir	Niğde
	Sivas	Yozgat	Aksaray*	Karaman*
	Kırıkkale*			
Black Sea	Amasya	Artvin	Bolu	Çorum
	Giresun	Gümüşhane	Kastamonu	Ordu
	Rize	Samsun	Sinop	Tokat
	Trabzon	Zonguldak	Bayburt*	Bartın*
	Karabük*	Düzce*		
Eastern Anatolian	Ağrı	Bingöl	Bitlis	Elazığ
	Erzincan	Erzurum	Hakkari	Kars
	Malatya	Muş	Tunceli	Van
	Ardahan*	Iğdır*		

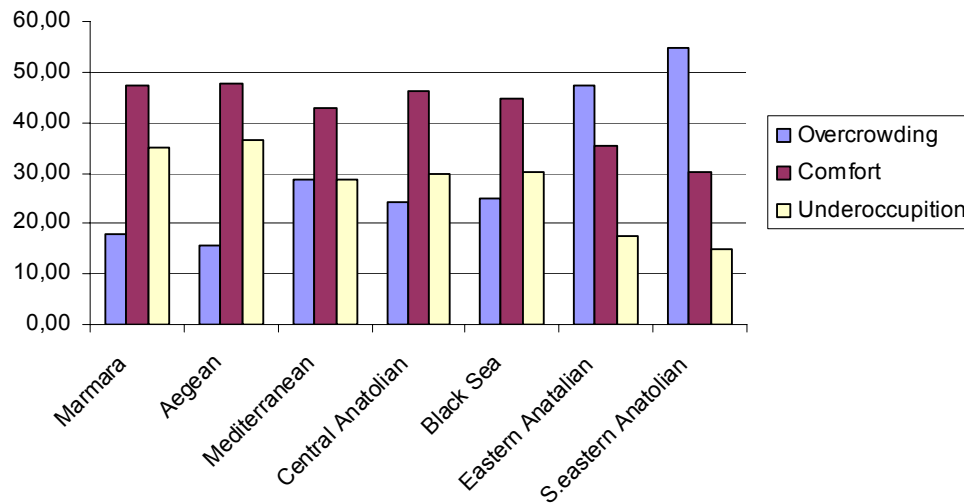
Table 4.1 (cont.)				
Southeastern Anatolian	Adiyaman	Diyarbakır	Gaziantep	Mardin
	Siirt	Şanlıurfa	Batman*	Şırnak*
	Kilis*			

Sources: SIS 2003, General Census of 2000 (no. 2759), pp. 17-18

* Cities that were districts and latterly proclaimed as province

Figure 4.2 below, which show the percentage of overcrowding, comfort and underoccupation in geographical regions composed of provinces above, exhibits that there are many differences in occupational densities in regions of Turkey. According to the figure, the biggest variation between regions is in overcrowding.

Figure 4.2: The rates of overcrowding, comfort and underoccupation in geographical regions of Turkey, 2000 (%)

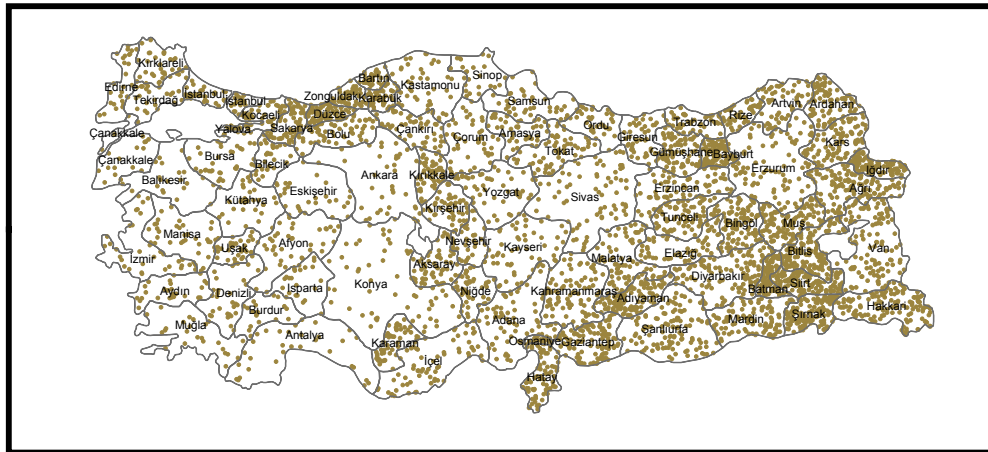


Source: SIS 2002, General Census of 2000, Social and Economic Characteristics of Population, Publications for Provinces.

The western regions, Marmara and Aegean, attract attention with higher rates of comfort and underoccupation and with lower rates of overcrowding in contrast. In almost all regions, except Eastern and Southeastern Anatolian, the zone of comfort includes a percentage between 40 and 50; however, in these two regions the percentage of comfort is near 30s. The rate of overcrowding which is lower

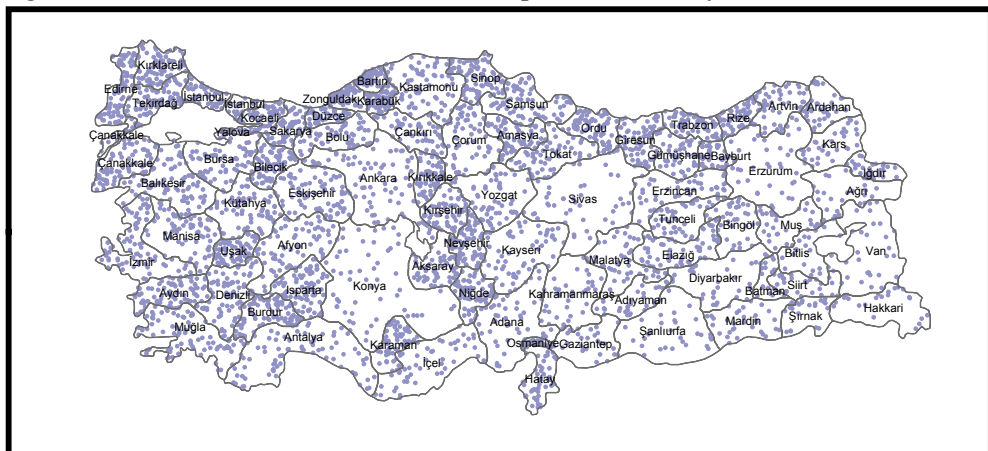
than 30 percent in other regions is at 50 percents in these two eastern regions of Turkey. At the same time, the level of underoccupation is near 15 percents in Eastern and Southeastern Anatolian regions and this rate is nearly half of the others. The differentiation of overcrowding and underoccupation between western and eastern part of the Turkey is more evidently visible in Figures 4.3 and 4.4.

Figure 4.3: The concentration of overcrowding in Turkey, 2000



Source: SIS 2002, General Census of 2000, Social and Economic Characteristics of Population, Publications for Provinces.

Figure 4.4: The concentration of underoccupation in Turkey, 2000



Source: SIS 2002, General Census of 2000, Social and Economic Characteristics of Population, Publications for Provinces.

What characteristics of the eastern and western part of Turkey cause these differences of occupational standards? This question needs some extra identification.

Like a lot of countries on the world, there are many differences and inequalities between the eastern and western part of the Turkey. The main differences are economic, cultural, geographic and climatic.

Economically, the east of the country is less developed and wealthy. The public and private investments had been concentrated to the west; which brings more employment opportunities, more income, wealth and better standards of living. Besides, the western part of the country has natural opportunities such as tourism, connection with sea and geographical structure enabling different modes of transportation.

Cultural differences on the other hand, depend on social elements rather than physical factors. The level of education and culture is lower than western Turkey and therefore bigger families living together are widely available. Children are tackled as an element of agricultural labor and security of the parents. The dwellings in this region are also different from the apartments in other Turkey. Not giving in details, they are one or two unit dwellings, often made up of materials other than concrete to provide easy use in building and specially designed against the climatic factors. Of course these explanations have particular validity for rural part of eastern Turkey; however, it would not be wrong to say that this cultural structure has inevitably some extensions in the life styles of the urban part of the region, where this study covers.

To sum up, we can say that the eastern Turkey has a different character than the west, especially in economic and cultural point of view. Economically the level of income is low (Table 4.2; Figure 4.5) and the opportunities of employment in sectors other than agriculture are few. Educational insufficiencies and cultural

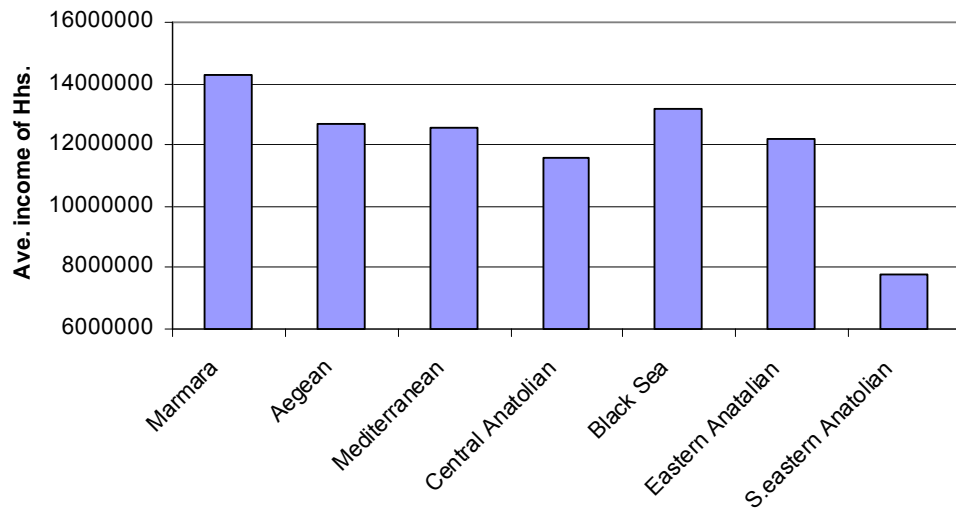
structure brings about larger size of families (Table 4.3; Figure 4.6) instead of the nucleus family type.

Table 4.2: Average income of urban households in geographical regions of Turkey, 1994 (TL)

Geographical Region	Average Hh Income	Number of Hhs
Marmara	14.279.709	2500
Aegean	12.715.990	2067
Mediterranean	12.563.674	2756
Central Anatolian	11.557.538	3272
Black Sea	13.204.904	3088
Eastern Anatolian	12.169.960	2444
Southeastern Anatolian	7.765.311	2090
TOTAL	12.141.110	18217

Source: SIS 1994, Household Income and Expenditure Survey (Raw Data)

Figure 4.5: Average income of urban households in geographical regions of Turkey, 1994 (TL)



Source: SIS 1994, Household Income and Expenditure Survey (Raw Data)

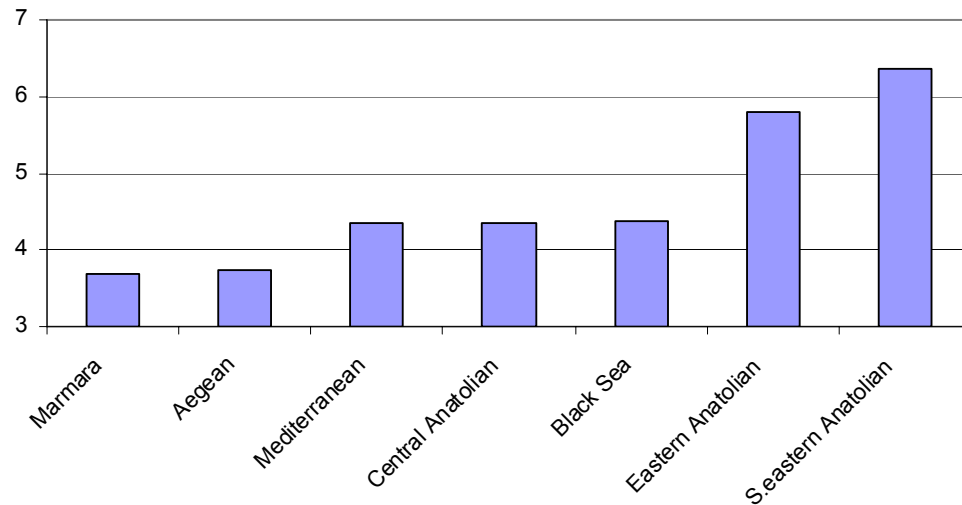
Table 4.3: Average size of urban households in geographical regions of Turkey, 2000

Geographical Region	Average Household Size	Number of Provinces
Marmara	3,6855	11
Aegean	3,7300	8
Mediterranean	4,3600	8
Central Anatolian	4,3500	13
Black Sea	4,3811	18
Eastern Anatolian	5,7900	14
Southeastern Anatolian	6,3633	9
TOTAL	4,6790	81

Source: SIS 2003, General Census of 2000 (no. 2759), pp. 96-97

According to Figure 4.5, which depends on Household Income and Expenditure Survey conducted by SIS in 1994, there is two times difference in the level of household income between the Marmara and Southeastern Anatolian Regions. As mentioned before, the ability to satisfy needs for housing is clearly dependent on income and in general we can expect lower-income households to exhibit more overcrowding due to their affordability problems for appropriate dwelling.

Figure 4.6: Average size of urban Hhs in geographical regions of Turkey, 2000



Sources: SIS 2003, General Census of 2000 (no. 2759), pp. 96-97

According to Figure 4.6, average household size is increasing from west to east and the average household size in Southeastern Anatolian Region is nearly two times of the average size in Marmara. As noted before, household size is the ultimate determiner of the housing need. Therefore, it is not surprising that eastern Turkey experiencing highest rate of overcrowding in the country, when we consider the region has the lowest level of income and the largest average family size.

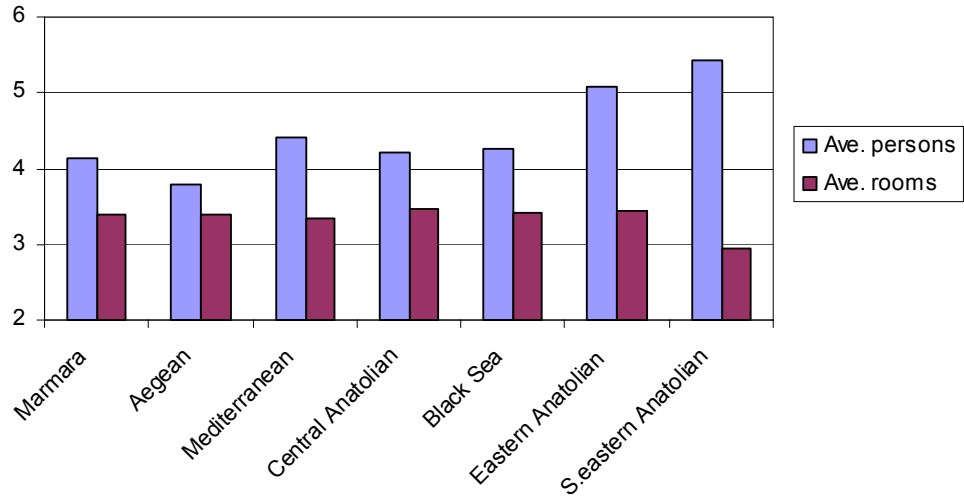
The Mediterranean Region has the highest overcrowding value after the eastern two (Figure 4.2). This region carries some characteristics common (ex. larger family size) with the Eastern and especially Southeastern Region, due to the fact that it is geographically close to these regions and especially eastern Mediterranean (cities like Adana, İçel) absorbs quite dense population from there by migration. Therefore, it is meaningful to state that higher percentage of overcrowding in Mediterranean Region is mostly caused by migrant households from Eastern and Southeastern Region.

Above, we explained higher rates of overcrowding in Turkey due to geographical differentiation of household size and income of the households. However, as mentioned before, the characteristics of the stock are also effective on housing efficiency. In Figure 4.7, the average of these two determinants of housing efficiency-household size and number of rooms of the dwellings are joined together for each geographical region.

Figure 4.7 gives a clear opinion about the determiners of housing inefficiency in Turkey. The more the two bars in are in accordance in the figure, the more the housing system is expected to be efficient.

First of all, it is quite obvious that the line indicating the average number of rooms is not fluctuating. This justifies the previous statement that housing stock in Turkey is not enough diversified to answer different needs and preferences of households.

Figure 4.7: Average size of the households and dwellings in according to geographical regions of urban Turkey, 1994



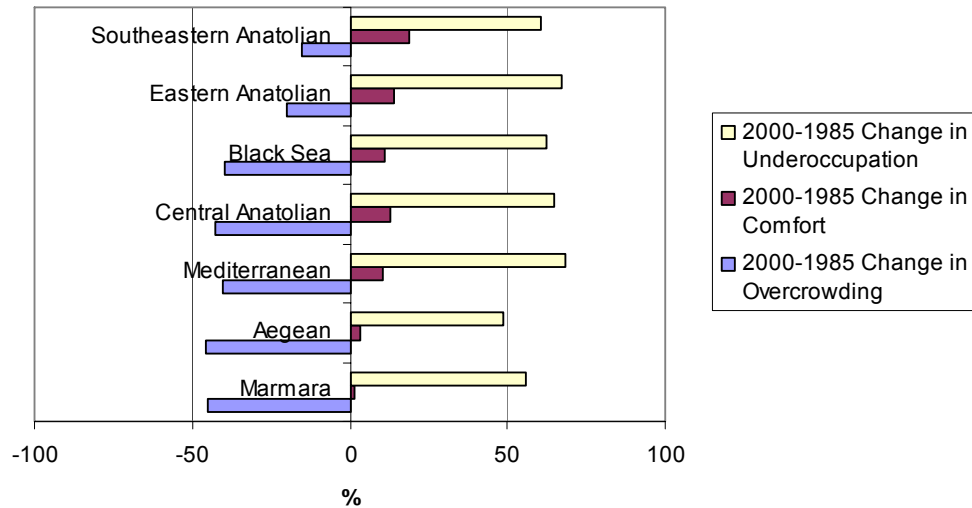
Source: SIS 1994, Household Income and Expenditure Survey (Raw Data)

Secondly, household size is more fluctuating dwelling size and it can be viewed as the determiner of housing efficiency. The overcrowding is emerging due to the gap between two lines. Because household size is more changeable from region to region, it can be stated as the basic determiner of overcrowding in a housing stock that composed of monotonous and identical units in size and type.

The Mediterranean Region has the highest household size average in the first five regions and this justifies the previous statement that the region has higher rate of overcrowding due to common characteristics with the Eastern and especially Southeastern Region, as a result of intake migration.

The gap between the family size and the number of rooms is considerably high for Eastern and Southeastern Region and this explains the high rate of overcrowding in these regions. Figure 4.8 gives an idea about the change in occupational densities in geographical regions in the last 15 years. The values indicate the change between the percentage in 1985 and in 2000, in terms of percentages.

Figure 4.8: Change in overcrowding, comfort and underoccupation, 1985-2000 (%)



Source: SIS 2002, General Census of 2000, Social and Economic Characteristics of Population, Publications for Provinces; SIS 1987, General Census of 1985, Social and Economic Characteristics of Population, Publications for Provinces

In the figure, comfort and underoccupation are in the increasing side, overcrowding is in the decreasing side. In all regions, obviously, the dominant character is the increase in underoccupation in nearly 50 percent. This finding is coherent with the previous findings about the whole Turkey. As stated before, this is a result of the housing system producing larger and larger dwellings despite the continuous fall in the average family size in the country. Overcrowding is in the decreasing tendency which is weaker in the eastern regions. On the contrary, comfort has a stronger increasing tendency in the eastern regions. The comfort rates in eastern regions, which are already lowest rates compared to other regions, are increasing. Because the initial values are very low, the increase revealed in terms of percentages emerge highly remarkable.

4.3.2 Province centers of Turkey

Turkey is composed of 81 provinces and these are tabulated in Table 4.1. The number of provinces was 67 and 14 are added later. One point must be noted that, the declaration of districts as provinces is mostly reasoned by political interest or

benefit. These districts often do not meet the standards and population of being a province. The reasons causing being a province can be exemplified such as being the hometown of a politician, being one of the promises in elections, viewing a tool for creating governmental employment or ‘developing’ that place.

In this study, these 14 provinces are excluded in some analysis because the number was 67 in 1985. These analyses are either time series or belong to 1985. Depending on the above stated reasons, this may not be noted as an important deficiency. If we need to repeat, these latter-formed provinces are not very big in size and population, and they do not exhibit an extra characteristic different from the province which they formerly bounded.

One important point needed to be reminded is that the census data on ‘center of provinces’ is used in this study because the main focus of interest is the efficiency of housing stock in urban areas of Turkey. This includes the households in the municipal areas of the province centers.

If we remember the questions aimed to answer in this part of the study related with the province centers:

- In which province center overcrowding and underoccupation is greatest and lowest?
- Where it has increased/decreased the most?
- Are some cities more likely to experience inefficiency than the others?
- Why some provinces have much higher indices of inefficiency?
- What features of urban areas explain their higher or lower levels of inefficiency?

This section of the study aimed to answer these questions and represent supporting geographical visual data produced by an application of GIS. The descriptive statistics for the occupational standards in provinces of Turkey is below.

Table 4.4: The maximum, minimum and mean values of overcrowding, comfort, underoccupation and average household size in province centers in Turkey, 2000

	Minimum	Maximum	Mean	Std. Deviation
Overcrowding	8,53	67,74	30,5577	15,4702
Comfort	21,98	51,08	42,1126	7,0902
Underoccupation	9,08	42,60	27,3263	8,9592
Ave. household size	3,24	8,25	4,9096	1,2270

Source: SIS 2002, General Census of 2000, Social and Economic Characteristics of Population, Publications for Provinces; SIS 2003, General Census of 2000 (no. 2759) pp. 242-96-97

In Turkey, there is 2.3 times difference in comfort between the minimum and maximum values, 8 times difference in overcrowding and 4.7 times in underoccupation (Table 4.4).

According to the Table 4.5, Batman is the province in Turkey which has the minimum percentage of households in comfort zone and maximum in overcrowding. Çanakkale is the province with minimum overcrowding on the other hand. One other important specialty for Çanakkale is that it has the minimum average household size in Turkey, which is 3.24. Batman is the third city having the biggest value of average household size. Below table shows the most overcrowded and underoccupied twenty province centers in Turkey.

Table 4.5: Provinces having maximum and minimum values of overcrowding, comfort, underoccupation and average household size in province centers in Turkey, 2000

	Minimum	Maximum
Overcrowding	Çanakkale	Batman
Comfort	Batman	Balıkesir
Underoccupation	Bitlis	Burdur
Ave. household size	Çanakkale	Muş

Source: SIS 2002, General Census of 2000, Social and Economic Characteristics of Population, Publications for Provinces; SIS 2003, General Census of 2000 (no. 2759) pp. 242-96-97

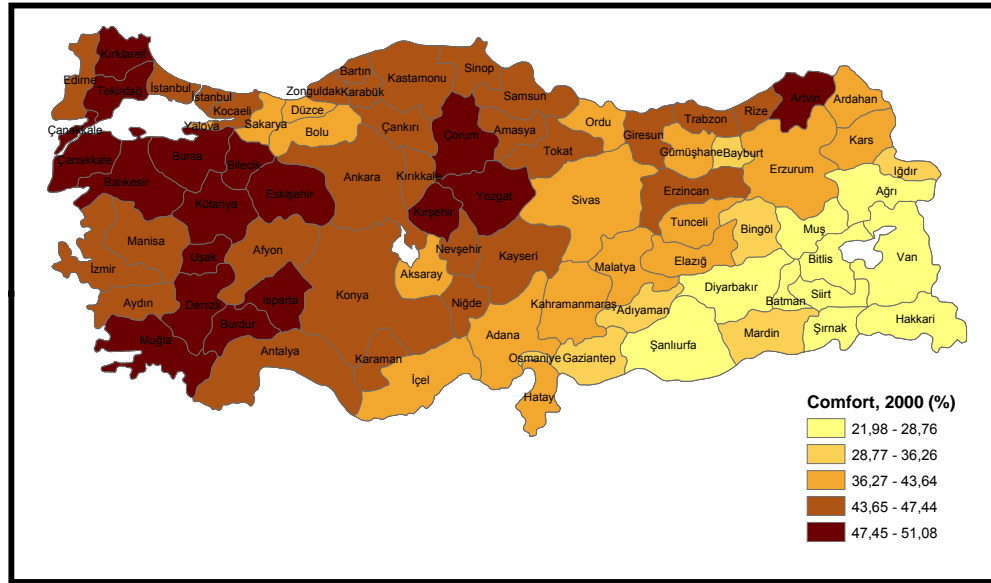
Table 4.6: Twenty most overcrowded and underoccupied province centers in Turkey, 2000

No	Province	Overcrowding (%)	Province	Underoccup. (%)
1	Batman	67,74	Burdur	42,6
2	Bitlis	63,97	Çanakkale	42,21
3	Hakkari	63,64	Sinop	41,51
4	Şırnak	62,81	Edirne	40,78
5	Ağrı	61,21	Aydın	39,88
6	Siirt	58,89	Ordu	39,74
7	Diyarbakır	57,29	Muğla	39,38
8	Van	57,22	Isparta	38,85
9	Şanlıurfa	56,74	Balıkesir	38,31
10	Muş	56,51	Antalya	38,25
11	Adıyaman	51,85	Bartın	38,08
12	Gaziantep	51,38	İzmir	37,82
13	Iğdır	50,95	Tekirdağ	37,62
14	Mardin	50,04	Ankara	37,13
15	Bingöl	47,81	Eskişehir	37,08
16	Bayburt	45,76	Kırklareli	36,85
17	Osmaniye	44,44	Denizli	36,79
18	Kilis	43,85	Bilecik	35,61
19	Kahramanmaraş	42,96	Nevşehir	35,54
20	Erzurum	42,87	Samsun	35,51

Source: SIS 2003, General Census of 2000 (no. 2759) p. 242

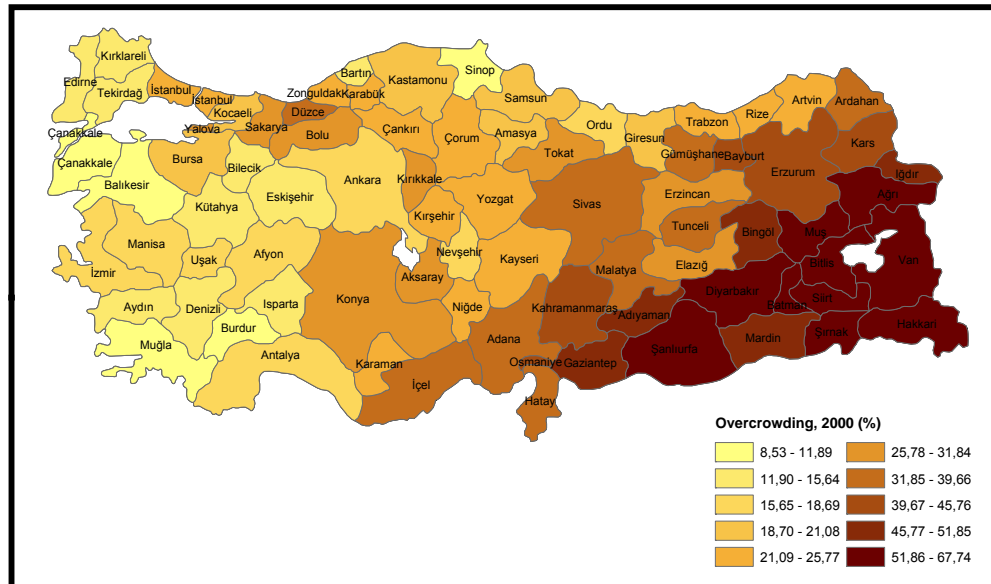
According to the Table 4.6, there is clearly a distinction between the provinces placed on east and west. As noted before, household size is quite high for eastern Turkey because of several reasons, which are widely explained before. As a result of this, the most overcrowded provinces are those which placed in eastern Turkey. on the other hand, for underoccupation it is not possible to maintain a strict rule depending on the region. Twenty most underoccupied provinces of Turkey include cities from every part of Turkey, such as west, center, north and south; except from the east.

Figure 4.9: Comfort in province centers of Turkey, 2000 (%)



Source: SIS 2002, General Census of 2000, Social and Economic Characteristics of Population, Publications for Provinces.

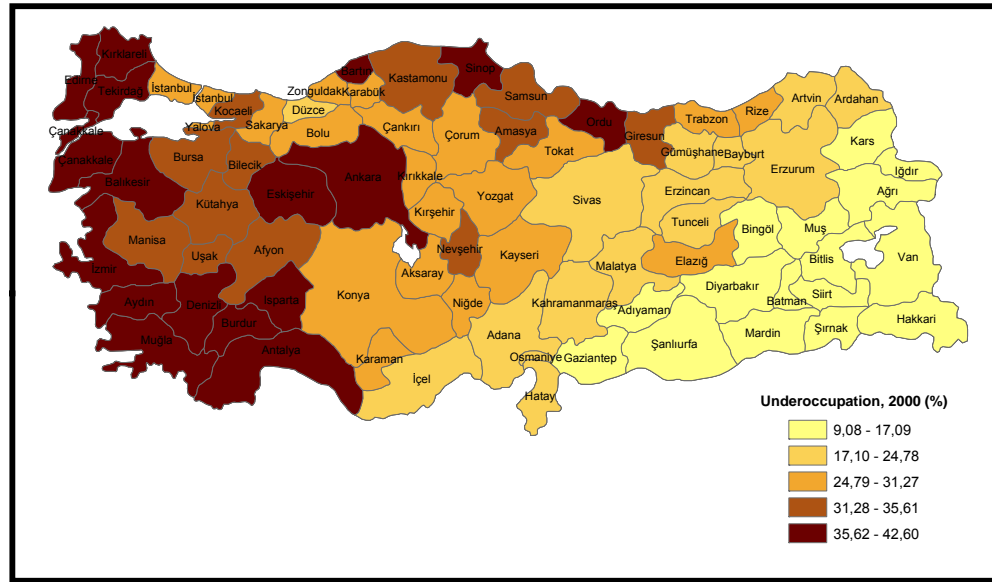
Figure 4.10: Overcrowding in province centers of Turkey, 2000 (%)



Source: SIS 2002, General Census of 2000, Social and Economic Characteristics of Population, Publications for Provinces.

The reasons for the differentiation of overcrowding and underoccupation for provinces of Turkey needs closer investigation. These will be investigated in a regression model and take up the last two parts of the study. Before that, we need to observe the differentiations in occupational densities and other features of provinces first; and second run an eye over the changing trends in these issues in the last 15 years.

Figure 4.11: Underoccupation in province centers of Turkey, 2000 (%)



Source: SIS 2002, General Census of 2000, Social and Economic Characteristics of Population, Publications for Provinces.

The above three figures (4.9; 4.10; 4.11) are the photographs of the stock use in province centers of Turkey for year 2000. Parallel with above statements, the geographical differentiation of overcrowding, comfort and underoccupation is evidently visible on the figures. Darker colors indicate the heavier situation.

First of all, we can say that there is a fall in housing standards from west to east. Eastern provinces have lower rates of comfort and higher overcrowding. Underoccupation is mostly dominant in western part of Turkey. The two opposite types of inefficiency is observed in two opposite parts of Turkey: underoccupation

in western Turkey and overcrowding in eastern part. Black Sea and Central Turkey on the other hand, generally exhibit middle range values in overcrowding and underoccupation, and relatively higher rates of comfort.

The leading provinces of east, such as Gaziantep, Şanlıurfa and Diyarbakır exhibit no different character from the other provinces in the region, although they have relatively higher population, education level and economic development than the region average. There is no striking exception that breaks the general tendencies in the Eastern and Southeastern Turkey.

Aegean provinces such as İzmir, Aydın, Muğla, Denizli, Manisa always take part in the first two segments of comfort and underoccupation, and last two in overcrowding. Similar with the eastern part, no striking exception that breaks the general tendency in western provinces is observed.

On the other hand, there is a clear differentiation in western and eastern Mediterranean provinces of Turkey. From west to east (Antalya to Hatay) comfort and underoccupation falls and overcrowding rises. This is exactly parallel with the previous statement that eastern Mediterranean provinces are likely to exhibit Southeastern characteristics as a result of the migration they intake.

Provinces of Marmara do not exhibit a homogeneous character. Bursa, Balıkesir, Çanakkale and Tekirdağ, which are southern and western provinces in the region reveal characteristics with Aegean: higher rates of comfort and underoccupation and lower rates of overcrowding.

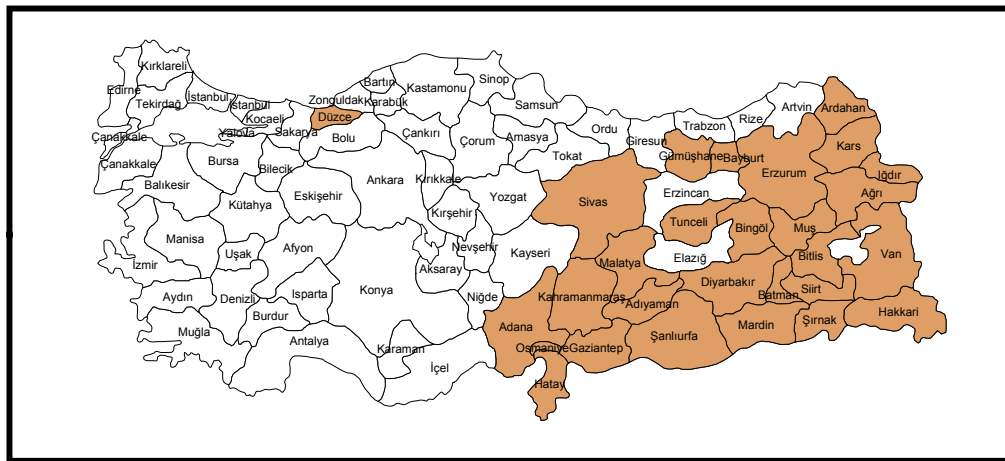
Central Black Sea provinces such as Kastamonu, Sinop, Samsun has higher rates of comfort similar with the central Anatolian provinces. These provinces also have quite high underoccupation. Artvin has the highest comfort value among the Black Sea provinces.

Three major provinces of Turkey, İstanbul, Ankara and İzmir, generally exhibit similar characters. There is not a considerable problem of overcrowding but

underoccupation is an indicating issue in these provinces. Differently, İstanbul has a lower underoccupation than the other two.

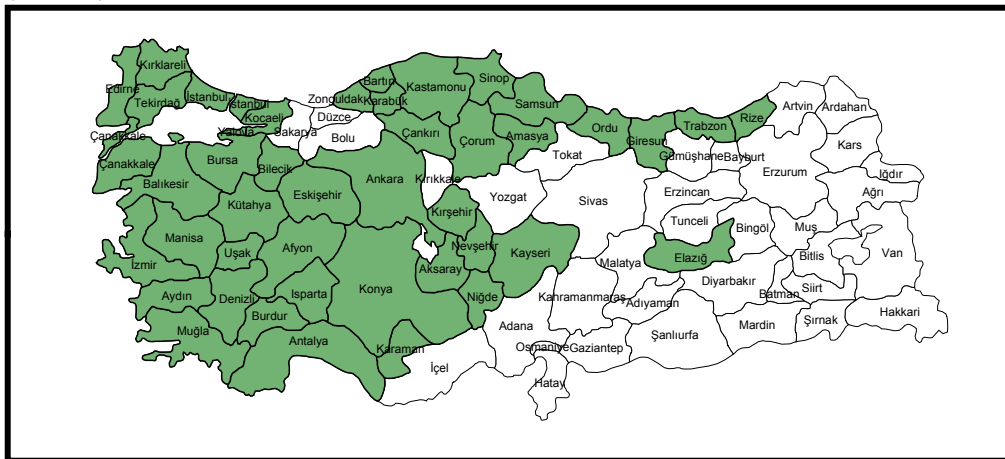
Picturing the provinces having overcrowding and underoccupation more than the Turkey average would give a better idea about the concentration of these occupational densities.

Figure 4.12: Province centers with overcrowding more than the average (>30.55), 2000



Source: SIS 2002, General Census of 2000, Social and Economic Characteristics of Population, Publications for Provinces.

Figure 4.13: Province centers with underoccupation more than the average (>27.55), 2000



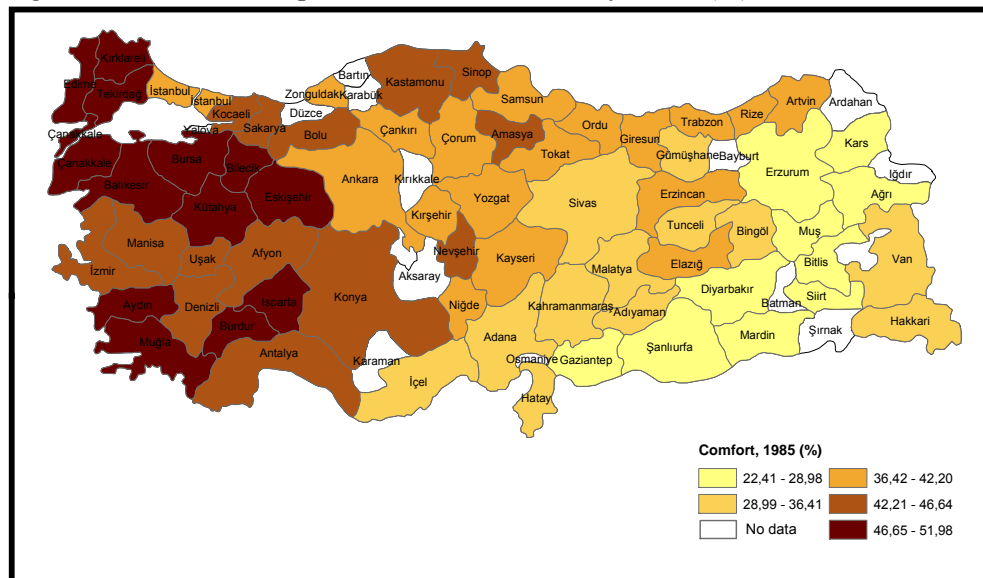
Source: SIS 2002, General Census of 2000, Social and Economic Characteristics of Population, Publications for Provinces.

Figures 4.12 and 4.13 exhibit the previous statement that overcrowding is a feature of eastern provinces and on the other hand, underoccupation is the dominant character for provinces that take part in western Turkey.

It is also necessary to investigate the distribution of comfort, overcrowding and underoccupation for year 1985 to capture the changing elements in the country in the last 15 years. Three figures below (4.14; 4.15; 4.16) show that there is no considerable difference in distribution of occupational densities between years 1985 and 2000. The provinces which are indicated in white color in the figures were proclaimed as provinces after 1985. Therefore, the data is not available for them.

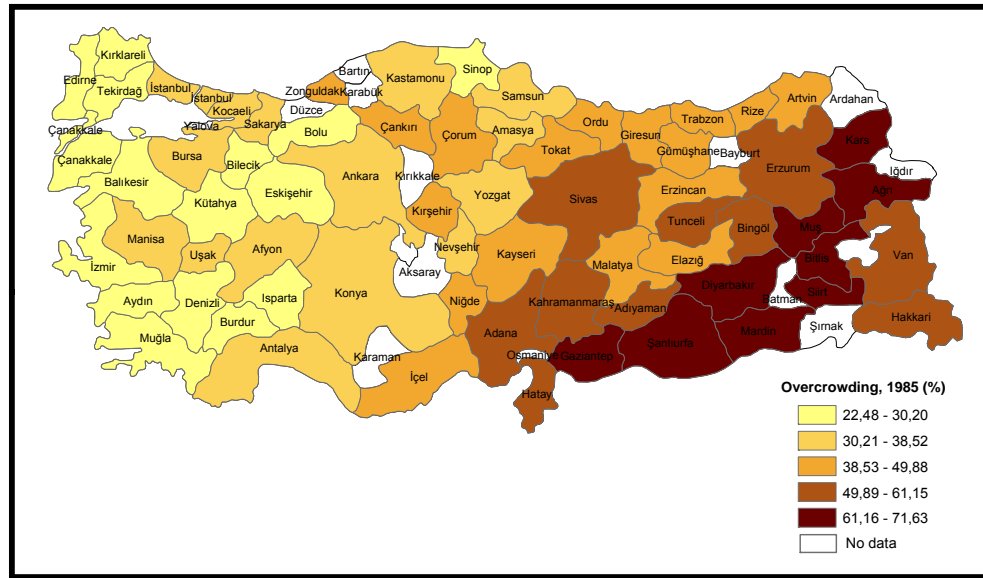
We can observe from the figures of 1985 that the falling tendency in housing standards from west to east was also a basic characteristic of stock at that time. Similar with the year 2000, Eastern provinces had lower rates of comfort and higher overcrowding, and underoccupation was dominant in western part of Turkey. Black Sea and Central Turkey generally exhibited middle range values in overcrowding and underoccupation, and relatively higher rates of comfort.

Figure 4.14: Comfort in province centers of Turkey, 1985 (%)



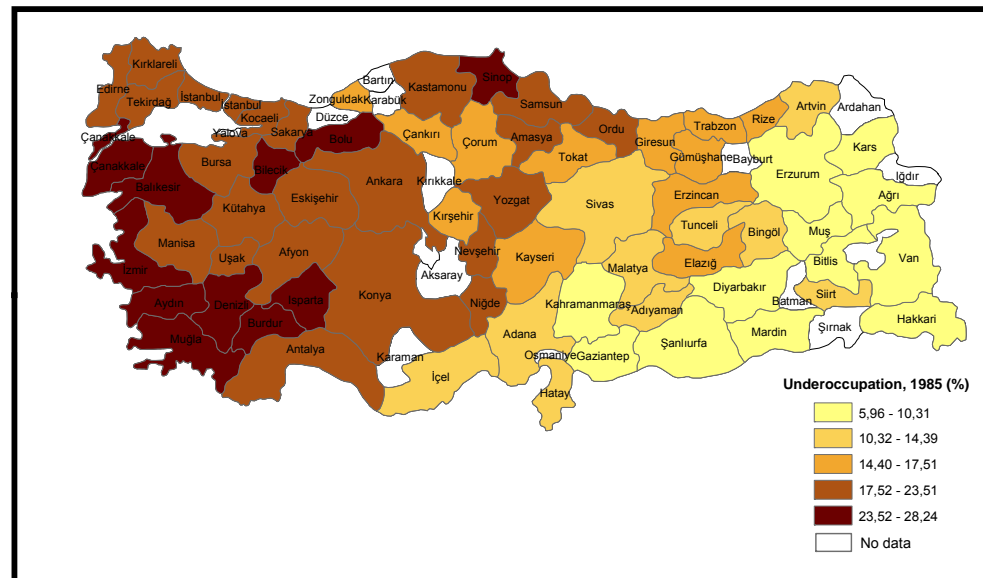
Source: SIS 1987, General Census of 1985, Social and Economic Characteristics of Population, Publications for Provinces.

Figure 4.15: Overcrowding in province centers of Turkey, 1985 (%)



Source: SIS 1987, General Census of 1985, Social and Economic Characteristics of Population, Publications for Provinces.

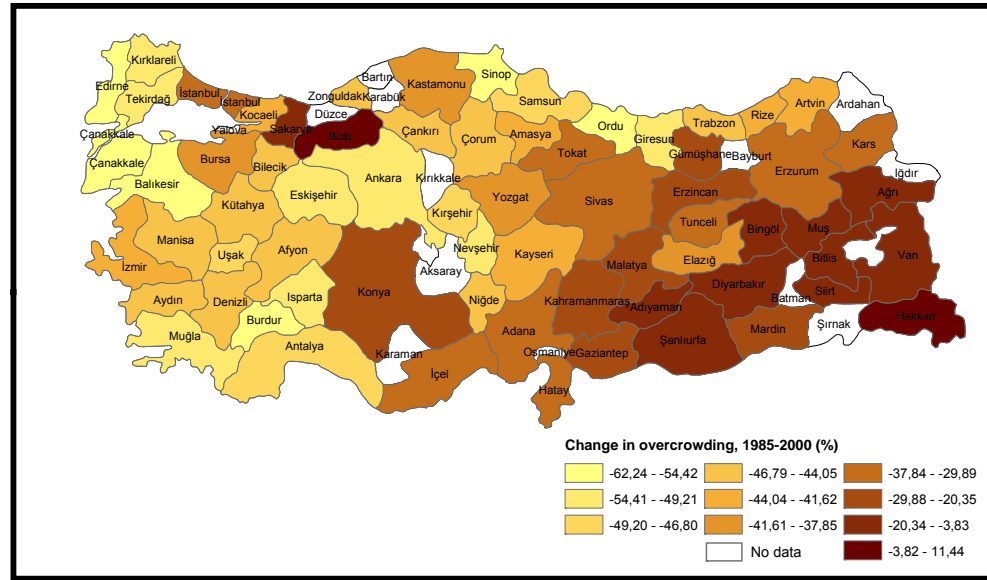
Figure 4.16: Underoccupation in province centers of Turkey, 1985 (%)



Source: SIS 1987, General Census of 1985, Social and Economic Characteristics of Population, Publications for Provinces.

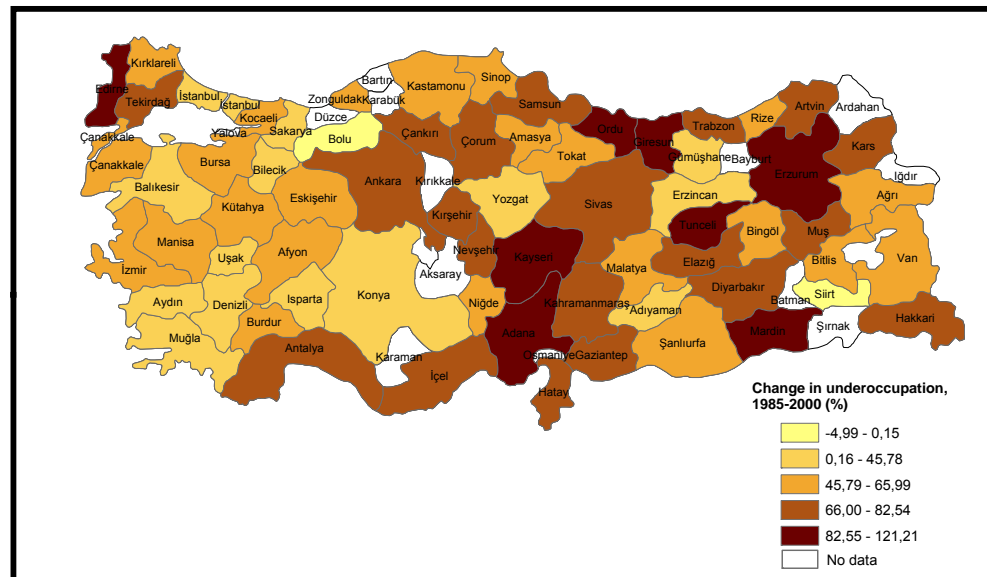
The following three figures (4.17; 4.18; 4.19) show the rate of change in overcrowding, comfort and underoccupation from 1985 to 2000.

Figure 4.17: Change in overcrowding in province centers of Turkey, 1985-2000 (%)



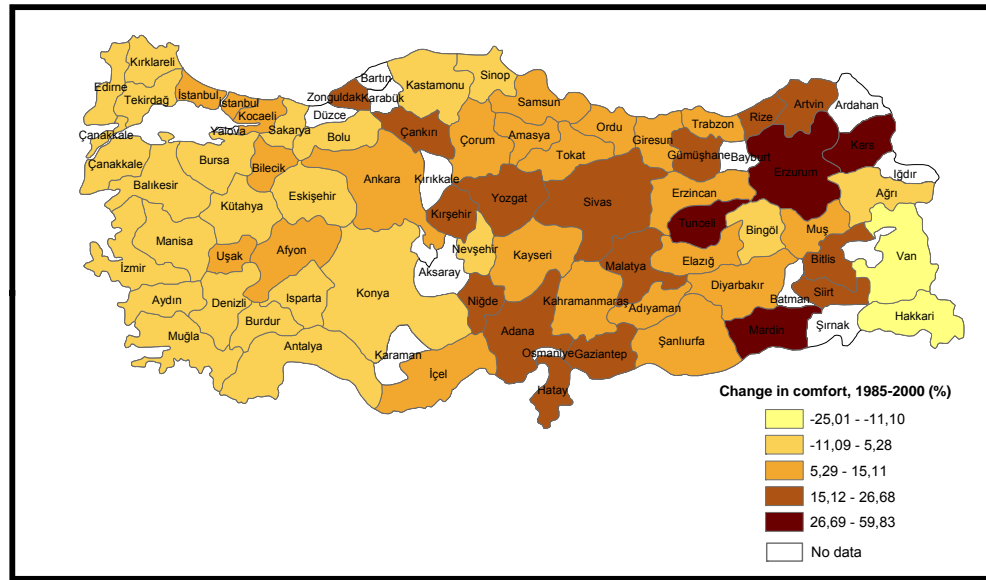
Sources: SIS 2002, General Census of 2000, Social and Economic Characteristics of Population, Publications for Provinces; SIS 1987, General Census of 1985, Social and Economic Characteristics of Population, Publications for Provinces.

Figure 4.18: Change in underoccupation in province centers of Turkey, 1985-2000 (%)



Sources: SIS 2002, General Census of 2000, Social and Economic Characteristics of Population, Publications for Provinces; SIS 1987, General Census of 1985, Social and Economic Characteristics of Population, Publications for Provinces.

Figure 4.19: Change in comfort in province centers of Turkey, 1985-2000 (%)

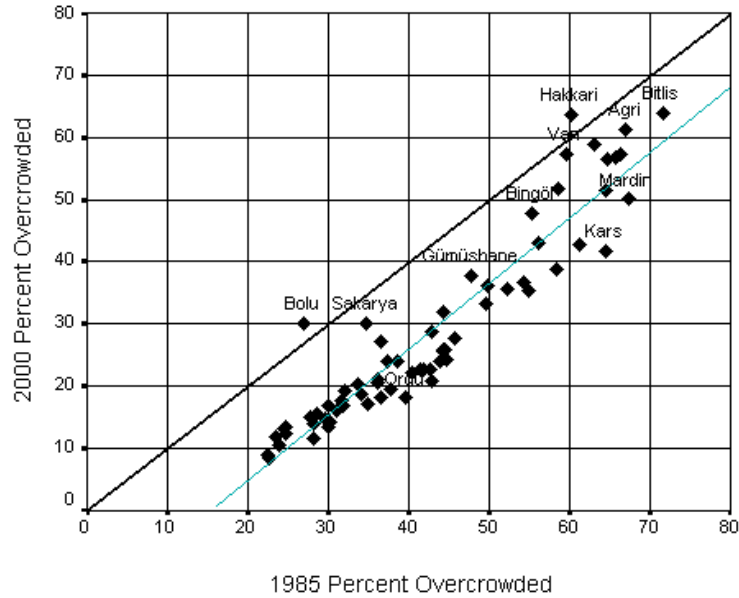


Sources: SIS 2002, General Census of 2000, Social and Economic Characteristics of Population, Publications for Provinces; SIS 1987, General Census of 1985, Social and Economic Characteristics of Population, Publications for Provinces.

Figure 4.17 indicate that there is little decrease in overcrowding in eastern provinces of Turkey from 1985 to 2000. Bursa, İstanbul, Sakarya, Bolu and Konya experienced a relatively slower fall in overcrowding compared to other provinces in their environment. According to Figure 4.18, Adana, Kayseri, Edirne, Ordu, Tunceli, Mardin and Erzurum are the provinces that experience the highest rise in underoccupation. But it necessary to note that, most of these provinces has still underoccupation in the smallest segment (Figure 4.11). Erzurum, Kars, Tunceli and Mardin experience the most rapid increase in the last 15 years (Figure 4.19).

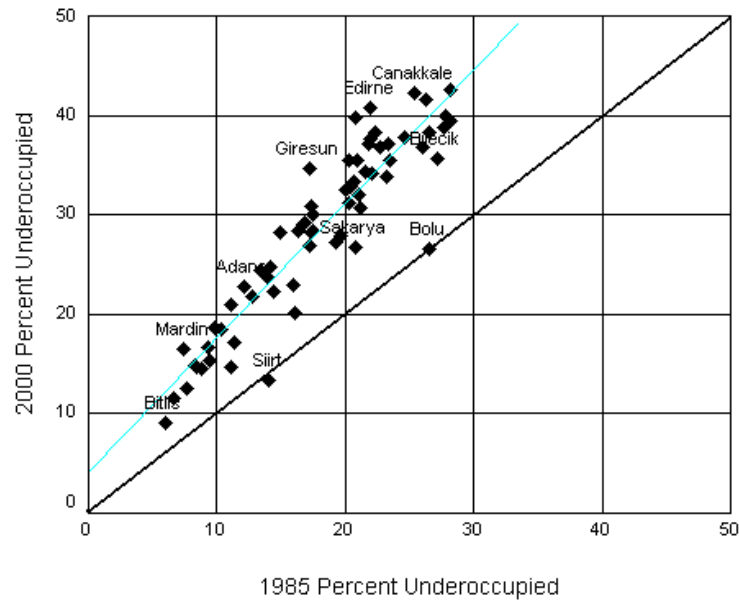
Figure 4.20 and 4.21 displays the change in overcrowding and underoccupation in each province center of Turkey from 1985 to 2000 by means of a scatter plot, with the 1985 values on the horizontal axis and 2000 values on the vertical. Provinces with no change fall on the diagonal, those where overcrowding or underoccupation is increasing lie above and those with declines lie below the diagram. The thin line passing through the provinces show the mean of the values.

Figure 4.20: Change in percentages of overcrowding in province centers of Turkey, 1985-2000



Sources: SIS 2002, General Census of 2000, Social and Economic Characteristics of Population, Publications for Provinces; SIS 1987, General Census of 1985, Social and Economic Characteristics of Population, Publications for Provinces.

Figure 4.21: Change in percentages of underoccupation in province centers of Turkey, 1985-2000



Sources: SIS 2002, General Census of 2000, Social and Economic Characteristics of Population, Publications for Provinces; SIS 1987, General Census of 1985, Social and Economic Characteristics of Population, Publications for Provinces.

According to Figures 4.20 and 4.21, provinces of Turkey have a decreasing tendency of overcrowding and increasing tendency of underoccupation because almost all values are below the diagram for overcrowding and above for underoccupation. Only Hakkari and Bolu have slightly increasing overcrowding in the last 15 years. The distribution of underoccupation has much variation than overcrowding.

4.3.2.1 Determinants of overcrowding in province centers

A number of factors may explain why urban overcrowding is more common in some provinces than in others. The previous parts of the study identifies that eastern provinces of Turkey are more likely to have overcrowding, and the ultimate reason of this likeliness is stated as the increase in the size of households.

The percentage of overcrowding in provinces of Turkey can be estimated in a linear probability model that employs multiple regression techniques. A total of 6 models are estimated, with different sets of variables. The whole of variables, those are available for 81 provinces are revealed in Appendices. Among these, those considered showing no collinearity are employed in regression analysis. These variables are:

1. Population of the province center in year 2000 (POP_00)
2. Growth rate of population between 1985 and 2000 in % (POP_CH)
3. The rate of net migration in ‰ (MIGR)
4. The percentage of renting (RENTER)
5. The percentage of ‘gecekondu’ in year 1985 (GKNDU)
6. The per capita Gross Domestic Product in T.L. (GDP)

Population of the province center in year 2000, growth rate of population between 1985 and 2000 and the rate of net migration in are variables used to test the effect of population of the province center on overcrowding. The percentage of renters reflect the effect of tenure, GNP reflects income and percentage of gecekondu is employed as an indicator of stock characteristics in the analysis. The descriptive

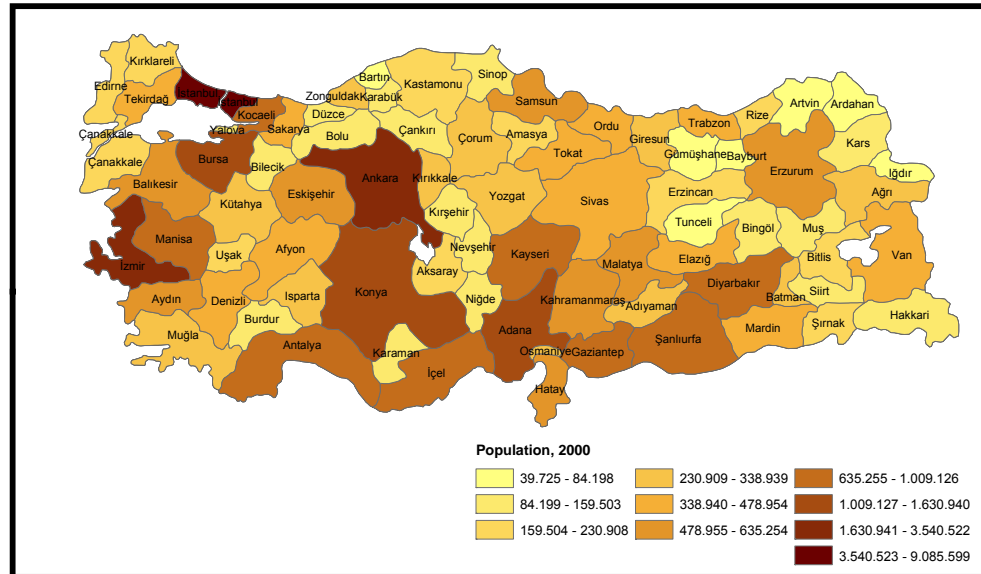
statistics of these dependent (OVCRW) and independent variables are shown in the below table (4.7). The sources of the data are mostly the census of population carried out by SIS, as mentioned before.

Table 4.7: Descriptive statistics of variables

Variable	Minimum	Maximum	Mean	Std. Deviation
OVCRW	8,53	67,74	30,1545	15,4702
POP_00	39725	9085599	543287,3	1101175
POP_CH	-35,23	150,99	59,1685	37,1718
MIGR	-164	108	-34,08	58,36
RENTER	9,23	35,03	19,2206	4,5399
GKNDU	11,52	60,5	27,4375	8,707
GDP	455.466.596	4.745.161.313	1.490.424.662	751.588.567

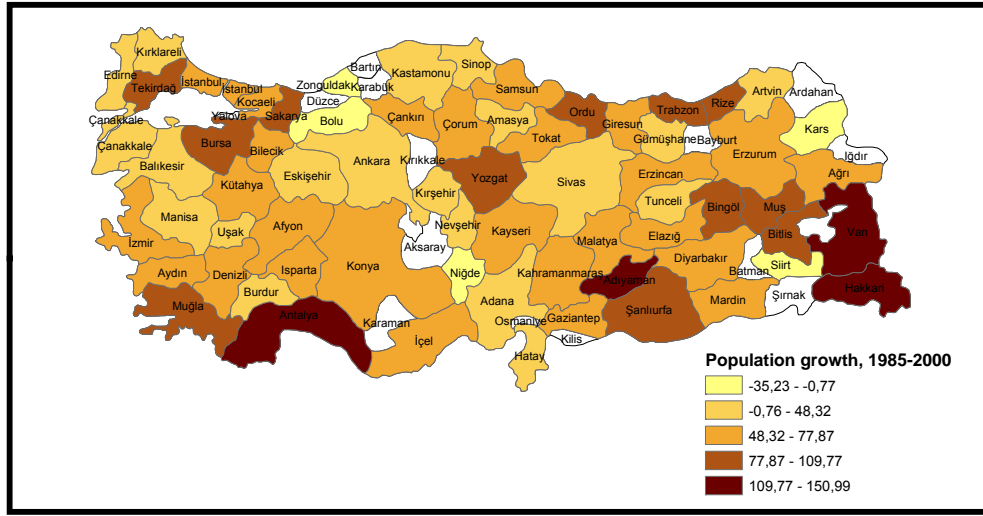
The following figures show the geographical distribution of variables to provinces of Turkey.

Figure 4.22: Urban population in province centers, 2000



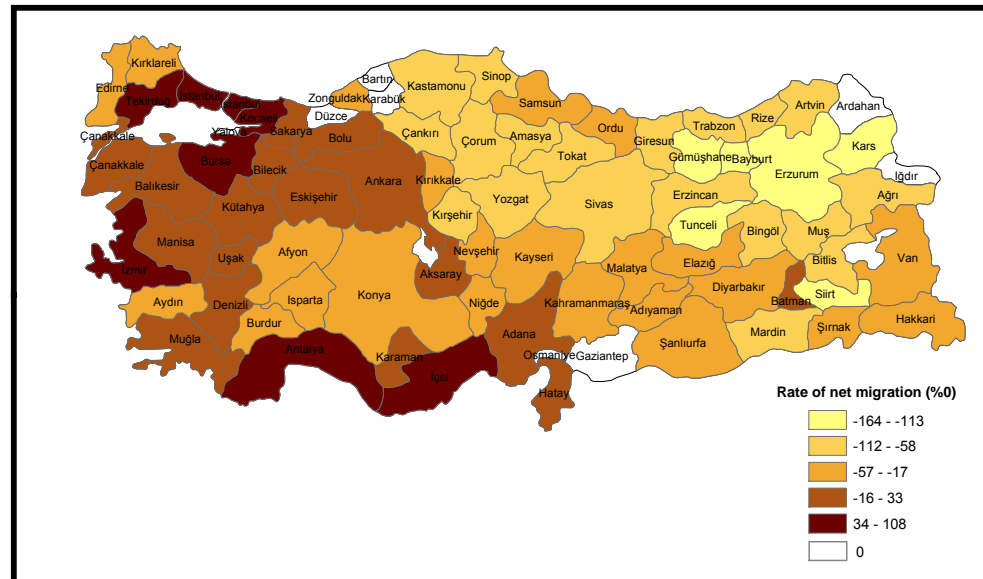
Source: SIS 2003, General Census of 2000 (no. 2759) pp. 110-111

Figure 4.23: The population growth of province centers, 1985-2000



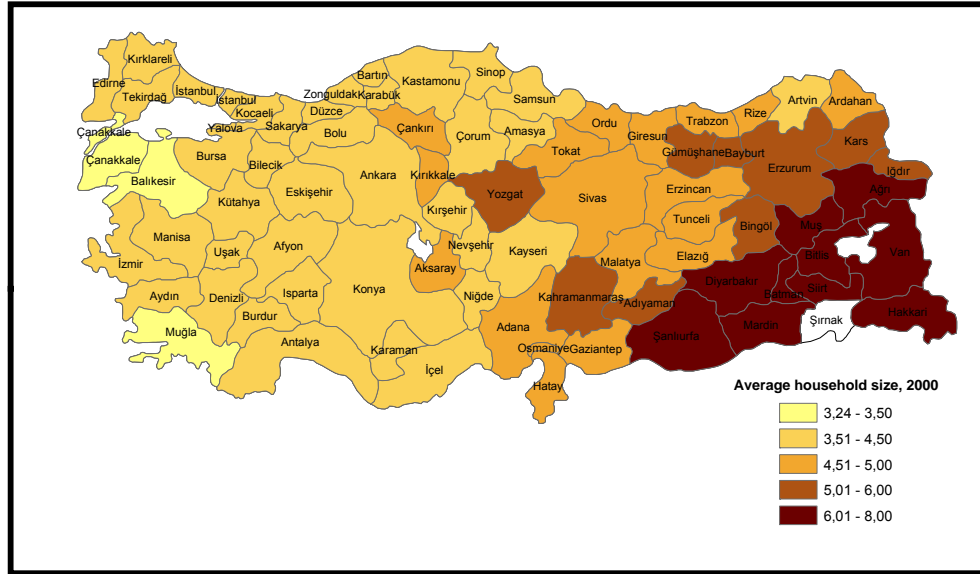
Source: SIS 2003, General Census of 2000 (no. 2759) pp. 110-111; SIS 1989, General Census of 1985 (no. 1369) p.166

Figure 4.24: The rate of net migration for province centers, 1990 (%)



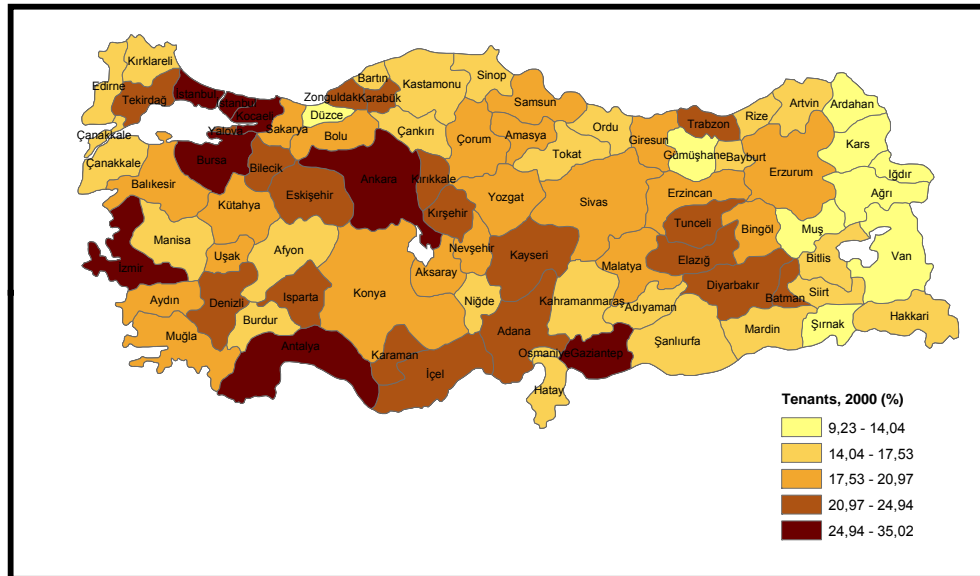
Source: SIS 2002, Statistical Yearbook of 2001 (no. 2690) pp. 80-81

Figure 4.25: Average household size in province centers, 2000



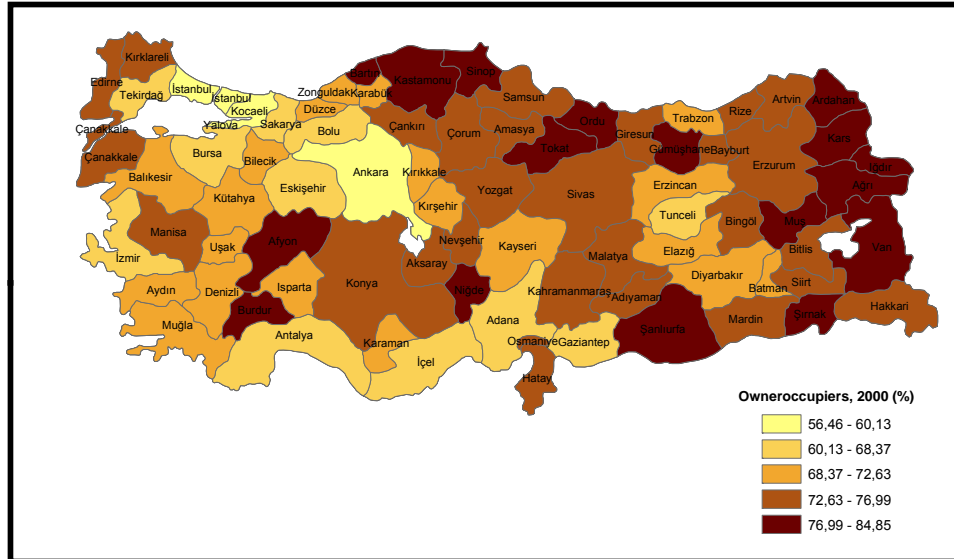
Source: SIS 2003, General Census of 2000 (no. 2759) pp. 96-97

Figure 4.26: Percentage of renters in province centers, 2000



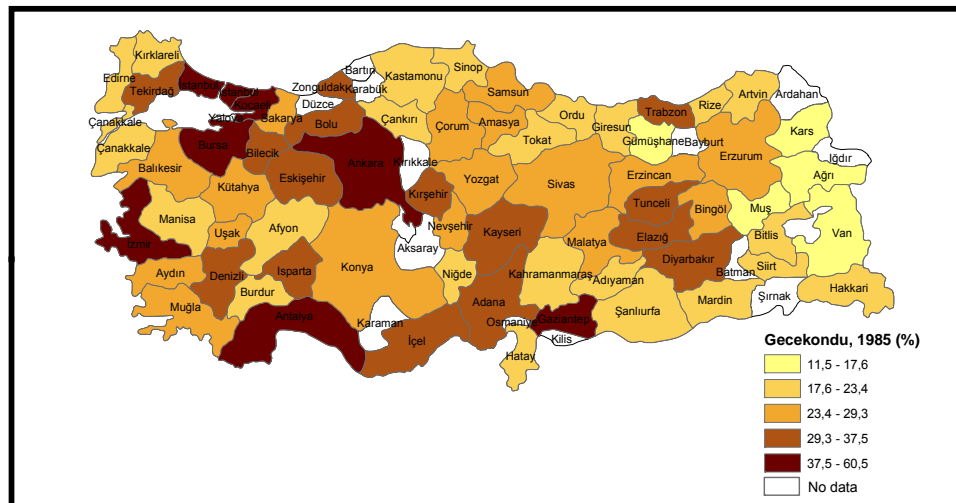
Source: SIS 2003, General Census of 2000 (no. 2759) pp. 298-299

Figure 4.27: Percentage of owneroccupiers in province centers, 2000



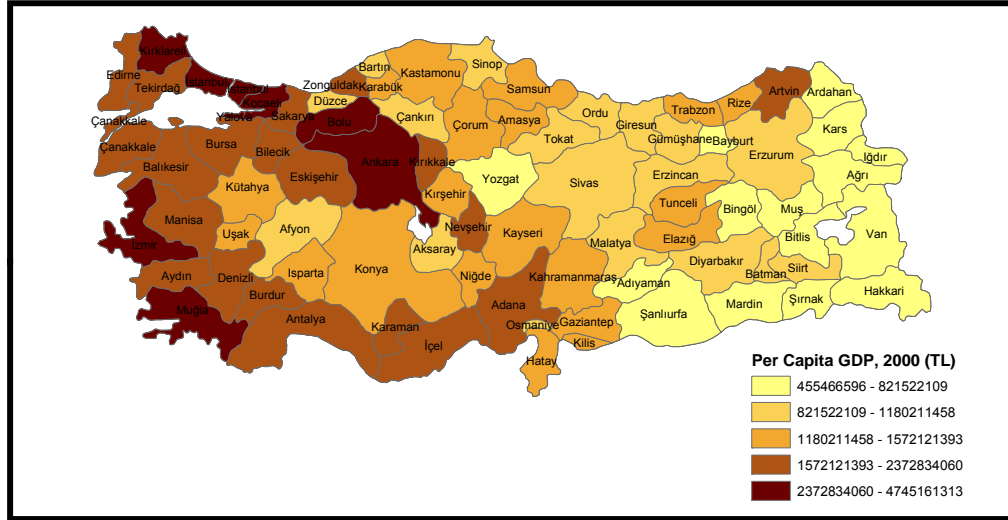
Source: SIS 2003, General Census of 2000 (no. 2759) pp. 298-299

Figure 4.28: Percentage of gecekondu in province centers, 1985



Source: SIS 1989, General Census of 1985 (no. 1369) pp.161-162

Figure 4.29: Per capita Gross Domestic Product by provinces, 2000



Source: www.die.gov.tr/220102t5

Table 4.8: Four regression results (β coefficients) for the relationship between overcrowding in province centers and selected variables

Independ. Variables	Models			
	1	2	3	4
POP_00	0,222	0,340*	0,149	-0,090
POP_CH	0,370**	0,327**	0,373**	0,136
MIGR	-0,641**	-0,487**	-0,532**	-0,056
RENTER	-	-0,299	-2,199**	-3,459**
GKNDU	-	-	2,073*	3,567**
GDP	-	-	-	-0,642**
F	10,19	8,803	8,927	10,697
R ²	0,330	0,366	0,427	0,521

* $p < 0.05$ ** $p < 0.01$

Table 4.8 summarizes the results from the 4 models. In this table the standardized regression coefficients, (β) are used to see which variables influence the rate of overcrowding most.

R-square statistics that represent the proportions of variation in overcrowding explained by the respective models is changed from 0.330 to 0.521. 52 percent of the change in variation in overcrowding rates across the province centers can be

explained by the model. This rate may be evaluated as an insufficient proportion; however, it would not be forgotten that very limited number of variables concerning the stock characteristics took place in the models.

According to Myers, Baer, Choi (1996), in addition to demographic characteristics, economic and housing market characteristics of a province also may increase the risk of overcrowding. In larger regions (in terms of population), which often have more pressure on their housing stocks, a shortage of rental housing or a lack of affordable housing may cause households to double up or to live in insufficient units.

Only the percentage of gecekondü can be named as a stock related variable. Other variables would be those concerning the type distribution of dwellings in the stock, the housing production, housing cost and level of rents in the province centers and these would have been brought wider explanations.

The first model includes the population variables of province centers: population size in year 2000; the change of population between years 1985 and 2000; rate of net migration. This base model explains the 33 percent of the variation (the R-square statistic) in overcrowding rates across the province centers. Population growth rate and rate of net migration are the most important variables related with population and both of them are statistically significant. The negative sign of net migration means that province centers which give migration have higher overcrowding. This is parallel with the previous finding that Eastern and Southeastern Regions provinces experience severe overcrowding. These provinces also loose population by giving migration to other provinces.

Model 2 includes the percentage of renters in the province center in order to test the effect of tenure. The R-square increased to 0.366. The percentage of renters is statistically insignificant and has a weak effect in explaining the variation in overcrowding across centers of province with a relatively lower coefficient. The negative sign means that provinces with higher rates of renters are less likely to experience overcrowding. This may be explained by higher intra-urban mobility

of renter groups, which enable them to move to an appropriate dwelling. As we noted before, tenants are more likely to move than home owners because they have fewer financial and psychological barriers against relocating. We may also note that the population size become significant with the introduction of percentage of renters.

Model 3 include the percentage of gecekondur type dwellings in year 1985. R-square increased from 36.6 percent to 42.7. As expected, provinces with higher rates of gecekondur are more likely to experience overcrowding. Gecekondur type dwellings are often small in size having one or two units. In contrast, households in gecekondur are often large in size. Therefore, it is inevitable that gecekondur type housing stock serves for overcrowding in the province. We may also note that the percentage of renting become significant with the introduction of percentage of gecekondur. Provinces with higher rate of gecekondur and lower rate of renters are more likely to experience overcrowding. In the gecekondur stock, the dominant type of tenure is owneroccupancy. Renting is not a common feature of gecekondur housing. Therefore, renting becomes significant when combined with gecekondur and this emerges as an interesting feature of this model.

Model 4 include the per capita GDP of the province, which included in the model as an indicator of the income of the province. With the introduction of per capita GDP variable R-square is increased from 0.427 to 0.521, which means the 52 percent of the variance in overcrowding is explained. The GDP variable has an important and significant effect in explaining the variation in overcrowding. The negative sign implies that provinces with higher levels of income are less likely to experience overcrowding. Higher level of income brings about better living standards, which also reflects standards of housing. Therefore, this is an expected relation between overcrowding and income. Also, the population variables loose their importance with the introduction of GDP to the analysis.

4.3.2.2. Determinants of underoccupation in province centers

In previous parts of the study underoccupation is revealed as the main tendency in Turkish housing and its reason stated as the housing production providing units continuously in increasing size, despite the decreasing average family size in the country. Because housing production is often supported by low-interest crediting or government subsidies and public resources are anyway used in the production of housing, excess housing consumption is stated as a housing problem, especially for developing countries like Turkey having limited resources.

A number of factors may explain why urban underoccupation is more common in some provinces than in others. The percentage of underoccupation in provinces of Turkey can be estimated in a linear probability modal that employs multiple regression techniques. The variables used are similar with those with the previous part of the study. One important deficiency is the lack of variables representing the characteristics of stock, such as the average floor area of the dwellings in the stock, variables concerning the type distribution of dwellings, the housing production, housing cost and level of rents in the province centers.

The whole of variables in the database those are available for 81 provinces are revealed in Appendices. Among these, those considered showing no collinearity are employed in regression analysis. These variables are:

1. Population of the province center in year 2000 (POP_00)
2. Growth rate of population between 1985 and 2000 in % (POP_CH)
3. The rate of net migration in ‰ (MIGR)
4. The percentage of renting (RENTER)
5. The percentage of ‘gecekondu’ in year 1985 (GKNDU)
6. The per capita Gross Domestic Product in T.L. (GDP)

The descriptive statistics of these dependent (UNDOCP) and independent variables are shown in the below table. The standardized regression coefficients, (β) are used to see which variables influence the rate of overcrowding most. The

sources of the data are mostly the census of population carried out by SIS, as mentioned before.

Table 4.9: Descriptive statistics of variables

Variable	Minimum	Maximum	Mean	Std. Deviation
UNDOCP	9,08	42,60	27,3263	9,0640
POP_00	39725	9085599	543287,3	1101175
POP_CH	-35,23	150,99	59,1685	37,1718
MIGR	-164	108	-34,08	58,36
RENTER	9,23	35,03	19,2206	4,5399
GKNDU	11,52	60,5	27,4375	8,707
GDP	455.466.596	4.745.161.313	1.490.424.662	751.588.567

Table 4.10: Seven regression results (β coefficients) for the relationship between underoccupation in province centers and selected variables

Independ. Variables	Models			
	1	2	3	4
POP_00	-0,219	-0,289*	-0,128	0,082
POP_CH	-0,302**	-0,277*	-0,315**	-0,107
MIGR	0,669**	0,578**	0,616**	0,197
RENTER	-	0,176	1,769*	2,878**
GKNDU	-	-	-1,738*	-3,053**
GDP	-	-	-	0,565**
F	10,354	8,073	7,632	8,441
R ²	0,334	0,346	0,389	0,462

* p<0.05 **p<0.01

Table 4.10 summarizes the results from the four models. R-square statistics that represent the proportions of variation in underoccupation explained by the respective models is changed from 0.334 to 0.462.

46 percent of the change in variation in underoccupation rates across the province centers can be explained by the model. This rate may be evaluated as an insufficient proportion; however, it would not be forgotten that very limited number of variables concerning the stock characteristics took place in the analysis. Only the percentage of gecekondur can be named as a stock related

variable. Other variables would be those concerning the type distribution of dwellings in the stock, the housing production, housing cost and level of rents in the province centers and these would have been brought wider explanations.

The first model includes the population variables of province centers: population size in year 2000; the change of population between years 1985 and 2000; rate of net migration. This base model explains the 33 percent of the variation (the R-square statistic) in underoccupation rates across the province centers. Population growth rate and rate of net migration are the most important variables related with population and both of them are statistically significant. Rate of net migration is relatively more important in explaining the variation in underoccupation. Province centers which intake migration have higher underoccupation. This is parallel with the previous finding that western provinces experience leading underoccupation in the country.

Model 2 includes the percentage of renters in the province center in order to test the effect of tenure. The R-square slightly increased to 0.346. The percentage of renters is statistically insignificant and has a weak effect in explaining the variation in underoccupation across centers of province with a relatively lower coefficient. We may also note that the population size become significant with the introduction of percentage of renters to the model.

Model 3 include the percentage of gecekondü type dwellings in year 2000. R-square increased from 34.6 percent to 38.9. Provinces with higher rates of gecekondü are less likely to experience underoccupation. As noted before, gecekondü type dwellings are often small in size, having one or two units. In contrast, households in gecekondü are often extended. Therefore, gecekondü type housing emerges as a place of lower housing standards.

Model 4 include the per capita GDP of the province, which included in the model as an indicator of the income of the province. With the introduction of per capita GDP variable R-square is increased from 0.389 to 0.462, which means the 46 percent of the variance in overcrowding is explained. The GDP variable has an

important and significant effect in explaining the variation in underoccupation. Naturally, provinces with higher levels of income are more likely to experience underoccupation. Higher level of income brings about better living standards, and it also reflects standards of housing. Therefore, this is an expected relation between income and underoccupation. Also, the population variables lose their importance with the introduction of GDP to the analysis. In contrast, the percentage of renters and gecekondus gain significance and importance with the introduction of GDP variable.

CHAPTER 5

CONCLUSIONS

Efficiency of housing depends on how much the households fit to their housing units. Efficient housing implies a system where all needs of the individuals are satisfied and no resources are wasted. In an inefficient housing stock, there are at one side households who are in insufficient housing according to their needs, and at the other side there are households consuming much more housing compared to their need. In both situations there is a mismatch between the dwelling unit and the household occupying it. Therefore, housing inefficiency is a result of two contrasting mismatches, overcrowding and underoccupation, both of which are housing problems.

Although efficient use of stock is an important issue of housing economics and policies, there is very little research on the subject in Turkey. This study aims to investigate stock efficiency in Turkey by measuring the degree to which the housing stock matches household structure through making a distribution between the dwelling units and the households in terms of their size according to international occupancy standards. By taking into account the size of the dwelling (number of rooms) and the size of the household, the stock is separated into three zones occupational density: comfort, overcrowding and underoccupation.

The comfort zone includes the households in appropriate housing according to internationally accepted standards. Below the comfort zone is the overcrowding, which covers the households in insufficient housing (under-consumption) in terms of number of rooms compared to their needs. In contrast, over the comfort zone

there is underoccupancy, which includes the households in excessive housing consumption compared to their needs.

In Turkey, more than half of the housing stock (56%) is being used ineffectively and inefficiently. Focusing on the type of the inefficiency, we can say that underoccupation (30%), with a higher rate compared to overcrowding (25%), is the dominant character of housing use in Turkey. The reasons of this picture can better be understood by looking over how other countries tackle the subject and compare their rate of inefficiency.

Efficiency is one of the major considerations in English housing policy. In the country, some priorities are described for people who are most in need of a home, and living in an overcrowded house is a reason of priority in allocation of council housing. Other than being a priority in allocation, household size and composition is one of the main determinants of the size and type of the property that will be offered by the council. Also, the changes in housing circumstances of the household (ex. the birth of a child) are also taken into consideration by the council.

Despite the efficiency objectives, underoccupation covering the 72% of all households is the dominant character in English housing. The objective of efficiency seems to be coming up as very low percentages of overcrowding, which is totally 2% in all tenures. In fact, it can not be considered as surprising in a housing system defining existing overcrowding as a reason of 'housing priority' for council housing applicants. In United States the situation is not different and the dominant character of housing use is underoccupancy, at a rate of 89% (Clark, Deurloo and Dieleman, 2000), which is higher than UK.

The reason for very high rates of underoccupation in American housing is stated by researchers as the growing size of the dwellings and the decrease in average household size. Housing systems of US and Turkey are similar because in both countries, there is very limited government control in the housing processes. Housing production is almost entirely carried out by the private sector and there is

almost no government participation. These similarities lead to similar tendencies of housing processes. However, the major differentiating factor is the low level of resources and wealth in Turkey. This leads to very high rates of overcrowding, as much as 23 times more compared to US case.

Long term observations in the stock reveal that during the last 35 years, a 57% decrease in overcrowding and a 218% increase in underoccupation was experienced in Turkish housing. The steep increase in the underoccupation, in especially the past 25 years, is an indicator for both the scarcity of 'appropriately designed' housing, and a 'social waste'. Physical stock is a national asset, and particularly in developing countries like Turkey, there are limited sources for its production and maintenance. Although underoccupation in the stock is not as significant as the British or the American case, its rapidly increasing progress seems to be leading Turkey just beside these countries in the near future.

In Turkey, self-building was the principal form of housing provision until 1950s. With the rapid rise in land prices under the effects of high rates of urbanization, pressures to raise development rights of land had increased. The legislation had to be changed to allow ownership of flats in apartments by different people. This cleared legal problems against marketing of housing produced by emerging speculative builders in the form of multi-storey apartments (Türel, 1993).

High level of growth, despite low levels of GDP and scarce resources were only to be maintained through the evolutions and reorganizations of property ownership relations. In this process, the use-value component of dwellings was suppressed, and it became imperative to produce larger and larger units to exploit the opportunities of maximizing exchange-values. The result of these reorganization processes was housing extensively turning into commodity (Balamir, 1975, 1996).

As a result, housing system in Turkey produces larger and larger dwellings in the last 35 years period. Also, in contrast with European and US examples, average floor areas of produced flats are greater than the houses. This tendency becomes

to be opposite in recent years because of the earthquake disasters occurred in the country. The demand on low-storey houses is increased and flats in high rise apartments began to lose popularity.

Another indicator related with the pattern of housing production is the number of dwellings having different number of rooms. Between 1965 and 1975, stability in all size of dwellings is dominant and there are slight fluctuations in production. However, after 1975, a steep rise in 3, 4 and 5 and more room dwellings, a gradual rise followed by stability in 2 room dwellings, and a fall in 1 room dwellings is observed in the housing stock.

While the size of produced dwellings is increasing in Turkey, on the contrary, average household size is decreasing. In such a scheme of households and dwellings, it is not possible to attain an appropriate distribution of housing, and efficient and effective use of stock. If we animate a hypothetical situation to test this statement, and distribute households to appropriate dwellings according to their size, the results are significant: 73% of two-person households are not accommodated and 56% of four-room dwellings are not occupied. Therefore, a diversified housing stock is necessary to answer different needs of households and attain an efficient use of stock.

Since housing stock is a national asset, inefficiency in housing and over and under-consumption of housing means wasting scarce social and economical resources. Also, the inefficiency in a housing stock is a source of inequality at the same time depending on the existence of households consuming housing more than their need at one side and households in insufficient consumption at the other.

Households in the comfort zone consume 24.60 m² housing space per person in Turkey and this amount corresponds optimum space for efficient, sanitary and inhabitable accommodation. The overcrowded households occupy 14.40 m² housing per person which is slightly more than the half of the optimum consumption. They experience the room stress sourced by lack of sufficient

housing space compared to their need. On the other hand, there are underoccupier households in the stock whose average housing consumption is 47.47 m² per person. This amount is nearly twice as big as the amount corresponds for comfort, and four times for overcrowding. This is an indicator of the inequality in the housing stock as well as a considerable social waste. Both overcrowding and underoccupation must not be regarded as 'acceptable' in a housing system having consideration of justice and every individual must be incited to accommodate in an appropriate dwelling to the need.

The amount of waste sourced by the inefficient stock use can be calculated using the annual rent paid variable in 1994 Household Income and Expenditure Survey data. In the survey, the monthly rent paid by the household is asked for the tenants and recorded. The same data is available for owneroccupiers and it is collected by asking the relative rent in the environment. The calculations which explained in details previously show that:

1. The annual cost of underoccupation in the housing stock is 596 million dollars.
2. The cost of overcrowding on the other hand is 480 million dollars annually.

Therefore, the total annual cost of inefficient stock use is 1.08 billion dollars in Turkey. This is a considerable amount of waste for a developing country in economic constraints and experiencing crises.

Turkey is a heterogeneous country with its differentiating elements between the west and east, south and north, such as the level of wealth, climate, culture, lifestyles, traditions etc. As well as other many other subjects, the efficiency of housing is expected to be shaped and differentiated depending on these factors between provinces. Therefore, there are many differences in occupational densities in regions and provinces of Turkey.

When we look at a regional perspective, the western regions, Marmara and Aegean, attract attention with higher rates of comfort and underoccupation and with lower rates of underoccupation in contrast. Eastern and Southeastern Anatolian Regions strike with severe overcrowding at a rate up to 50 percent of all households. The Mediterranean Region has the highest overcrowding value after the eastern regions. The other regions do not reflect characteristics of particular importance.

The reasons of this differentiation between regions can be related with the differences and inequalities between the eastern and western part of Turkey. The main differences are economic, cultural, geographic and climatic. Eastern Turkey has a different character than the west, especially in economic and cultural point of view. Economically the level of income is low and the opportunities of employment in sectors other than agriculture are few. The ability to satisfy needs for housing is clearly dependent on income and in general we expect lower-income households to exhibit more overcrowding due to their affordability problems for appropriate dwelling.

On the other hand, the different cultural aspects of the region bring about larger size of families instead of the nucleus family type. As a result, average household size is increasing from west to east and the average household size in Southeastern Anatolian Region is nearly two times of the average size in Marmara. Household size is the ultimate determiner of the housing need. Therefore, eastern Turkey experience highest rate of overcrowding owing to the region's lowest level of income and the largest average family size in the country.

Mediterranean Region carries some characteristics common with the Eastern and especially Southeastern Region, due to the fact that they are geographically close to each other and especially eastern Mediterranean provinces absorbs quite dense population from there by migration. Therefore, higher percentage of overcrowding in Mediterranean Region is mostly caused by migrant households from Eastern and Southeastern Region.

Because housing stock in Turkey is not sufficiently diversified to answer different needs and preferences of households, household size, which displays more variation according to geographical and socio-cultural elements, can be viewed as the determiner of housing efficiency.

When we observe the differentiation in occupational densities of the regions in the last 15 years period, we need to note that comfort and underoccupation are in the increasing side, and overcrowding is in the decreasing. In all regions, obviously, the dominant character is the increase in underoccupation in nearly 50 percent. This is a result of the housing system producing larger and larger dwellings despite the continuous fall in the average family size in the country. Overcrowding is in the decreasing tendency which is weaker in the eastern regions. On the contrary, comfort has a stronger increasing tendency in the eastern regions.

Turkey is composed of 81 provinces. The number of provinces was 67 and 14 are added later. The distinction in eastern and western Turkey in overcrowding and underoccupation clearly continues in province based analysis. The most overcrowded provinces are those which placed in eastern Turkey. The geographical differentiation of overcrowding, comfort and underoccupation is evidently visible on the maps represented in the study. First of all, there is a fall in housing standards from west to east. Eastern provinces have lower rates of comfort and higher overcrowding. Underoccupation is mostly dominant in western part of Turkey. The two opposite types of inefficiency is observed in two opposite parts of Turkey: underoccupation in western Turkey and overcrowding in eastern part. Black Sea and Central Turkey provinces on the other hand, generally exhibit middle range values in overcrowding and underoccupation, and relatively higher rates of comfort.

The leading provinces of east, such as Gaziantep, Şanlıurfa and Diyarbakır exhibit no different character from the other provinces in the region, although they have relatively higher population, education level and economic development than the

region average. There is no striking exception that breaks the general tendencies in the Eastern and Southeastern Turkey.

Aegean provinces such as İzmir, Aydın, Muğla, Denizli, Manisa always take part in the first two segments of comfort and underoccupation, and last two in overcrowding. Similar with the eastern part, no striking exception that breaks the general tendency in western provinces is observed.

On the other hand, there is a clear differentiation in western and eastern Mediterranean provinces of Turkey. From west to east (Antalya to Hatay) comfort and underoccupation falls and overcrowding rises. This is exactly parallel with the previous statement that eastern Mediterranean provinces are likely to exhibit Southeastern characteristics as a result of the migration they intake.

Provinces of Marmara do not exhibit a homogeneous character. Bursa, Balıkesir, Çanakkale and Tekirdağ, which are southern and western provinces is the region reveal characteristics with Aegean: higher rates of comfort and underoccupation and lower rates of overcrowding.

Central Black Sea provinces such as Kastamonu, Sinop, Samsun has higher rates of comfort similar with the central Anatolian provinces. These provinces also have quite high underoccupation. Artvin has the highest comfort value among the Black Sea provinces.

Three major provinces of Turkey, İstanbul, Ankara and İzmir, generally exhibit similar characters. There is not a considerable problem of overcrowding but underoccupation is an indicating issue in these provinces. Differently, İstanbul has a lower underoccupation than the other two.

The analysis that portrays the provinces having overcrowding and underoccupation more than the Turkey average exhibit that overcrowding is a feature of eastern provinces and on the other hand, underoccupation is the dominant character for provinces that take part in western Turkey.

In Turkey, in almost all provinces there is an increasing tendency for underoccupation and decreasing tendency for overcrowding from 1985 to 2000. Bursa, İstanbul, Sakarya, Bolu and Konya experienced a relatively slower fall in overcrowding compared to other provinces in their surroundings and only Hakkari and Bolu have slightly increasing overcrowding in the last 15 years. The distribution of underoccupation has much variation than overcrowding. Adana, Kayseri, Edirne, Ordu, Tunceli, Mardin and Erzurum are the provinces that experience the highest rise in underoccupation. But it necessary to note that, most of these provinces has still underoccupation in the smallest segment. Erzurum, Kars, Tunceli and Mardin experience the most rapid increase in the last 15 years.

What features of provinces explain their higher or lower levels of inefficiency? The percentage of inefficiency (overcrowding and underoccupation) in provinces of Turkey is estimated in a linear probability model that employs multiple regression techniques. The variables are selected to reflect the population, income, tenure and gecekondü proportion of the province centers.

For overcrowding, the first model shows the single effect of population variables: population size in year 2000; the change of population between years 1985 and 2000; rate of net migration. This base model explains the 33 percent of the variation (the R-square statistic) in overcrowding rates across the province centers. Population growth rate and rate of net migration are the most important variables related with population and both of them are statistically significant.

With the introduction of the percentage of renters in the province center variable in order to test the effect of tenure, the R-square increased to 0.366. The percentage of renters is statistically insignificant and has a weak effect in explaining the variation in overcrowding across centers of province with a relatively lower coefficient. The negative sign means that provinces with higher rates of renters are less likely to experience overcrowding. This may be explained by higher intra-urban mobility of renter groups, which enable them to move to an appropriate dwelling.

The percentage of gecekondur type dwellings introduced and R-square increased from 36.6 percent to 42.7. As expected, provinces with higher rates of gecekondur are more likely to experience overcrowding. Gecekondur type dwellings are often small in size having one or two units. In contrast, households in gecekondur are often large in size. Therefore, it is inevitable that gecekondur type housing stock serves for overcrowding in the province

The per capita GDP of the province included in the model as an indicator of the income of the province. With the introduction of per capita GDP variable R-square is increased from 0.427 to 0.521, which means the 52 percent of the variance in overcrowding is explained. The GDP variable has an important and significant effect in explaining the variation in overcrowding. The negative sign implies that provinces with higher levels of income are less likely to experience overcrowding. Higher level of income brings about better living standards, which also reflects standards of housing.

An analysis using same variables is maintained for underoccupation.

The first model including the population variables of province centers (population size in year 2000; the change of population between years 1985 and 2000; rate of net migration) explains the 33 percent of the variation (the R-square statistic) in underoccupation rates across the province centers. Population growth rate and rate of net migration are the most important variables related with population and both of them are statistically significant. Rate of net migration is relatively more important in explaining the variation in underoccupation. Province centers which intake migration have higher underoccupation.

The percentage of renters in the province centers used in order to test the effect of tenure. The R-square slightly increased to 0.346. The percentage of renters is statistically insignificant and has a weak effect in explaining the variation in underoccupation across centers of province with a relatively lower coefficient.

The percentage of gecekondur type dwellings introduced and R-square increased to 38.9 percent. Provinces with higher rates of gecekondur are less likely to experience underoccupation. Gecekondur type dwellings are often small in size, having one or two units. In contrast, households in gecekondur are often extended. As a result, gecekondur type housing emerges as a place of lower housing standards.

Per capita GDP of the province included in the model as an indicator of the income. With the introduction of this variable R-square is increased from 0.389 to 0.462, which means the 46 percent of the variance in underoccupation is explained. The GDP variable has an important and significant effect in explaining the variation in underoccupation. Naturally, provinces with higher levels of income are more likely to experience underoccupation. Higher level of income brings about better living standards, and it also reflects standards of housing. Also, the population variables lose their importance with the introduction of GDP to the analysis. In contrast, the percentage of renters and gecekondur gain significance and importance with the introduction of GDP variable.

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APPENDIX A

DATABASE USED IN THE ANALYSIS

Pro code	Province name	Region	Overcr_1985 %	Comfort_1985 %	Underoc_1985 %	Overcr_2000 %	Comfort_2000 %	Underoc_2000 %	Overcr_Change %	Comfort_Change %	Underoc_Change %	Pop_Group	Pop_2000	Pop_1985	Pop_Change %	Net_Mig %	Ave_Hhsize	Owneroc %	Tenant %	gecekon %	pc GDP TL
1	Adana	3	54,83	33,06	12,11	35,36	41,9	22,76	-35,5	26,68	87,94	5	1397853	1142201	22,38	16	4,51	67,88	22,21	32,71	2.063.558.157
2	Adiyaman	7	58,65	30,23	11,11	51,85	33,5	14,66	-11,6	10,78	31,95	29	338939	150991	124,5	-38	5,7	76,36	17,10	22,39	784.974.966
3	Afyon	2	34,14	43,84	22,02	18,69	47,1	34,18	-45,3	7,5	55,22	38	371868	229790	61,83	-38	4,34	78,37	15,97	20,38	1.084.363.036
4	Ağrı	6	67,03	25,28	7,69	61,21	26,3	12,52	-8,68	3,92	62,81	51	252309	141852	77,87	-95	7,11	84,86	9,77	11,52	517.631.913
5	Amasya	5	36,07	42,93	21	20,67	47,4	31,95	-42,7	10,39	52,14	56	196621	148614	32,3	-60	4,03	73,40	19,87	27,08	1.286.947.211
6	Ankara	4	36,59	41,58	21,83	18,2	44,7	37,13	-50,3	7,43	70,09	2	3540522	2737209	29,35	25	3,73	58,65	31,33	53,42	2.605.011.401
7	Antalya	3	31,1	46,64	22,26	16,01	45,7	38,25	-48,5	-1,93	71,83	8	936330	397712	135,4	90	3,72	65,73	26,46	40,26	1.828.026.184
8	Artvin	5	44,52	42,08	13,4	25,77	49,8	24,46	-42,1	18,27	82,54	80	84198	58302	44,42	-99	4,3	74,99	17,41	23,22	1.767.730.440
9	Aydın	2	24,41	47,78	27,82	13,11	47	39,88	-46,3	-1,61	43,35	35	493114	302311	63,11	-27	3,58	72,56	18,96	26,12	1.841.403.378
10	Balıkesir	2	23,86	49,55	26,59	10,61	51,1	38,31	-55,5	3,09	44,08	24	577595	407585	41,71	5	3,33	72,63	19,61	27,00	1.770.386.316
11	Bilecik	1	24,76	48,11	27,13	13,48	50,9	35,61	-45,6	5,82	31,26	75	124380	71521	73,91	20	3,65	70,02	22,16	31,65	2.210.990.018
12	Bingöl	6	55,24	33,35	11,41	47,81	35,1	17,08	-13,5	5,28	49,69	60	123470	61199	101,8	-88	5,75	73,85	19,04	25,78	669.084.210
13	Bitlis	6	71,63	22,41	5,96	63,97	27	9,08	-10,7	20,26	52,35	72	219511	119626	83,5	-72	7,21	75,33	16,24	21,56	554.372.719
14	Bolu	5	26,93	46,55	26,52	30,01	43,4	26,56	11,4	-6,7	0,15	49	142685	143787	-0,77	-9	3,93	66,48	20,36	30,62	3.571.042.740
15	Burdur	3	22,48	49,29	28,23	8,89	48,5	42,6	-60,5	-1,56	50,9	65	139897	98907	41,44	-37	3,54	77,92	15,34	19,69	1.713.211.523
16	Bursa	1	31,98	47,66	20,36	19,29	47,8	32,88	-39,7	0,36	61,49	4	1630940	840094	94,14	62	3,82	64,77	26,34	40,66	2.192.464.441
17	Çanakkale	1	22,59	51,98	25,43	8,53	49,3	42,21	-62,2	-5,23	65,99	55	215571	148108	45,55	-5	3,24	74,23	17,43	23,48	2.176.084.884
18	Çankırı	4	43,84	39,34	16,83	24,08	46,7	29,2	-45,1	18,76	73,5	66	141186	84494	67,1	-61	4,7	75,20	17,13	22,78	1.007.200.165
19	Çorum	5	40,45	42,1	17,45	22,23	47,8	30,01	-45	13,42	71,98	32	311897	200431	55,61	-58	4,14	75,59	18,66	24,69	1.429.452.727
20	Denizli	2	27,67	46,35	25,98	15,02	48,2	36,79	-45,7	3,95	41,61	20	413914	248673	66,45	15	3,66	69,03	23,36	33,85	1.763.003.620
21	Diyarbakır	7	66,37	25,34	8,29	57,29	28	14,79	-13,7	10,38	78,41	9	817692	472055	73,22	-35	6,23	70,95	21,84	30,78	1.061.904.172
22	Edirne	1	30,03	47,98	21,99	13,52	45,7	40,78	-55	-4,75	85,45	39	230908	178610	29,28	-21	3,55	74,84	15,64	20,89	2.269.110.396
23	Elazığ	6	45,75	37,91	16,34	27,67	43,6	28,39	-39,5	15,11	73,75	21	364274	233621	55,93	-46	4,77	70,18	23,66	33,72	1.414.945.371
24	Erzincan	6	44,25	39,83	15,92	31,84	45,3	22,91	-28,1	13,61	43,91	43	172206	112307	53,34	-93	4,78	72,45	18,66	25,75	960.925.798
25	Erzurum	6	61,15	28,98	9,87	42,87	38,4	18,72	-29,9	32,51	89,67	16	560551	350955	59,72	-113	5,31	74,80	18,07	24,16	911.902.224
26	Eskişehir	4	28,18	48,53	23,29	13,95	49	37,08	-50,5	0,91	59,21	12	557028	404236	37,8	11	3,52	66,45	24,95	37,54	2.115.951.500
27	Gaziantep	7	64,51	27,07	8,42	51,38	33,9	14,73	-20,4	25,19	74,94	6	1009126	642938	56,96	.	4,98	65,62	26,48	40,36	1.319.714.752
28	Giresun	5	42,78	40,01	17,21	20,84	44,5	34,7	-51,3	11,1	101,63	50	283316	160995	75,98	-74	4,62	77,00	18,00	23,38	1.176.827.335
28	Giresun	5	42,78	40,01	17,21	20,84	44,5	34,7	-51,3	11,1	101,63	50	283316	160995	75,98	-74	4,62	77,00	18,00	23,38	1.176.827.335

Pro code	Province name	Region	Overcr_1985 %	Comfort_1985 %	Underoc_1985 %	Overcr_2000 %	Comfort_2000 %	Underoc_2000 %	Overcr_Change %	Comfort_Change %	Underoc_Change %	Pop_Group	Pop_2000	Pop_1985	Pop_Change %	Net_Mig %	Ave_Hhsize	Owneroc %	Tenant %	gecekon %	pc GDP TL
29	Gümüşhane	5	47,83	36,13	16,04	37,69	42,2	20,13	-21,2	16,75	25,5	78	77570	68793	12,76	-135	5,42	79,75	14,04	17,60	936.307.623
30	Hakkari	6	60,15	33,19	6,66	63,64	24,9	11,47	5,8	-25	72,22	68	139455	55563	151	-33	7,51	75,84	16,28	21,46	704.530.159
31	Hatay	3	52,3	33,85	13,86	35,62	40,7	23,71	-31,9	20,15	71,07	34	581341	428845	35,56	-4	4,63	74,85	16,38	21,89	1.539.510.064
32	Isparta	3	24,6	47,66	27,73	12,49	48,7	38,85	-49,2	2,1	40,1	33	301561	183298	64,52	-17	4,01	69,84	23,02	32,96	1.322.950.770
33	İçel	3	49,49	36,41	14,1	33,36	41,9	24,78	-32,6	14,97	75,74	10	999220	566419	76,41	68	4,46	68,37	23,29	34,06	2.070.390.353
34	İstanbul	1	37,39	41,43	21,19	24,02	45,2	30,75	-35,8	9,17	45,12	1	9085599	5560908	63,38	108	3,81	57,90	35,03	60,50	2.773.175.779
35	İzmir	2	30,03	45,37	24,6	16,92	45,3	37,82	-43,7	-0,24	53,74	3	2732669	1800797	51,75	64	3,54	64,15	27,08	42,21	2.701.782.781
36	Kars	6	64,55	25,99	9,36	41,76	41,5	16,7	-35,3	59,83	78,42	52	142145	196700	-27,7	-164	5,05	79,16	12,69	16,02	712.133.971
37	Kastamonu	5	33,77	45,51	20,72	20,33	46,3	33,35	-39,8	1,78	60,96	64	174020	122350	42,23	-99	3,98	78,50	14,99	19,09	1.512.677.611
38	Kayseri	4	44,19	40,89	14,92	25,76	46,1	28,17	-41,7	12,67	88,81	11	732354	488556	49,9	-19	4,38	70,02	23,61	33,72	1.449.057.001
39	Kırklareli	1	29,5	47,8	22,7	14,75	48,4	36,85	-50	1,26	62,33	70	189202	134780	40,38	-21	3,52	73,91	17,30	23,41	2.744.033.313
40	Kırşehir	4	42,56	40,79	16,66	22,64	48,3	29,05	-46,8	18,44	74,37	48	147412	103483	42,45	-80	4,36	71,47	22,30	31,20	1.210.490.814
41	Kocaeli	1	36,11	43,86	20,03	21,08	46,4	32,52	-41,6	5,79	62,36	28	722905	411917	75,5	108	4	60,13	27,16	45,17	4.745.161.313
42	Konya	4	36,5	43,92	19,58	27,29	44,9	27,86	-25,2	2,12	42,29	7	1294817	852457	51,89	-17	4,49	73,16	20,75	28,36	1.407.506.713
43	Kütahya	2	28,65	49,76	21,58	15,64	50,1	34,27	-45,4	0,66	58,8	31	318869	199499	59,83	-9	3,88	72,31	19,74	27,30	1.416.967.767
44	Malatya	6	49,88	35,74	14,39	36,22	41,5	22,25	-27,4	16,2	54,62	14	499713	307623	62,44	-54	4,81	73,41	20,57	28,03	1.170.104.381
45	Manisa	2	31,62	44,87	23,51	17,69	46,8	35,49	-44,1	4,35	50,96	26	714760	481897	48,32	21	3,72	74,73	17,40	23,29	2.067.355.486
46	Kahramanmaraş	3	56,13	33,56	10,31	42,96	38,5	18,55	-23,5	14,69	79,92	17	536007	342428	56,53	-42	5,09	75,29	17,54	23,29	1.212.079.897
47	Mardin	7	67,32	25,23	7,45	50,04	33,5	16,48	-25,7	32,7	121,21	63	391249	244000	60,35	-70	7,09	75,60	17,13	22,66	722.778.070
48	Muğla	2	23,41	48,35	28,24	11,89	48,7	39,38	-49,2	0,79	39,45	73	268341	136160	97,08	33	3,37	71,99	19,64	27,28	2.670.917.947
49	Muş	6	64,74	26,88	8,39	56,51	28,8	14,73	-12,7	6,99	75,57	61	159503	78477	103,3	-100	7,15	83,12	10,61	12,76	455.466.596
50	Nevşehir	4	34,95	45,02	20,23	17,21	47,3	35,54	-50,8	4,95	75,68	62	136523	94371	44,67	-41	4	74,91	18,38	24,54	1.826.079.948
51	Niğde	4	41,38	38,38	20,25	22,81	45,9	31,27	-44,9	19,65	54,42	54	126812	172556	-26,5	-56	4,01	79,09	15,69	19,84	1.572.121.393
52	Ordu	5	39,69	39,55	20,76	18,09	42,2	39,74	-54,4	6,62	91,43	41	416631	220067	89,32	-55	4,75	78,76	16,56	21,02	863.443.575
53	Rize	5	44,2	38,29	17,51	25,53	46,1	28,35	-42,2	20,42	61,91	53	205245	111368	84,29	-84	4,93	76,98	17,43	22,64	1.532.762.580
54	Sakarya	1	34,77	44,44	20,79	30,06	43,3	26,67	-13,6	-2,63	28,28	18	459824	227625	102	10	4,25	68,25	19,01	27,86	1.854.187.167
55	Samsun	5	37,77	41,25	20,98	19,41	45,1	35,51	-48,6	9,28	69,26	15	635254	408622	55,46	-29	4,09	73,73	20,26	27,48	1.460.114.459
56	Siirt	6	63,07	22,9	14,03	58,89	27,8	13,33	-6,63	21,35	-4,99	47	153522	237014	-35,2	-141	6,9	73,52	16,66	22,66	878.448.436
57	Sinop	5	28,16	45,51	26,33	11,59	46,9	41,51	-58,8	3,03	57,65	77	101285	70543	43,58	-89	3,97	78,16	16,03	20,51	1.180.211.458
58	Sivas	4	54,34	32,89	12,76	36,73	41,5	21,77	-32,4	26,18	70,61	22	421804	315336	33,76	-106	4,76	74,72	18,22	24,38	1.099.693.955

Pro code	Province name	Region	Overcr_1985 %	Comfort_1985 %	Underoc_1985 %	Overcr_2000 %	Comfort_2000 %	Underoc_2000 %	Overcr_Change %	Comfort_Change %	Underoc_Change %	Pop_Group	Pop_2000	Pop_1985	Pop_Change %	Net_Mig %	Ave_Hhsize	Owneroc %	Tenant %	gecekon %	pc GDP TL
59	Tekirdağ	1	30,2	47,89	21,91	14,33	48,1	37,62	-52,6	0,33	71,7	42	395377	205678	92,23	47	3,66	68,27	23,15	33,91	2.142.770.978
60	Tokat	5	42,81	39,98	17,21	28,75	44,4	26,86	-32,8	11,01	56,07	40	401762	246126	63,23	-67	4,98	78,84	16,89	21,43	1.112.105.644
61	Trabzon	5	41,87	40,76	17,38	22,62	46,5	30,84	-46	14,18	77,45	25	478954	239553	99,94	-68	4,72	72,50	22,11	30,49	1.210.203.491
62	Tunceli	6	58,46	30,42	11,12	38,75	40,3	20,97	-33,7	32,41	88,58	79	54476	43085	26,44	-154	4,59	63,73	22,52	35,34	1.249.983.942
63	Şanlıurfa	7	65,65	24,94	9,42	56,74	27,9	15,36	-13,6	11,87	63,06	13	842129	401450	109,8	-30	6,64	78,64	14,68	18,67	817.168.282
64	Uşak	2	31,85	44,91	23,24	16,94	49,2	33,88	-46,8	9,51	45,78	36	182040	126078	44,39	2	3,75	71,46	20,98	29,36	1.285.185.575
65	Van	6	59,5	31,72	8,78	57,22	28,2	14,57	-3,83	-11,1	65,95	19	446976	189269	136,2	-38	6,64	81,86	12,77	15,60	701.915.321
66	Yozgat	4	38,52	42,2	19,28	23,94	48,9	27,16	-37,9	15,9	40,87	57	315156	151610	107,9	-64	5,07	76,56	18,54	24,22	785.266.492
67	Zonguldak	5	44,64	37,96	17,4	24,38	47,4	28,19	-45,4	24,97	62,01	45	250282	350832	-28,7	-29	3,86	70,32	21,55	30,64	2.372.834.060
68	Aksaray	4	.	.	.	29,64	42,6	27,74	.	.	.	37	200216	.	.	-8	4,8	74,11	20,18	.	896.148.264
69	Bayburt	5	.	.	.	45,76	36,1	18,13	.	.	.	76	41356	.	.	-133	5,3	76,88	15,86	.	821.522.109
70	Karaman	4	.	.	.	23,89	46,6	29,53	.	.	.	44	139912	.	.	5	4,12	71,13	22,16	.	1.757.545.948
71	Kırıkkale	4	.	.	.	26,71	46,3	27,03	.	.	.	27	285294	.	.	-28	4,61	69,78	23,21	.	2.145.357.817
72	Batman	7	.	.	.	67,74	22	10,28	.	.	.	23	304166	.	.	14	7,14	71,61	22,18	.	978.485.683
73	Şırnak	6	.	.	.	62,81	25	12,21	.	.	.	71	211328	.	.	-25	8,03	79,06	13,79	.	521.197.754
74	Bartın	5	.	.	.	15,63	46,3	38,08	.	.	.	74	48002	.	.	.	3,65	79,33	15,29	.	850.719.418
75	Ardahan	6	.	.	.	39,66	41,3	19,08	.	.	.	81	39725	.	.	.	4,87	84,68	9,23	.	664.638.142
76	Iğdır	6	.	.	.	50,95	32	17,09	.	.	.	67	81582	.	.	.	5,51	81,13	13,16	.	733.232.503
77	Yalova	1	.	.	.	26,93	43,1	29,98	.	.	.	59	98661	.	.	.	3,71	56,47	24,16	.	2.929.680.172
78	Karabük	5	.	.	.	23,05	46,6	30,36	.	.	.	46	157756	.	.	.	3,87	69,23	21,12	.	1.404.195.767
79	Kilis	3	.	.	.	43,85	35,6	20,54	.	.	.	58	74985	.	.	.	4,56	75,98	17,07	.	1.455.209.367
80	Osmaniye	3	.	.	.	44,44	36,3	19,3	.	.	.	30	311994	.	.	.	4,92	76,76	16,88	.	979.330.577
81	Düzce	5	.	.	.	37,67	38,8	23,56	.	.	.	69	130632	.	.	.	4,32	71,51	12,55	.	1.029.037.332