SPATIAL VARIATION OF APARTMENT HOUSING IN ANKARA

A THESIS SUBMITTED TO
THE GRADUATE SCHOOL OF NATURAL AND APPLIED SCIENCES
OF
MIDDLE EAST TECHNICAL UNIVERSITY

BY

METİN TOPÇU

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS
FOR
THE DEGREE OF MASTER OF SCIENCE IN THE DEPARTMENT OF CITY
AND REGIONAL PLANNING
IN
URBAN DESIGN

DECEMBER 2004

Approval of the Graduate School of Natural and Applied Sciences.

_____

Prof. Dr. Canan ÖZGEN

Director

I certify that this thesis satisfies all the requirements as a thesis for the degree of Master of Science.

_____

Prof. Dr. Ali TÜREL

Head of Department

This is to certify that we have read this thesis and that in our opinion it is fully adequate, in scope and quality, as a thesis for the degree of Master of Science

_____

Prof. Dr. Ali TÜREL

Supervisor

Examining Committee Members

Prof. Dr. Tansı ŞENYAPILI   (METU, CP)   _____

Prof. Dr. Ali TÜREL   (METU, CP)   _____

Assoc Prof. Dr. Özcan ALTABAN   (METU, CP)   _____

Assoc Prof. Dr. Gülden BERKMAN   (METU, CP)   _____

Assoc Prof. Dr. H. Tarık ŞENGÜL   (METU, ADM) _____

I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Name, Last name　:　Metin TOPÇU

Signature　　　　:

ABSTRACT

SPATIAL VARIATION OF APARTMENT HOUSING IN ANKARA

Topçu, Metin

M.S., Department of Urban Design

Supervisor : Prof. Dr. Ali Türel

December 2004, 144 pages

This thesis contains explanations about the reasons why residents prefer apartment housing to low rise housing far away from the central business district. And it also investigates the facts that affect residents' and producers' apartment housing choice. As a dominant housing provision type, apartment housing is produced every location in urban space in Ankara. Therefore the study begins with investigating the formation and growth of apartment housing in Ankara by introducing spatial variation of apartment housing. With the help of building and population censuses, distribution of 400 quarters in the Greater Ankara Municipality borders with respect to building and population density, building features, share of apartment housing and average number of storeys are analyzed. FAR values are calculated and analyzed from the CBD to western direction to introduce the change in building densities. Lastly a questionnaire survey is done to find out whether differentiation of building and environment attributes of apartment housing that are produced in different location of urban area are well-matched with their residents' preferences.

At the end of the analysis differentiation of housing structure of the city clearly comes out. While it is expected that the height of housing structure is decreasing

by going far away from the CBD, it is found increasing along certain directions such as western and south-western. However by moving at western direction FAR decreases from 2 to 0,75 which states different characteristics of housing structure even if high average number of storey. As a result apartment housing provisions at different locations offer different lifestyles with their building and environmental characteristics.

ÖZ

ANKARA'DA APARTMAN KONUTUNUN MEKANSAL DAĞILIMI

Topçu, Metin

Yüksek Lisans, Kentsel Tasarım Bölümü

Tez Yöneticisi: Prof. Dr. Ali Türel

Aralık 2004, 144 sayfa

Bu tez sakinlerin merkezi iş alanından uzakta müstakil konut yerine apartman konutu tercih etmelerinin sebepleri hakkında açıklamalar içermektedir. Ayrıca sakinlerin ve üreticilerin apartman konut tercihini etkileyen nedenleri araştırmaktadır. Ankara'da kentsel mekanın her noktasında baskın bir konut sunum biçimi olarak apartman konutu üretilmektedir. Bu nedenle, çalışma Ankara'da apartman konutunun oluşumu ve gelişimini kentsel mekanda dağılımı ile inceleyerek başlamaktadır. Ankara Büyükşehir Belediye sınırları içindeki 400 mahalleyi; bina ve nüfus yoğunluğu, bina özellikleri, apartman konutunu oranı ve ortalama kat yükseklikleri bakımından bina ve nüfus sayımları kullanılarak analiz edildi. Bina yoğunluklarındaki değişimi göstermek için kent merkezinden batı doğrultusunda EMSAL değerleri hesaplandı ve analiz edildi. Son olarak farklı konumlarda üretilmiş apartman konutlarının yapı ve çevre özelliklerinin faklılaşması ile sakinlerin tercihleri arasında benzerlikleri ortaya koymak için anket çalışması yapıldı.

Analiz sonunda kentin konut dokusundaki farklılaşma açık bir şekilde ortaya çıkmıştır. Bina yüksekliğinin kent merkezinden uzaklaştıkça düşmesi beklenirken batı ve kuzey batı gibi bazı yönlere doğru arttığı saptanmıştır. Fakat batı

doğrultusunda ilerledikçe farklı karakterde konut dokusunu belirten emsal değeri yüksek ortalama kat sayısına rağmen 2'den 0,75'e kadar düşmektedir. Sonuç olarak farklı konumlardaki apartman konut sunumları, bina ve çevresel özellikleri ile farklı yaşam biçimi sergilemektedir.

Anahtar Kelimeler: Uydu-Kent Apartman Konutu, Kapital-Arsa Kullanım Oranın Değişimi, Emsal, Yerleşim Konumu Seçimi

ACKNOWLEDGMENTS

TABLE OF CONTENTS

LIST OF TABLES

Tables

LIST OF FIGURES

Figures

CHAPTER I

INTRODUCTION

1.1 Subject of the Study

In Turkey urbanization at high rates still continues with population increase in cities due to increasing life expectancy, decreasing infant deaths and rural - urban migration. Increasing urban population puts pressures on housing stock in urban areas. Also changing life styles of residents and differentiation in family structure increase demand for housing. That means the demand is not only in quantity but also in quality and variety of housing. It is hard to say that there is an equilibrium between demand and supply and existing housing stock is adequate for meeting these needs even if considering quantity there is sufficient housing provision. Furthermore, most of the new constructions and in the same way many housebuilders are not responsive to consumers' opinions or choices, and the needs / wishes of the residents.

Households spend their most part of their time and mostly do various daily activities in the house or around residential environment. Households' residential choice thus reflects their habits, preferred lifestyles, and also culture. In the research of the tendency of places / houses that Turkish family lives in, it is made clear that 92 percent of Turkish people want to live in a single house which has a garden and courtyard (Türk Ailesinin Yaşadığı Mekanlar / Konutlara İlişkin Eğilimler, 1999). Yet, the greater part of the people still lives in apartment houses even if they have a chance to live in a single house. In fact people's housing preferences frequently failed to show high connections with their actual choices of housing alternatives (Gärling,

2002). Especially most of the families in the suburbs that have greater income and mobility live in apartment houses whereas there is an opportunity for living in a single house. Frequently these families choose less preferred housing, because of absence of alternatives and poor opportunities offered from housing market or income constraint, i.e. alternatives are not affordable for the family.

Urban community necessities differ residential areas and create transformation on these areas. Especially increasing necessity of service areas by growing city try to locate at the primary center alter its environment and affect to the residential areas around. This agglomeration pressure changes the residential structure near the city center, and provides extremely dissimilar lifestyles according to housing units at further residential locations. Accordingly changing family structure and urban lifestyle have played an important role in choosing housing type and location. Shrinking family structure to a nucleus family and the desire of individual living brings necessity of more housing units. Both increasing working hours and using huge commuting time decrease the time that spent in house, therefore its role has changed in households' life.

Considering housing development process the primary decision authority is the planning system of the city. It is tried to control housing development and stock with application conceptual plans and planning regulations. But the pressure on urban land development, and speculative housing provision, allocation of workplaces, existing housing composition, producers' behaviors, externalities, high income group's choices (Türel, 1981) and trends are also effective on the housing development and housing stock differentiation. As it is mentioned before housebuilders mostly are not responsive households' choices, so it should be considered how they decide the housing provision type or location, what determines their behaviors, marketing policy and foreground specifications of their products, and also what the reasons are that large firms participate in housing market.

In short, the thesis contains the study of explanations that is; finding out the reasons why residents that are far away from the central business district prefer apartment housing (high density) to single housing (low density). Also investigating the formation and growth of apartment housing in the suburbs with scope and range of space-movement relationship, the position in theoretical approaches, residents' choices and changing tastes, and the role of the housing market by introducing spatial variation of apartment housing and their location, i.e. distance from the Central Business District (CBD) in ANKARA. Besides these, investigating the producers (housebuilders) in historical process and their location choice, and tending towards the housing supply on lands that are far from the CBD.

1.2 Aim of the Thesis

In this thesis the primarily aim is to discuss apartment housing -as a kind of housing finance- with respect to differentiation of housing supply according to user choices and supply properties in an urban area. Then to try to reveal the reasons behind these choices and to explain the factors that affect building apartment housing. At last to determine the scope and the frame of urban design in this subject.

There are major and minor questions that aiming to answer in relation to the aim of the thesis;

- ❖ Being as far away from CBD, while it is expected that the height of housing structures should be decreasing, why apartment housing is preferred and produced? Is that situation the result of land owners' and housing suppliers' desire to increase benefits and profits?

❖ What are the reasons that direct the residents to live in apartment housing and settle in the fringe of the city or far from city center? Are there any differences in the quality of life? Is there any importance of urban design, environmental quality and functionality, and residents' awareness while making these choices?

❖ What sorts of subsidies are considered for residents that prefer these settlements? i.e. what do residents gain by preferring to settle in apartment housing and out of the city and lose in return? Does the distance make any difference in these choices?

1.3 Scope of the Subject:

We decided to constitute the research within the boundaries of the Greater Ankara Municipality. Thus we investigate 8 districts municipalities; Altındağ, Çankaya, Etimesgut, Gölbaşı, Keçiören, Mamak, Sincan, Yenimahalle and their 400 quarters within the light of socio-economic structures, land/housing values, urban population allocation, building and population density, distance from city the center, building/housing data and design components of some sampled settlements. To clarify the discussed subjects we choose building parcels / lots in sampled quarters (during the study, it will be explained later why these sampled sub-regions are selected?) then make conclusions with drawings and collected data. And we also include the questionnaire survey to find out whether differentiation of building and environment attributes of apartment housing that are produced in different location of urban area are well-matched with their residents' preferences.

1.4 Research Methodology of the Study

Since the purpose of this study is to achieve some clarification on apartment housing choices, the subject has been tried to be identified clearly. Thus, in the thesis we try to introduce causalities that form the subject of the thesis and the questions that are directed to the aim of the study undoubtedly in the first chapter.

The second chapter includes the review of the existing literature, and provides findings of theoretical research. We try to show the relationship between housing and land market with the aspects of urban land price formation, its variation in urban space and land-use determination. Then it will be introduced the reasons and the basis of formation of housing types, and factors of production that affect types of the provision.

Next chapter is about the choice of apartment housing. It will be clarified in two parts and finished with the implication of urban design. First part is composed of economic approaches to explain the use and built of apartment housing. From the side of the household and the producer, the importance of location will be examined as spatial place for households and substituting the factors of production for builder. Lastly floor area ratio will be studied with its effects on the construction cost, the house price, and the choice of use to understand development densities in urban space. In the second part it will be tried to empathize the subject with non-economic approach from the users' attitude.

In the fourth and fifth chapter we used the data from Building Census 2000 and Population Census 2000 to evaluate the formation of apartment housing in Ankara. Considering demographic structure of Ankara, housing provision (apartment vs. single housing), spatial variation of existing apartment stock, apartment housing development in three different periods (-1970, 1970-1990,

1990-), apartment housing producer types, population allocation to distances from CBD, and ratio of population that choose apartment housing and their spatial variation are investigated. Within the scope of quarters, apartment housings examined specific features as elevator, firestairs, heating system and parking area. Firstly, we made arrangements and calculations of collected data. We prepare samples with constituting sub-regions (those are directed with the light of plans and by combining established quarters and their data). We try to follow an analytical strategy with empirical studies, and then develop statistical analyses by using building census and population census.

While analyzing the data following criteria are studied:

i   - population progress and urbanization.
ii   - apartment housing production
iii - selected sub-regions (quarters in the boundaries Greater Ankara Municipality)

      housing provision according to investor

      distance from the urban center,

      development process of apartment housing

      population density of existing situation,

      dwelling unit ratio,

      types of housing,

      average number of stories,

      # apartment housing / ratio / features

iv   - determination of sampled buildings
v   - sampled buildings characteristics

      average floor area ratio

      building height

      construction area

      parcel area

      number of housing units

vi   - observed similarities on sampled buildings

      environment/services

      distance/transportation

      cost /price

      socio-cultural structure/class

We arrange the questionnaire survey in some quarters far from the CBD to the households living in the apartment housing dwelling unit in order to find out residents' preferences.

Lastly, gain normative and descriptive approach to thesis subject by evaluating the results of the analyses, and find answers to these normative questions basing on the data and reach results. We assess results and explain positive approaches, and conclude hypotheses with our findings.

CHAPTER II

HOUSING

The characteristics of housing as a product are very different from any other consumer goods. It has many functions; it is a shelter, a home that is a common place to describe people in terms of where they live, an economic good – produced, a consumption good and an investment good, and very expensive good –, it has first of all a very high capital value with its factors of production especially Land and its production time is far longer than for most other commodities. Besides urban land, there are capital, labor and technology – factors of housing production – guiding types of provision. It is a physical good in terms of its appearance, which makes up a large portion of the urban environment, and also a social good, providing guarantee for future, social status indicator, satisfaction and privacy to individuals, and establishing the setting within which much of the social interaction among people takes place (Fowler, Siegel, 2002; Tekeli, 1991).

In this frame to understand apartment housing as a fact of housing provision and as a result of urban environment, it should be studied in detail the factors of production, Land; housing production related to other types of provision; and housing environment that is constituted by housing provision and its quality.

2.1 Housing and Land Market

2.1.1 Land Price Formation and Its Variation in Urban Space

> "… the supply of land at each location is fixed; … only the demand considerations determine the relative value of land or housing at different locations." (Dipasquale, Wheaton, 1996)

Land has a unique character; non-reproducibility and being fixed in supply. This character determines the price structure of land. Moreover, land produces services that are accumulated and enhance the value of land. During a specific time period these services are gathered in urban land then the value of land rent is capitalized as land price of urban space and the amount one pays for the use of land.

> "With man-made commodities, …, price is a function of demand and supply ... But since land as a whole is a fixed supply provided by Nature, the earnings of 'pure' land are determined solely by demand" (Harvey, 1986)

According to Kauko there are two directions of urban land price theory depending on urban space: first, macro economic changes in the transition to a post-industrial society and the influences of these changes on land value formation; second, emphasizing the meaning of the place from the spatial point of view by Massey, Scott and Storper. The former direction groups into cities based on their economic activity and services as; multiply advanced service centre, specialized service centre, industrial centre and consumer oriented cities.

> "…. as Alonso put it, *Land as space is a homogeneous good and land at a location is a continuously differentiated good.* "
> (Fujita, Thisse, 2002)

All in these contents there are main services, in other word, central services which have superior value and are mostly located in the centre. Interacting with each other and combining the great value at one point bring about the formation of the Central Business District (CBD). Considering that condition it is important to be close to the CBD, and also to have benefit from these services. Then it is concluded the fact 'distance' that is formed with the location differences between city center and land.

> "Since value depends on economic rent, and rent on location, and location on convenience, and convenience on nearness, we may eliminate the intermediate steps and say that value depends on nearness" (Erol, 2000)

Nearness to the CBD that is the transformation of urban land rent to price is simplified as location rent in the urban space. The accessibility to the urban centre determines the value and price for the urban land.

> "Both land rent and land use vary across locations depending on these characteristics. Among them, the most important for location theorists is the transport-cost differential over space."
> (Fujita, Thisse, 2002)

Depending on the accessibility, aiming to maximize benefits increases the demand on having a closer location to the CBD and, the price of land related to demand increase the location rent. The demand for urban land designates its variation and usage in urban space.

2.1.2 Land-use and Residential Areas

As it is mentioned in previous section most of the city is oriented by its activities and the location of these activities defines patterns of urban land use. At locations, where Land is more valuable, development tends to use less land that is more expensive factor, relatively more structural capital that is less expensive factor. Any housing services produced at these locations must therefore be relatively expensive.

In a monocentric city, the land-value gradient shows rapid exponential decline outwards from the centre of the CBD. The non-land/land input ratio will therefore fall rapidly with increasing distance. Factor substitution is, therefore, a central feature of intra-metropolitan production conditions (Richardson, 1978). The basic idea was taken from the classic rent theory of Ricardo and developed to a bid rent theory of the consumer by Alonso, Muth and Mills (and also basic assumptions of the Thünian Model). Bid rent implies that at different distances from the city centre there are different land use zones depending on the willingness of each group to pay.

Because, land is allocated among activities through the price of land in a market economy. Builders maximize profits by producing the most benefits in relation to costs, thus they should find convenience location to gain highest profit level. Higher profits mean a lower possible bid rent function, so that the optimal site is that where the actual rent equals the lowest possible bid rent, in other words where the bid rent function is tangential to the rent gradient (Richardson, 1978).
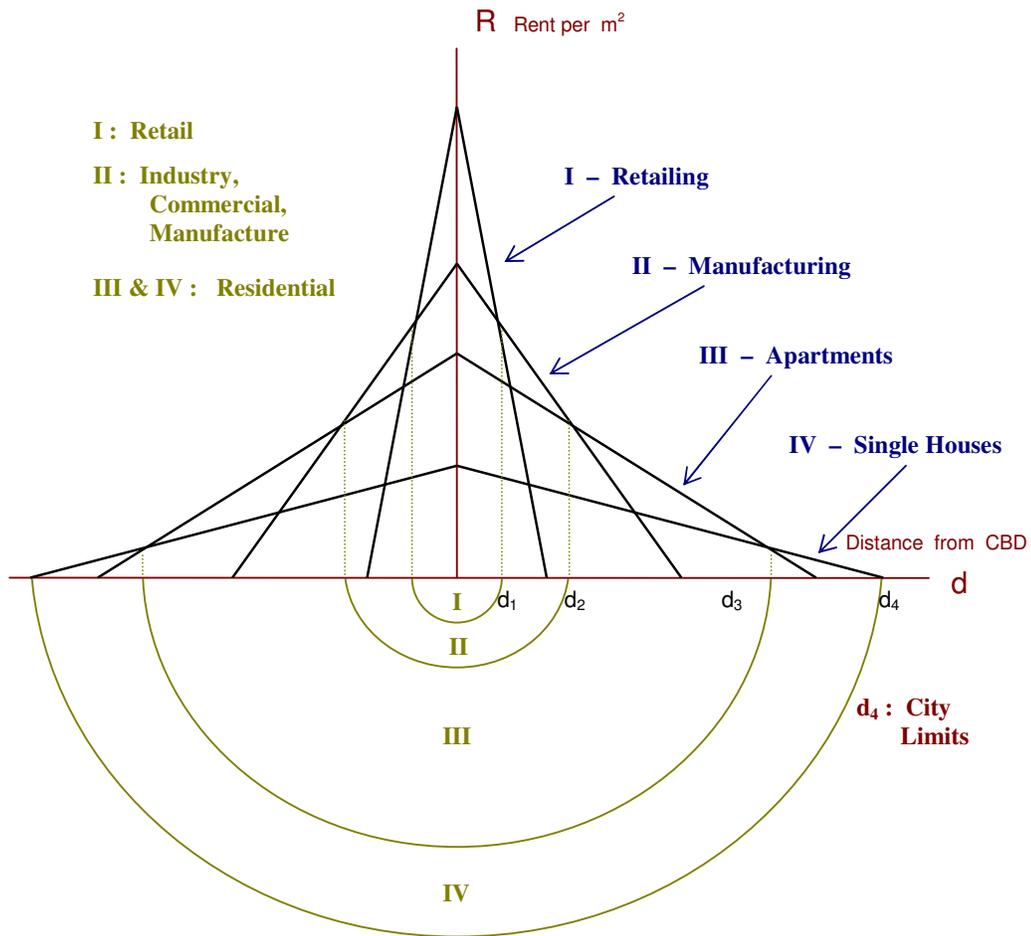
Source: Richardson, 1978

Figure 2.1: Bid-rent curves and their relation to distance and city boundary.

The Cobb-Douglas utility function[1] for composite consumption (the reciprocal of density) and location (land) rent determined by accessibility to the CBD are related to distance in a way that is similar to an exponential relationship, negative and positive respectively (Richardson, 1978; Fujita, Thisse, 2002). This residential location behavior is based on transportation cost, land rent, and preferences for space. As it is shown in the figure 2.1 residential areas

---

[1] Typical utility function of consumers' preferences are described by x_1 and x_2; $U(x1,x2) = x_1^a x_2^b$ and with $a > 0$ and $b > 0$ is called Cobb-Douglas utility function.

(III, IV) are placed on the fringe of the monocentric city. The competition between different land use zones is not enough to achieve efficient usage because housing consumers and landlords are not really conscious of the technical details of housing choices or the implications of these technical details for the others thus the decisions are mostly deficient. And also economic efficiency requires some form of coordinated action with its environment. Adjacent land use zones affect the economic livelihood of another.

2.2 Housing Production and Types of Provision

Housing production and types of its provision are related to governmental policies, planning decisions, land development rights and policies; and by the factors: land variation in urban space, rate of urbanization and urban population increase, existing housing stock and accessibility to main workplaces.

Housing is considered place and space where the diversity of humanity, social relations, social practices, cultural values, and symbolic representations, political and economic forces are all produced and reproduced. Thus housing and home have to more appropriately meet the needs of both people and society. Are these housing needs related to dwelling type? Or size? Ytrehus discussed the concept of housing needs and he raised the questions related to necessary. It can be concluded that the consumption of housing mostly exceeds the necessary, but does it satisfy needs? Needs may be considered as synonymous with the subjective preferences of the actors in the housing market. That means following the rules of the free market of supply and demand in the economic theory is the most rational way to distribute goods and services of housing; however needs can be confused with wants in this market oriented approach. Because wants are affected by social position whereas needs are basic

human necessities (Ytrehus, 2001). Do the actors of housing market have necessary knowledge about needs, trends, wants, preferences and psychological attitude, and become conscious that housing has specific different characteristics than other commodities?

2.3 Housing Environment

Houses differ in structure size and characteristics, as well as in the location and its surroundings. Thus, household implicitly chooses many different goods and services while selecting a house. They should view the house as a part of specific system to which it belongs and decided residential location considering intangible things as well tangible. Because neighborhood and housing environment that engenders strong personal and emotional reactions that affect residents' impressions of their surroundings (Carmona, 2001). Besides physical layout of residential environment and its psychological effects there is social composition which is usually not homogeneous. As a matter of the fact different sections of the society have different experiences, responses and needs in relation to the environment (Frankin, 2001) but for all of them the most important point is the quality of the housing environment. In this sense, generally housing provision may be adequate in quantity but it may cause many problems if the environmental quality is not sufficiently realized.

CHAPTER III

APARTMENT HOUSING

In this chapter choice of dwelling unit in the apartment housing is clarified. It is necessary to start with defining its specific and distinguishing features. Apartment housing is the building that has more than 3 or 4 storey and on each storey / flat different households live. In this study 5 and more storied housing buildings are separated and accepted as apartment housing, because of obligations that are brought with more than 4 storey such as elevator, fire stairs, etc...

Single housing and apartment housing are differentiated with their appearance, physical characteristics and their environment such as street character, open spaces, building orientation; and also by providing various spatial and social structures, and a way of life. Thus it is easy to define the apartment residential neighborhood characteristics, but the most distinctive and identifying characteristic feature is the balance between private spaces and public spaces which are crucial to create desirable environment (Figure 3.1).
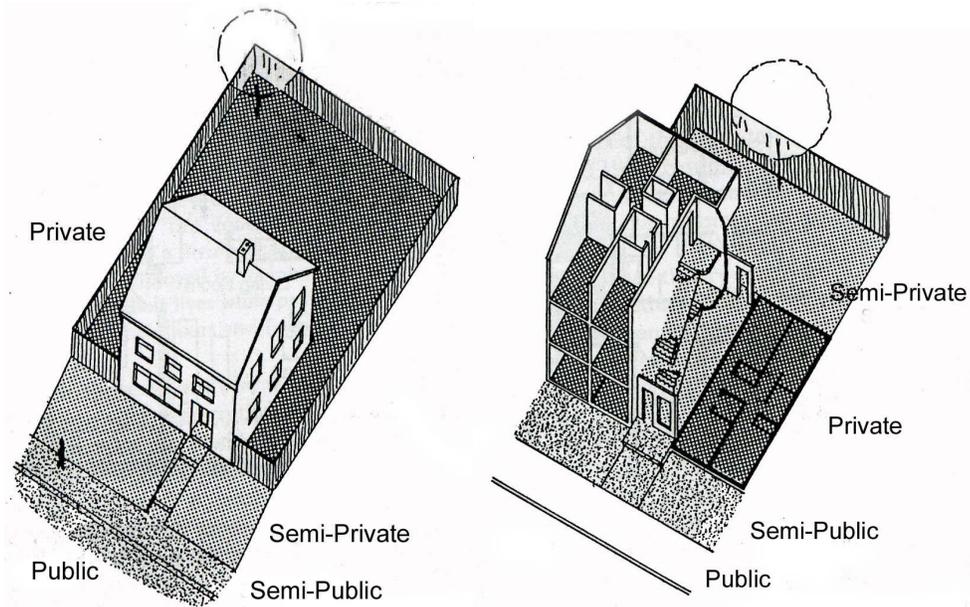
Source: Lang, 1987

Figure 3.1: Territorial hierarchies of a single house and an apartment house

In contrast to the single housing, apartment housing provides adequate number of housing units for rapidly urban population increasing, gives a possibility to construct more than one housing unit on a plot where the location rent is high, brings a solution for limited urban land availability problem, and provides affordable housing provision for middle and lower-income groups with decreasing production cost of housing.

Considering the actors or agents in the housing market as producers within an input-output relation and users – house buyers and tenants – separately, and commodities – goods and services –, we can simply explain the choice of apartment housing into three section as economic and non-economic approaches, and the role of urban design in these choices.

3.1 Economic Approaches to Explain the Choice of Use and Building Apartment Housing

According to Carmona there are seven main points that affect the house buyer's decisions;

1. Price and value
2. Locality
3. Estate (urban design)
4. House design
5. Livability (the house itself)
6. Features
7. Construction

In the research, between these aspects,

> "the livability and estate (especially the spaciousness in the home and variety in the layout) were rated most highly by residents" (Carmona, 2001).

The first and the second aspects are mostly related with households' economic conditions. They have to make a choice within income constraints. Similarly İmamoğlu stated Turkish house buyers' preferences as, economic reasons; site and characteristics of district; aesthetic, estate and the beauty of the house; and location according to transportation (İmamoğlu, 1996). To summarize, in these researches economic factors are ranked always on the top of households' preferences list.

From the producers' side the only consideration is the profit maximization, thus we try to examine the attitude of the producer in the economic approaches to explain the choice of location and building apartment housing.

3.1.1 Explanation of the Spatial Variation of Housing Consumption with Location Choice in an Urban Area

3.1.1.1 Spatial Place for Household and Choice

From the households' side, related to economic approaches, residential differentiation is understood as a phenomenon associated with growth of differences in income. Substitutions on goods within this income and its constraints are the crucial point to understand the behavior underlying households' preferences. In this section, households are assumed to be identical in terms of preferences and income, in equilibrium they thus have to reach the same utility level regardless of location. However location affects households' utility maximization within changing these preferences and choices on expenditures. We can simply separate households' expenditures into housing, transportation and other goods and services. Thus we can bring a conclusion that location choice of households depends on these expenditures. Similarly, Kauko collected the household's rationale behind residential location into three explanations;

> "(i) minimization of travel costs, (ii) minimization of travel costs and housing costs among the same income group (Wingo 1961), (iii) and income and the availability and conditions of mortgage financing, without any efficient trade-off, as the maximum housing expenditure theory of Ellis (1967) and Stegman (1969) suggests." (Kauko, 2001)

The traditional theory of land use advanced by Alonso, Muth, and Mills is generalized from a single-centered urban structure on uniform featureless plain, with primary economic activities surrounded by concentric rings of residential settlement (transportation equally possible in all directions and no legal, social or other restrictions on transactions in the urban land market)

that are determined by microeconomic constraints. In this theory, utility maximization is at the root of household location decision making and general equilibrium. Furthermore households trade the costs of housing consumption (depending on housing size) against the costs of commuting (accessibility to the CBD) (Schafer, 1974), i.e. households exchange accessibility for space in making their residential site choices, which is called trade-off model. The optimal choice of residential location balances the marginal utility gains from additional housing services against the marginal utility losses from longer commutes.

> "The income elasticity of demand for housing is higher than the income elasticity of the marginal commuting cost, then distance from the center will increase with income level – a result that can be interpreted as a preference for *privacy* against *community*" (Goffette-Nagot, F., 2000)

For a given level of income there exists a trade-off in the household's choice between more space and worse access or better access and less space. In addition, income elasticity for land and the cost of commuting distinguish income classes on the basis of location, with higher incomes choosing to live away from central cities and lower incomes near or within central cities (Nelson, Sanchez, 1997; Fujita, Thisse, 2002). According to Mills, households are assumed to select the location that maximizes their utility; that is utility theory which is a function of housing and other goods [U = f (H, Z)][2]. A theory of household – location choice can be formulated as an extension of consumer – behavior theory. Suppose a household has a utility function or set of indifference curves that represents its tastes or preferences for housing services and for non-housing goods and services (Mills, 1993) within the context of resource constraints; such as income and time.

---

[2] Households utility function and maximization of utility within a budget constraint equation is simplified (Straszheim, 1975).

(1) $Y = Ph.H^3 + Pz.Z + Pt(u)$

Y, income; $P_h.H$, Housing consumption; $P_z.Z$, Other goods; and $P_t(u)$, Transportation cost, i.e. T(k,d) k travel cost per unit distance, d distance

(2) $Y - Pt(u) = Ph.H + Pz.Z$

$\underbrace{\hphantom{Y - Pt(u)}}$

M

2nd equation introduce housing consumption, i.e. net income, M, depends on distance while assuming constant cost of goods and income.

(3) dB > dA and PtB(u) > PtA(u)

with an constant income and goods, MA > MB therefore

(4) $P^A_h.h^A + P_z.Z^A > P^B_h.h^B + P_z.Z^B$
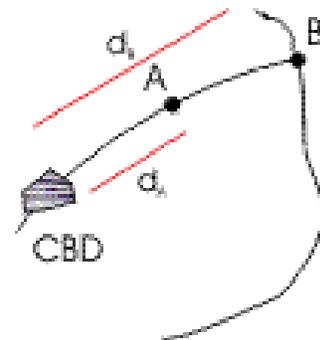
Figure 3.2: Drawing that visualizes the distance of point A and B from the CBD.

At location A savings in transport cost that depends on distance and less friction would be spent on housing. A is much more expensive spatial location than B for consumer.

---

[3] Ph.H is simplified from per unit of land, lot size of housing and other housing prices

Depending on utility function it can be easily seen that wherever the household decides gets the maximum satisfaction of that location with housing services and goods. In the household's equilibrium consumption figure 3.3, equilibrium condition for a household is introduced depending on location u (location to urban center). At these residential equilibriums, changes in land costs reflected housing costs and evaluated at the utility-maximizing housing consumption are balanced by the corresponding changes in commuting cost.
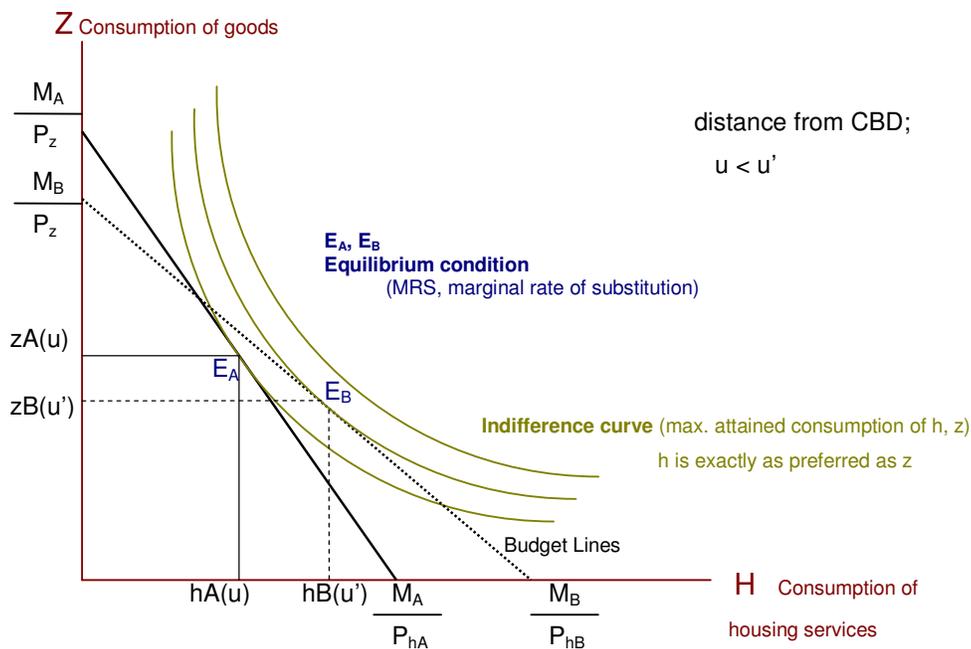
Source: Mills, Hamilton, 1993

Figure 3.3: Households' utility function depend on housing and consumption of other goods

That means this figure changes if households decide to live away from center (at different location), then the slope of the budget line changes[4], because housing services are more expensive at the center, first location (A), but other goods are available and also commuting cost is cheaper than the

---

[4] Equation (2) introduces the slope as $-P_h/P_z$ and changes in the price ratio effect the slope.

second location (B). Therefore equilibrium of the households moves from E_A to E_B.

Household size must be balanced against other factors related to overall expenditures, because it is typically related to household income. Beckmann stated that larger family has a stronger preference for space and thus lives farther away from the CBD to benefit from the lower land rent (Fujita, Thisse, 2002). Besides preference for more space and space per person increase by higher socio-economic level of household (İmamoğlu, 1996).

Households with lower incomes would locate closer to urban centers unless employment location is ubiquitous. The outward shift of jobs to the suburban employment ring of metropolitan areas concludes the change of equilibrium. Decentralization of employment and services means that more land area comes within the same commuting range for the family and sometimes allowing for quicker commuting (Nelson, Sanchez 1997) than former location. Households whose work places are located at the centre are ready to pay more to be close to the CBD because their commuting costs are lower, and the main determinant of location choice is the transport cost savings. Thus the transportation has a crucial role that can play in affecting the residential development patterns of urban areas. However, low transportation cost for personal travel is giving households greater flexibility and opportunity to choose where to live, especially with regard to distance from employment and central city functions (Nelson, Sanchez, 1997). Moreover this low commuting cost support the development of single CBD.

While analyzing consumers' tradeoffs in the decision to move and the selection among alternative residential locations, it is clear that transportation is only one element of what has been termed the total activity system in which each household is involved. Consumers make personal choices regarding residential density and location based on a series of housing, neighborhood, job, and transportation tradeoffs.

Formal economic `bid-rent' theories were based on the intuitive concept that the residential location choices of individuals are based on a tradeoff between the increasing costs of commuting to work and the decreasing unit prices of housing and land that are associated with living further out from a central area of employment. These theories offer low-income households tend to locate on high-priced urban land, while higher-income households choose suburban locations where land is cheaper. The explanation lies in the relative preference of high-income households for large residential lots and their greater willingness to pay for transportation over long distances to and from work.

> "If higher income workers place a higher value on their commuting time, they face a trade-off between a higher land demand (due to normality of land) and the extra value of commuting time. As a result, the low-income consumers reside near the center and the middle class consumers in the suburbs; however, now the high-salary professionals and working couples choose to reside close to the CBD, because of their high value of time, in an urban section different from that of the poor consumers (Fujita 1989, chap. 2)" (Fujita, Thisse, 2002)

Besides accessibility, however, there is a variety of other residential location attributes that may affect the housing and location choices of households. These may include the age, income, and racial composition of neighborhoods, residential density, and the size, quality, condition, and price of the housing stock.

In Weisbrod, Ben-Akiva and Lerman's book they introduce two studies that have examined the tradeoffs between transportation access and other factors. The first group explored the market price differentials among parcels

of residential real estate and concluded that transportation has a small but statistically significant impact on the prices paid for residential real estate. The other group examined the impact of socio-economic factors and the level of public services on the actual location decisions (as opposed to prices paid) of households and provides evidence for several conclusions:

(1) The levels of community expenditures on police, fire, education, and recreation services are less important factors in location choice for most households than is transportation accessibility to work.
(2) The effect of transportation access on location choice decisions is overshadowed by household income and size considerations.
(3) Household auto ownership level decisions are related to residential location decisions. (Weisbrod, Ben-Akiva, Lerman, 1980)

3.1.1.2 Factors of Substitution for Producer (Builder)

As a specialized sector of the construction industry, housebuilding distinguish significantly with its own trends, requirements and development cycles from other sectors. The major objective of the housebuilding sector is to find an urban land and on it to create a market value. And while creating this value, builder tries to maximize profit by reducing the cost of the unit product. The minimum possible cost which is composed of land and other factors (non-land factors - capital) is reached by producing housing at the equilibrium point. The optimum combination of factors of housing production will introduce this equilibrium point depending on the units of production and demand.

Assume the cost of the construction is composed of Capital (K) and Land (L) and equal to the firm's budget[5] (C). Then quantity of housing unit produced is the function of Capital and Labor.

---

[5] The equations are simplified from production function of the housebuilder (Muth's notation) of the resource of Straszheim, M.R. 1975

(1) $C = P_K.K + P_L.L$ and $Q_H = f(K, L)$
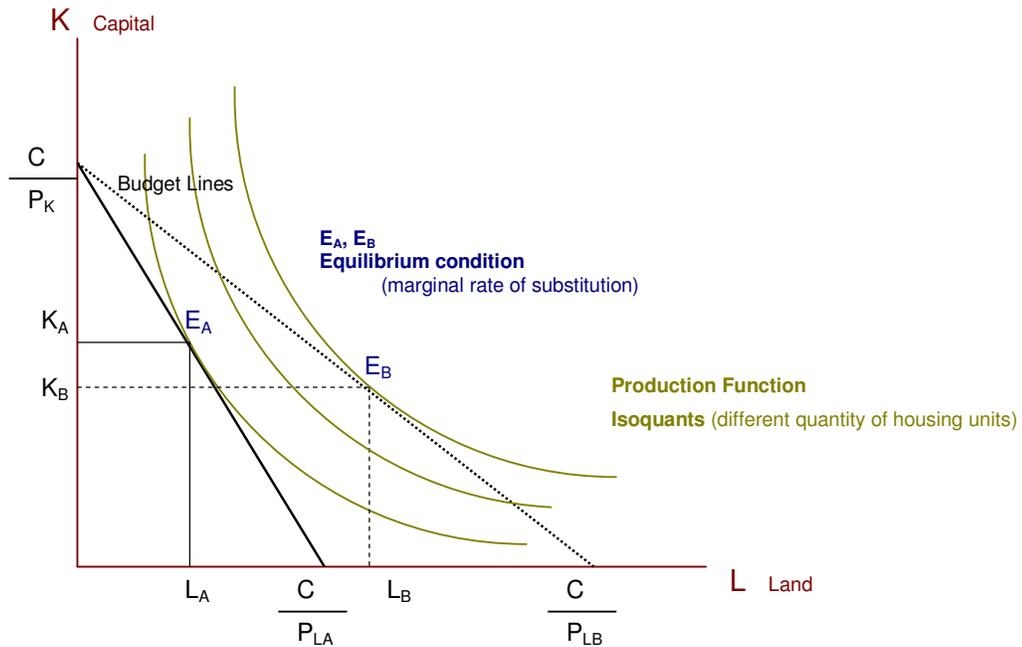
Source: Richardson, 1978; Harvey, 1986

Figure 3.4: Housebuilders' budget function depend on factors of production
        (Capital and Land)

This figure 3.4 simply constitutes the substitution of costs of the firm between Land and Capital. City size, geography, residential density, climate, history, regional preferences and location (bid-rent) determine the land value, whereas capital is constant for the same production unless there is heterogeneous commodity, structure size, type, variables, quality as characteristics of house. Within budget constraints the only way to increase the production is the change of the factors; cheaper land or decreasing cost of capital. Change in the cost of capital is possible only when the technological improvement occurs in the very long run.

25

(2) $P_{LA} > P_{LB}$

(3)   Max. $Q_H = f(K, L)$ subject to $C = P_K.K + P_L.L$ $E_A \rightarrow K_A/L_A > K_B/L_B \leftarrow E_B$

On the producers' side the only determinant for location choice for residential area in the housing market is profit maximization. While achieving the profit maximization, the firm is dealing with costs and benefits within the budget constraints of the firm. At the point A Land is much more valuable than B and the ratio of Capital to Land at A superior to B thus the unit produced on a unit land area decrease when construction moves to B. Moreover productivity of Land, its price relative to other factors and the price of the final product will direct the construction to other locations (Harvey, 1986). The emphasis tends to be on achieving the least costly solutions whereas producing maximum units and profit depending on production function. If the developers' profits are uniform throughout the city and it is expected that the land rent falls as distance to the CBD increases, it is expected to reflect the unit price of housing for consumers.

In the Carmona's study about housing design quality through the English planning process he gathers importance of site selection criteria from a producer. In these criteria location choice (may be considered as access to city center) is assigned 10th rank and the price of land is assigned 8th rank.

Table 3.1: Perceived importance of site selection criteria by housebuilders

Criteria in site selection	Ranking of importance
Market factors	1
Planning permission (availability or ease to get)	2
Basic services (existing and ease to supply)	3
Social class of neighborhood	4
Condition of sub-soil	5
Access to schools	5
Site availability	5
Topographic conditions	8
The asking price of land	8
Size of site	10
Access to city centre	10
Proximity to local shops	10
Physical environmental quality	13
Access to employment	14
Availability of clearance grant	15
Existing ground cover	16

Source: Carmona, 2001

This ranking importance may change depend on the size of the construction and the size of the budget. Most of the time the larger companies have an advantage of restrictions caused by planning system with their greatest financial resources, technical skills, and more sophisticated marketing techniques. Thus, they are able to acquire the best sites, while land is scare and land allocations and permissions are time-consuming. On the contrary, smaller companies are more competitive on small sites with their construction structure.

3.1.2 Spatial Variation of Development Densities in Urban Space

It can be considered the spatial variation in building densities as a consequence of building types. That can be explained as the outcome of planning authorities' decisions, land development rights and mostly housing

producers' behavior. Developer wants to maximize the residual profits to be obtained from the production. Therefore the density of the development should be the optimum point that let the maximizing the profit while reducing the residual value with the increasing density (Dipasquale, Wheaton, 1996). Because households pay less for a housing unit located densely, the greater density thus reduces the value and also the profit from each unit, yet increases the number of units on the urban land. In brief the choice of residential location of the developer is therefore not independent of the choice of a certain housing type. Because the provision is nearly a direct control on the ratio of capital land by limitations on the floor area ratio (McDonald, McMillen, 2003). Developer should find an equilibrium point by choosing the composition of the housing in terms of floor space, housing type and location.

Density will be defined by the number of dwelling units per urban land area of the lot or parcel excluding public spaces, natural water features and preservation areas, and also areas that do not have permission for development according to regulations. To measure the density of development, i.e. the measure of the intensity of a development we may use floor area ratio that is the ratio of gross housing floor area permitted to the total land area of the lot.

Dipasquale and Wheaton used the price model to define price (P) for housing per square foot of floor area, the construction cost estimate model to define cost (C) per square foot of floor area of constructing housing units, and the value per square foot of land area (p) that related to FAR;

(1) $P = \alpha - \beta F$

"The coefficient α represent the collective value of all other housing attributes that can affect the price (per square foot of floor area) of a house, while β represents the marginal reduction in value that occurs as the house lot is reduced and its density or FAR ratio increased." (Dipasquale, Wheaton, 1996)

(2) $C = \mu + \pi F$

"… μ represent a basic cost of construction cost (per square foot) and π the incremental additional cost(assumed linear) as density increased." (Dipasquale, Wheaton, 1996)

(3) $p = F(P\text{-}C)$

p is the residual value per square foot of urban land area that is gained by multiplying the value of FAR with the difference of the price of house and construction cost

Price per sq. ft.

Housing

α

Assumed Profit per square
foot of floor area

P*

No profit at the point of **d**, $P = C$

μ

d

Construction Cost C

House Price P

FAR

Floor area ratio

F^*
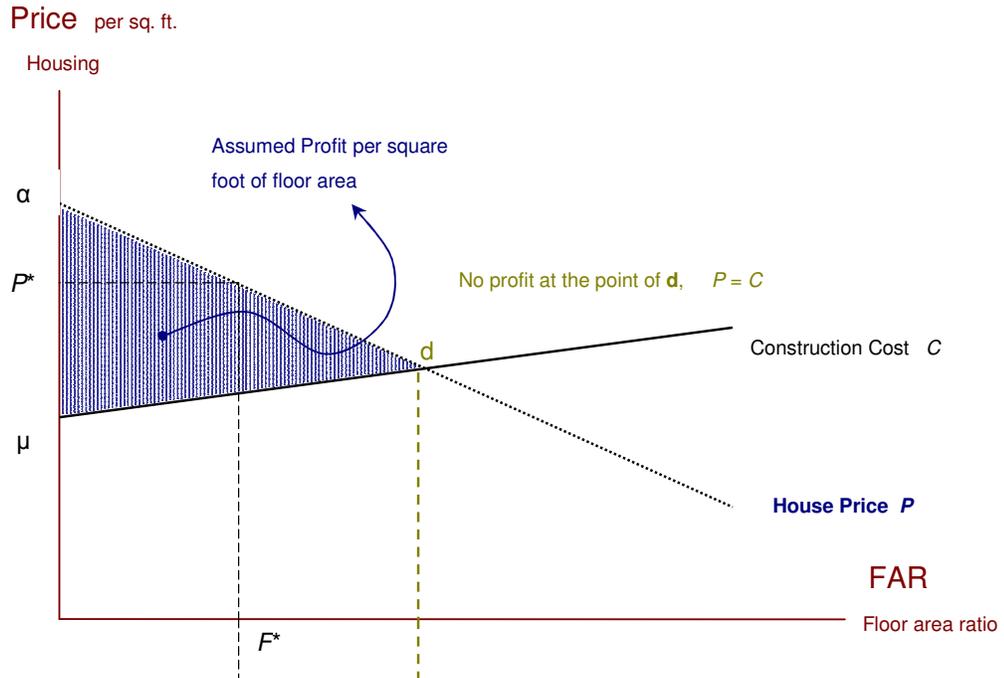
Source: Dipasquale, Wheaton, 1996
Figure 3.5: Housing price and construction cost comparison depending on
            floor area ratio

Price per sq. ft.

Land

p^* maximum attained price
(max. profit reach) at F^*

p^*

FAR

F^*
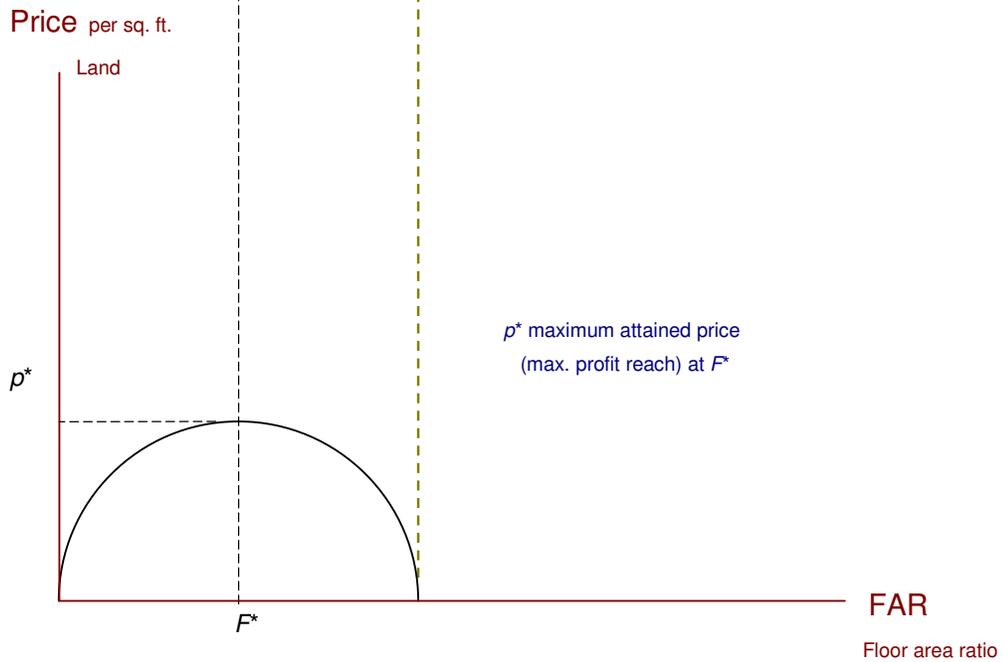
Floor area ratio

Source: Dipasquale, Wheaton, 1996
Figure 3.6: Land price depending on floor area ratio.

With different types of housing provision it is feasible to reach the optimum development density. The important point is to find the equilibrium between the FAR and housing price related to cost, because construction cost of housing units per unit of floor area tends to rise with increasing floor area ratio. Besides types of housing provision, housing characters are considered in development density.

In the previous chapters it is obvious that increasing distance from the CBD causes a decrease in Capital-Land ratio, because commuting costs increase with distance; this means that rent declines with distance in equilibrium. A result of this substitution that is understood as the decrease of density at less valuable location and the equilibrium land consumption is rising from the CBD to the urban fringe whereas the equilibrium building and population density decreases.

In Chapter 3.1.1.1 equation (1) introduce the housing price as Ph.H that is included land size and price. Using this equation with same household's preferences and fixed lot size we can find;

(4) R(d) + T(d) = Constant	Both Land rent R(d) and Transport cost T(d) are dependent on distance d from the CBD.

If transport cost increased with the distance than land rent will decrease according to opposite relations between the shapes of the land rent and transport cost (Fujita, Thisse, 2002). Decreasing land rent lead a rise in the lot size and concluded that residential lot size increases with distance; in other words, "the density gradient is negative" (Richardson, 1978) related to distance to the CBD. This negative exponential density-distance function is entirely consistent with the standard theory of household location behavior in a monocentric city (Richardson, 1978; Fujita, Thisse, 2002). Because the highest value of land in the CBD have to be used densely to gain efficiency.

On the contrary it is expected that the density (in other words FAR) will be decreasing with distance to the CBD[6]. In the figure 3.6 it is observable that the maximum attained price for land (per square foot) provides maximum profit from housing construction (per square foot) at the point F^* where optimum density is achieved. After the point F^* increasing density rise the construction cost of housing till the point of d where house price is equal to construction cost, i.e. the land price is equal to zero. The condition zero price for land is not possible in the market therefore the equilibrium point is probably between the point F^* and d with increasing density. As a consequence density is an important factor that affects profitability of development and formation of the land-use of the city.

3.2 Non-Economic Approach

3.2.1 Approaches to the Residential Choice and Satisfaction

Considering residential location choice or housing type choice, households are basically rational, but not always decided on deliberate residential choices, there is thus a strong need for the correct knowledge. This knowledge that is about human needs and their housing needs should be based on scientific, objective research and methods. When considering human needs as biological, satisfaction of these needs can be measured objectively but actual housing needs are considered as life values and also rather a result of a complex set of biological, psychological and socio-cultural variables.

---

[6] "Yacovissi and Kern (1995) 's regressions of population density in zones of the Baltimore metropolitan region in 1980 include both a density decline with distance due to long-run equilibrium conditions and a density decline due to the timing of development" (Goffette-Nagot, F., 2000).

According to Bradshaw; experts', professionals' or bureaucrats' criteria for satisfaction of housing needs are less credible. Foster and Fraser support Bradshaw by pointing these criteria inevitably reflect the experts' own ideals, idiosyncrasies and fashions, and also often imply paternalistic and moralistic elements (Ytrehus, 2001). Related to time, place, social environment and context, and also physical surrounding housing needs change, because necessities of life change continuously. Nevertheless, residents have similar housing needs and they want to move if there is lack of similarity between where they live and their housing preference. Thus clarifying these preferences and characteristics of housing will help us to understand residents' movements. Based on Massey and Wu's categorization of housing characteristics there are six main points: convenient location, safety and comfort, independence and choice, affordability, privacy, and social opportunity (O'Brien, 2002). Furthermore independent from housing characteristics and attributes residents must have alternative choices to satisfy their needs. They might be able to choose better quality and style beside location and size.

We tried to categorize the residential choice within non-economic approach into three aspects; psychological and social, neighborhood, and comparison between city center and suburbs.

3.2.1.1 Psychological, Social Aspects and Household Composition

Except economical conditions and physical factors, households' social behavior and psychological tendencies should be considered within the context of urban spatial choice. A psychological approach brings into the discourse of place the attributes of emotion, effect and self-involvement, of privacy, territory and biography, and needs thus giving greater depth to an understanding of the factors which lead to attachment to place. It helps to explain the need to personalize places in order to develop and sustain the sense that this place is one's own (Frankin, 2001). The individual's life course

and the social context within which they are set shape houses as material objects and homes as symbolic entities. Thus homes are special kinds of places and are socially constructed in a continual and changing process. Clearly, the congruence between housing and households is important, particularly since dwellings can influence family life – positively or negatively. With the help of perceptual and cognitive psychology, focusing on the individual and individual behavior and experience of people in relation to places' and drawing on Jungian archetypes, the home becomes a symbol of the self or of collective memory. (Frankin, 2001)

Determining residential location and housing attributes (preferences), needs are considering to be satisfied within the psychological framework. Because life satisfaction is closely related with residential satisfaction[7]. According to Gärling life values are cognitive representations of needs, desires, and aspirations that human beings strive to attain (Gärling, 2002) these life values as to reach their goals or end states. Gärling listed these values from most to least important:

Togetherness: A feeling of belonging and security, loving someone, good relations;

Well-being: Contentedness, enjoyment, happiness, pleasure, inner harmony;

Wealth: A good economy, ability to afford things;

Comfort: A comfortable life.

Whether with its attributes or its environment preferred house should provide these values or convenient conditions to attain them. While evaluating life values with housing attributes or activities, Gärling's observations showed that the most important housing attribute is size of the housing, as a result of

---

[7] Canter presented two cognitive process related to residential satisfaction; first, to be purposive (fulfilling purpose of resident) and second, use of different comparison standards (compare past housing experiences with today's) (Gärling, 2002)

activities such as; relaxing, being with friends and partying. Another attribute is about privacy – outdoor private space that provide to be with family and to work in the garden. There two other housing attributes are about location; to be close to the countryside and to be close to the downtown. Countryside provides a space to exercise and relax whereas downtown offer facilities as cultural events and shopping (Gärling, 2002).

Household composition is useful in relating culture to housing and it influences the form and spatial organization of housing. Therefore, family structure - life stage and characteristics of individual members (such as age, occupation, education, and race) plays an important role in house preference and also location choice. Cultural and social amenities of household such as status and social class influence the quality of the surrounding, but do not directly depend on the distance to the CBD. After changing social factors and technological advances appear to be reshaping the conventional understanding of residential location behavior for households.

It becomes easier for households to afford a rural-esque lifestyle and equip it with all the modern conveniences. And most of the households still see single homes on large lots as the ideal (Nelson, Sanchez 1997). Because households want a house of their own and then they want the sense of freedom and anonymity (Clark, 1966, Türk Ailesinin Yaşadığı Mekanlar / Konutlara İlişkin Eğilimler, 1999). In these homes they find themselves living. They are ready to accept the disadvantages of suburban life such as excessive commuting time, expensive trips to centre, the feel of loneliness of subdivision of life… etc.

3.2.1.2 Environment / Neighborhood Aspect

It is obvious that quality of neighborhood, ethnic and social homogeneity and social activities attract households to specific locations. Little and Kirwan and Ball explored the implications of the desires of most families to live in

homogenous neighborhoods. Pagageorgiou introduced multi-centric spatial structures and residential attractiveness variable that justify location choices (Richardson, 1978). Housing is more than the dwelling, the neighborhood and its environment become important. Even if the housing provision is adequate, it is expected to produce some problems by constituting its environment with not in required quality manner. Since quality of life concerns living conditions with its environment. Households' behavior acts to satisfy these conditions.

> "… a survey of potential customer and non-customer attitudes (819 in all) to new-build residential design, the aim being to uncover the public's views on such housing, and, if possible, the reasons for any prejudices and preferences. What was revealed was a widespread disdain for the perceived products of the housebuilding industry, but also some rejection of the emerging professional consensus on how to improve new residential environments. Most obviously, the survey revealed strong support for 'traditional' (suburban) residential development, preferably built at not too high densities and designed to fit into the already established context."
> (Carmona, M. 2001)

As the survey indicated that the preference for low density residential environments, and exposed many households move to low-density dwelling such as the suburbs when it becomes financially possible. This lower density location brings larger space for housing and individual lot besides households should be ready to pay more for land.

> "… first residents in 'appropriate quality' developments tended to consider location, price and value for money before design. Nevertheless, the work also confirmed that housebuilders developing to a more 'sustainable quality' also ensured that

their developments achieved a better return, particularly in areas where good choice existed for potential purchasers, with residents making a conscious decision to move to developments that offered better quality dwellings, a better estate layout and supported a stronger feeling of community and sense of pride. Nevertheless, where little choice exists for new purchasers, the tendency for new residents to place location, price and value ahead of design is perhaps inevitable. In making these judgments, it seems that most buyers of new-build homes consider their purchase to be value for money…" (Carmona, 2001)

Environment; with its characteristics transportation, crime rate, pollution, demographic structure, education facilities, open spaces, recreation facilities, density of neighborhood, public services etc… guide households' choices. Ellis emphasized the importance of environmental preferences and neighborhood characteristics in residential location decisions. Yamada stressed the role of environment externalities (Richardson, 1978). Bishop and Davison declared that residents prefer locations on quiet cul-de-sacs, request more imaginative design, greater privacy, a wider range of layouts and house types, and also they are critical if plot sizes were too small, densities too great, and there is the lack of landscaping (Carmona, 2001). Segal clearly stated that Irwin and Bockstaed's model of how neighborhood interactions can affect long-term patterns of land use the neighborhood effects for land development are negative, which may reflect congestion effects. Centrally employed households may select suburban settlements because they want to minimize the contact with congestion, air pollution, and high crime rates (actual or perceived) that are found in the central city.

3.2.1.3 Comparison between City Centre and Suburb

Studying the residential choice and satisfaction with respect to psychological and social aspects of household composition and environment of housing conclude that there are not only conditions, obligations and needs but also opportunity of choices. These residential location choices are usually city centre and suburb. As it was mentioned previous sections congestion and disorganization of city life, increasing crime and urban decay are affecting households' location decisions and making cities less attractive. Besides, inadequate services - such as residential accommodation, secure place for children, reduction in the quality of infrastructure, communications, shopping - in other words the decaying quality of city life, city is condemned for most of the households. So, are there only problems of the city life that force households for looking different residential locations? Do the households go far locations for living? Or, are there any other factors, something else?

> "The existence of a well-preserved historical center may lead
> the rich households to cluster nearby to enjoy the benefit of a
> rich cultural life (as in Kyoto or Paris). Likewise, natural
> amenities available near the city limits may induce a similar
> clustering at the city fringe to permit the rich consumers to
> benefit from a better natural environment. To the extent that
> rich households value being together (a club effect), historical
> or natural amenities may act as a focal point (Bruekner, Thisse
> and Zenou 1999)." (Fujita, Thisse 2002)

Fujita express that pull factors of both city center and suburbs. Similarly, Clark stated the movement to suburbs as not to escape from the city center but to be a desire to secure a house in which to live. And he made research about residents that is concluded that the only important criterion for young residents was to be close to work place, shopping centers, and entertainment area. The city center offered everything they wanted except house, thus

there was nothing about the city (Clark, 1966). For the family side the only problem was the housing size. Most of the housing services and size became not sufficient to households with children in the city center. Households were forced into the outside of the city to find a way of life and a kind of housing they required. In the same way to Clark' research, Carmona compiled the research that is about the factors that let households move to their current location.

Table 3.2: Determination of factors (urban push and suburban pull) of moving outside of the city by households.

New speculative housing - push and pull factors (Mulholland Research Associates Limited, 1995)

Urban 'push' factors	%	Suburban 'pull' factors	%
Traffic problems/lack of safety	39	Attractiveness of development	57
Busy crowded nature of context	23	Quiet secluded area	46
Levels of crime	20	Good environment for children	30
Poor environment for children	17	Safety from traffic	29
Lack of adequate gardens	17	Good local schools	26
Poor parking facilities	15	Green open environment	21
Lack of privacy	13	Proximity to other families	20
Noisy troublesome neighbors	12	Clean unpolluted environment	19
High levels of pollution	12	Good views of countryside	15
Street disturbances	12	Good privacy	15
Poor standard of schools	8	Secure environment from crime	10

Source: Carmona, M. 2001

It is obvious most of the highly rated factors are about environmental. While negative effects of traffic and lack of safety cause movement, same considerations loose their importance to settle. It can be concluded from the table 3.2 that households do not escape from urban life but be attracted by

suburban life because pull factors are much more ranked considering to push factors.

Most of the researches in Turkey show similarities with the table 3.2, whereas priorities change. For example of suburban pull factors, clean and neat environment, and not polluted pure air of suburban development (İmamoğlu, 1996) is the most ranked factor for residents to prefer outside of the city center. To be far from the city center is ranked second, and privacy of house is ranked third in the same research by İmamoğlu (İmamoğlu, 1996; Şenyapılı, 2003). These factors continue with good environment for children, green environment and attractiveness of new developments.

Only privacy is related with the housing type, single housing that dominate over suburban developments and hard to realize in the city center. But other factors are mostly related with the environment also they are met with apartment housing. Although households' dependence and affection to their house mostly changes according to socio-economic level, İmamoğlu express that households which live on the fringe of the city feel affection for their houses and environment (İmamoğlu, 1996). Şenyapılı stated push factors of inner districts of residential areas in the city for the reasons of decentralization as dissatisfaction of physical conditions of existing living environment, insufficient space of housing unit, and negative effects of social environment (Şenyapılı, 2003). On the contrary, physical conditions of environment and housing characteristic factors are not ranked highly in Carmona's research. Such as traffic problems, densely population and lack of services for population are mostly occurred by the agglomeration of buildings.

3.3 Planning and Urban Design Implications for Apartment Housing

3.3.1 Planning System and Market Relationship

The relationship between the urban planning system and the land and housing market is a long debated issue. Planning regulation and institutions have been developed when unregulated development of cities during the industrial revolution caused great environmental and public health problems. The current concern is to what extent planning regulations are in lines with market conditions, and if planning decisions cause inefficiencies in the functioning of the land and housing markets.

It has been observed that planning system does not operate independently from the market conditions. Although economists claim that planning restrictions and granting development rights for certain areas only cause scarcities in land provision that leads to the rise in land and housing prices (Ball, Kirwan, 1977; White, Allmendinger, 2003), it is not difficult to show positive welfare implications of such differential (and phased) land development decisions, on the grounds of efficiency of infrastructure investments and supervision of development activity. Moreover, planning system affect output, location, density and quality of housing development which have benefits, and provide public amenities that might otherwise not exist under market conditions. An unregulated market probably fails to provide housing for all members of society because of profit considerations and also may not be concerned about social cost or social necessities of society, or the natural environment. Under such conditions, there has been a role for intervention which is mainly in terms of land use planning that has an impact on the housing market together with specific policies.

Considering locations and housing types, in terms of demand for housing by upper income groups in a particular area may not be perfectly substitutable

by another area. Therefore, the extent of the relative price differential will depend on the degree of substitutability between areas and housing types in the market (White, Allmendinger, 2003), whereas it is hard to manage these relative price differentiations in the planning system with policies which are considered as an exogenous variable. Planning system tries to balance demand side by providing the amount of land needed for housing, which is estimated by population forecasts and information on household formation rates by comparing with existing stock. Due to these factors, it was shown that housing prices are differentiated over space in Ankara where demand-supply equilibrium is not existed and where there are agglomerations of high income groups at specific locations (Türel, 1981).

The critical issue within the context of this study in whether development densities that are determined by plans are in conformity with the spatial distribution of land and housing prices as well as with the preferences of inhabitants. It is expected that there should not be much diversion between market conditions and development rights in Ankara.

3.3.2 Planning and Residential Preferences for Apartment Housing

Except for one or two examples such as luxurious high-rise apartments and high-tech condominiums, apartments are the indicators of middle class (income groups) in today's cities. They are generally designed for solution to concentration of residents in specific urban locations, to provide necessary housing units. There are also other factors, such as demographical forces, and a need of less expensive housing that creates apartment housing. However households are faced with scarcity of choices between provisions and forced to settle in the apartment housing disregarding their needs.

Considering planning and design issues, the visual effect of the townscape and the standards derived from concern for residential amenity dominate the planning process and practice. However there should be accomplished

issues of the planning process for agglomeration of apartment housing and the importance of these issues lies in a better understanding of people's preferences for attractive housing and residential environments

Location is the primary issue according to nearness to public transport nodes, shopping centers, employment centers and other community facilities. In general, the inner city transportation shapes the housing developments and also the density. It is expected that the higher accessibility to the center brings higher density. Transportation nodes pull investments for housing and population. On the contrary increasing private car ownership causes spreading to the city boundaries and decreases the density of central settlements, and brings dispersions. Besides, new investments or improvements in the system of the means of transportation that reduce monetary costs of commuting or transport time are factors that cause flattening of land rents and population densities.

Second issue is density. Due to housing provision, there should be a balance between the service area and building density by choosing housing types and dwelling unit sizes. This balance generally determines the quality of environment and social structure of residents. Changing lifestyle and family structure affect necessity of housing size and service area. In Rapoport's article, dwelling size has been going up while household size in the USA has decreased. A space for housing based on lifestyles is pointed to be a result of a reduction of constraints and related to status and changes in lifestyle. (Rapoport, 2001).

Third issue is environment; there should be adequate open space around buildings and accessible recreational opportunities. Because traditional perceptions of desirable residential form can be defined as households want to live in a safe, quiet, peaceful and green village environment. It should be suitable for their families with parking facilities, public services, communal areas and amenities that are adequate as part of residential developments.

Lastly, apartment residential development provides coherent space in order to develop social relation and offer lifestyle which is comfortable, convenient urban life and encouraging a sense of community. These are provided by successful urban design schemes. Housing should be considered as the focus point of this urban design success. In this context urban design and planning have great impacts on the provision and the choice of an apartment housing, as considered with land use, transport, employment location and a range of other social and economic activities.

3.3.3 Planning and Design Principles

There are basic design principles to reach successful urban environment and housing; quality of spaces, local identity, ease of movement, density, security and comfort, environmental sustainability, management and maintenance (Carmona, 2001). Most of them could be attained by new residential developments easily; on the contrary, there are lots of difficulties and practical application problems for existing residential areas because of regulations on existing sites encounter limitations and constraints of given rights. Nevertheless housebuilders' concern for design extends only so far as their market strategies allow. Obviously better design results in higher sales values for their products. But, it is hard to cover an expense of the design costs and furthermore the builders' major aim, maximizing profit, will not be achieved limiting products. Because increasing unit of products mostly causes reducing design quality within the budget constraint.

Besides design quality, actors of housing market, especially planning authorities should be concerned for the public interest, including protection of the environment by limiting environmental damage of residential development. They have to release enough land for housing efficiently and on time, while considering other planning demands such as economic development and achievement of basic residential amenity – light, space, privacy, parking…etc – (Carmona, 2001). For example apartment housing

that is far from the CBD is generally a product of public policy and helps to minimize environmental degradation by directing low-intensity development into the countryside (Nelson, Sanchez, 1997) by designated low floor area ratio. These new designed settlements are attractive for households and public transport decreases transport cost with railways and highways which can carry commuters to many more locations more efficiently. Nevertheless there are economic wastes; these transportation opportunities mostly unprofitable and only for social purposes, and services such as shopping, fire protection, police, water, electricity, sewerage are all removed to suburbs where concentration of population is low. There are also social wastes for the city such as the isolation of suburban residents and deprivations by weakening relationships.

Tekeli stated that in the mass housing provisions the owner of the house is not known at the beginning of construction, thus it should offer variety and choice. And the change in value of housing unit is more important than the value of usage. In contrast individual housing production is produced for usage not for sale, so that the value of usage defines the design process. Building cooperatives are careful in housing productions for their partners' needs; that's why values, tastes and cooperatives' social position define housing design. Small-capital housebuilders (yapsatci) prefer mainly the most developed and prestige parts of the city to realize provision. In these areas housing units are large in size, in construction luxurious materials are used, and the type of housing is apartment housing. High value of urban land in developed part of the city forces yapsatçı to construct apartments (Tekeli, 1982).

Another impact on the design of apartment housing and on the relationship of buildings is national building regulations and codes. They affect functionality and shaping aesthetics of residential developments and also choice of materials, accessibility, layout and orientation of buildings that determine the quality of residential development. Considering apartment housing, height

45

controls of the buildings are part of the urban design objectives for a neighborhood and should be appropriate to adjacent buildings and the width of the street according to its capacity.

Apartment housing brings new elements with themselves such as elevators, staircases and balconies. These elements also bring new problems. For example; balconies whose primary function is to satisfy the need for open space in high-rise buildings may be considered insecure for children and insufficient for outdoor activities. Although staircases are common places as shared entrance to home, the cognition of an individual of going out is hard to satisfy with shared entrance. Thus in high-rise buildings privacy is only achieved inside the housing unit, besides privacy is obtained with balconies or roof gardens as a private outdoor space. On the contrary socializing in shared outdoor space on roof, ground around building, shared entries, hallways, elevators, and stairs if they are carefully designed for sociability. However personalization of units is difficult (except at interior units) and all images rely on overall apartment character and form.

3.4 Concluding Remarks

The study on characteristics of housing and its functions in detail make it easier to understand both producers' and households' choices. From the producers' side housing has high capital values that producers can gain excessive profit when finding a way to decrease the costs of factors of production, especially that of land. It is known that the price of land determined by location of land to central services, quality of services produced and accessibility. Or find a way to increase number of outputs of production within budget constraints by rising development densities or increasing housing size to attain residual value. Since price of land decrease with distance from the CBD housebuilders are expected to use less capital

per unit of land which implies lower floor area ratio (or *emsal* in Turkish) when producing housing at a suburban location, compared to central district.

Households get maximum satisfaction of location with housing type, its services and goods, and its environment within income constraints. By choosing housing due to spatial immobility they also choose residential location and type, as a consequence they try to find maximum attained consumption of housing services against other factors related to overall expenditures as determined by relative price levels. As land housing prices decrease with distance from the CBD, households are expected to consume more land and housing by moving to a suburban location from an inner one. An increase in consumers' income raises demand for more housing services and also leads to a decrease in the relative value of commuting costs, thus making locations in the suburbs more desirable.

These movements should be considered as a result of attraction of suburban life and its pull factors, not an escape from urban life. It is estimated that these residential movements in Ankara explain an expectation of different lifestyles according to location and apartment housing choices. Besides apartment housing attributes such as size, safety and comfort and affordability; and its provision of differentiated privacy, social opportunity, density of residential environment and homogenous neighborhood characteristics should be considered in the study. Because apartment housing choice is not the result of established lifestyle of dwellers in Ankara. Dominance of apartment housing should be consideration of limited choices for households, and be reflection of capital insufficiency, scarcity of urban land provision and pressures of market system.

The main hypothesis derived from the economic approaches is that although it is observed that apartment housing is produced in every location in urban space in Ankara, development densities of land should be decreasing with distance from the CBD, in conformity with the decline in land prices and

preferences of households. Planning regulations that have been in effect since Jansen Plan should be in lines with this market conditions. This supply rationality is expected to be in conformity with the preferences and housing consumption decisions of households.

CHAPTER IV

HOUSING PROVISION WITHIN THE CONTEXT OF SUBURBANIZATION AND DECENTRALIZATION

4.1 Production of Apartment Housing by Different Forms of Provision in Turkey

In Turkey according to Tekeli, housing supply is considered in seven types; individual housing production, building cooperatives' housing production, developers' housing production (yapsatci and large-capital builders), mass housing cooperation's production, building cooperative associations' and local administrations' housing production, individual squatter production, semi-organized squatter production (Tekeli, 1982). These provisions were appeared as a solution of housing problems at different time to settle different parts of society. Thus we can see provision types at the same time only with different relative importance.

Table 4.1: Classification of housing provisions

According to	status of user	a) owner-occupied house
		b) house for rent
	legislative public improvements	a) authorized house
		b) squatter
	degree of supply	a) single house
		b) apartment house
		c) mass housing
	size	a) small
		b) medium
		c) large
	degree of possibility for adding new units	a) constructed-completed
		b) possibility to new developments
	excess market value of materials used in the construction	a) luxurious houses
		b) non-luxurious houses

Source: Tekeli, 1982

As the aim is to own a house to live, not for sale, individual housing production is mostly composed of single houses. Building cooperatives are formed for providing participants to own a house easily and sensitive for their participants' desires, thus most of the times they produce single family housing. On the contrary mass housing cooperation, and building cooperative associations' and local administrations' housing apartments are produced to decrease unit cost and to increase the number of housing units. Only except for advertisement purposes and creating an alternative provision to apartment housing life they use single housing production. Developers produce only apartments to get excess profit after sharing the housing units

that they produced with landowners. Squatter housing productions vary in housing types. It depends on producers' resources. Generally with limited resources they can produce single houses.

Table 4.2: Number of authorized housing units between the years 1970 and 1980

Years	Single House	Apartment House	Total	Change in Housing Production %	Ratio of Apartment %
1970	51731	103984	155715	-	66,78
1971	55974	94383	150357	-3,44	62,77
1972	56054	105889	161943	7,71	65,39
1973	59597	135354	194951	20,38	69,43
1974	51142	109905	161047	-17,39	68,24
1975	55454	126231	181685	12,81	69,48
1976	57175	167405	224580	23,61	74,54
1977	52863	163265	216128	-3,76	75,54
1978	66640	170457	237097	9,70	71,89
1979	70275	181571	251846	6,22	72,10
1980	56435	147554	203989	-19,00	72,33

Source: Tekeli, 1982

According to the Table 4.2, we can see the greater part of the total authorized housing production is composed of apartment houses. Depending on changes in total housing production, apartment housing production showed fluctuations yet preserve its share in total production. Also in this ten year period there were steadily increases in its ratio to housing production. In 1980 the ratio of apartment housing production to total production was 72 per cent whereas in 1970 only 67 percent of production was apartment houses.

4.1.1 Investors of Apartment Housing Production

In building censuses in Turkey, SIS classifies investors of housing production in seven types; Private Enterprise, Construction Cooperative, Government Funded Organizations, Government and Private Funded Organizations, Special Administrations, Municipalities, and State Economic Enterprises. When we compare construction statistics in 1992 and 2002 for Turkey and Ankara (Table 4.3), it will be concluded that there is an enormous change in investor types of the housing provision in Ankara between the years 1992 and 2002. In Ankara share of construction cooperatives and public sector decrease to one third as before, private sector increase from share of 52% to 87%. In 1992 and in 2002 the dominant investor type was private enterprise in both Turkey and Ankara. Does this similarity about producers' type in Ankara and Turkey reflect to product as the same type of housing units? According to construction permits in 2002 in Table 4.4 it is clear that the product of private provision is completely different in Ankara than in Turkey.

Table 4.3: Comparison of investors of housing production according to construction permits in 1992 and 2002

	1992				2002			
	TURKEY		**ANKARA**		**TURKEY**		**ANKARA**	
Private Ent.	103115	75%	3656	52%	39997	85%	2734	87%
Const. Coop.	30709	22%	2262	32%	5089	11%	310	10%
Gov. Funded Org.	1285		1602		1117		58	
Gov. & Private Funded Org	236		18		309		8	
Special Admin.	114		2		110		6	
Municip.	1363		804		559		28	
State E. Ent.	1168		101		61		9	
Public Total	4166	3%	1085	16%	2156	4%	109	3%
Total	137990	100%	7003	100%	47242	100%	3153	100%

Source: Building Construction Statistics in 1992 and 2002

Housing Provision in Ankara 1992

Private Sector
52%

32%
Construction Coop.

16%
Public Sector
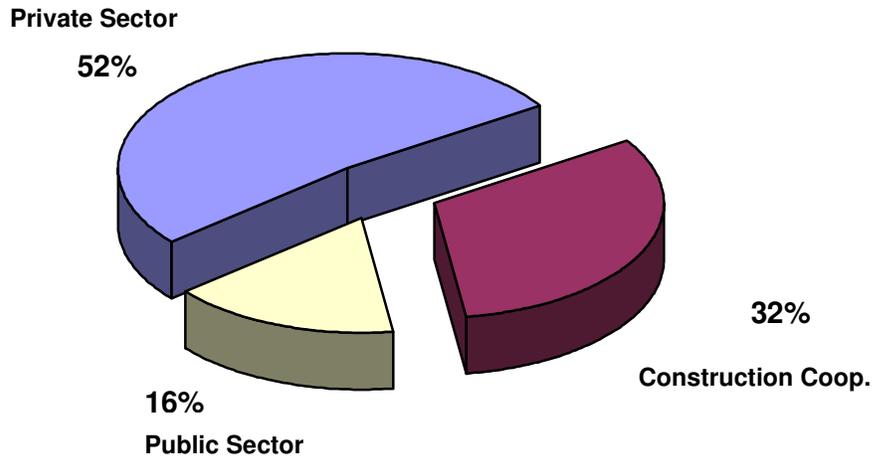
Figure 4.1: Comparison of the investors of housing provision in Ankara
(1992)

Housing Provision in Ankara 2002

Private Sector
87%

10%
Construction Coop.

3%
Public Sector
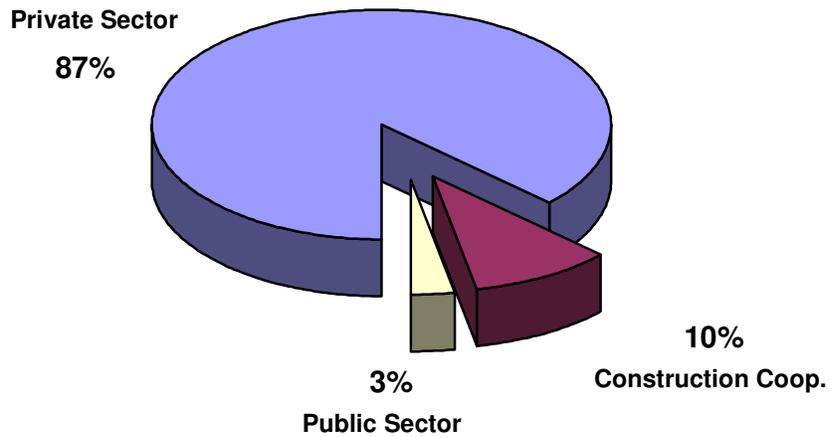
Figure 4.2: Comparison of the investors of housing provision in Ankara
(2002)

Table 4.4: Completed New Buildings by Investor According to Construction
Permit - 2002

	Privt. Ent.	Const Coop.	Gov. Funded Org.	Gov. & Private Funded Org	Special Admin.	Muncp.	State E. Ent.	TOTAL
ANKARA								
# of Buildings	2734	310	58	8	6	28	9	**3153**
# of Dwelling Units	26825	1906	3	22	0	53	3	**28812**
Average # of Dwel. Unit	9,8	6,1	0,1	2,8	0	1,9	0,3	**9,1**
TURKEY								
# of Buildings	39997	5089	1117	309	110	559	61	**47242**
# of Dwelling Units	131598	23561	4403	464	47	1834	13	**161920**
Average # of Dwel. Unit	3,3	4,6	3,9	1,5	0,4	3,3	0,2	**3,4**

Source: Building Construction Statistics in 2002

In the year 2002 private sector are the main investors for building and it will be understood that they have a greater role in apartment housing in Ankara when the dwelling units are examined. That will be explained in the types of the building, i.e. private enterprises make investments mostly on apartments whereas construction cooperatives make investments on single houses or low rise housing and non-housing units. Also there is a point that might be discussed is; the difference of investors in Turkey and Ankara. Construction cooperatives produce mostly apartments and private enterprises produce generally single houses in Turkey. We can see the contradiction in investments in Ankara. Single houses are produced generally by construction cooperatives. Total average number of dwelling units shows that the dominance of apartments in provision of housing units. Moreover in 2002 the number of total produced dwelling units in Ankara is 28812 which has a

54

share of 17,79% in proportion to total produced dwelling units. Whereas comparing population of Ankara with population of the country, it has only %8 share which is extremely small concerning housing provision proportion. In fact country's urban population increased (30,75%) more than Ankara's urban population increase (24,81%) between 1990 and 2000.

4.2 Formation of Apartment Housing in Ankara

The provision of apartment housing started with the birth of modern industrial society and as a result of new middle class' necessities of residential areas at accessible locations to workplaces (as close as possible), in the 19th century (Kıray, 1998; Aktuna, 2003). This concentration of housing and population in limited urban land caused vertical development on residential areas. Because apartment housing makes it possible constructing more than one housing unit on the same plot, thus created the possibility for limited income households to own or rent a housing unit due to decreasing cost of housing.

First examples of these type of housing provision were seen in İstanbul; Akaretler (1880-1987) for English minority, Sourp Agop (1890), Harikzadegan Apartments and Tayyare Apartments (1922). Pera and Galata were also early examples of apartment housing development in İstanbul (Gür, 2000; Aktuna, 2003). In view of Ankara, at that time there were not sufficient necessity, and also not adequate capital accumulation and technology for apartment house construction (Balamir, 1994).

Only after the proclamation of Ankara as a capital city, the apartment housing development began with Reşit Ayvaz and his partnership in 1924. There were Vakıf Houses (1927), Vakıf Apartments (Tekeli, 1996) – I. Belvü Palas and II. Evkaf Apartment – (1926-1930), by private provision of 11 apartment housing in front of Ankara Castle and around Vakıf Apartments, and 5 Hamamönü Vakıf Houses (1924-1925) (Cengizkan, 2002; Gür, 2000).

Besides Vakıf housing there were also rental houses (1931) on Işıklar, Hisarpark and Anafartalar Streets in Ankara (Gür, 2000). After finishing nearly 200 houses with the help of public participation, it was decided to give up the policy about participating housing development in 1926 by municipality (Cengizkan, 2002), subsequently apartment housing construction seriously affected with this decision. At that time apartment housing production was extremely costly and thus there was a strong need of capital accumulation. Increasing number of flats brings more profit especially provision was held on prestige areas. Besides apartment housing provided modern life style. Therefore, only high income groups preferred apartment housing, whereas middle income groups preferred single low-rise housing. After Second World War, this situation was changed by increasing urbanization which rise demand on housing and increase urban land values that made impossible to provide single house on one parcel (Tekeli, 1979). Apartment housing mostly become an only choice for middle income groups.

4.2.1 Apartments in the Historical Development Process and in Spatial Structure within the Legislation and the Planning Context in Ankara

4.2.1.1 Planning Context

During Ankara's planning processes speculative housing development mostly forced to change planning decisions. Both Jansen's and Uybadin-Yücel's plans were affected these forces. Although these plans were insufficient to meet development of Ankara, brought regulations and tried to direct city spread. Following plans for Ankara, for the years 1990 and 2025 brought more structural approach than former plans.

In the planning context of Ankara, the most influential factor has always been urban population growth (Table 4.5). It was hard to provide accommodation for unexpectedly increasing population within the economic constraints and

absence of technical experience, thus made pressure on existing residential areas by increasing density and building heights. Appearance of unauthorized housing is another outcome under these circumstances. As a consequence of these facts, problems that have been already mentioned partially in previous chapters, can be considered in the physical and the social context. Considering Ankara, most of the physical problems are related with the density of buildings and population, and their effects on the environment.

Table 4.5: Population progress between 1927 and 2000, and urban population change in Ankara[8]

Year	Population	Population Increase	Urban Population	Rural Population	Urban Population Increase	Proportion of Urban Population
1927	404581	-	99066	305515	-	24,49%
1935	534025	31,99%	152695	381330	54,13%	28,59%
1940	602965	12,91%	188416	414549	23,39%	31,25%
1945	695526	15,35%	279491	416035	48,34%	40,18%
1950	819693	17,85%	348552	471141	24,71%	42,52%
1955	1120864	36,74%	551364	569530	58,19%	49,19%
1960	1321380	17,89%	783351	537529	42,08%	59,32%
1965	1644302	24,44%	1069761	574541	36,56%	65,06%
1970	2041658	24,16%	1467304	574354	37,16%	71,87%
1975	2585293	26,63%	1997980	587313	36,17%	77,28%
1980	2854689	10,42%	2238967	615722	12,06%	78,43%
1985	3306327	15,82%	2737209	569118	22,25%	82,79%
1990	3236626	-2,11%	2836719	399907	3,64%	87,64%
1995[9]	3622243	11,92%	3188620	433623	12,41%	88,03%
2000	4007860	10,65%	3540522	467338	11,04%	88,34%

Source: Population Census 2000

---

[8] In Ankara urbanization process still continue, that is concluded from urban population increase steadily between 1927 and 2000, even if the population of Ankara Province was decreased from 1985 to 1990, because of the districts of Kırıkkale, Delice, Keskin and Sulakyurt were separated from the province of Ankara in 1989.

[9] 1995 population quantities are estimated by calculation with respect to the average increase between 1990 and 2000

From the year 1927 to 2000 Ankara population has regularly increased as similar to the national population growth. But with the help of being a capital city, urban population ratio increase exceeded Turkey's average. Urban population in Ankara had the great part of these increases, even attracted whole increase while rural population began to decrease after 1955. In Ankara urban population growth had always been faster than total population growth. Thus the proportion of urban population increased continuously and the share of urban population to total population became stable near 2000 at the share of 88%. Urban growth did not spread to every part of Ankara. In Table 4.6, although it can be concluded that there were always sufficient provision of urban space for increasing population, in fact most of these urban areas were not equipped with infrastructure and superstructure. Besides the agglomeration on some locations brought deficiency of infrastructure.

Table 4.6: Urban population progress and urban area growth in Ankara between 1927 and 2000

Year	Urban Population	Urban Area	Density	Change in Pop.	Change in Area
1927	74.553	300	249	-	-
1932	110.000	710	155	47,55%	136,67%
1944	220.000	1900	116	100,00%	167,61%
1956	455.000	3650	125	106,82%	92,11%
1970	1.236.152	13778	90	171,68%	277,48%
1985	2.285.904	26892	85	84,92%	95,18%
2000	3.174.296	31221	102	38,86%	16,10%

Source: Çakan, Okçuoğlu, 1977; Altaban, 1986; Altaban, 2002; CP401 Studio Project, 2000

These developments on specific location cause increase in density and brought problems in the physical context. Firstly, high density development cause insufficiency of infrastructure; especially parking areas, green areas, and playgrounds for children do not sustain excessive population concentration. Allowance to build extra storey below the ground level on the sloping parcels leads to the increase in density with 4 households for each

storey. Çakan and Okçuoğlu expressed that 1961 District Building Height Regulation Plan brought huge amount of development and provided new demand to increase building heights for a long time. Moreover the plan brought lots of problem to the city by adding storey to the buildings with consequences such as;

- unpleasant built environments were created by application the plan,
- not suitable for climate conditions of Ankara,
- not compatible with existing buildings static systems,
- inconvenience for the inner installations of buildings,
- allowance to built a roof storey as if it is a normal storey,
- tearing down of buildings that did not finish its economic life to build high-rise apartments (building life decreased nearly 15 years) (Çakan, Okçuoğlu, 1977). Most of the buildings that did not finish their economic life were torn down and replaced by higher apartments, accordingly the density of quarters increased (Çakan, Okçuoğlu, 1977; Altaban, 1986).

Secondly, materials that were used in the production of many apartments were not good in quality. High rise apartments change the city silhouette, block the sunlight, change the climate of the city and cause air, light and noise pollution. For example, in 1965 District Building Regulation Plan brought excessive increase of the heights of apartment housing in built up areas and gave a new shape to the central parts of the city; especially in Dikmen, Ayrancı, Esat and Gazi Osman Paşa districts excessive development filled valley sides on the south-north direction and damaged the natural characteristics of the areas and blocked air ventilation channels (Altaban, 1986). Consequently, in these quarters air pollution increased with exceeding the population density of 350 persons per hectare (Çakan, Okçuoğlu, 1977). These calculations were related with existing residential density increase and its limited serviced area.

Table 4.7: Total and per person service area[10] in 1970

Housing area	Total Service Area (Hectare)	Area per one person (m^2)
Bahçelievler - Emek	8,85	1,60
Cebeci	6,02	1,07
Çankaya – GOP - Yıldız	8,42	2,55
Maltepe – Anıttepe - Mebusevleri	15,33	4,13
Ayrancı	4,86	1,32
Aydınlıkevler	12,78	2,91
Küçükesat	1,79	0,40
Etlik	7,49	2,94
Keçiören	6,40	1,28
Yenimahalle - Karşıyaka	13,01	2,96

Source: Çakan, Okçuoğlu, 1977

Besides required service area, deficiency of equipment of apartments such as fire stairs, elevator, and closed parking caused problems in the physical context. By increasing private car ownership parking availability has become the biggest problem in the densely populated districts.

Social context of these problems are much more complicated. Individualism increased, weaken the relationships between neighborhoods and becoming hard to find solution on common problems such as; sharing living spaces, managing and maintaining the apartment. These problems forced people to move to the fringe of urban areas or obtain second housing at different locations. Changing tastes, incomes or social statutes lead people to change their residential choices. At the beginning living in an apartment housing flat was the sign of modern life style and prestige, however nowadays apartment housing are the basic residential style for middle and lower income groups. On the contrary single houses become hard to obtain and turn out to be the sign of status and prestige.

---

[10] In 1973 ANPB stated that 16,30 m^2 (composed of primary school 3,20; secondary school 1,8; high school 2; green area 8; health 0,3; culture 0,5; administrative 0,1; other 0,4) service area per person had to be arranged (Çakan, Okçuoğlu, 1977).

4.2.1.1.1 Jansen's Plan Period 1928

Jansen's Plan was important to establish the capital city which symbolized the new regime and the new country. Besides this major aim, Jansen stated his priorities such as sensitivity to natural environment, considering aesthetics, economic conditions and healthy urban environment with open and green areas. Thus the plan offered low density residential areas.

Jansen had to prepare the city plan according to 300 thousand residents as given to him by the authorities, but his plan could accommodate only 150 thousand residents (Çakan, Okçuoğlu, 1977; Tankut, 1993). This low density residential development was only for 150 thousand residents, but it was stated that it was possible to accommodate 300 thousand residents by rising densities in the same planned area, however the population exceeded 400 thousand in that plan period.

According to Tekeli, Jansen was against the diffusion of apartment house all over the city, thus apartment housing development was limited on Atatürk Boulevard and around Kızılay district in his plan (Tekeli, 1996). There were other possible reasons such as economic, technological and technical constraints to built apartments. In general, Jansen's Plan proposed 2 storey for residential buildings, maximum 3 storeys for mixed used buildings in Ankara (Tankut, 1993), where all buildings were designed with front and rear gardens. After the end of Jansen's contract in 1939 these areas were exposed to density increase (Tankut, 1993; Çakan, Okçuoğlu, 1977).

4.2.1.1.2 Uybadin-Yücel's Plan Period 1957

In 1950s by deficiency of existing plan, introducing a new plan became essential for the extremely rapidly developing city. Annual population growth ratio reached nearly 12 %, and most of this increase was compensated by unauthorized housing. The plan tried to contain the increasing population

mostly in the existing developed area by regulating the residential densities and service areas. Augmentation of unauthorized house building and lack of financial sources restricted the planned development. Therefore planning decisions were not put into practice, but they only offered a new regulation to building heights by increasing building height. In this plan period adequate residential space was provided vertically with District Building Regulation Plans and opening up new development by partial land development plans.

Jansen's Plan did not manage with population increase, similarly Uybadin-Yücel were misled in population estimation. They designed plan for the population of 750 thousand residents for the year 1977, however the population reached nearly 1,5 million at that year. These unexpected population pressures eased to make modifications on plans which worked efficient only within their designed context.

4.2.1.1.3 Ankara Development Plan 1990

In the analyses for the preparation of the plan, it was found out that the density of residential areas reached their maximum points, whereas service areas were insufficient to handle population. Local services such as primary, secondary and high schools; open space; cultural and entertainment, administrative, health and religion service areas were all below the necessary areas per person. And also urban services education, open space and socio-cultural service areas were far away that it should be.

Table 4.8: Comparing regions with respect to service area in 1970

Region Name	1970 Pop.	Gross Housing Area (hectare)	Gross Density (person/ hectare)	Local Service Area (hectare)	Necessity Local Area Service (hectare)	Area for residential usage (hectare)
Küçükesat-Kavaklıdere	44265	151.35	292	1.79	72.13	-
Ayrancı	36934	268.61	138	4.86	60.22	-
Çankaya-Yıldızevler	32962	495.49	67	8.42	53.73	208.15
Dikmen-Öveçler	41266	637.33	65	5.43	67.26	125.50
Devlet	5601	16.82	332	3.06	9.14	6.50
Balgat-Çukuranbar	20221	319.41	63	4.25	32.95	272.25
Bahçeli-Emek	55160	257.76	214	8.85	89.90	-
Maltepe-Anıttepe	37157	145.41	256	15.33	60.57	-
Söğütözü	2800	72.33	39	0.63	4.59	268.55

Source: Ankara Nazım Plan Şeması Raporu 1977

In Table 4.8 districts are selected from the west and south of the CBD to compare existing situation with respect to dwelling units densities of apartment housing in Chapter 4.4. According to local services all do not have the necessary area, even if there was not any newly development area. Excessive housing provision by apartments and consequently population increase in existing districts cause decreasing service area per person. Indicators show that in some districts necessary service areas are ten times greater than existing area. In the 1990 Development Plan this problem was handled, and offered corridor style planning and dispersion of population by creating suburbs as the planning policy to bring a solution for the high density problems, agglomerations on specific locations and deficiency of service areas. At this direction the plan proposed that development of the city will be towards the south-west and north-west direction.

4.2.1.1.4 Ankara Development Plan 2025

The same problems that have been mentioned in the 1990 plan are also being considered in the 2025 Development Plan. Therefore to overcome

these problems, the plan attracted attention to decentralizing urban services and functions. Trying to create a balance population and the labor force by decentralization, it is aimed to prevent population and density increases in the existing residential areas. Extensive and large scale shopping centers and malls are restricted to locate near the existing CBD and they directed to new development centers. Educational services especially private high schools and universities (except medical faculties) are supported for decentralization by enabling those establishing campuses at the fringe of the city.

This decentralization policy is supported by creating new business districts with huge shopping and cultural centers, and dispersing administrative and public units from the CBD to the parallel directions to planned centers. Around these centers parcels for residential use are mostly freed from height and storey limitations by only giving floor area ratios.

4.2.1.2 Legislation Period

4.2.1.2.1 The Period after Proclamation of Ankara 1923

The first period began with the proclamation of Ankara as a capital city in 1927, where population was 74.553 and the city was located on 300 hectares of land with the density of 248 residents per hectare. Especially around Ulus quarter apartment housings were built among public buildings (Altaban, 1986). With the law 586 in 1925; an advance payment - half of their monthly wages - were paid to all officials to enable them setup housing cooperatives. And also there were compensations which were paid for housing rent to officials with the law 1452 from 1929 to 1951.

After the declaration of Municipalities Law in 1930, Ankara Municipality was organized and the values of lands that had development plans were increased. This increase in urban land values made impossible to built single

houses in one parcel. Although in 1935, building census showed that only 351 buildings were apartments in 17372 residential buildings (Türel, 1986). Thus, in this period cooperatives pioneered to develop housing in Bahçelievler and Güvenevler quarters supported by loans to finance construction. In 1934 increasing the building height to 3 storeys and again in 1935 adding one flat to all buildings in Yenişehir, and between 1936 - 1938 enlarging urban development boundaries caused increases in the height of housing and in the density of lots (Tankut, 1993; Altaban, 1986). Some apartments in the Kavaklıdere quarter and apartments for Ziraat Bank employees were built due to government appropriated funds for official's housing in the state budget in the year 1937 and the law 1352 declared to construct houses for officials in 1938. These policies did not work efficiently to enable officials to own their housing. For that reason between 1939 and 1963 the housing rent increases were restricted. In the same period amnesty laws (in 1938) led to legalize unauthorized housing outside of the plan area, and after the year 1949 all the buildings were legalized.

In 1935 it was allowed to construct building on plot of land where did not have plan even if they had to accept the situation after subdividing in the future. In 1938 temporary allocation was allowed on lands that exceed 3000 m^2 out of the planning area. After that planning area and municipality border were joined and equalized, developed area grew from 1500 to 16000 hectares (Çakan, Okçuoğlu, 1977). In comparison to the former urban area, 10 times greater land area was led to speculative provision.

With the law 4026 in 1944 providing housing for officials was considered the government's duty, and consequently Namık Kemal quarter was built. In 1945 after the establishment of Ministry of Labor and Social Security and Social Insurance Institution (SSK), then some rent of the SSK fund was allocated for housing finance. Saraçoğlu quarter was an important performance of the Emlak Eytam Bankası which was established in 1926. In 1948 Yenimahalle quarter was built with the law of 5228 that was aimed to

increase housing production and to prevent unauthorized housing. In spite of the growing necessity of apartment housing with increasing urban land values; insufficient accumulation for building apartment housing and deficiency of laws about possessing a flat limited the provision of apartment housing. Considering not legal but the only way of possessing an apartment flat was to buy it with the notary confirmation (Türel, 1996) in accordance to the Notary Law dated 1948.

In 1951 municipalities were authorized for housing provision by changing the law numbered 5656. In the same year building heights were increased along some streets that were allowed to make a roof storey in accordance to the decision of the Council of Ministers. Depending on that decision buildings were allowed to build the fourth storey on Kumrular Street, on some parts of GMK Boulevard, between Opera and Dikimevi, and between Kızılay and Dikimevi; and the fifth storey on Atatürk Boulevard (Çakan, Okçuoğlu, 1977; Tekeli, Güvenç, 1986).

4.2.1.2.2 Title Deed Law and Flat Ownership Law

After the Notary Law, with the approval of Title Deed Law in 1954 brought a new solution for apartment housing, as it became easier to own an apartment housing unit. As a consequence of that law, out of 3861 building permits in 1954, 2361 of them were for apartment housing; i.e. nearly 62% of housing constructions were apartment housing (Türel, 1986). After 1954 this ratio continued to increase following periods.

With laws 6188 in 1953, and 7367 in 1958 it is aimed to increase housing production and to prevent unauthorized housing and than "İmar ve İskan Bakanlığı" was established in 1958 to regulate these applications. In 1960's it was decided to increase all building heights by one storey in the districts of Etlik, Çankaya, Keçiören, Yenimahalle, Dikmen and Balkiraz (Çakan, Okçuoğlu, 1977).

After the Flat Ownership law was enacted in 1965, ownership of flats in the apartment blocks were regulated easily and provision of apartment housing continuously increased. Rapid production of apartment housing and their spread out to the central city oriented the spatial organization of Ankara towards the fringe. Especially Bahçelievler, Emek, Y.Ayrancı, Maltepe, K.Esat, Çankaya and Aydınlıkevler quarters changed dramatically; most of the buildings that did not complete their economic lives were torn down and replaced by higher apartments, and accordingly the density of quarters increased (Altaban, 1986).

4.2.1.2.3 District Building Height Regulation Plans, and Five Year Development Plans Period

In this period, when we examine five year development plans' policies on housing they had almost the same aims; increasing production of housing with limited resources, restricting luxurious housing provision, giving priority to provide housing for poor residents, producing low cost rental housing units to eliminate negative effects of rent payments, to prevent land speculation by providing cheaper land, solving squatter problems, establishing necessary institutions to reach all these aims (Balamir, 1993; Keleş, 2000). In the first Five Year Development Plan period Aydınlıkevler and Balgat were built with the help of labor unions.

After 1960 Yücel's opinion was asked about increasing all building heights by one storey, with the exception of 2-3 storey ones in the districts Etlik, Çankaya, Keçiören, Yenimahalle, Dikmen and Balkiraz. (Çakan, Okçuoğlu, 1977)

> "Yücel stated in his report - Housing density exceeded maximum values due to the existing district building height regulation plan because of insufficiency of social and cultural

institutions, children playgrounds, traffic problem, parking areas, infrastructure establishment in Ankara. Thus, becoming an apartment city, Ankara won't be worse off with an additional storey increase." (Çakan, Okçuoğlu, 1977)

Only after one year in 1961 (1968 application year) increasing building heights was accepted with district building height regulation plan, it was followed by others in 1970 and 1973.

Figure 4.3: District Building Height Regulation Plan

Ankara Metropolitan Planning Bureau (AMPB) research in 1970 stated that 615,796 residents were living in the planned area whereas there were a place for nearly 1,5 – 2 million residents according to the existing development rights of the District Building Height Regulation Plan (Çakan, Okçuoğlu, 1977).

Table 4.9: Estimated population densities in Ankara in 1977

Housing Area	1957 Plan Estimation (Persons / Hectare)	1968 District Building Height Regulation Plan Estimation (Persons / Hectare)	AMPB Calculation in 1977 (Persons / Hectare)
Emek	378	1124	532
GOP	390	1123	469
Cebeci	447	1122	650
Çankaya	321	1070	477
Maltepe	426	1064	529
Y.Ayrancı	473	1051	634
Aydınlıkevler	160	962	410
Bahçelievler	69	915	317
Küçükesat	304	894	586
Mebusevleri	148	888	225
Etlik	245	737	532
Keçiören	100	665	277
Yenimahalle	358	537	379

Source: Çakan, Okçuoğlu, 1977

In 1966 with the help of the Law numbered 775, at 14 different locations lands were expropriated to establish Squatter Housing Prevention Zones in Ankara. These areas were later allocated to middle income households' cooperatives in Aktepe, Sincan, Fatih and Elvankent quarters due to prevailing credit system (Türel, 1996). At the end of 1970's most of the high valued urban areas almost completed rebuilding process in the inner parts of the city and local authorities did not provide necessary urban land for residential development. Thus, for housebuilders moving to urban fringe where beforehand mostly immigrants forced to settle, was the only choice to provide housing in a profitable way (Türel, 1995). These places are also desired by mass housing producers, including middle, middle-high level income groups' cooperatives and their workplaces (Şenyapılı, 1996; Gür, 2000). Not only housebuilders but also households wanted to move to the outskirts of cities due to excessive increase in land prices (according to land value), deterioration of natural environment and air pollution (Altaban, 1986). Batıkent was built with expropriated most of its land at the urban fringe, and Eryaman was allocated for mass housing and than transferred to the Housing Development Administration (HDA).

4.2.1.2.4 After 1980 Economic Stabilization Period

Beginning of 1980s construction of a single apartment housing regarded not to be a solution for developing affordable housing (Tekeli, 1979). New solution is transition from a single apartment housing to mass housing. In 1984 Mass Housing Law was enacted and with the help of HDA provision of mass housing increased. Construction of mass houses for government employees at the fringe of the city accelerated the development and dispersion of housing out of the inland city. However the economic stabilization program in 1980 and Government economic regulations, particularly lofting central on the application of free interest rates affected the demand on housing as an investment and also housing production. Increasing interest rates led to decrease of housing investments. The Mass Housing Law of 1984 numbered 2985 gave the priority in the allocation of housing credits to the housing cooperatives.

4.3 Development and Spatial Allocation of Urban Population of Ankara Depending on Distance from the CBD

We can start by offering background information on the spatial distribution of population in Ankara. In Figure 4.4 it is expected to illustrate the spatial allocation of urban population according to the distance from the CBD. The Hittite Sun Statue on Sıhhıye Square is accepted as the central location "0" and calculated distances of quarters to this center. Each KM interval determines quarters' location according to their distance by drawing circles around this center, and all calculations and evaluations are made within this point of view.
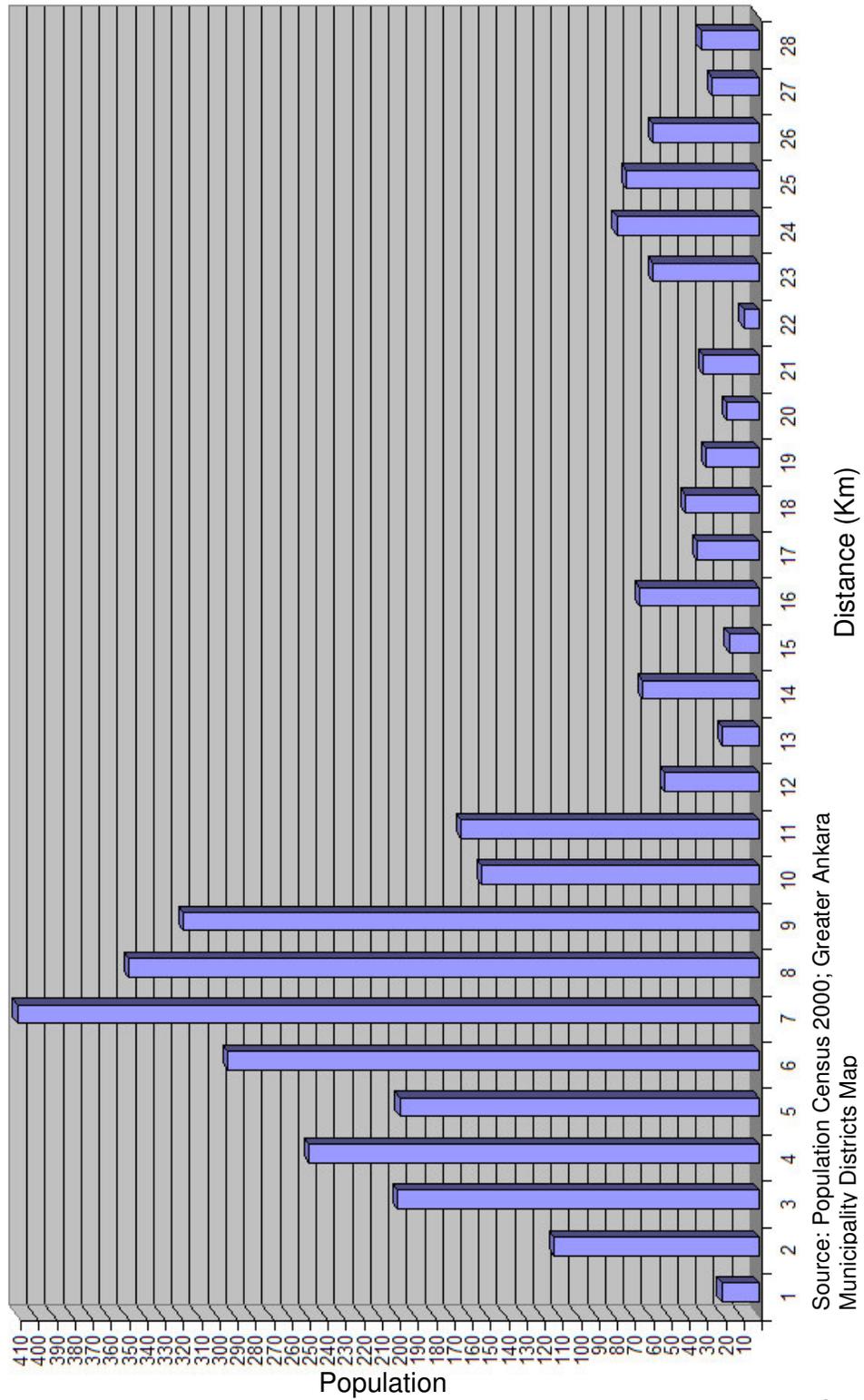
Figure 4.4: Population Distribution in Ankara with distance from the CBD (2000)

Source: Population Census 2000; Greater Ankara Municipality Districts Map

Population

Distance (Km)

In the figure 4.4, population of quarters which are in the same distance interval are summed up, then trying to create the picture of population distribution of Ankara Greater Municipality in relation to the distance from the CBD. We can easily see the agglomeration from 3rd Km to 9th Km. After the 9th Km it is started to fluctuate. This can be explained as the strength of the primary center, because in the first km land use allocations probably weigh non-residential use. The high ratio of population (nearly 70% of population) settles around the center and closer locations, within the first 9 Km. Around 25th Km there is an other agglomeration points (10% of population). This population agglomeration is a clue for partial urban dispersion and success of 1990 and 2025 development plan policies on decentralization. The movement of population and human activities from the urban center to the periphery have taken place by creating new centers; and exurbanization as the demographic growth in rural areas far from the city are considered in Ankara. Another point that supports the dispersion is to show not contiguity of residential areas in Ankara.

When we examine urban population development with respect to distance to the CBD in Figure 4.6, closer distance loose population continuously. The other point is about peak points of different years and the changing fluctuations from closer areas to the far areas. The agglomerations of population was around 3rd Km in 1970, 5th Km in 1985, whereas around 7th in 1990, and around 7th and around 25th in 2000. In these frame from 1970 to 2000 population dispersion is easily seen by existing new development areas at 27th Km.
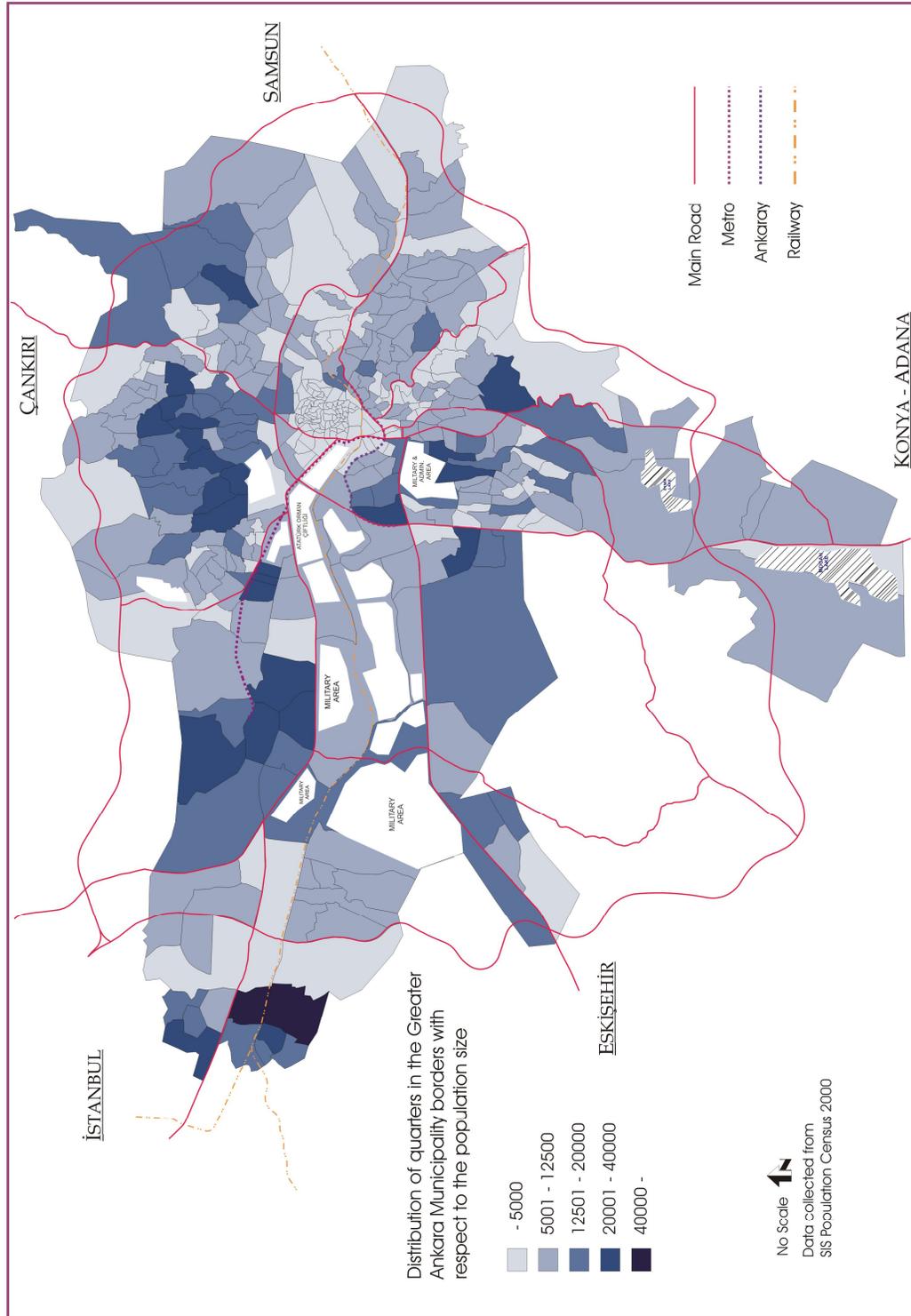
Figure 4.5: Distribution of quarters in the Greater Ankara Municipality
borders with respect to the population size
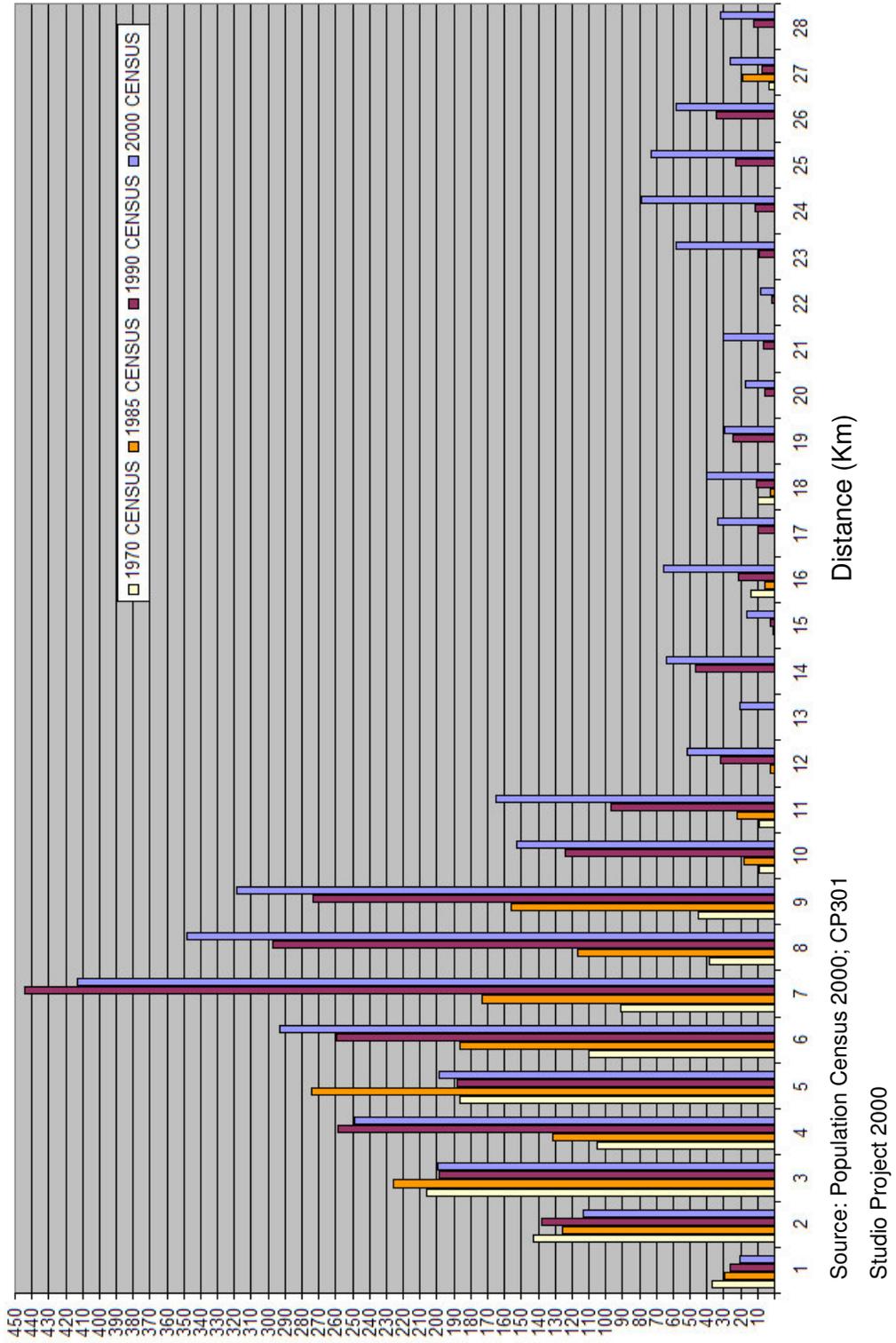
Figure 4.6: Comparison of 1970, 1985, 1990 and 2000 Population censuses in terms of the population distribution with distance from the CBD in Ankara
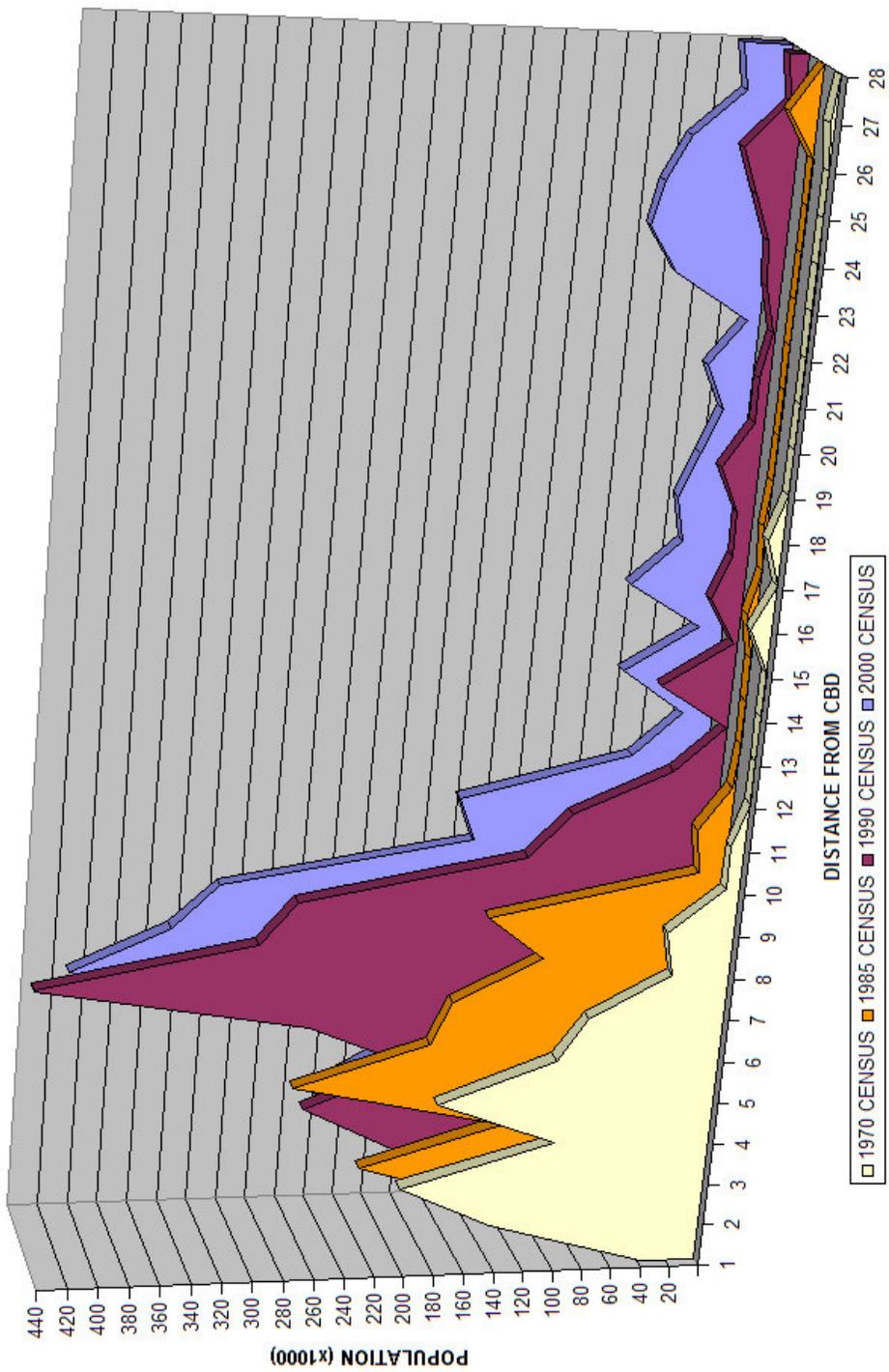
Source: Population Census 2000; CP301 Studio Project 2000

Figure 4.7: Alternative demonstration type of Figure 4.6

The decrease of population of districts that are close to the CBD during this period is explained by the alter in land use decisions and dwelling units usage. In the first 3 Km interval population decreased from the year 1970 to 2000. Quite the opposite of this decrease was the increase in building heights as explained in the previous chapters. That may be accompanied by the change in the functionality of residential units. The growing CBD uses may take over the residential use and change it to non-residential uses.
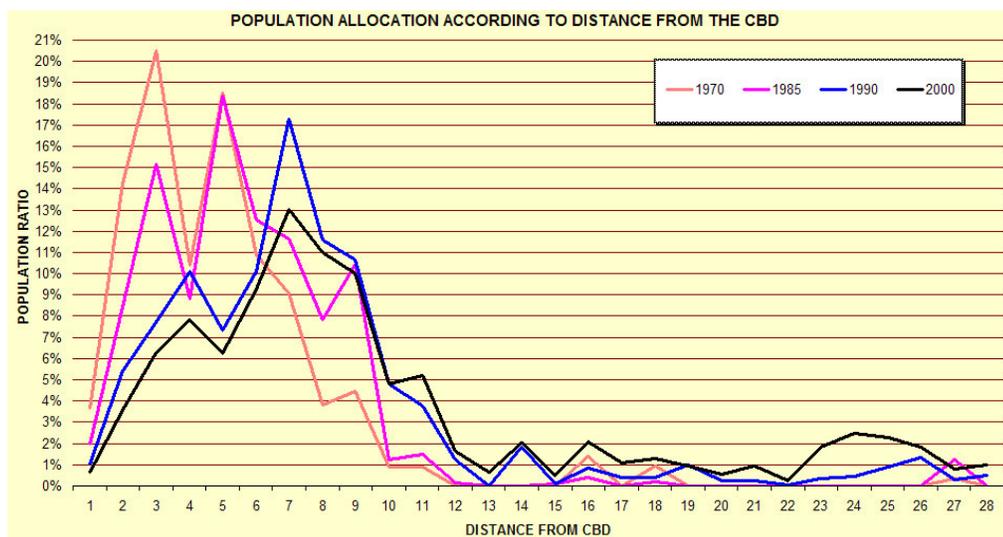
Source: Population Census 2000; CP301 Studio Project 2000

Figure 4.8: 1970, 1985, 1990 and 2000 Population census allocation comparison according to distance from the CBD

In Figure 4.8 we can compare the portion of the populations in 1970, 1985, 1990 and 2000 and their allocation with distance from the CBD. The most striking point in the figure is lines have become flatter from 1970 to 2000. It can be concluded that the city spread increased between 1970 and 2000. After 15th Km bigger portion of the 2000 population settled, compared to the previous censuses. Whereas 1970 and 1990 were still more dependent on the central locations.

4.4 Spatial Distribution of Existing Housing Stock According to Building Height in Ankara

In Figure 4.9, residential and mostly residential buildings in districts which are in the same distance interval, storey numbers are summed up than obtain the average storey by dividing with the residential and mostly residential building number. Obtaining average storey numbers located to their interval showed us the allocation of apartments, i.e. agglomeration of apartments according to distance.
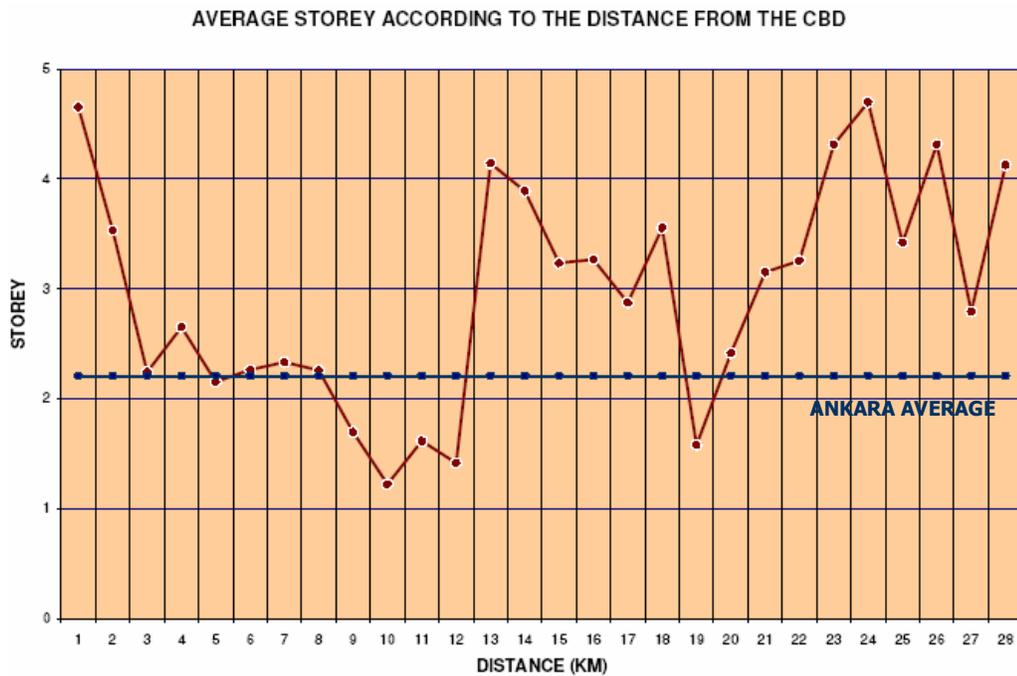
Source: Building Census 2000

Figure 4.9: Average number of storeys according to distance from the CBD

Around CBD in the first Km average number of storey of residential buildings reach the first peak and began to decrease with distance. Between 5th and

12th Km mostly 1-2 storey residential buildings are occupied referring to the figure 4.9. Comparing with figure 4.4 these locations are accommodated by greater part of the population, which is about 62%. This decrease in the number of storeys is the result of densely located one storey houses in the quarters at the northern and eastern parts of Ankara. The figure 4.10 clearly states that in these quarters average number of storeys is below 3. Building height begin to increase after the 12th Km, between 13th and 18th Km show the second peak point, and between 22nd and 28th the third peak point.

Table 4.10: 2000 population census and average number of storeys according to distance from the CBD

Distance From CBD	2000 Population	Residential + Mostly Residential	Total Number of Storeys	Average Number of Storeys
1. KM	20435	597	2777	5
2. KM	113285	5828	20576	4
3. KM	199524	15506	34762	2
4. KM	248517	15600	41360	3
5. KM	198371	17040	36679	2
6. KM	293338	26635	60309	2
7. KM	412857	30558	71246	2
8. KM	348386	26009	58721	2
9. KM	318309	35103	59486	2
10. KM	144515	26125	31792	1
11. KM	164706	24842	40111	2
12. KM	51552	8302	11738	1
13. KM	20139	619	2563	4
14. KM	64283	3183	12377	4
15. KM	16303	2168	7013	3
16. KM	79007	6568	22221	3
17. KM	41180	3375	10385	3
18. KM	12572	887	2062	2
19. KM	29247	3374	5327	2
20. KM	10109	1189	1847	2
21. KM	29367	1422	4491	3
22. KM	8023	466	1517	3
23. KM	58446	2370	10220	4
24. KM	78471	1882	8841	5
25. KM	72769	3022	10336	3
26. KM	58601	1886	8134	4
27. KM	25925	1478	4127	3
28. KM	31848	2106	8690	4

Source: Building Census 2000; Population Census 2000
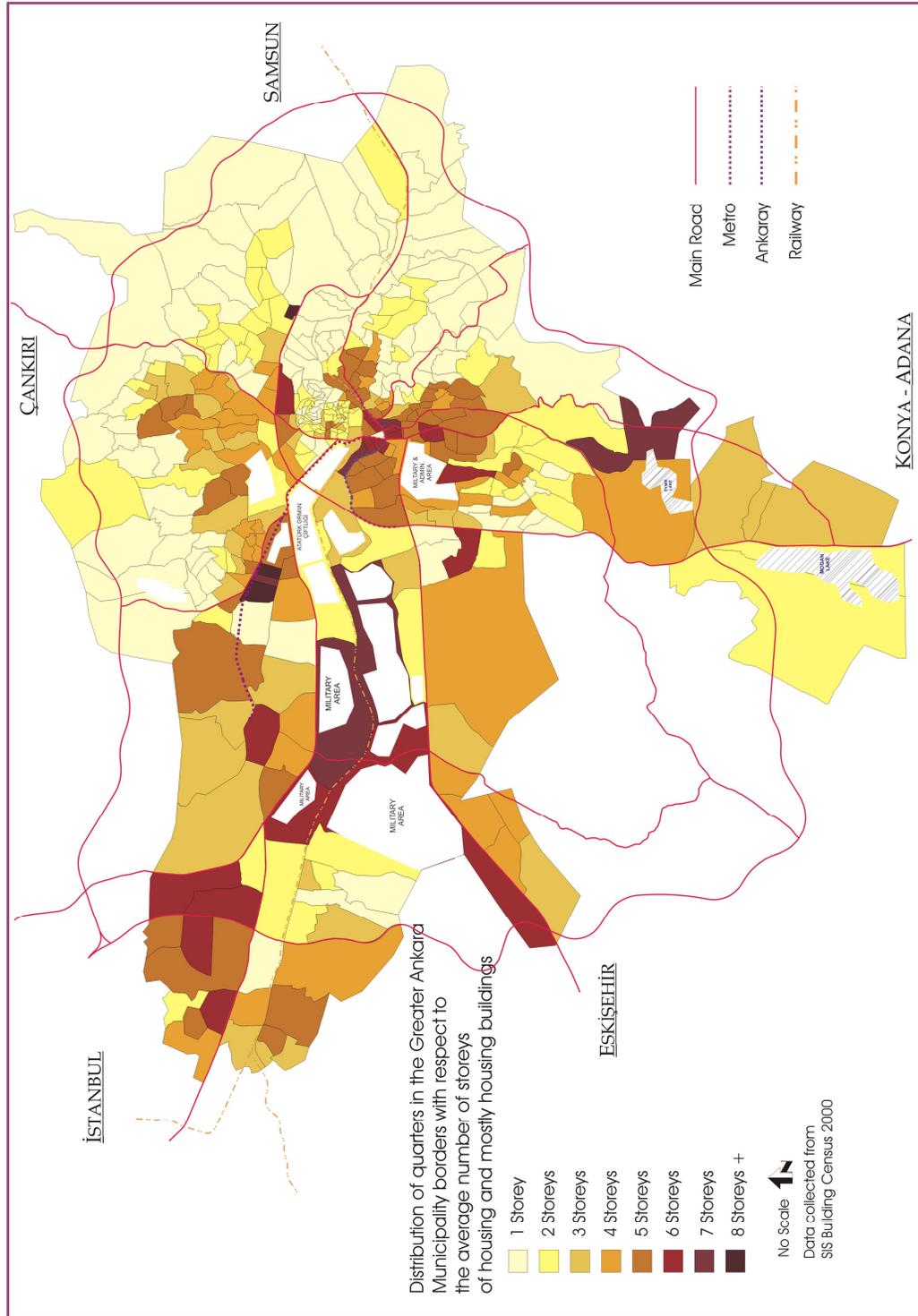
Figure 4.10: Distribution of quarters in the Greater Ankara Municipality borders with respect to the average number of storeys of housing and mostly housing buildings

According to arranged data from Building Census 2000, in each quarter total number of storeys of residential and mostly residential building are divided by number of residential and mostly residential buildings to present building height characteristics of quarters. In Figure 4.10 agglomeration of quarters that have high average number of storeys around the CBD can be seen easily. While going away from the CBD average number of storey mostly decreases, but along some directions it increases in fact exceeds average number of storeys around the center.

To evaluate these changes and clarify the results we classify average number of storeys into three in Figure 4.12. By classifying it can be made clear that residential structure of the southern and western directions differs from other parts of the city. However average number of storey analysis is not enough to conclude exactly the dominance of apartment buildings in quarters' residential structure. As an example excessive number of low rise houses equalizes average number of storey despite of highest apartment buildings and introduce some quarters as the same whereas they have completely different residential structures. Therefore the share of dwelling units in the apartment houses should be considered to achieve the dominance of apartments. In the Figure 4.14, total number of dwelling units in the apartments over 5 storey are rated to total numbers of dwelling units to calculate the ratio of households that live in apartment houses for each quarter. In the overall study area, average share of dwelling units in apartments to total dwelling units is %53,74 which is accepted as threshold to illustrate agglomeration, and the share over %80 in some quarters proves the dominance of apartment housings.
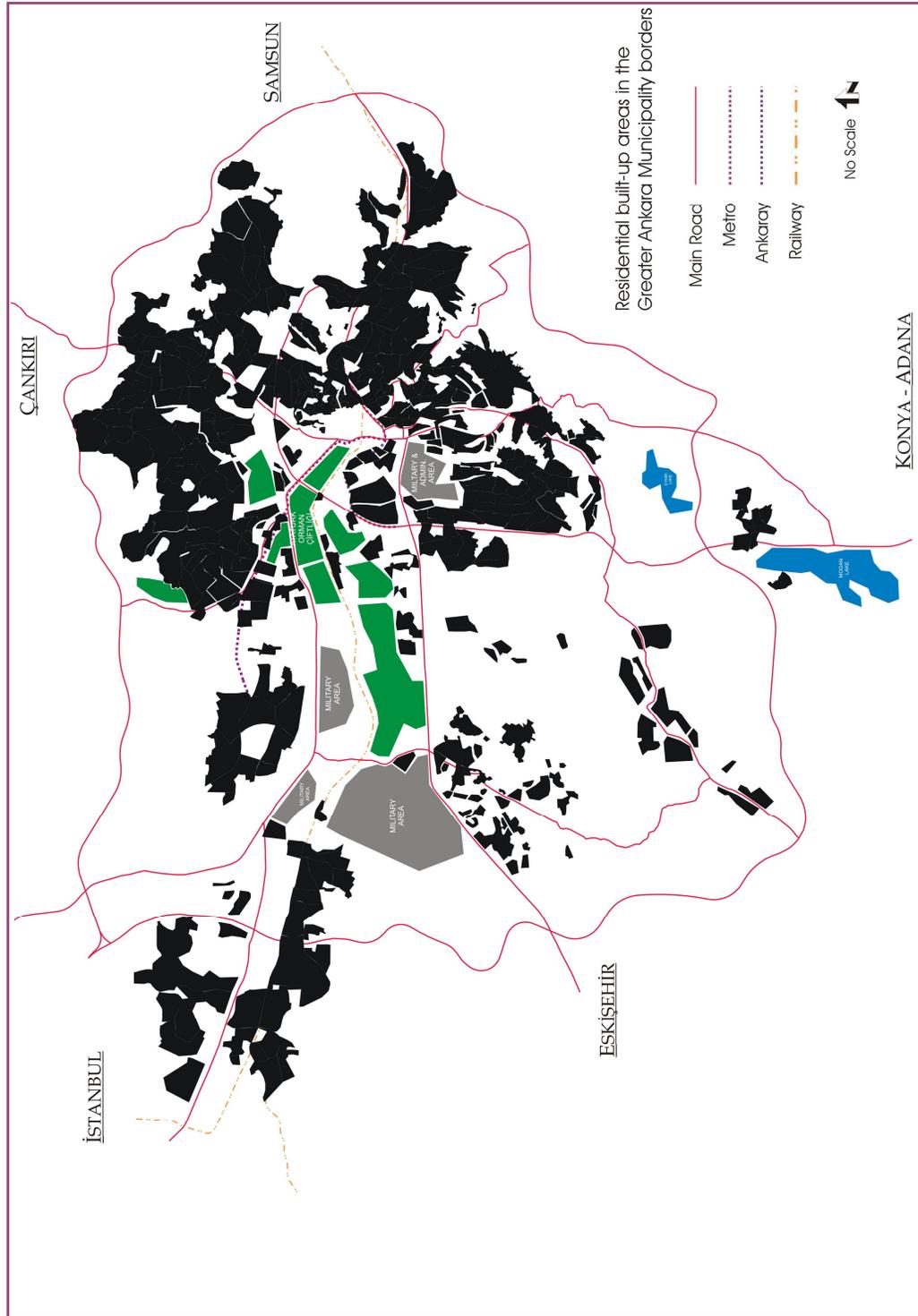
Figure 4.11: Residential built-up areas in the Greater Ankara Municipality borders.
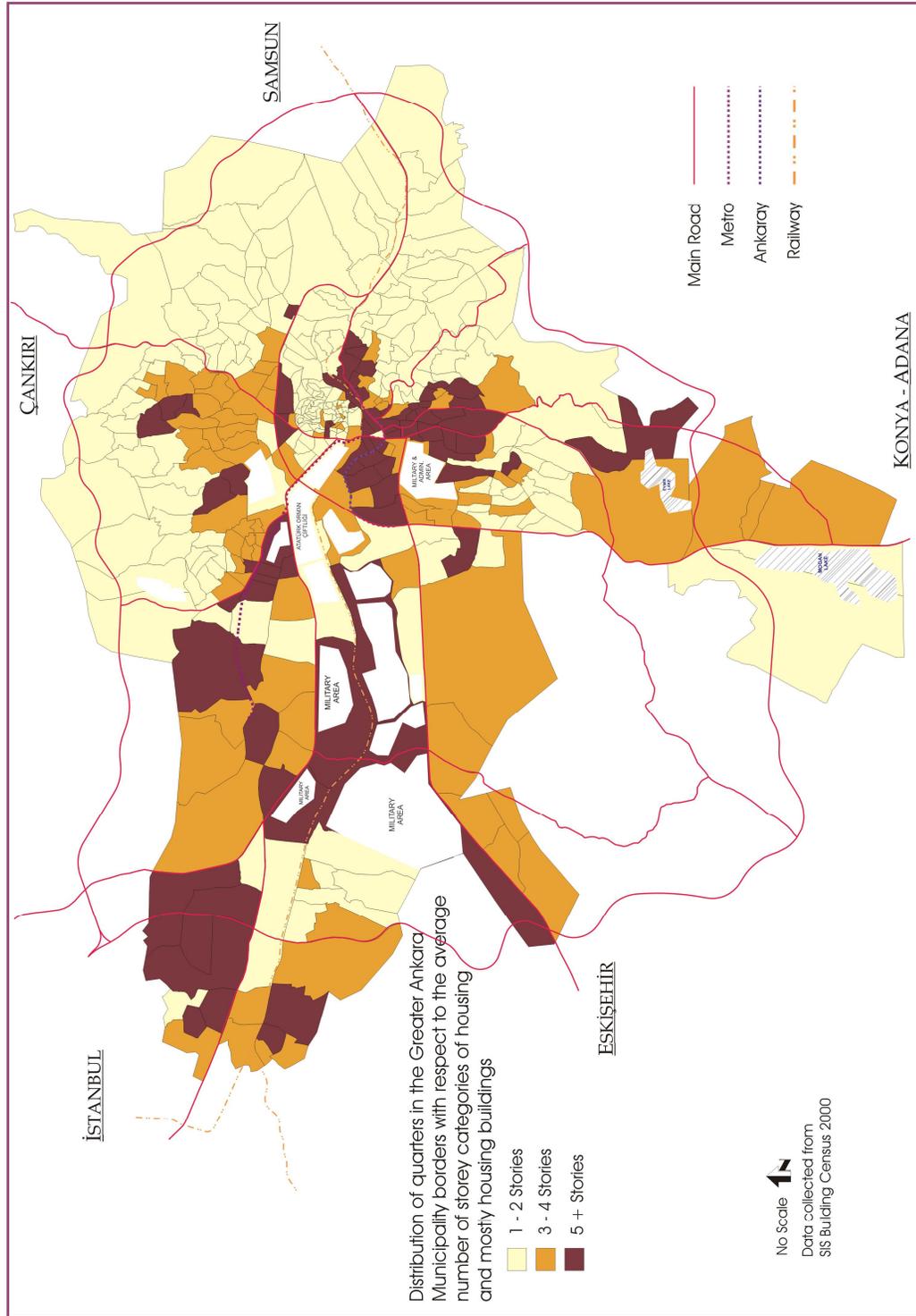
Figure 4.12: Distribution of quarters in the Greater Ankara Municipality borders with respect to the average number of storey categories of housing and mostly housing buildings
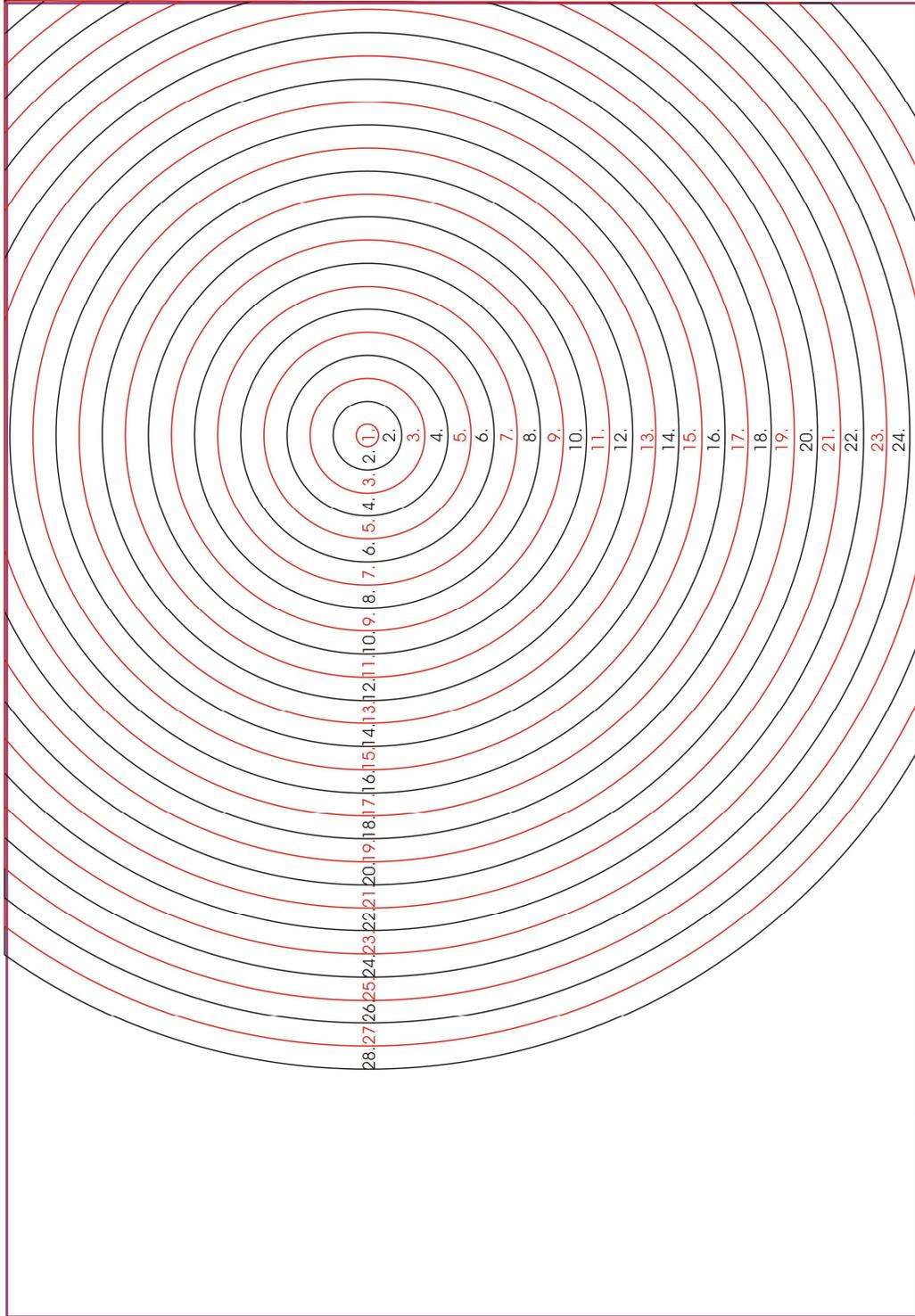
Figure 4.13: Drawing that visualizes distance from the CBD (each circle increases distance by one Km.)

Figure 4.14: Distribution of quarters with respect to the share of dwelling units in the apartments over 5 storeys in the total number of dwelling units

4.5 Role of the Government and Restrictions Imposed by Planning Decisions and Development Rights

In the new residential development areas planning decisions and regulations on building construction are more varied except number of storeys. According to the 2025 Development Plan (although the plan is not approved, it is partially used in development areas) and instructions, residential areas are mostly defined by floor area ratio (FAR, emsal) and most of the building lots are freed from building height limitations. Developers are free to choose their provision type that do not affect to or make great changes to in development density. Existing residential areas near the centre are still regulated by district building height regulation plans while new development areas are mostly regulated by floor are ratio. Arrangements on building height are only considered outside the district building height regulation plan boundaries by merging lots, or by decreasing floor area of building, and then increasing height. In Ankara Municipality's Building Codes it is stated that building heights on the lots outside the district building height regulation plans are determined in two ways; first the maximum height of the building and second planning decisions such as floor area ratio and flat area ratio. According to instructions;

1- Maximum building height equation:

$H = 0,50 + n \times 3,00$ (n is allowed storey number)

2- On construction binary buildings H, second building height adjusts the existing one, even if both buildings height exceeds previously determined maximum H.

3- On the lots that are pointed as high density construction region, H does not exceed the distance from the front side of the building to the middle line of the road.

4- If there is a situation about the conservation of a monument or historical structure, to protect its view H is determined by the regulations on registered buildings

Figure 4.15: Distribution of quarters in the Greater Ankara Municipality borders with respect to the dominant producer type of residential and mostly residential buildings.

**4.6 Spatial variation of Apartment Housing According to the Forms of
    Provision**

In order to determine the dominant producer types of residential and mostly
residential buildings in the quarters are calculated by classifying the data on
producers into three groups; private enterprise, public enterprise and
cooperatives.

In the figure 4.15 it can be easily seen that building cooperatives and public
enterprises mostly choose the western side and partially the south-western
side of the city for housing provision. These agglomerations on the west and
the south-west corridors are along the main roads to some important cities of
Turkey, namely; İstanbul and İzmir. These public enterprise development
locations are intentionally determined in order to create gaps with the existing
settlements by jumping to the interval of 15th and 28th Km from the CBD.
Because spreading to nearly 30th Km from the center cause breaking the
continuity of residential land use, but not really broke off. Quarters which are
located on the area between these main roads are seen as a provision of
public enterprise and building cooperatives, but these quarters mostly consist
of military service areas and housing provided for military and other
employees.

Far from the CBD decreasing land prices (cheap land provision by local
administration) allowed to create these developments and by the easy
access to the centre with main roads it is considered that these districts use
mostly the CBD, despite existing subcenters. After increasing the attraction of
new developments these gaps among the CBD and subcenters getting filled
up by cooperative apartments of middle income groups that have lower
quality buildings and environment (Türel, A. 1996). This type of provision is
the only way to own a dwelling unit for middle income groups. Distinct from
the new development areas, Türel stated that these apartments are built

mostly as 5 storeys without elevator having similar architectural plan and less than 100 m^2 their floor area, they are thus considered low standard housing. On the contrary new development areas such as Eryaman and Konutkent provide better quality having with carefully designed environment, sport centers, playgrounds, and social, cultural and shopping centers even if their addressing social group differs. Compare figure 4.12 with figure 4.15, in these quarters mostly apartments are the products of the public sector and building cooperatives provision, are also matched with areas mostly formed by the apartment housing.

CHAPTER V

COMPARISON AND EVALUATION OF APARTMENT HOUSING FROM DIFFERENT PARTS OF ANKARA IN TERMS OF PLANNING/PRODUCTION CHARACTERISTICS AND USER SATISFACTION

5.1 Evaluation of Population and Building Densities by Comparing Spatial Variation of Apartment Housing

A research of population and building densities in Greater Ankara Municipality borders reveals that there are certain regions which show completely different composition within general structure of the city. Considering quarters by gross density categories of persons per hectare[11] in Figure 5.1, an axis pass along the CBD at the northern and southern directions define the most densely locations. Besides this axis we can see similar agglomeration around the CBD and at far distance of the north-western direction. Most of these quarters are populated over 200-300 person per hectare and except Sincan district they are located within first the 10th Km distance.

In Figure 5.2 number dwelling units of each quarters are summed up and divided to total area of quarters to find gross density of dwelling units. Consequences of this figure are almost same with Figure 5.1. However it can be clearly seen that there are slightly increase of density values compared to population densities. Especially densities of quarters at the southern part of

---

[11] Gross density of persons per hectare is calculated by dividing 2000 population census data of quarters to total area of quarters (including non-residential and inconvenient areas)

the CBD are appeared noticeably whereas quarters at the northern part stay on the same density level. We can reach two assumptions; first, number of households in the southern quarters are probably lower than other parts of the city and second, high share of apartment buildings increase number of dwelling units. From the previous chapters we know second assumption is proved and in the figure 5.3 the first assumption is confirmed with calculation that introduces average number of persons per dwelling unit by dividing population to number of dwelling units.

In the figure 5.3 it can be seen that there are 4 similar regions where average number of persons per dwelling unit is 1-2; inner southern and western parts, and distant western and northwestern parts. These regions are also demonstrate similar apartment housing dominance, but in figure 5.1 and 5.2 they are differentiated with population and building densities. Distant western parts has the lower density values than other three regions. Besides the figure[12] 5.5 introduces that in this region most of apartment housings were built after 1990 whereas in inner districts most of them were built between 1970 and 1990, and some were built before 1970.

It can be concluded that distant western parts are alternative residential areas for apartment housing lifestyle while providing low density residential environment. Because respect to their population, these inner quarters are mostly equipped with poor service areas because of high density and insufficiency of open areas. In order to prove these density differentiation we make floor area ratio research along directions from the CBD to west and from the CBD to south.

---

[12] In figure 5.5 apartment housings in quarters are classified into three with their construction period; before 1970, between 1970 and 1990, and after 1990.

Figure 5.1: Distribution of quarters in the Greater Ankara Municipality borders with respect to gross density categories of person per hectare
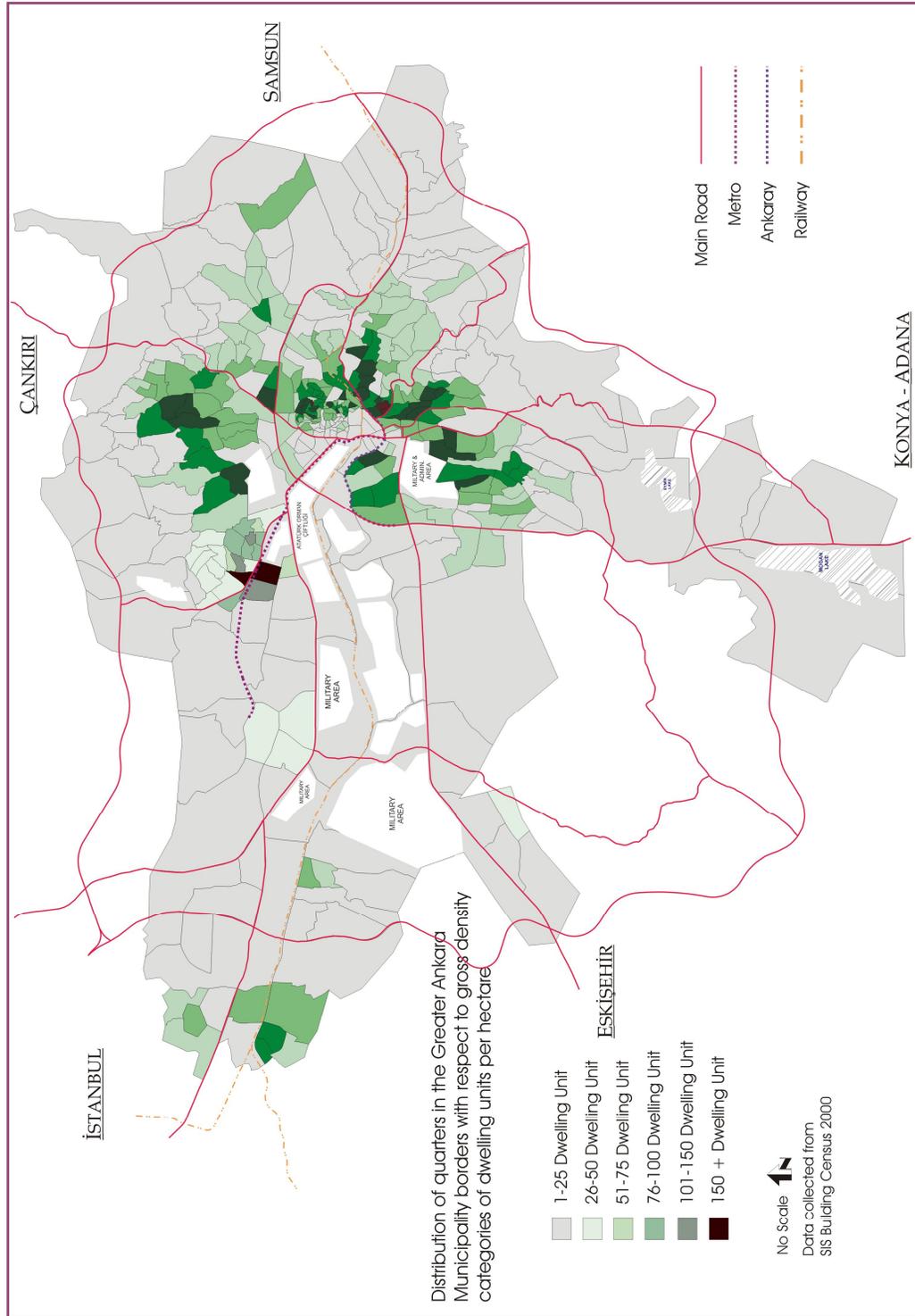
Figure 5.2: Distribution of quarters in the Greater Ankara Municipality borders with respect to gross density categories of dwelling unit per hectare

Map labels:
SAMSUN
ÇANKIRI
KONYA - ADANA
İSTANBUL
ESKİŞEHİR

Legend:
Main Road
Metro
Ankaray
Railway

ATATÜRK ORMAN ÇİFTLİĞİ
MILITARY & ADMIN AREA
MILITARY AREA
MILITARY AREA
MILITARY AREA

Distribution of quarters in the Greater Ankara
Municipality borders with respect to
the number of persons per dwelling unit

(ANKARA Average 3,2)
1-2 Person
3-4 Person
5-10 Person
11 + Person

No Scale   N

Data collected from
SIS Building Census 2000
SIS Population Census 2000

Figure 5.3: Distribution of quarters in the Greater Ankara Municipality borders with respect to the number of persons per dwelling unit

94

In the previous chapter, analyses and the conclusion are directed to identify sampled areas. There are 85 lots chosen for our research. They are mostly from districts that show similar characteristics in the calculated data in the western and south-western corridors of Ankara, and their residents mostly have similar middle or high socio-economic level. Then floor area ratio values are calculated from construction permits and building licenses of residential buildings in these lots. Figure 5.4 states that the highest values are around the CBD, and with distance from the CBD, FAR values are decreasing to 0,5.

These FAR value differences between residential areas around the CBD and far from the CBD prove that they have highly dissimilar residential environments. Their residential densities vary with FAR and exhibit different residential structures in spite of the dominance of apartment housing. We have already known from previous chapters, lower far values increase open space in the parcel, provide lower density, and thus increase residual value. Because increasing vertical development within lower far values decrease horizontal development and let more open space around the building.
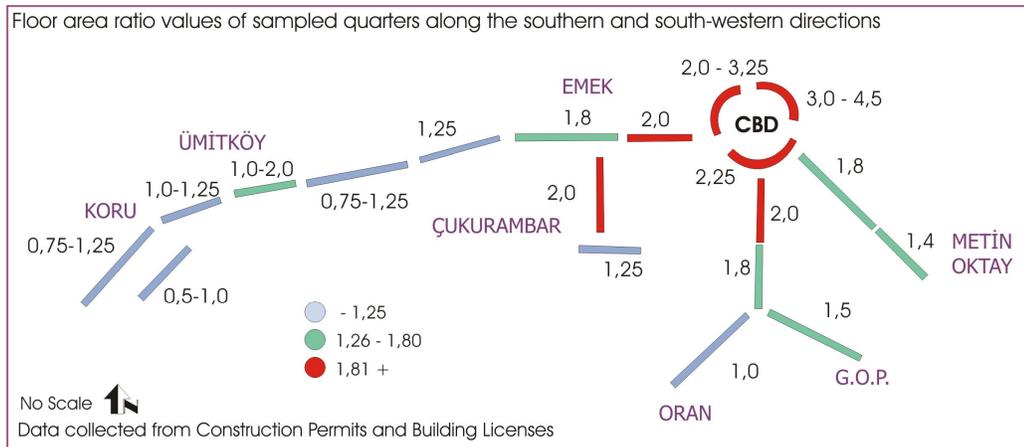
Figure 5.4: Drawings visualizing FARs with respect to distance from CBD along the southern and south-western directions

Figure 5.4 proves the hypothesis that was specified at the end of chapter 3 that housebuilders should be using less capital per unit of land with distance from the CBD, which implies lower floor area ratio.
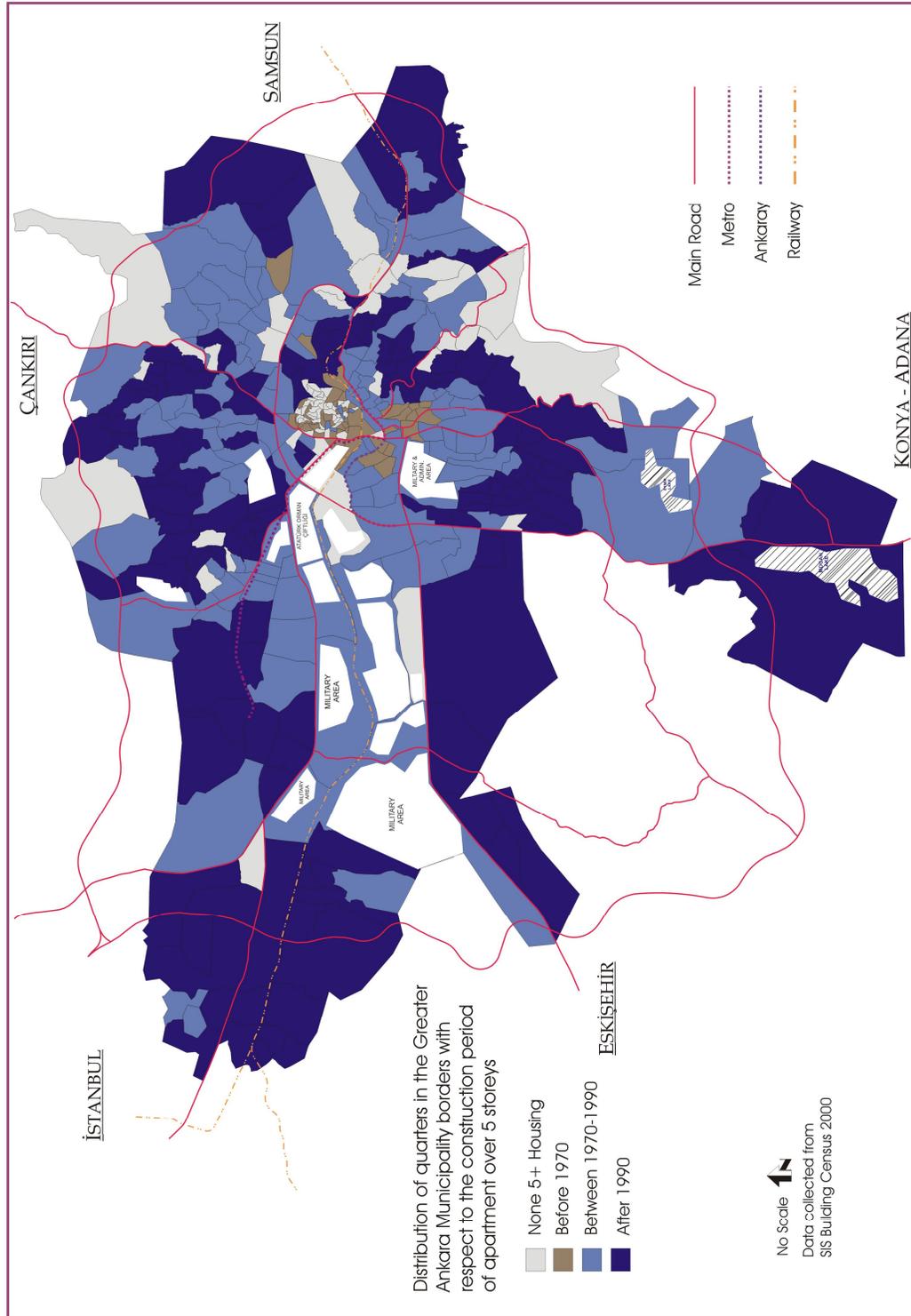
Figure 5.5: Distribution of quarters in the Greater Ankara Municipality borders with respect to the construction period of apartment over 5 storeys
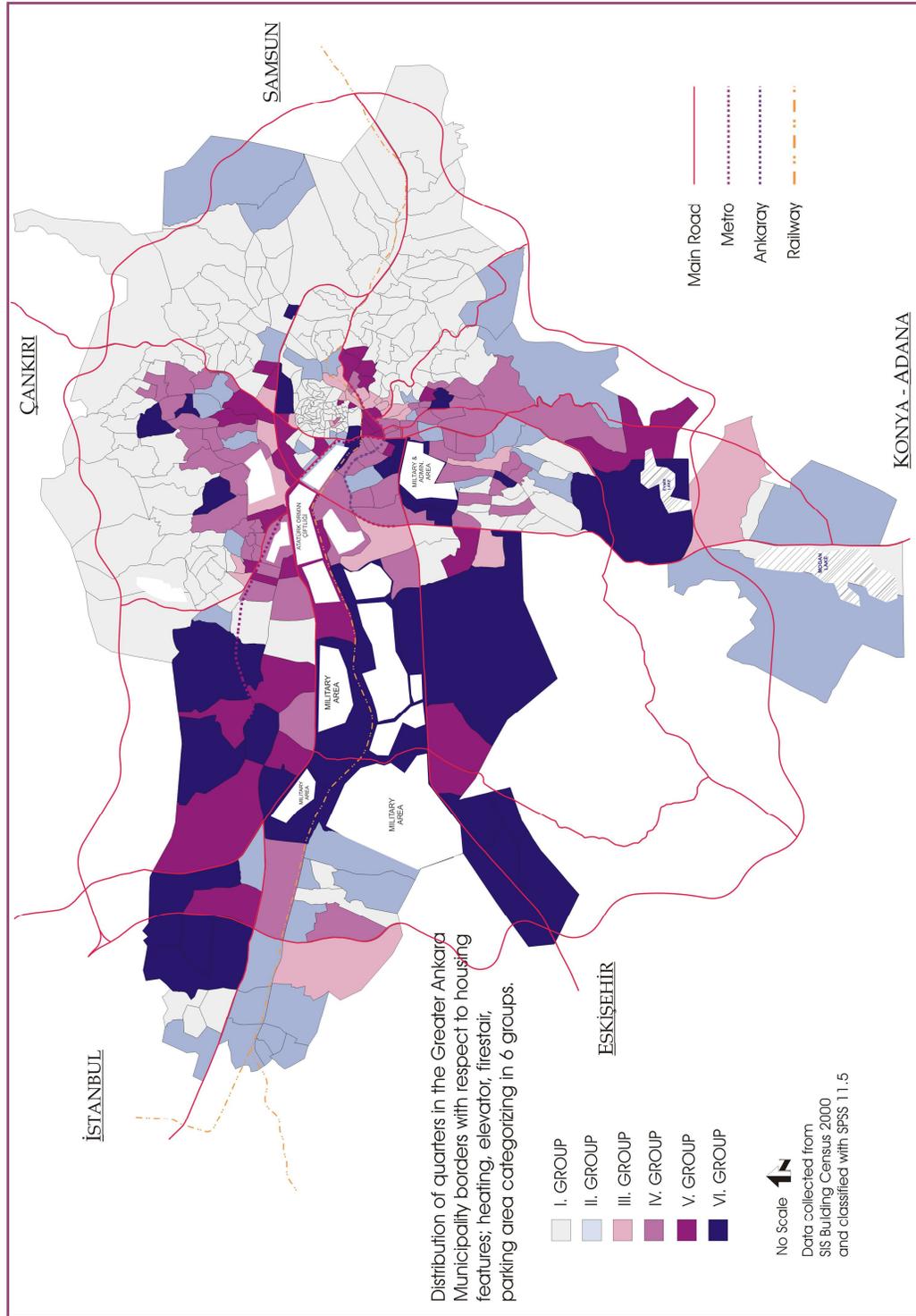
Figure 5.6: Distribution of quarters in the Greater Ankara Municipality borders with respect to building features; heating, elevator, firestair, parking categorizing in 6 groups.

5.2 Evaluation of Building Features by Comparing Spatial Variation of Apartment Housing

Data that are collected from SIS Building Census 2000 for all quarters in the Greater Ankara Municipality borders are evaluated in terms of building quality that is defined according to the availability of some structural features such as heating systems, elevator, firestairs and parking area. For the heating system data, the ratio of buildings that have central heating and private radiator systems; for the elevator, the ratio of the buildings that have elevator; similarly for firestairs, the ratio of the buildings that have a firestair; and lastly for parking area, sum up the number of buildings that have open or closed parking areas are calculated for each quarter. Then, quarters are grouped into 6, according to the level of endowment of apartments with these structural features.
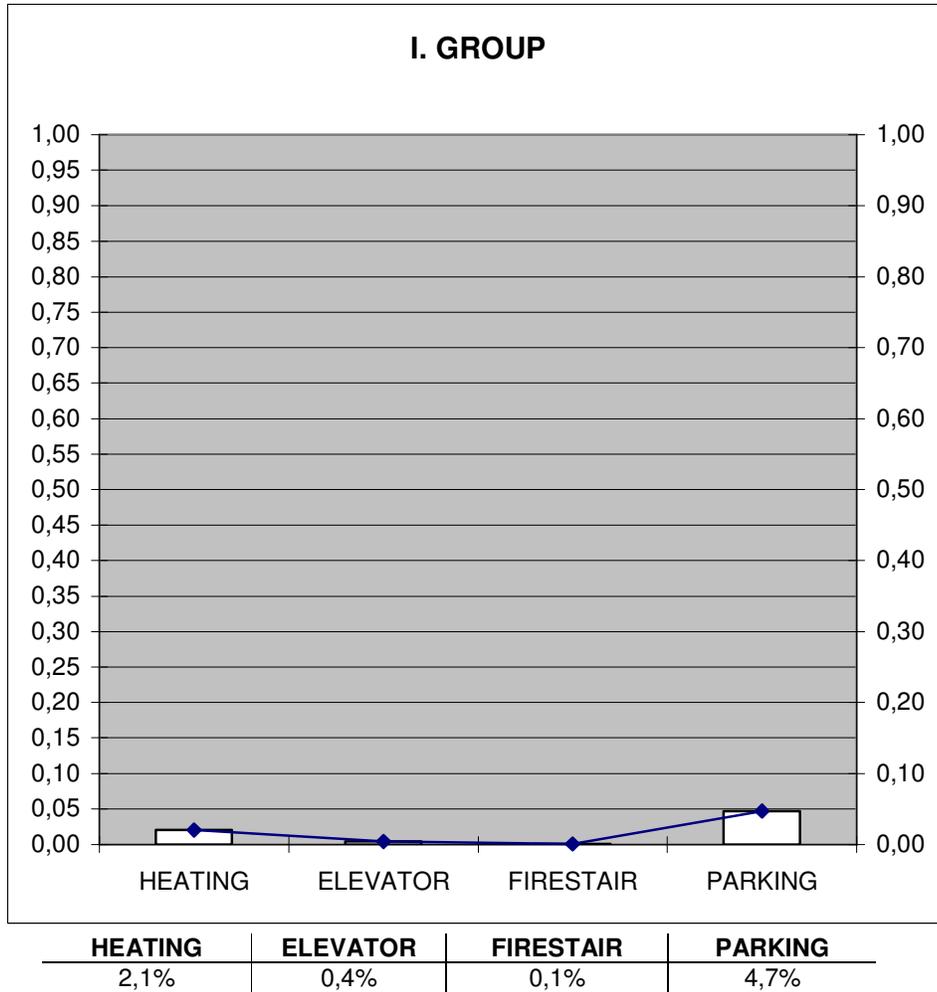
Figure 5.7: Classifying quarters with respect to the level of structural features of buildings (Group I)

206 of 400 quarters are in the Group I. These quarters are commonly concentrated in Altındağ, Keçiören, Mamak and Sincan districts. In Figure 5.6 agglomerations are at the upper northern, north-eastern and eastern parts of the CBD. Buildings in the quarters that are classified in Group I are equipped with those structural features poorly. Compared to other groups, this group has the lowest ratio of structural features. Heating is the most important factor for defining the quality and comfort of a building, thus these quarters have the lowest quality buildings as 2,1 % of buildings have central heating or private radiator system. Low ratio of elevator and firestair features should

be the indicators of the majority of the low-rise buildings. Quarters in Group I match with the quarters in figures 4.10 and 4.12 since the average number of storeys is 1,4 in these quarters. Besides the low rise residential as shown in figures 5.1 and 5.2 these quarters are densely populated neighborhoods. Low parking area ratio indicates that these quarters are the oldest residential areas or unplanned areas or densely built areas, where residents are in lower socio-economic groups.

In figure 4.14 Sincan district is shown having high ratio of dwelling units in apartments, particularly Fatih, Ulubatlı and Yunus quarters on the northern part of Sincan have such a characteristic. And provisions of apartment housing in these quarters are mostly undertaken by cooperatives on lands that are developed by public agencies. However majority of provision of apartment housing in Group I is by the private sectors (Figure 4.15).

II. GROUP

HEATING	ELEVATOR	FIRESTAIR	PARKING
8,3%	1,9%	2,6%	40,8%
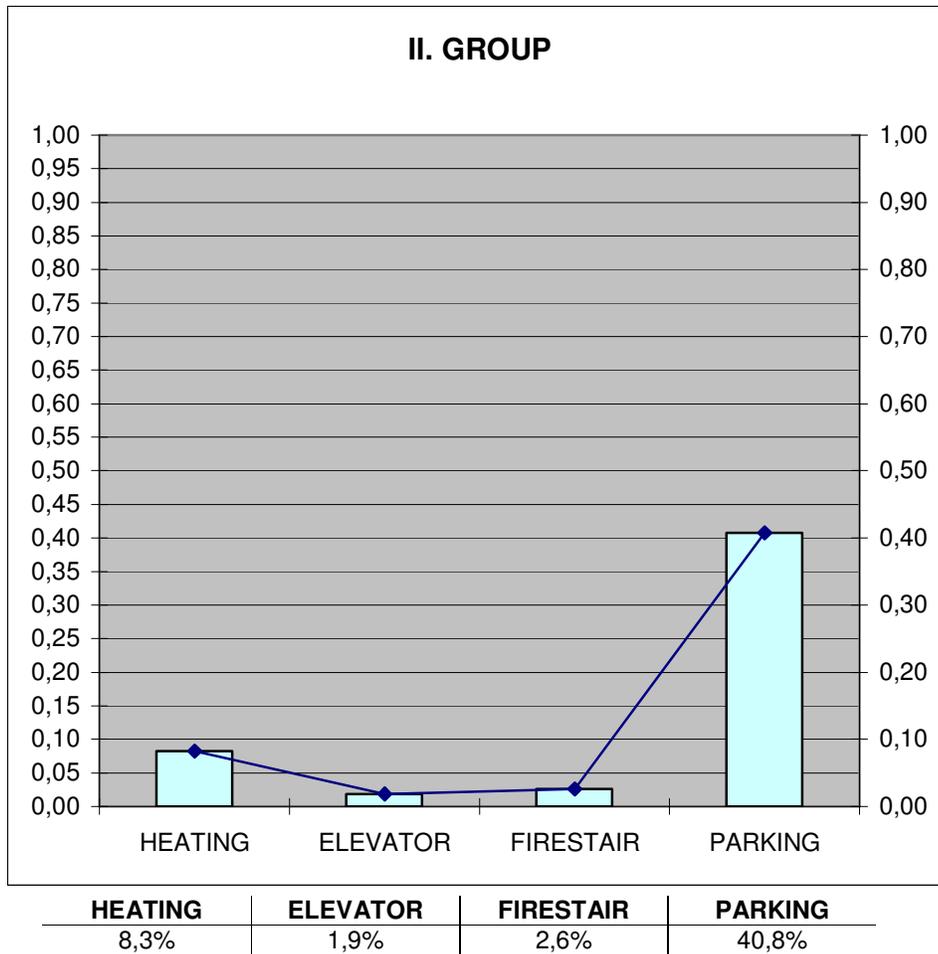
Figure 5.8: Classifying quarters with respect to the level of structural features of buildings (Group II)

Group II is another group that includes low-rise buildings with the average number of storey 1,3. This group is attracted with the second highest firestair ratio. Together with other low ratio of building features this high ratio is explained with the difference of the types of buildings except housing. The elevator ratio is low parallel to the building height, although higher ratios of this feature and the heating system compared to Group I illustrate that in these quarters, apartments are better in quality. These quarters are dispersed and are mostly located away from the CBD (Figure 5.6). The gross densities of population and dwelling unit are considerably low. According to the figure 4.15 almost all the apartments in these quarters were created by

private provision and mostly built after 1990 (Figure 5.5). High parking area ratio is related to construction period of apartments, and majority of low rise detached housing that are owned by high income groups in Gölbaşı district.

HEATING	ELEVATOR	FIRESTAIR	PARKING
44,2%	4,1%	0,7%	12,7%
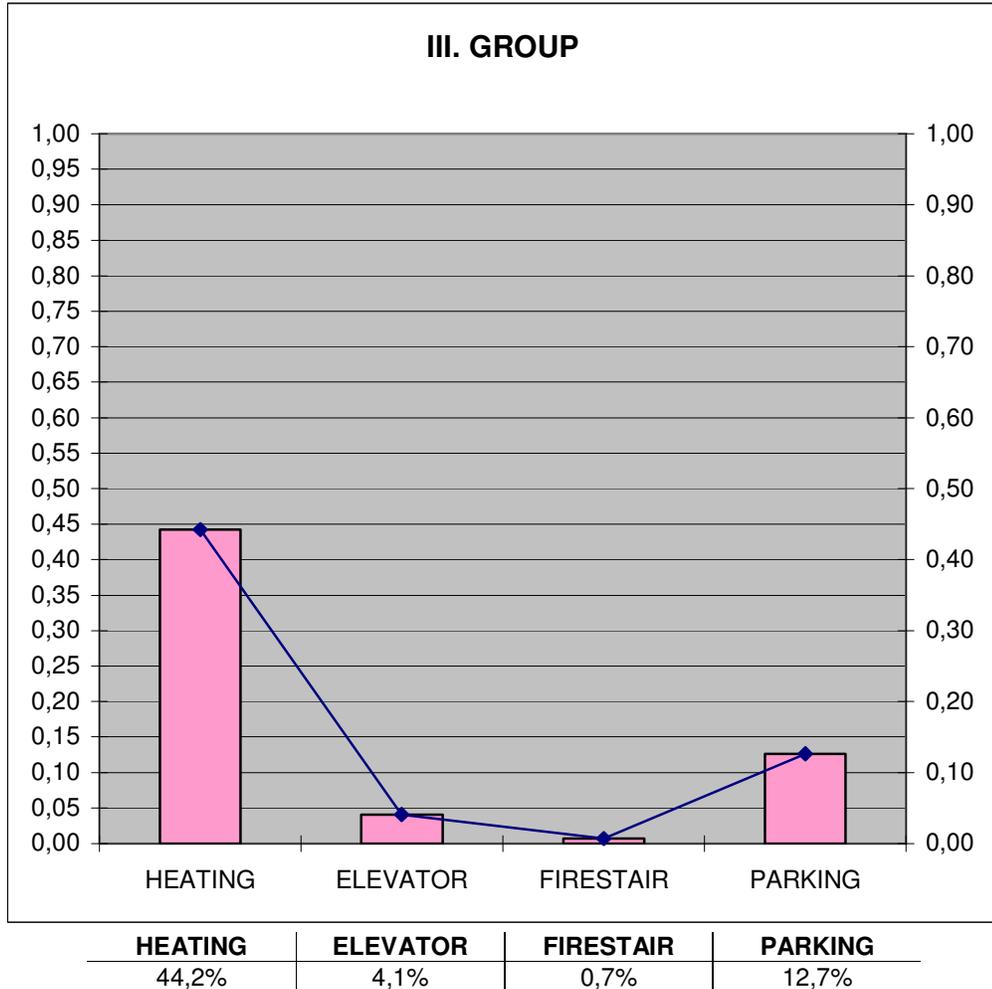
Figure 5.9: Classifying quarters with respect to the level of structural features of buildings (Group III)

In the third group the average number of storeys of residential buildings rise to 3,2. Comparing to others this is the only group that has no leading specific features. Low ratio of parking area and firestairs, but higher heating and

elevator ratios are the indicators of dominance of lower middle income groups and moderate quality apartment housing in these quarters. In Figure 4.12, quarters belonging to this group have mostly 3-4-5 storey residential buildings. These quarters are agglomerated at the eastern part of the CBD and at the direction of north and north-east where there are connections to Samsun and Airport roads. Further quarters are located close to the circular motorway. Centrally located quarters are densely populated and have 3-4 persons per one dwelling unit on the average (Figure 5.3). Except in Karakusunlar quarter, all the apartment residential buildings are produced by private sector. Whereas some apartment housing belongs to the periods earlier than 1970, the majority of apartments were constructed in the 1970-1990 period.

IV. GROUP

HEATING	ELEVATOR	FIRESTAIR	PARKING
45,8%	10,6%	1,7%	50,1%
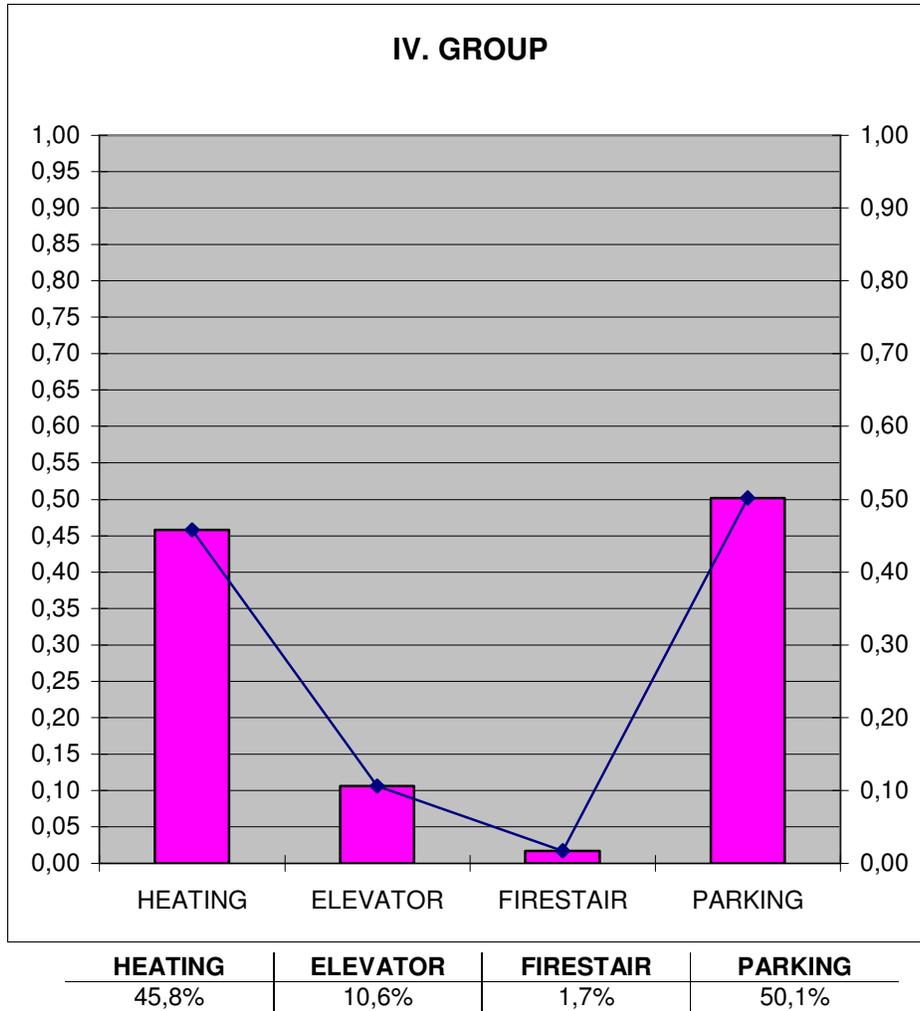
Figure 5.10: Classifying quarters with respect to the level of structural
features of buildings (Group IV)

South, inner west and north-west directions from the CBD are the
agglomeration areas for this group. Except Elvan and Etiler quarters, all
quarters are close to the CBD, i.e. have high relations with CBD. Average
number of storeys increased to 4 in this group. Quarters that have the
highest average number of storeys are in this group. And other quarters
generally have an average of 5 and over storey housing, and compared with
Figure 4.14 these match with the high share of dwelling units in apartment
housing. In these quarters apartment buildings' construction period is

generally between 1970 and 1990. In Figure 4.15 except Gayret and İnönü quarters, housing in all other quarters are the product of private sector. These quarters are highly populated and built up areas, but considering the household size the average is mostly 1-2, and only some dwelling units with 3-4 persons. Group IV has the second highest parking and elevator ratio (Group VI has the highest ratio of features). All structural features ratios are above the average ratios[13] in this group. These can be interpreted that residents of these quarters are in middle and upper middle income groups. High ratio of parking area is explained as a result of the transformation of single houses to apartments or changing the front and back gardens to parking areas.

---

[13] Arithmetic average building features of all quarters are Heating = 26,1%; Elevator = 4,1%; Firestair = 1,0%; and Parking = 23,6 %.

V. GROUP

HEATING	ELEVATOR	FIRESTAIR	PARKING
87,8%	6,9%	1,2%	19,0%
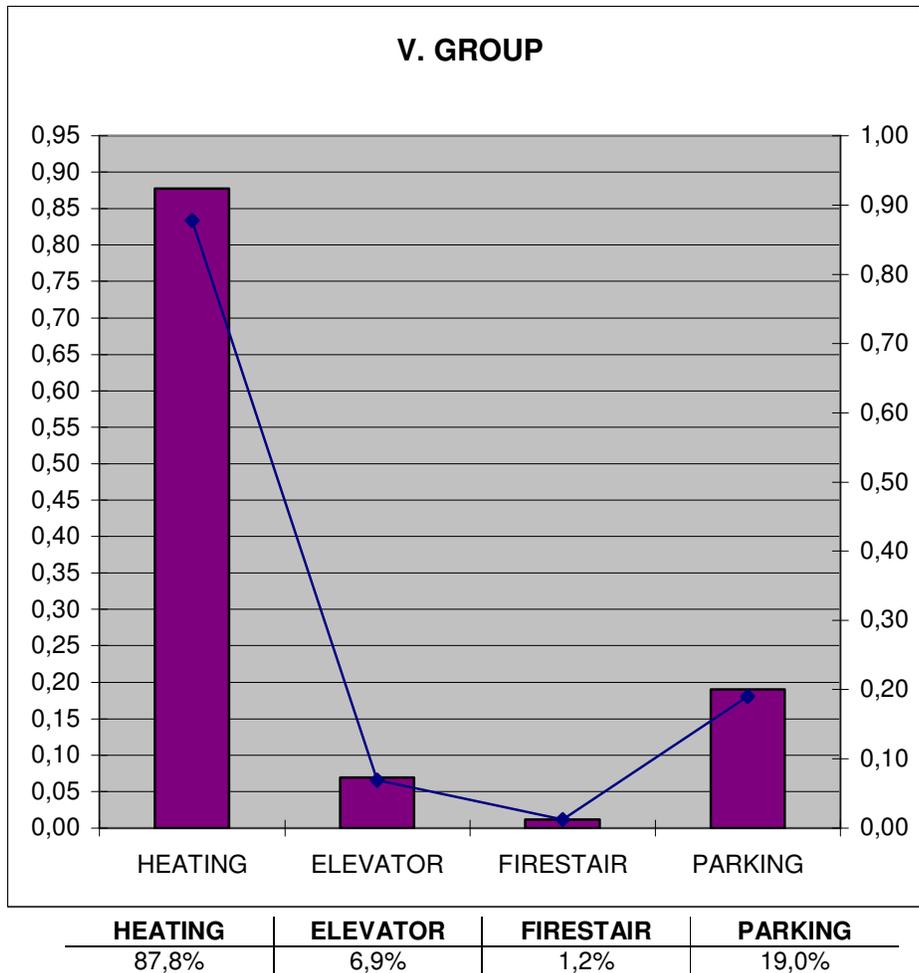
Figure 5.11: Classifying quarters with respect to the level of structural
features of buildings (Group V)

Comparison to other groups, quarters in the Group V do not show exact location or agglomeration at any location in the city (Figure 5.6). In this group average number of storeys decreased to 3,4. Most of quarters are in the 3-4 average storey category, but there are quarters that have an average of 6 or more storeys. In the Figure 5.1 these quarters have the least gross density being in the 1-100 person per hectare category. Parking area and elevator ratios sharply decrease, compared to Group IV. But heating ratio increases by nearly half. In these quarters apartment buildings are in good quality with respect to heating and elevator ratio, and having a relatively new construction

period, as in the figure 5.5 most of the quarters are created after 1990. The majority of the producer types of the apartments are building cooperatives and public agencies (Figure 4.15).

HEATING	ELEVATOR	FIRESTAIR	PARKING
88,3%	14,8%	4,1%	86,4%
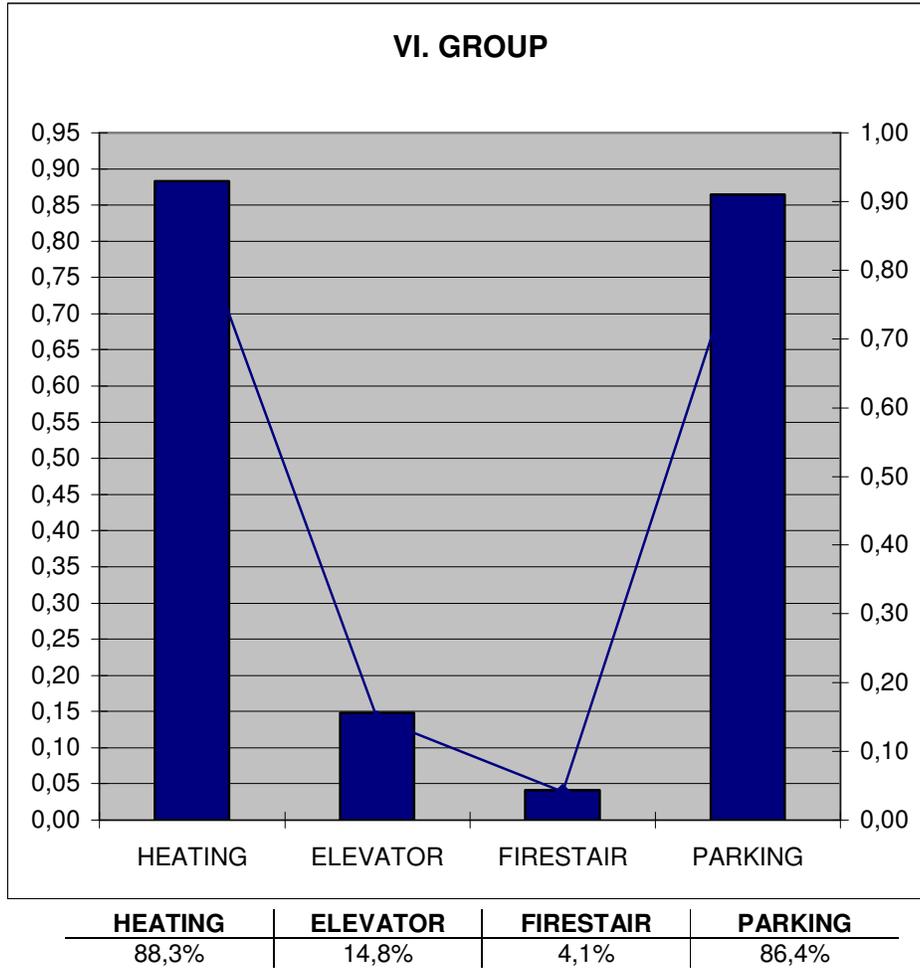
Figure 5.12: Classifying quarters with respect to the level of structural features of buildings (Group VI)

Group VI has the highest ratio of building features and the highest average storey with 4,1. In quarters of this group, average storey varies between 3 and 7. These quarters are located on the western (around Eskişehir Road), the north-western (around İstanbul Road), and the southern (around Konya/Adana Road) parts of the city. Except a few quarters at south-west of

the CBD, most of the quarters in this group are 10 Km far from the CBD (Figure 5.6). Referring to the figure 4.16, Ostim, Kentkoop, Batısitesi, Şehit Osman Avcı, Tunahan and Eryaman at the north-west direction, and Buketkent, Zırhlıbirlik and Bahçekapı at the west direction are the quarters that have at least 80% of dwelling units in apartment buildings. In figure 5.5 most of apartments in these quarters have been constructed after 1990. Almost all the apartments in these quarters are the product of public agencies and building cooperatives.

5.2 Evaluation of Questionnaires

There 84 questionnaires that are collected after filled by residents from apartment buildings in Ümitköy, Konutkent, Koru, Buketkent and Yenikent quarters.

Consequently, 14% of buildings do not have elevator and 12% of them have 2 dwelling unit on a flat. 25% of them have 4 rooms, 60% have central heating system, 77% have playground, 35% have sport area, and 10% do not have parking area. Average number of person per dwelling unit is 3,08 and 65% of them are owner occupiers. Average monthly rent is 435 M TL for tenants. Average number of trips per household to CBD is 2,4 for owners and 3,1 for tenants in a week.

According to tables 5.1 and 5.2 average number of working household members and students in owner occupier households are higher than tenant households, while share of the dwelling units where households are working exceeds owners' share. Besides tenant are more sensitive to be close to the workplace and use frequently private car. Location thus is more important for tenants than for house owners whose heads are mostly retired.

Table 5.1: Statistical analyzes of households which are the owner of the
dwelling unit

OWNER	# of DW	55	# of PER.	166
	# OF WORKERS	RATIO	# OF STUDENTS	RATIO
PERSONS	42	2	44	1,47
DWELLING UNIT CLOSE TO	21	38%	30	55%
WORKPLACE	4	10%	28	64%
PRIVATE CAR	24	57%	12	27%
SERVICE	10	24%	14	32%
BUS	7	17%	12	27%

Table 5.2: Statistical analyzes of households which are tenant

TENANT	# of DW	29	# of PER.	93
	# OF WORKER	RATIO	# OF STUDENTS	RATIO
PERSONS	34	1,55	21	1,24
DWELLING UNIT CLOSE TO	22	76%	17	59%
WORKPLACE	12	35%	14	67%
PRIVATE CAR	15	44%	8	38%
SERVICE	11	32%	5	24%
BUS	8	24%	2	10%

In the questionnaire the reasons are asked to clarify the choice of apartment housing. Owners mostly reply to this question with the reason of ownership and than secondly ownership and environment. Tenants firstly choose environment, than economically feasible and at last environment and close to workplace reasons.

In table 5.4 tenants have more negative opinions about apartment housing (13,8%) than owner occupied households (10,9%). Positive opinions are ranked as first security, and than comfortable and environment for tenants whereas for owners these order changes as first comfortable and than other reasons; security, neighborhood and environment.

Table 5.3: Answers of the question about the choice of apartment housing

WHY DO THE HOUSEHOLD CHOOSE APARTMENT HOUSING?

	OWNER		TENANT	
OWNER	42	76,4%	0	
ENVIRONMENT	1	1,8%	17	58,6%
CLOSE TO WORKPLACE	2	3,6%	2	6,9%
FEASIBLE (ECONOMIC)	0		5	17,2%
OWNER + ECONOMIC	3	5,5%	0	
OWNER + ENVIRONMENT	7	12,7%	0	
ENVIRONMENT + CLOSE TO WORKSP.	0		3	10,3%
ENVIRONMENT + ECONOMIC	0		2	6,9%

Table 5.4: Opinion about the apartment housing

	Owner		Tenant	
ALL NEGATIVE OPINIONS	6	10,9%	4	13,8%
SECURE	4	7,3%	4	13,8%
COMFORTABLE	10	18,2%	3	10,3%
CLEAN	2	3,6%	0	
ECONOMIC	3	5,5%	0	
NEIGHBORHOOD	4	7,3%	0	
WARM	1	1,8%	0	
ENVIRONMENT	0		2	6,9%
SECURE + FEASIBLE (ECONOMIC)	3	5,5%	0	
COMFORTABLE + ECONOMIC + NEIGHBORHOOD	1	1,8%	0	
ENVIRONMENT + NEIGHBORHOOD	4	7,3%	1	3,4%
SECURE + WARM	1	1,8%	2	6,9%
COMFORTABLE + NEIGHBORHOOD	0		1	3,4%
COMFORTABLE + WARM + ECONOMIC	0		2	6,9%
OTHER	14	25,5%	9	31,0%
COMFORTABLE + SECURE + NEIGHBORHOOD	2	3,6%	1	3,4%

Table 5.5: Opinion about the district

	Owner		Tenant	
ALL NEGATIVE OPINIONS	2	3,6%	4	13,8%
QUIET	4	7,3%	5	17,2%
QUEIT + ENVIRONMENT	1	1,8%	2	6,9%
NEAT + FAR	1	1,8%	0	
RESIDENTS	1	1,8%	0	
NATIVE	2	3,6%	0	
ENVIRONMENT	2	3,6%	0	
NEAT + RESIDENTS	2	3,6%	0	
NEAT	7	12,7%	2	6,9%
NEAT + RES + NATURE	3	5,5%	0	
NATURE + FAR	1	1,8%	0	
NEAT + NATURE	4	7,3%	0	
NEAT + SHOPPING	7	12,7%	4	13,8%
ENV + SEC + GOOD FOR CHILDREN	2	3,6%	1	3,4%
ENVI + NEAT + RESI	4	7,3%	2	6,9%
NEAT + SECURE	1	1,8%	0	
QUIET + SECURE + NATURE + SHOPPING	2	3,6%	1	3,4%
OTHER	5	9,1%	7	24,1%
NEAT + NATURE + SHOOPING	3	5,4%	0	
QUIET + SECURE	1	1,8%	1	3,4%

Table 5.6: Opinion about the location

	Owner		Tenant	
ALL NEGATIVE OPINIONS	12	21,8%	3	10,3%
SHOPPING	3	5,5%	1	3,4%
FAR	2	3,6%	1	3,4%
CLEAN	0		2	6,9%
QUIET	6	10,9%	1	3,4%
RESIDENTS	1	1,8%	0	
CLEAN + RESIDENTS	1	1,8%	0	
QUIET + MODERN	2	3,6%	0	
FAR + QUIET + CLEAN	7	12,7%	3	10,3%
ENVIRONMENT + RESIDENTS	1	1,8%	0	
FAR + QUIET	1	1,8%	0	
OTHER	15	27,3%	17	58,6%
FAR + CLEAN	3	5,5%	0	
QUIET + SHOPPING	1	1,8%	0	
QUIET + SECURE	0		1	3,4%

Similar higher share of negative opinions of tenants are continued within the questions about district than owners' in table 5.5. Tenants which have positive opinions mostly about characteristics of district state reasons such as; quiet, neat and close shopping center respectively. Ranking owners' opinions differs again, firstly neatness of district than be close to natural environment and shopping centers, quietness and characteristics of residents of district (homogenous socio-economic level of residents) are stated.

Considering answers about opinions about location, it can be seen that share of negative opinions of owner occupied households increase and exceed share of tenants' negative opinions. We can explain this situation about more satisfaction of apartment housing and district than location by absence of same quality apartment housing and environment at closer locations. Therefore households have to make a choice between location and quality of environment while buying a house. However these negative opinions about distant location from the CBD, both higher share of answers of owners and tenants state the positive effects of distance. To be far away from the distance is ranked first as positive opinions about location. Moreover, tenants and owners state cleanness and quietness of environment (again positive effects of far away from the CBD), only within a different order.

CHAPTER VI

CONCLUSION

In the process of Ankara city development, it is obvious that urban population increase at high rates puts pressures on the built environment. Related to this pressure and as a result of deficiency of development plans, the fastest and easiest solution appeared to be increasing building heights in central districts. Because evolvement of these residential areas in the existing limited area let to handle the problem easier compared to more expensive solutions for the expansion due to budgetary limitation. On the contrary increasing building heights with speculative housing provision brought issues such as high population and building densities that resulted decreasing service areas per person, disappearance of its natural environment and arising unfavorable living conditions which have been difficult to manage. As a result of these problems residents began to move out from central districts when it was possible with rising incomes and car ownership, expansion of mass transport services or provision of cheaper alternatives through the speculative housing provision.

Increasing necessity of services areas by growing population as well as increasing building heights at inner quarters, and expanding primary center which altered its environment and affected residential areas around it provide extremely dissimilar lifestyles according to residential environments. In this context development planning decisions and structural plans created opportunities for housing development and ease to develop alternative provisions. Growing city with new transportation facilities and increasing income and private automobile ownership decrease relative cost of transportation in household budgets in time that make it easier to settle at far

114

distances. These developments compensate increasing demand for new housing units by changing life styles of residents and differentiation in family structures.

In this study it is mainly hypothesized that residents would like to live in low-rise housing as moving to peripheral sides from central districts. Thus we expect to find more single houses and fewer high-rise buildings at the fringe of the city. Alternatively it is expected that residents would prefer low development density (FAR) even if they choose apartment housing far from the CBD. Furthermore it is known that increasing distance from the CBD leads to changes in land and housing prices and provides opportunities for residents to increase housing consumption. Small variation in transport cost (mainly of public transport) with distance further encourages this development.

In order to develop these hypotheses; firstly, conclusions are drawn as to the relevance of urban economics for understanding the changing structure of the city. Traditional bid-rent theory explains that urban land should be allocated among activities through the price of land in a market economy and determines the value of land with distance from the CBD. Coming to reasons from outcomes of the theory, allocation of the factors of production should be based on the relative price levels of all factors of production. Lastly trade-off models explain what residents gain depending on their choices and lose in return of these choices.

Secondly, statistical analyzes of the existing structure with the help of the results of building and population censuses are carried out to support the study. As shown in figure 4.14, the share of dwelling units in apartments are increasing in the total number of dwelling units, in short in most of quarters apartment housing is being used much more than single housing. It is concluded that the height of housing structures are not decreasing by going far from CBD, in fact considering to all directions from the CBD average

115

number of storeys at a far distance is higher than average at closer locations. Examining different directions separately brings that at the north average number of storeys increases slightly, then begins to decrease, at the east it is always decreasing, at the south first increases sharply than begins to decrease a little, and at the west it increases sharply than becomes stable. According to this result we decided to investigate spatial variation of apartment housing in Ankara and to achieve different characteristics of districts that are close to the CBD and far from the CBD in order to find the reasons about the location and choice of apartment housing. Differentiation of housing structure of the city clearly comes out at the end of the analysis. Each part has its own apartment housing context and according to these structures they provide different lifestyles. Especially with respect to figures that demonstrate classifying quarters as the share of dwelling units in apartments, average number of storeys, dominant producer type of residential buildings, construction period of apartments, number of persons per dwelling unit and building features, we can apparently state differences.

It is analyzed in two parts as producer and consumer rationalities to explain apartment housing and building heights differentiation with distance from the CBD. From the producers' side, at closer locations to city center private provisions are leading with respect to other types of provisions, while building cooperatives and public sector provisions are dominant at distant locations. At the inner parts of the city it is easier to get speculative profits, to create residual value and to find consumer for private sector; it is hard for other types of provision because of high relative costs of the factors of production, and for building cooperatives and public sector to find large development areas. At the outer parts of the city large available development area and cheaper land as the most critical factor of production make it easier to create a residual value and make it suitable for building cooperatives, large-capital builders and public sectors. These producers try to gain more profit by decreasing unit cost of production and increasing number of units (also density) or producing units that aimed to higher income groups at inner

116

locations. These decisions also affect the environment of residential buildings. During last decade changes in investor types of the housing provision, especially dominance of the private provision states that speculative housing producers operate profitably in Ankara. Actually average number of dwelling units per residential building in private sectors' provision is almost 10 which means that important amount of these residential buildings have over 5 storeys, i.e. they are mostly apartment housing.

The reasons that direct residents to live at the fringe of the city are mostly explained with the pull factors of suburban residential areas and the push factors of the city center. Questionnaire survey shows that most of the households are getting pleasure from their location by pointing the push factors and praising the district by presenting its characteristics as pull factors. It is concluded from the interviews that negative opinions are mostly related with transportation time cost; however the effect of distance to the city center is unnoticeably small comparing to the effect of characteristics of the district. Because of relative location advantages of these districts which are close to workplaces, schools, and shopping centers or with in a reasonable distance, the dominance of primary center loses its importance and validity. But the reasons of living in an apartment housing unit should be considered more precisely by including the opportunities that apartment housing provides and environmental values. Apartment housing is the product of modern urban lifestyle. Acquiring a dwelling unit of apartment housing is the simplest way to own a house for moderate income groups. Questionnaire results bring some conclusions about the advantages of apartment housing such as providing comfortable life, more feasible by sharing most of costs, offering different quality neighborhood and lifestyle, and satisfying needs with its environment.

In order to examine the factors that affect the production and choice of apartment housing at different location by presenting meaningful comparisons, the southern and the western parts of the city are selected due

117

to the agglomeration of apartment housing along these directions and similarities between districts. A first criterion is density of buildings and population. It is found out that floor area ratio differentiated with distance from the CBD. By moving from central districts to the west direction FAR decreases from 2 to 0,75 whereas to the south direction it decreases from 2,25 to 1,4 and in some districts to 1. These findings support the hypotheses that was specified in chapter 3 concerning both builders' and residents' rationalities. With respect to gross density categories of person per hectare the inner southern districts show differentiations between 200-300 and 300-400 persons per hectare while inner western parts are classified with 100-200 and far distances with 1-100 person per hectare. Similar to person per hectare, gross density categories of dwelling units show same situation. Therefore it can be concluded that these quarters are differentiated with their building and population densities, and provide completely dissimilar residential environments.

A second criterion is the classifying districts according to their building features. Most of the quarters that are far from the CBD show similarities with central ones. In these quarters apartment buildings were generally built in the same period (Figure 5.5). Additionally they are addressing the same income group households with a similar family structure which is generally 1-2 and 3-4 persons per one dwelling unit. But in the figure 5.6 it is obvious that building quality differs in these quarters. Quarters that are far from the CBD belong to the sixth group which is the highest ranked in all features. However inner quarters belong the third and the fourth groups.

To conclude apartment housing provisions at different location offer different lifestyles with their building and environmental characteristics. In order to enjoy benefits of these superior districts households want to move out and be better off when it is financially possible. In the further study it should be explained the reasons behind the apartment housing and location choice by making research on different land uses across spatially dispersed urban

area. Do variation of land-uses support building apartment housing? According to this question the agglomeration of residential use should be evaluated by comparing its variation together with other land-uses. There is another missing point in the study which is the consideration of socio-economic groups while comparing apartment housing choice whether it differentiates or not. Moreover to support these choices and to clarify the subject there should be transportation cost analyzes and commuting weights. Lastly examining the densities should be extended with calculating existing service areas to compare the environmental quality of districts.

REFERENCES

1. (1977) *Ankara Nazım Plan Şeması Raporu 1970-1990*, İmar ve İskan Bakanlığı, Ankara Metropoliten Alan Nazım Plan Bürosu, Yayın no: 5, Ankara

2. (1983) *A Design Guide for Residential Areas*, Essex County Council, GB

3. (1994) *Building Construction Statistics 1992*, State Institute of Statistics Prime Ministry Republic of Turkey, SIS, Ankara

4. (1998) *Ekonomik ve Sosyal Göstergeler: Ankara*, Türkiye Cumhuriyeti Başbakanlık Devlet İstatistik Enstitüsü, DİE, Ankara

5. (1999) *Türk Ailesinin Yaşadığı Mekanlar / Konutlara İlişkin Eğilimler*, Birinci Cilt, Başbakanlık Basımevi, Ankara

6. (2000) CP 301 Planning Studio Project, Middle East Technical University, City and Regional Planning Department

7. (2000) CP 401 Planning Studio Project, Middle East Technical University, City and Regional Planning Department

8. (2001) *2000 Census of Population: Ankara*, State Institute of Statistics Prime Ministry Republic of Turkey, SIS, Ankara

9. (2001) *Building Census 2000*, State Institute of Statistics Prime Ministry Republic of Turkey, SIS, Ankara

10. (2004) *Building Construction Statistics 2002*, State Institute of Statistics Prime Ministry Republic of Turkey, SIS, Ankara

11. Aktuna, Z. (2003) "*Re-Reading The Social Context of Apartment Block Development in İstanbul: 1889-1922*", unpublished MS thesis, METU

12. Alonso, W. (1960) "*A Theory of the Urban Land Market" Papers and Proceedings,* Regional Science Association, 6, p. 149-157.

13. Alonso, W. (1964) *Location and Land Use; toward a general theory of land*, Cambridge, Harvard University Press

14. Altaban, Ö. (1986*) "Ankara Kentsel Alanının Doğal Çevreye Yayılımı (1923-1985)",* Ankara 1985'den 2015'e*, Ankara Büyük Şehir Belediyesi

15. Altaban, Ö. (2002*) "Ankara Metropoliten Alan Planlama Deneyimi: 1970-1984 Nazım Plan Bürosunun Kuruluşu, Örgüt Yapısı, Planlama Yaklaşımı ve Sorunlar",* Planlama 2002/04, TMMOB Şehir Plancıları Odası Yayını

16. Anas, A. (1982) *Residential Location Markets and Urban Transportation*, Academic Press, NY

17. Aragones, J.I. Francescato, G. Garling T. (2002) *Residential Environments*, Bergin & Garvey, London

18. Ayata, S., Ayata, A. (1996) *Konut, Komşuluk ve Kent Kültürü*, Konut Araştırmaları Dizisi: 10, TOKİ, Ankara

19. Balamir, M. (1975) *"Kat Mülkiyeti ve Kentleşmemiz"* Mimarlık Fakülte Dergisi Cilt 1, Sayı 2, ODTU

20. Balamir, M. - Derleyen (1993) *Ülkemiz Koşullarına Uygun Konut Üretim Modeli*, ODTÜ Mimarlık Fakültesi Yayınları, ANKARA

21. Balamir, M. (1994) "*Kira Evi'nden Kat Evleri'ne Apartmanlaşma: Bir Zihniyet Dönüşümü Tarihçesinden Kesitler*", Mimarlık Dergisi, Sayı 260

22. Ball, M. J., Kirwan, R. M. (1977) *"Accessibility and Supply Constraints in the Urban Housing Market" Urban Studies*, Volume 14, Carfax Publishing Company, pg. 11-32

23. Bektöre, İ.S. (1986) "*Formation of Apartment Blocks in Squatter Areas as a Distinct Aspect of Unauthorized Urban Housing Stock*", unpublished MS thesis, METU

24. Bell, K. P., McMahon, M. A (2003) "*Spatial Analysis of Household Location Decisions in Maine*", Submission for the AERE Workshop, Madison, Wisconsin

25. Bogart, W. (1998) *The Economics of Cities and Suburbs*, Upper Saddle River, NJ: Prentice Hall.

26. Carmona, M. (2001) *Housing Design Quality: through policy, guidance and review*, Spon Pres, NY

27. Cengizkan, A. (2002) *Modernin Saati*, Mimarlar Derneği Yayın No: 9, Boyut Yayın Grubu, Ankara

28. Clark, S.D. (1966) *The Suburban Society*, University of Toronto Press, Canada

29. Çakan, C., Okçuoğlu, Y. (1977) *"Ankara'da İmarlı Alanda Yoğunluk Sorunu"* sf43 Mimarlık Dergisi 77/3

30. Dieleman, F.M., Mulder, C.H. M. (2002) *"The Geography of Residential Choice" Residential Environments - Choice, Satisfaction, and Behavior*, Bergin & Garvey, London

31. Dipasquale, D., Wheaton, W.C. (1996) *Urban Economics and Real Estate Markets*, Prentice-Hall, NJ

32. Durlauf, S.N. (2003) *Neighborhood Effects*, Department of Economics, University of Wisconsin

33. Erol, I. (2000) *"Elasticity of Capital-Land Substitution in Housing Supply: An Econometric Study of The Housing Market in Ankara"*, unpublished MS thesis, METU

34. Fowler, E.P., Siegel, D. (2002) *Urban Policy Issues: Canadian Perspectives*, Oxford University Press, NY

35. Fujita, M., Thisse, J.F. (2002) *Economics of Agglomeration: Cities, Industrial Location, and Regional Growth*, Cambridge University Press, UK

36. Frankin, B.J. (2001) *Discourses of Design: Perspectives on the Meaning of Housing Quality and 'Good' Housing Design*, Housing, Theory and Society 2001; 18: 79–92, Centre for Housing Management and Development, Department of City and Regional Planning, Cardiff University, UK

37. Gärling, T., Friman, M. (2002) *"A Psychological Conceptualization of Residential Choice and Satisfaction" Residential Environments - Choice, Satisfaction, and Behavior*, Bergin & Garvey, London

38. Gause, D.C. (1989) *Exploring Requirements: quality before design,* Dorset House Pub., NY

39. G.B. (1988) *The Economics of the Construction Firm*, London

40. Goffette-Nagot, F. (2000) *"Urban Spread Beyond The City Edge" Economics of The Cities – Theoretical Perspectives*, Cambridge University Press, UK

41. Gür, Ş.Ö. (2000) *Doğu Karadeniz Örneğinde Konut Kültürü*, YEM Yayınları, İstanbul

42. Harvey, J. (1986) *The Economics of Real Property*, Macmillan Education Ltd., Hong Kong

43. İmamoğlu, O., İmamoğlu, V. (1996) *İnsan, Evi ve Çevresi: Ankara'da Bir Toplu Konut Araştırması*, Konut Araştırmaları Dizisi: 15, TOKİ, Ankara

44. Jarvis, F.D. (1993*) Site Planning and Community Design*, Home Builder Press

45. Karlqvist, A., Lundqvist, L., Snickars, F., Weibull J.W. (1978) *Spatial Interaction Theory and Planning Models*, North-Holland Inc., Amsterdam

46. Kauko, T. (2001) *"Combining Theoretical Approaches: the Case of Urban Land Value and Housing Market Dynamics"*, Housing Theory and Society

47. Keleş, R. (2000) *Kentleşme Politikası*, İmge Kitabevi, Ankara

48. Kıray, M. B. (1979) *"Apartmanlaşma ve Modern Orta Tabakalar"*, Çevre Dergisi, Sayı 4, Ankara

49. Kıray, M.B. (1998) *Kentleşme Yazıları*, Bağlam Yayıncılık, Ankara

50. Lang, J.T. (1987) *Creating Architectural Theory: The Role of the Behavioral Sciences in Environmental Design*, Van Nostrand Reinhold, NY

51. Lennard, H.L., Lennard, S.H.C. (1995) *Livable Cities Observed*, California

52. Levy, J. (1985) *Urban and Metropolitan Economics*, New York: McGraw-Hill

53. McDonald, J.F. (1979) *Economic Analysis of an Urban Housing Market*, Academic Press, NY

54. McDonald, J.F., McMillen, D.P. (2003) *"Cost and Benefits of Land Use Regulations: A Theoretical Survey"* Journal of Real Estate Literature, Volume 11, Number 2

55. Mertyürek, S. (2000) "*Determination of user awareness and appreciation on the issues of urban design in the specifics of housing environments*", unpublished MS thesis, METU

56. Mills, E.S., Hamilton, B.W. (1993) *Urban Economics 5th Edition*, Addision-Wesley Publishers Inc.

57. Nelson, A.C., Sanchez T.W. (1997) *"Exurban and Suburban Households: A departure from Traditional Location Theory?"*, Journal of Housing Research, Volume 8, Issue 2

58. Neutze, M. (1968) *The Suburban Apartment Boom*, Resources for the future Inc., Washington D.C.

59. O'Brien, A., Inglis, S., Herbert, T., Reynolds, A. (2002) *FINAL REPORT: Linkages between housing and support – what is important from the perspective of people living with a mental illness*, AHURI, Melbourne

60. Okyay T., Yazar, V., Altaban, Ö. (1975) *"Housing and Environmental Standarts as A Product of The Free Market Mechanism, An Example: Ankara"*, Mimarlık Fakülte Dergisi Cilt 1, Sayı 2

61. Oscar, R.O. (2004) *The New American Apartment: innovation in residential design and construction*, NY

62. Peters, P. (1982) *Kent Konutları*, Yaprak Kitabevi, Çeviren: Gerçek C., İstanbul

63. Rapoport, A. (2001) *Theory, Culture and Housing*, Housing, Theory and Society 2001; 17: 145–165, The School of Architecture and Urban Planning, University of Wisconsin, Milwaukee

64. Reggiani, A. (2000) Spatial *Economic Science – New Frontiers in Theory and Methodology*, Springer, NY

65. Richardson, H.W. (1978) *Regional and Urban Economics*, The Chaucer Press, GB

66. Riley, T. (1999) *The Un-private House,* Museum of Modern Art, NY

67. Ruggiero, V. (2001) *Movements in The City: conflict in the European metropolis*, Pearson Education Limited, Malaysia

68. Schafer, R. (1974) *The Suburbanization of Multifamily Housing*, Lexington, Massachusetts

69. Segal, D. (1979) *The Economics of Neighborhood*, Academic Press, NY

70. Straszheim, M.R. (1975) *An Econometric Analysis of The Urban Housing Market*, Columbia University Press, NY

71. Şenyapılı, T., Türel, A. (1996) *Ankara'da Gecekondu Oluşum Süreci ve Ruhsatlı Konut Sunumu*, Batıbirlik Yayınları, Ankara

72. Şenyapılı, T. (2003) "*Kaçış Adaları*", Mimarlık Dergisi, 2003, 07-08, sayı 100+60, Boyut Yayın, İstanbul

73. Tankut, G. (1993) *Bir Başkentin İmarı, Ankara: (1929-1939)*, Anahtar Kitaplar Yayınevi, İstanbul

74. Teige, K. (2002) *The Minimum Dwelling*, MIT, Cambridge

75. Tekeli, İ. (1979) "*Türkiye Kentlerinde Apartmanlaşma Sürecinde İki Aşama*", Çevre Dergisi, Sayı 4, Ankara

76. Tekeli, İ. (1982) *"Türkiye'de Konut Sunumunun Davranışsal Nitelikleri ve Konut Kesiminde Bunalım" Konut 81*, Kent Koop Yayınları: 20, Ankara

77. Tekeli, İ., Güvenç, M. (1986) "*Ankara Kenti Yoğunluk Yüzeyleri ve Gelişimi*", *Ankara 1985'den 2015'e*, Ankara Büyük Şehir Belediyesi

78. Tekeli, İ. (1991) *Kent Planlaması Konuşmaları*, TMMOB Mimarlar Odası Yayını, Ankara

79. Tekeli, İ. (1995) "*Yetmiş Yıl İçinde Türkiye'nin Konut Sorununa Nasıl Çözüm Arandı" Konut Araştırmaları Sempozyumu Konut Araştırmaları Dizisi: 1*, ODTÜ, Ankara

80. Tekeli, İ. (1996) *Türkiye'de Yaşamda ve Yazında Konut Sorunun Gelişimi*, Konut Araştırmaları Dizisi: 2, ODTÜ, Ankara

81. Türel, A. (1981) "*Ankara'da Konut Pazarı Analizi", Türkiye Birinci Şehircilik Kongresi, 1. Kitap*, Derleyen: Yiğit Gülöksüz, ODTÜ, Şehir ve Bölge Planlama Bölümü, Ankara

82. Türel, A. (1986) "*Ankara'da Konut Yapım Süreçleri*", *Ankara 1985'den 2015'e*, Ankara Büyük Şehir Belediyesi

83. Türel, A. (1995) "*Türkiye'de Konut Yapım ve Mülk Konut Edinme Süreçleri" Konut Araştırmaları Sempozyumu Konut Araştırmaları Dizisi: 1*, ODTÜ, Ankara

84. Vercelloni, V. (1989) *The Adventure of Design,* Rizzoli Publication, NY

85. Weisbrod, G., Ben-Akiva, M., Lerman, S. (1980*) Tradeoffs in residential location decisions: Transportation versus other factors*, Massachusetts Institute of Technology, Cambridge, USA

86. White, M. Allmendinger, P. (2003) *"Land-use Planning and the Housing Market: A Comparative Review of the UK and the USA", Urban Studies*, Volume 40, Numbers 5-6, Carfax Publishing Company, pg. 953–972

87. Ytrehus, S. (2001) *Interpretation of Housing Needs – a Critical Discussion*, Norwegian Building Research Institute, Housing, Theory and Society 2001; 17: 166–174, Blindern, Oslo, Norway

88. Zax, J.S. (2002) *Residential Location Theory and The Measurement of Segregation*, Departmen of Economics, University of Colorado

APPENDICES

Appendix A: A Sample Questionnaire

Sayın apartman sakini,

Orta Doğu Teknik Üniversitesi Şehir ve Bölge Planlama Bölümü - Kentsel Tasarım Yüksek Lisans tezi için yapılan anket formunu doldurarak çalışmaya katkıda bulunduğunuz için teşekkür ederiz.

ANKET FORMU

MAHALLE 1-NO / 2-ADI:

BİNA 3-KAT SAYISI: 4-TABAN ALANI: 5-KATTAKİ DAİRE SAYISI: 6-ODA SAYISI:

7-ASANSÖR: Yok – Var   8-ISITMA: Merkezi – Kombi – Diğer   9-OTOPARK: Yok – Var (Kapalı-Açık)

10-OYUN ALANI: Yok – Var   11-SPOR ALANI: Yok – Var

12- ANKET YAPILAN DAİRE KAÇINCI KATTA:

HANEHALKI 13-KİŞİ SAYISI: 14-MÜLK: Evsahibi – Kiracı (Aylık Kira:)

OKUL TÜRÜ K-Kreş, İ-İlköğretim, L-Lise, Ü-Üniversite
GİDİŞ-GELİŞ Y-Yürüyerek, A-Özel Araç, S-Servis, O-Otobüs, D-Dolmuş, G-Diğer (   )

	15-ÇALIŞAN SAYISI			18- OKUYAN SAYISI		
	16-İŞYERİ SEMTİ	17-İŞE GİDİŞ - GELİŞ		19-OKUL TÜR	20-OKUL SEMTİ	21-OKULA GİDİŞ - GELİŞ
1			1			
2			2			
3			3			

22-APARTMANDA OTURMA NEDENİ: Ev Sahibi – Ucuz – Çevre – İşyeri Yakın – Diğer (   )

23-APARTMANDA OTURMAKTAN MEMNUN MUSUNUZ? Evet – Hayır
NEDENİ:

24- BU SEMTTE OTURMAKTAN MEMNUN MUSUNUZ? Evet – Hayır
NEDENİ:

25-KENTTİN BU NOKTASINDA OTURMAKTAN MEMNUN MUSUNUZ? Evet – Hayır
NEDENİ:

26-ÖNCEKİ OTURDUĞUNUZ SEMT / EVTİPİ: (   ) / Müstakil Ev - Apartman

27-KIZILAY VE ÇEVRESİNE HANGİ SIKLIKTA GİDİYORSUNUZ? Haftada Toplam (   )

Appendix B: List of Quarters

Table 8.1: List of Quarters and Some Data

ID	Quarter	Distance from the CBD (KM)	Residential +Mostly Res. Buildings	Average Number of storeys	Share of dwelling units in apartments in the total number of dw. units (%)	Share of apartments in the total number of resd. buildings (%)	Total Number of Dwelling units	Building Features Group
1	AHİLER	4,63	360	3,71	17,95	12,81	2980	5
2	AKALAR	1,46	201	1,87	20,53	1,89	380	1
3	AKBAŞ	1,53	94	2,36	39,85	12,61	261	1
4	AKKÖPRÜ	2,46	38	1,37	0,00	2,84	46	2
5	AKTAŞ	2,58	441	1,18	0,00	0,00	615	1
6	ALEMDAĞ	8,06	974	1,91	7,75	2,29	2283	1
7	ALİ ERSOY	6,00	1014	1,68	34,85	5,54	2066	1
8	ALPASLAN	1,28	135	1,92	0,00	0,00	308	1
9	ALTINBAŞ	3,04	13	1,38	0,00	4,76	26	1
10	ALTINPARK	5,42	176	3,04	8,26	3,49	1477	5
11	ALTINTAŞ	1,96	25	2,06	0,00	1,25	37	1
12	ANAFARTALAR	1,66	1	5,00	100,00	30,57	6	1
13	ATIFBEY	2,82	100	1,27	0,00	0,00	195	1
14	ATİLA	2,99	626	1,32	20,07	1,57	912	1
15	AYDINLIKEVLER	4,48	728	4,18	50,47	41,12	5641	3
16	BAĞLARIÇI	10,12	949	1,30	0,46	0,21	1292	1
17	BARAJ	10,91	4494	1,07	0,00	0,00	4788	1
18	BAŞKIR	1,84	171	1,81	0,00	0,00	314	1
19	BAŞPINAR	8,59	3683	1,27	1,07	0,29	5352	1
20	BATTALGAZİ	7,60	1052	2,06	9,72	3,69	2582	1
21	BEŞİKKAYA	10,63	2568	1,18	4,63	0,68	3324	1
22	I. SULTAN MURAT	3,21	612	1,59	2,92	0,78	1779	1
23	BOZKURT	2,52	7	1,29	0,00	2,80	8	1
24	CEMALBEY	2,62	854	1,19	0,00	0,00	1060	1
25	ÇALIŞKANLAR	4,50	892	1,46	23,11	5,52	1705	1
26	ÇAMLIK	8,97	1123	1,55	5,76	1,35	2015	1
27	ÇANDARLI	2,51	234	1,42	0,00	0,00	401	1
28	ÇEŞME	1,94	110	1,47	0,00	5,19	186	1
29	ÇİMENTEPE	1,10	13	2,23	0,00	9,09	37	1
30	DEMİRFIRKA	1,57	95	2,04	0,00	0,00	251	1
31	DEMİRTAŞ	0,92	79	2,11	29,82	10,62	218	1

ID	Quarter	Distance from the CBD (KM)	Residential +Mostly Res. Buildings	Average Number of storeys	Share of dwelling units in apartments in the total number of dw. units (%)	Share of apartments in the total number of resid. buildings (%)	Total Number of Dwelling units	Building Features Group
32	DEREBOYU	7,89	99	1,81	3,54	1,77	254	1
33	DOĞANBEY	1,35	16	2,00	0,00	19,37	24	2
34	DOĞANŞEHIR	3,07	357	1,50	0,53	0,26	940	1
35	DOĞANTEPE	8,43	2860	1,48	0,79	0,17	4958	1
36	DOĞU	7,23	612	1,54	0,00	0,00	1073	1
37	ENGÜRÜ	2,90	487	1,31	0,00	0,00	644	1
38	ENVERPAŞA	2,61	106	1,30	0,00	0,00	138	1
39	EVLIYAÇELEBI	2,82	172	2,26	4,59	1,19	784	1
40	FATIH	2,45	356	1,27	0,00	0,00	753	1
41	FAZIL AHMET PAŞA	2,85	55	1,84	60,81	8,27	148	1
42	FAZILET	3,18	134	3,48	52,38	29,71	840	3
43	FERMANLILAR	2,65	217	1,57	1,08	0,45	371	1
44	FERUDUN ÇELIK	9,76	4353	1,06	0,16	0,16	4867	1
45	FEVZIPAŞA	2,00	0	0,00	0,00	64,78	0	5
46	GÖKÇENEFE	3,04	220	1,40	0,00	0,00	646	1
47	GÜLPINAR	6,79	1429	1,36	2,04	0,41	2349	1
48	GÜLTEPE	3,89	831	1,06	6,91	0,33	926	2
49	GÜNDOĞDU	1,45	84	4,61	91,19	76,92	670	5
50	GÜNEŞEVLER	6,00	1388	1,43	15,95	1,93	2778	1
51	HACILAR	6,86	1243	2,26	12,65	4,53	3533	1
52	HAYRI AKMANLAR	2,82	329	1,60	0,00	0,00	740	1
53	HÜRRIYET	2,68	261	1,40	0,00	0,00	483	1
54	IÇKALE	1,81	170	1,94	0,63	0,57	478	1
55	INKILAP	2,02	25	2,56	25,97	19,61	77	1
56	ISTIKLAL	1,21	64	2,50	33,33	11,63	192	1
57	IZZETTIN	2,22	79	2,15	4,97	1,03	181	1
58	KARAKUM	7,62	759	1,62	7,71	1,17	1168	1
59	KARAPÜRÇEK	11,77	1182	1,18	18,39	2,14	1740	2
60	KARTALLAR	2,53	186	1,24	0,00	0,00	419	1
61	KEMAL ZEYTINOĞLU	3,08	293	1,22	0,00	0,00	388	1
62	KILIÇASLAN	1,45	17	2,12	0,00	0,94	41	1

Table 8.1 (continued)

ID	Quarter	Distance from the CBD (KM)	Residential +Mostly Res. Buildings	Average Number of storeys	Share of dwelling units in apartments in the total number of dw. units (%)	Share of apartments in the total number of resid.buildings (%)	Total Number of Dwelling units	Building Features Group
63	KIZILELMA	1,37	14	3,79	73,91	18,64	69	3
64	KOYUNPAZARI	1,31	1	1,00	0,00	0,00	1	1
65	KÖPRÜBAŞI	2,38	107	2,29	31,21	15,38	330	1
66	MEYDAN	1,27	38	2,34	16,24	4,55	117	1
67	MİSAKIMİLLİ	1,43	49	2,04	20,51	9,69	78	1
68	NAZIMBEY	1,73	69	2,88	53,24	17,44	293	1
69	NECATİBEY	1,72	16	4,81	87,59	68,14	145	1
70	OĞUZ	1,33	34	2,68	34,57	13,16	81	1
71	ORHANGAZİ	2,55	360	1,21	0,00	0,00	921	1
72	ÖNCÜLER	2,26	234	1,26	0,00	0,00	391	1
73	ÖNDER	6,22	977	2,23	7,11	6,91	2843	1
74	ÖRNEK	3,96	498	5,51	97,54	88,08	6064	6
75	ÖZBEKLER	1,85	62	1,89	0,00	0,00	99	5
76	ÖZGEN	0,95	16	1,94	8,33	13,95	24	1
77	ÖZGÜRLÜK	3,12	342	1,21	0,00	0,00	524	1
78	ÖZTÜRK	2,00	49	2,22	0,00	5,04	106	1
79	PAZAR	1,78	104	1,74	0,46	0,65	219	1
80	PLEVNE	3,32	203	2,26	58,66	23,28	641	1
81	SAKALAR	1,03	66	2,17	2,69	12,84	186	1
82	SAKARYA	1,93	109	4,09	88,52	50,34	906	3
83	S. SOMUNCUOĞLU	3,80	942	1,18	8,51	1,59	1728	1
84	SEYFİ DEMİRSOY	5,09	307	4,45	56,59	48,77	2776	5
85	SIĞINAKLAR	2,22	156	1,50	0,00	0,00	271	1
86	SİNANPAŞA	2,63	204	1,63	0,00	0,00	374	1
87	SİTELER	5,53	2	3,00	0,00	16,41	8	2
88	SOKULLU	2,37	309	1,19	0,00	0,00	504	1
89	SUTEPE	1,39	3	2,33	0,00	0,00	5	4
90	SÜMER	1,28	88	1,60	0,00	0,00	162	1
91	ŞENYURT	1,57	6	5,17	98,15	39,71	54	3
92	ŞÜKRİYE	2,25	319	1,39	11,74	3,83	528	1
93	TABAKHANE	2,01	35	2,74	2,08	2,11	48	1

Table 8.1 (continued)

ID	Quarter	Distance from the CBD (KM)	Residential +Mostly Res. Buildings	Average Number of storeys	Share of dwelling units in apartments in the total number of dw. units (%)	Share of apartments in the total number of resid.buildings (%)	Total Number of Dwelling units	Building Features Group
94	TURAN	1,65	168	2,08	36,93	8,10	501	1
95	TURGUTREIS	2,62	294	2,23	10,59	2,83	850	1
96	ULUBATLIHASAN	2,96	148	1,57	0,00	0,00	382	1
97	ULUBEY	6,72	1170	2,01	8,84	3,44	2603	1
98	ÖLKÜ	0,75	14	3,14	59,68	23,71	186	6
99	YALÇINKAYA	2,02	266	1,80	0,00	0,00	579	1
100	YAMAÇ	2,31	187	1,25	0,00	0,00	376	1
101	YAVUZ SELIM	2,58	89	1,71	0,00	0,00	177	1
102	YEĞENBEY	1,22	33	2,03	10,00	11,90	80	1
103	YENICE	1,06	5	2,20	0,00	12,50	47	2
104	YENIHAYAT	1,91	270	1,80	0,00	0,00	639	1
105	YENITURAN	2,81	56	1,86	12,57	4,72	167	2
106	YILDIRIM BEYAZIT	3,03	99	1,85	10,57	3,00	227	1
107	YILDIZTEPE	7,03	1280	1,75	26,41	5,63	2893	1
108	YILMAZLAR	2,26	231	1,40	0,00	0,00	345	1
109	YIĞITLER	2,76	340	1,53	4,36	2,32	528	1
110	YUNUS EMRE	6,39	719	1,67	38,13	7,84	1479	1
111	ZIRAAT	3,56	156	4,85	72,08	53,62	1719	5
112	ZÜBEYDEHANIM	3,54	377	4,23	70,36	13,44	3208	5
113	ZÜLFAZIL (SOLFASOL)	8,37	446	1,53	2,74	0,65	694	1
	ALTINDAĞ		52313	1,62	20,99	5,20	113324	
114	AKPINAR	8,63	834	1,37	20,44	2,31	1448	1
115	ANITTEPE	1,43	228	5,16	79,06	74,43	2345	4
116	ARKATOPRAKLIK	1,86	135	3,94	40,56	29,50	1117	3
117	AŞAĞIDIKMEN	10,41	117	6,74	100,00	93,60	3466	5
118	AŞAĞIIMRAHOR	5,19	30	1,30	0,00	0,00	38	1
119	AŞAĞIÖVEÇLER	5,20	442	3,59	65,85	40,28	3127	4
120	AŞIKPAŞA	3,37	768	1,45	17,46	2,93	1403	1
121	ATA	6,70	782	1,49	20,26	3,12	1540	1
122	AYDINLAR	6,03	231	3,72	22,01	18,11	2363	6
123	AYRANCI	3,72	474	5,43	85,54	77,85	8162	4

Table 8.1 (continued)

134

ID	Quarter	Distance from the CBD (KM)	Residential +Mostly Res. Buildings	Average Number of storeys	Share of dwelling units in apartments in the total number of dw. units (%)	Share of apartments in the total number of resid.buildings (%)	Total Number of Dwelling units	Building Features Group
124	AZIZIYE	4,37	410	5,43	88,33	79,38	5698	4
125	BADEMLIDERE	4,64	280	1,37	13,70	2,11	460	1
126	BAĞCILAR	4,13	295	1,42	34,94	4,65	601	1
127	BAHÇELIEVLER	2,62	615	4,11	37,19	30,65	5779	4
128	BALGAT	3,94	237	3,24	27,95	11,30	1893	4
129	BARBAROS	2,61	257	5,27	93,58	87,50	3426	4
130	BAYRAKTAR	3,64	170	5,05	69,99	53,55	1986	4
131	BIRLIK	6,19	1340	2,90	68,47	26,25	7562	4
132	BOZTEPE	4,15	341	1,27	0,00	0,00	436	1
133	BÜYÜKESAT	4,50	381	5,28	75,04	54,37	4295	4
134	CEBECI	2,38	224	4,76	70,57	48,10	2525	4
135	CEVIZLIDERE	6,24	1366	1,22	0,00	0,07	1833	1
136	CUMHURIYET	0,38	0	0,00	100,00	82,20	12	5
137	ÇAMLITEPE	1,54	375	3,47	69,92	40,00	2746	3
138	ÇANKAYA	4,44	356	5,06	89,31	64,48	3780	4
139	ÇAYYOLU	14,09	1694	2,96	49,35	4,99	3408	5
140	ÇUKURAMBAR	6,09	765	1,41	14,35	0,93	1366	1
141	DEVLET	2,83	58	4,40	63,77	14,60	690	6
142	DILEKLER	2,08	349	1,32	8,60	1,12	523	1
143	DOĞUŞ	2,29	100	4,64	65,78	58,25	1385	4
144	EHLIBEYT	5,42	126	3,43	65,98	28,26	1170	4
145	ELLINCIYIL	2,30	451	1,25	0,00	0,00	574	1
146	EMEK	3,34	1067	4,71	73,21	57,95	10133	4
147	ERTUĞRULGAZI	2,34	339	4,04	82,27	53,03	3283	5
148	ERZURUM	1,75	85	5,19	89,33	76,92	1153	3
149	ESATOĞLU	2,06	147	5,14	92,17	88,67	1928	2
150	ETI	1,07	25	7,36	90,78	68,99	434	4
151	FAKÜLTELER	1,80	240	4,85	71,27	57,84	2802	3
152	FIDANLIK	0,65	49	5,94	95,50	88,79	667	5
153	GAZIOSMANPAŞA	3,62	268	4,74	73,89	57,98	2677	4
154	GÖKKUŞAĞI	7,14	902	1,22	0,00	0,00	1242	1

Table 8.1 (continued)

ID	Quarter	Distance from the CBD (KM)	Residential +Mostly Res. Buildings	Average Number of storeys	Share of dwelling units in apartments in the total number of dw. units (%)	Share of apartments in the total number of resid.buildings (%)	Total Number of Dwelling units	Building Features Group
155	GÖKTÜRK	2,42	238	2,10	25,45	7,66	1104	2
156	GÜVEN	3,48	350	5,34	87,94	81,28	5048	4
157	GÜZELTEPE	5,15	380	3,20	58,04	25,64	2805	2
158	HARBİYE	4,54	487	5,62	93,95	90,10	8929	4
159	HİLAL	6,97	426	1,82	48,50	11,82	1167	2
160	HUZUR	6,86	569	3,57	83,85	44,94	4533	4
161	İLERİ	1,42	235	4,18	46,06	35,02	2321	3
162	İLKADIM	5,04	895	2,34	61,69	19,18	4805	3
163	İLKER	7,99	743	1,22	15,28	1,81	1008	1
164	İNCESU	1,52	166	4,61	61,36	45,24	1672	3
165	İŞÇİBLOKLARI	6,39	412	5,87	96,75	79,91	7504	5
166	KARAKUSUNLAR	6,95	798	2,49	82,07	13,73	4316	3
167	KARAPINAR	7,73	600	1,33	8,53	0,65	809	1
168	KAVAKLIDERE	1,89	261	5,48	95,29	90,76	3567	4
169	KAZIM ÖZALP	4,55	335	4,76	60,31	38,85	2814	4
170	KEKLİKPINARI	8,98	937	1,72	70,42	7,60	3374	1
171	KIRKKONAKLAR	5,52	1251	1,53	43,99	6,96	2671	1
172	KIZILAY	0,61	9	6,33	97,37	97,91	228	4
173	KIZILIRMAK	5,00	543	1,47	18,96	1,60	1081	1
174	KOCATEPE	0,97	18	6,22	96,49	91,94	342	4
175	KORKUTREİS	0,35	13	5,85	90,30	93,45	237	4
176	KÜÇÜKESAT	2,55	102	4,98	81,32	76,19	1322	4
177	KÜLTÜR	1,07	121	6,72	97,49	93,30	1632	4
178	MALAZGİRT	7,28	595	1,18	21,05	2,77	803	1
179	MALTEPE	0,97	375	5,01	77,60	71,88	4617	4
180	MEBUSEVLERİ	1,85	260	4,57	70,69	53,94	2429	2
181	MEŞRUTİYET	1,12	16	5,81	80,39	88,89	204	4
182	METİN AKKUŞ	6,96	302	2,12	60,83	16,29	1205	2
183	METİN OKTAY	2,83	385	2,24	39,55	12,41	1593	1
184	MİMAR SİNAN	2,60	529	1,45	7,15	0,75	811	1
185	MUHSİN ERTUĞRUL	2,77	114	5,01	88,18	83,62	1717	4

Table 8.1 (continued)

136

ID	Quarter	Distance from the CBD (KM)	Residential +Mostly Res. Buildings	Average Number of storeys	Share of dwelling units in apartments in the total number of dw. units (%)	Share of apartments in the total number of resid.buildings (%)	Total Number of Dwelling units	Building Features Group
186	MURAT	3,61	124	4,34	53,65	43,08	1711	6
187	MUSTAFA KEMAL	8,94	885	2,04	38,82	4,66	1628	6
188	MÜRSEL ULUÇ	7,92	1031	2,10	66,24	19,21	3682	2
189	NACİ ÇAKIR	6,20	304	4,81	67,80	54,57	3652	4
190	NAMIK KEMAL	1,06	74	3,51	12,53	19,78	471	5
191	NASUH AKAR	3,56	125	4,42	70,51	48,97	1475	6
192	OĞUZLAR	4,66	344	3,36	20,78	10,45	3166	6
193	ORAN	11,74	684	4,11	73,03	18,87	4027	6
194	ORTADOĞU	10,62	572	3,92	71,29	20,68	4740	6
195	ORTAİMRAHOR	6,69	84	1,39	0,00	0,00	112	1
196	OSMAN TEMİZ	6,74	329	4,02	57,08	35,35	3106	4
197	ÖNCEBECİ	1,04	207	4,86	74,54	61,33	2553	5
198	ÖVEÇLER	5,24	656	1,95	50,68	13,11	2632	1
199	REMZİ OĞUZ ARIK	2,69	190	5,94	96,28	88,58	3013	2
200	SAĞLIK	0,30	24	5,08	93,22	76,58	295	5
201	SANCAK	8,38	1591	2,41	77,02	26,88	6222	4
202	SEYRAN BAĞLARI	1,61	480	2,73	51,08	22,09	3181	3
203	SOKULLU MEHMET P.	4,86	366	4,08	92,58	61,56	3772	2
204	SÖĞÜTÖZÜ	5,95	152	3,26	83,97	31,10	1235	4
205	ŞEHİT C. KARACA	6,59	511	1,83	46,59	10,19	1363	1
206	ŞEHİT C. ÖZDEMİR	5,91	381	2,38	52,04	18,49	2204	4
207	TINAZTEPE	1,78	262	4,87	72,70	65,41	3084	3
208	TOPRAKLIK	1,63	86	3,84	46,48	29,89	667	3
209	UMUT	3,15	245	4,97	69,10	58,00	3240	5
210	YEŞİLKENT	8,23	135	1,28	0,00	0,00	171	2
211	YILDIZEVLER	5,94	926	2,47	77,78	24,25	4947	2
212	YUKARIBAHÇELİEVLER	2,52	830	4,77	80,69	71,33	8105	4
213	YUKARIDİKMEN	8,21	1603	1,53	48,54	6,04	3346	1
214	YUKARIÖVEÇLER	5,48	444	1,41	37,35	7,28	838	1
215	YÜCETEPE	1,55	241	4,90	75,70	62,18	2309	6
216	YÜZÜNCÜYIL	3,59	304	4,08	39,98	23,83	3164	6

Table 8.1 (continued)

137

ID	Quarter	Distance from the CBD (KM)	Residential +Mostly Res. Buildings	Average Number of storeys	Share of dwelling units in apartments in the total number of dw. units (%)	Share of apartments in the total number of resid.buildings (%)	Total Number of Dwelling units	Building Features Group
217	ZAFERTEPE	2,13	672	1,30	10,08	1,03	1220	1
	ÇANKAYA		44680	2,88	67,55	28,03	263475	
218	ALSANCAK	18,71	1608	1,07	1,49	0,18	1747	2
219	ALTAY	20,52	351	5,53	97,24	72,73	3948	5
220	BAHÇEKAPI	9,86	23	7,13	95,77	1,17	284	6
221	ELVAN	21,30	466	3,26	89,83	42,29	2753	4
222	EMİRYAMAN	22,50	759	5,10	95,03	58,99	7567	6
223	ETİLER	19,21	349	1,99	49,39	12,95	1154	4
224	İSTASYON	17,47	525	2,42	54,27	16,59	2543	2
225	KAZIM KARABEKİR	18,51	638	2,76	58,22	24,59	3600	2
226	OTUZAĞUSTOS	18,39	909	1,66	25,56	5,58	2527	1
227	PİYADE	20,40	895	1,70	34,20	7,20	2041	2
228	SUVARİ	19,45	840	1,37	7,36	1,53	1331	1
229	ŞEHİT OSMAN AVCI	20,43	176	5,84	84,44	53,00	3945	6
230	ŞEKER	18,51	219	1,56	5,83	2,08	343	2
231	ŞEYHŞAMİL	22,93	239	5,22	77,36	67,35	3136	6
232	TOPÇU	22,81	892	3,89	91,48	37,16	8487	3
233	TUNAHAN	22,63	203	6,40	96,24	89,66	3966	6
234	YEŞİLOVA	22,48	277	1,21	3,89	1,36	437	2
235	ZIRHLIBİRLİKLER	15,56	147	5,71	93,99	18,78	1531	6
	ETİMESGUT		9516	2,70	74,22	19,09	51340	
236	BAHÇELİEVLER	16,94	423	2,97	35,54	18,50	2074	2
237	GAZİOSMANPAŞA	17,30	362	2,18	10,61	5,03	1188	1
238	KARŞIYAKA	15,56	694	2,10	2,46	0,88	1058	2
239	SEĞMENLER	16,56	820	2,71	18,68	6,70	2763	1
240	ŞAFAK	15,79	497	2,87	56,90	20,12	2216	3
	BÖLBAŞI		2796	2,56	28,67	9,43	9299	
241	ADNAN MENDERES	8,91	545	3,17	78,31	31,71	3435	4
242	AKTEPE	9,16	829	1,55	5,60	1,70	1392	1
243	AŞAĞIEĞLENCE	5,72	688	4,74	59,99	52,80	10556	4
244	ATAPARK	9,79	2809	1,08	0,76	0,14	3151	1

Table 8.1 (continued)

ID	Quarter	Distance from the CBD (KM)	Residential +Mostly Res. Buildings	Average Number of storeys	Share of dwelling units in apartments in the total number of dw. units (%)	Share of apartments in the total number of resid. buildings (%)	Total Number of Dwelling units	Building Features Group
245	AYVALI	7,16	1822	3,16	50,91	20,63	9790	4
246	BADEMLİK	10,32	1685	1,17	4,73	0,59	2241	1
247	BAĞLARBAŞI	8,19	1181	2,74	34,84	15,59	6702	4
248	BASINEVLER	5,34	838	2,65	39,11	14,42	4822	2
249	ÇALDIRAN	7,81	471	1,88	12,53	2,75	1812	1
250	ÇİÇEKLİ	6,41	520	3,06	33,92	18,13	3520	4
251	EMRAH	5,29	312	3,99	55,64	26,75	3199	4
252	ESERTEPE	7,98	1491	1,75	43,68	5,90	5078	1
253	ETLİK	6,73	742	4,77	79,25	64,26	11523	6
254	GÜÇLÜKAYA	6,75	572	3,23	48,56	26,09	5599	2
255	GÜMÜŞDERE	4,15	163	2,26	10,11	3,17	445	3
256	GÜZELYURT	9,70	516	1,08	0,00	0,00	597	1
257	HASKÖY	6,13	162	3,30	42,11	22,91	1045	4
258	INCIRLI	6,77	1079	3,21	53,14	26,06	9419	4
259	KALABA	5,62	346	4,50	53,07	41,15	4641	5
260	KAMİL OCAK	7,15	401	4,04	38,16	26,15	4379	4
261	KANUNİ	11,37	1965	1,09	3,83	0,39	2298	1
262	KARARGAHTEPE	5,50	625	3,84	69,02	38,72	4442	4
263	KAVACIKSUBAYEVLERİ	5,01	829	4,10	42,50	31,99	6077	5
264	KÖŞK	9,19	324	2,55	36,70	15,71	1722	4
265	KUŞÇAĞIZ	8,32	2168	1,45	18,70	2,69	4140	1
266	ONDOKUZMAYIS	7,29	785	3,97	53,00	33,92	8589	4
267	OSMANGAZİ	10,27	1086	1,43	27,46	2,78	1748	1
268	OVACIK	10,86	369	2,21	0,00	0,00	588	1
269	PINARBAŞI	8,83	722	4,65	66,77	54,58	9996	6
270	SANCAKTEPE	8,80	1761	1,38	1,27	0,17	2288	1
271	ŞEHİTKUBILAY	9,82	2669	1,21	6,09	0,95	3581	1
272	ŞENLİK	8,22	561	5,06	82,51	77,12	10221	4
273	ŞENYUVA	10,67	733	1,11	1,12	0,13	892	1
274	ŞEVKAT	6,60	515	4,26	60,05	46,82	5202	2
275	TEPEBAŞI	7,36	712	4,28	56,37	42,80	8696	4

Table 8.1 (continued)

139

ID	Quarter	Distance from the CBD (KM)	Residential +Mostly Res. Buildings	Average Number of storeys	Share of dwelling units in apartments in the total number of dw. units (%)	Share of apartments in the total number of resid.buildings (%)	Total Number of Dwelling units	Building Features Group
276	UFUKTEPE	10,38	764	1,16	11,43	1,03	1137	1
277	UYANIŞ	9,49	1166	1,82	26,88	3,75	2880	1
278	YAKACIK	7,60	290	4,71	60,35	47,70	5238	6
279	YAYLA	8,62	2318	1,30	15,75	1,40	3517	1
280	YEŞİLÖZ	8,29	783	1,50	1,22	0,37	1313	1
281	YEŞİLTEPE	9,22	1537	1,24	4,48	0,38	2233	1
282	YİRMİÜÇNİSAN	9,93	494	1,67	41,47	8,15	1295	1
283	YÜKSELTEPE	10,14	2564	1,16	0,23	0,11	2657	1
	KEÇİÖREN		42912	2,14	46,81	12,47	184096	
284	ABİDİNPAŞA	2,86	414	5,32	92,76	86,31	5483	5
285	AKDERE	3,04	1042	1,47	25,47	3,69	2599	1
286	AKŞEMSETTİN	8,33	1846	1,08	5,32	0,43	2106	1
287	ALTIAĞAÇ	5,85	1083	1,18	0,08	0,18	1325	1
288	ANAYURT	5,27	734	1,32	14,14	2,08	1209	1
289	ARAPLAR	8,11	504	1,34	0,00	0,00	729	1
290	AŞIKVEYSEL	3,76	385	3,86	55,60	34,07	4160	1
291	BAHÇELERİÇİ	5,78	698	1,29	27,04	3,71	1187	1
292	BAHÇELERÜSTÜ	4,23	964	1,24	7,14	0,81	1428	1
293	BALKIRAZ	3,13	363	4,91	88,50	75,30	4252	5
294	BAŞAK	11,83	1896	1,32	5,71	1,23	2678	2
295	BOĞAZİÇİ	7,30	1038	1,15	0,08	0,18	1191	1
296	BOSTANCIK	8,11	831	1,39	1,93	0,45	1194	1
297	CENGİZHAN	7,27	1731	1,19	0,00	0,00	1893	1
298	ÇAĞLAYAN	4,83	630	1,16	11,92	1,25	931	1
299	ÇİĞİLTEPE	6,18	47	8,11	98,89	77,05	921	6
300	DEMİRLİBAHÇE	2,73	392	4,60	76,88	60,28	4442	3
301	DERBENT	6,85	2086	1,28	0,56	0,19	2880	1
302	DOSTLAR	9,20	2189	1,18	0,04	0,09	2763	1
303	DURALI ALIÇ	7,68	2205	1,19	0,00	0,00	3133	1
304	DUTLUK	6,52	827	1,28	0,00	0,00	1252	1
305	EGE	6,22	1895	1,10	1,95	0,20	2210	1

Table 8.1 (continued)

ID	Quarter	Distance from the CBD (KM)	Residential +Mostly Res. Buildings	Average Number of storeys	Share of dwelling units in apartments in the total number of dw. units (%)	Share of apartments in the total number of resid.buildings (%)	Total Number of Dwelling units	Building Features Group
306	EKİN	10,01	1472	1,55	15,33	2,86	2648	1
307	FAHRI KORUTÜRK	6,69	1290	1,54	1,32	0,23	1891	1
308	GENERAL ZEKİ DOĞAN	5,21	1103	1,98	57,14	15,34	3644	1
309	GÜLSEREN	4,69	705	1,32	1,47	0,78	1155	1
310	GÜLVEREN	4,22	1299	1,19	6,73	0,68	2348	1
311	HARMAN	4,89	848	1,39	12,00	1,47	1692	1
312	HÜREL	4,32	743	1,31	32,03	3,72	1455	1
313	HÜSEYİNGAZİ	5,74	689	1,44	7,96	1,27	1043	1
314	KARAAĞAÇ	6,38	515	1,36	0,00	0,00	751	1
315	KARTALTEPE	4,19	870	1,34	17,22	2,67	1649	1
316	KAYAŞ	10,50	441	1,86	10,77	2,16	1439	1
317	KAZIM ORBAY	3,91	673	1,53	30,76	4,82	1531	1
318	KÖSTENCE	8,38	1172	1,19	0,49	0,08	1420	1
319	KUTLU	4,47	1311	1,39	11,91	1,56	2107	1
320	KÜÇÜKKAYAŞ	11,37	1892	1,07	0,58	0,26	2397	1
321	MEHTAP	4,12	696	1,65	54,74	8,68	1657	1
322	MİSKET	5,60	1292	1,29	4,00	0,53	1927	1
323	MUTLU	5,21	3555	1,26	1,00	0,14	4712	1
324	PEYAMİ SEFA	3,89	1021	1,47	42,63	6,51	2381	1
325	PTT EVLERİ	6,50	150	1,11	0,00	4,58	234	1
326	SAİMEKADIN	3,57	291	5,17	90,48	76,22	3330	5
327	ŞAFAKTEPE	3,61	632	2,33	52,15	15,23	3093	2
328	ŞAHAP GÜRLER	9,46	2111	1,07	3,48	0,33	2382	1
329	ŞAHİNTEPE	5,65	1286	1,61	21,43	3,54	2552	1
330	ŞEHİT CENGİZ TOPEL	2,61	1143	1,06	5,44	0,52	1250	1
331	ŞİRİNTEPE	6,34	1170	1,27	0,07	0,08	1501	1
332	TEPECİK	9,64	1455	1,18	0,26	0,13	1899	1
333	TUZLUÇAYIR	4,80	669	2,30	43,17	11,93	2861	1
334	TÜRKÖZÜ	3,71	1560	1,17	9,12	0,82	2171	1
335	ÜREĞİL	8,38	337	1,25	1,36	0,28	442	1
336	YATIKMUSLUK	4,69	1457	1,13	1,67	0,61	1681	1

Table 8.1 (continued)

ID	Quarter	Distance from the CBD (KM)	Residential +Mostly Res. Buildings	Average Number of storeys	Share of dwelling units in apartments in the total number of dw. units (%)	Share of apartments in the total number of resid. buildings (%)	Total Number of Dwelling units	Building Features Group
337	YENİBAYINDIR	11,88	683	1,26	23,40	1,99	1111	1
338	YEŞİLBAYIR	10,51	2346	1,19	0,74	0,17	2959	1
339	YUKARIİMREHOR	7,89	60	1,37	0,00	0,00	100	2
	MAMAK		60737	1,41	26,84	3,72	115399	
340	ATATÜRK	25,39	617	4,92	86,80	65,53	7273	2
341	FATİH	25,49	649	4,73	92,74	57,58	5069	1
342	GAZİOSMANPAŞA	27,17	2106	4,13	86,53	36,72	9873	2
343	İSTASYON	25,93	620	3,27	56,59	14,28	4391	2
344	MAREŞAL ÇAKMAK	23,98	1882	4,70	82,18	62,73	23887	2
345	PINARBAŞI	26,05	942	2,57	69,97	24,76	3890	2
346	PLEVNE	24,24	1315	4,33	73,64	56,08	12852	2
347	TANDOĞAN	26,00	536	3,19	79,02	38,14	3647	2
348	ULUBATLIHASAN	24,75	1486	2,22	68,30	16,46	5145	1
349	YUNUS EMRE	24,58	221	6,04	99,81	94,85	2626	1
	SİNCAN		10374	3,87	79,94	41,86	78653	
350	ANADOLU	7,52	944	2,57	14,77	4,65	2728	3
351	AŞAĞIYAHYALAR	9,72	214	1,70	13,64	2,23	462	2
352	AVCILAR	9,54	1138	1,09	2,61	0,34	1303	1
353	BARIŞ	7,24	90	5,29	100,00	95,79	1068	5
354	BARIŞTEPE	8,65	1080	1,32	0,88	0,18	1589	1
355	BATISİTESİ	15,22	414	5,42	97,84	38,73	4261	6
356	BEŞTEPELER	4,44	728	2,41	20,64	7,87	3086	3
357	BUKETK.A.T.KIŞLALI	17,98	913	4,16	88,34	32,03	5513	6
358	BURÇ	8,66	955	1,31	7,08	1,49	1371	1
359	ÇAMLICA	7,55	209	3,56	95,89	41,41	2654	4
360	ÇARŞI	6,45	402	4,18	62,23	45,37	1922	4
361	ÇİĞDEMTEPE	9,93	1967	1,14	5,12	1,10	2346	1
362	DEMETEVLER	7,92	529	7,61	98,05	91,52	10731	4
363	DEMETGÜL	6,92	431	7,93	99,17	97,25	8991	4
364	DEMETLALE	7,31	482	6,82	95,32	84,63	6686	5
365	EMNİYET	3,66	424	3,30	26,23	8,69	2615	4

Table 8.1 (continued)

ID	Quarter	Distance from the CBD (KM)	Residential +Mostly Res. Buildings	Average Number of storeys	Share of dwelling units in apartments in the total number of dw. units (%)	Share of apartments in the total number of resid.buildings (%)	Total Number of Dwelling units	Building Features Group
366	ERGAZİ	13,64	650	3,86	94,22	28,87	5192	5
367	ERGENEKON	7,11	873	3,13	59,76	28,64	4978	2
368	ESENTEPE	6,91	509	3,96	65,96	45,05	2591	4
369	GAYRET	5,83	176	4,87	95,87	43,51	3053	4
370	GAZİ	5,83	652	2,23	6,91	1,79	2141	5
371	GÜVENTEPE	7,86	1093	1,51	5,42	1,26	1881	1
372	GÜZELYAKA	7,75	739	1,77	9,18	2,53	1546	1
373	IŞINLAR	5,29	4639	2,66	64,73	42,48	3011	5
374	İLKYERLEŞİM	13,34	1869	3,14	22,82	1,87	5921	5
375	İNÖNÜ	12,41	619	4,14	73,50	17,46	6422	4
376	İVEDİK	10,86	224	1,23	24,59	0,46	366	1
377	KALETEPE	8,98	1306	1,15	2,64	0,37	1592	1
378	KARDELEN	15,03	3276	3,19	47,52	8,58	7066	6
379	KARŞIYAKA	7,86	706	4,23	60,37	37,13	4446	3
380	KAYALAR	8,40	989	1,24	1,38	0,29	1373	1
381	KENTKOOP	13,17	664	6,03	99,90	99,25	10054	6
382	KONUTKENT	19,71	734	3,81	79,92	21,83	2904	6
383	KORU	17,57	1632	3,88	72,61	12,39	5312	6
384	MACUNKÖY	9,26	548	1,13	9,42	18,47	626	1
385	MEHMET AKİF ERSOY	9,05	1159	1,23	51,60	2,84	2403	1
386	OSTİM	10,88	227	4,74	98,34	4,61	2228	6
387	ÖZEVLER	8,98	232	5,50	88,59	59,43	2709	1
388	PAMUKLAR	7,98	1665	1,38	0,50	0,18	2188	1
389	RAGIP TÜZÜN	6,25	334	3,95	38,36	32,55	1572	4
390	TEPEALTI	6,69	425	4,03	62,17	43,21	1829	4
391	UĞUR MUMCU	10,89	4231	2,77	41,76	3,21	7066	5
392	ÖMİTKÖY	14,04	474	4,20	89,02	24,07	3343	5
393	VARLIK	4,88	382	1,91	7,80	4,07	1589	3
394	YENİBATI	16,14	1398	2,94	62,22	15,41	5881	5
395	YENİÇAĞ	5,93	379	3,79	48,95	33,01	1426	4
396	YENİK.-YAŞAMKENT	20,23	283	3,12	53,42	5,30	584	6

Table 8.1 (continued)

143

ID	Quarter	Distance from the CBD (KM)	Residential +Mostly Res. Buildings	Average Number of storeys	Share of dwelling units in apartments in the total number of dw. units (%)	Share of apartments in the total number of resid.buildings (%)	Total Number of Dwelling units	Building Features Group
397	YEŞİLEVLER	8,56	741	2,72	56,30	15,99	3590	1
398	YİRMİBEŞMART	6,45	140	5,04	37,71	16,84	2787	5
399	YUKARIYAHYALAR	9,76	647	1,39	13,42	1,30	1185	1
400	YUNUS EMRE	6,45	588	3,69	40,03	26,24	3098	4
	YENİMAHALLE		46123	2,84	62,98	13,93	171279	
	TOTAL		269451	2,21	53,75	13,38	986865	