

HACETTEPE UNIVERSITY INSTITUTE OF POPULATION STUDIES
Technical Demography Program

**POPULATION AGEING IN TURKEY:
CURRENT AND PROSPECTIVE CO-RESIDENCE PATTERN
OF
ELDERLY POPULATION**

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OF
ELDERLY POPULATION**

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ANKARA, SEPTEMBER 2008

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.....
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I dedicate my thesis to my beloved husband,
Barış Canpolat
and
my beautiful, happy, shining, creative, extraordinary daughter
Kayra Canpolat
whose love, patience, and sacrifice will always be an inspiration for me.

ABSTRACT

Population ageing is a notable demographic phenomenon worldwide led by developed countries in the 21st century due to increased in longevity and continuous decline in the fertility rate. Although Turkey is considered to have a young population, changes in population structure in time shall put Turkey into an ageing stage and it will become a country with an old aged population starting in 2030. The proportion of the old population in total population of Turkey is currently less than that of the young population, but the absolute number of old individuals (65+) as at 2005 (4 090 000) is more than the population of Moldavia and Norway, 10 times greater than that of Luxembourg and close to total population of Denmark and Finland. In 2030 the size of old aged population in Turkey shall be approximately 9.5 million.

This study has four objectives. The main objective of this thesis is to investigate the co-residence pattern of the aged population by using the 1998 and 2003 TDHS data and to determine the change in its structure. Its second main objective is -by starting from the said structure and change pattern- to determine what kind of household composition the old aged individuals shall live in during 2005-2050 period. The secondary objective is to estimate, from a demographic point of view, what would be the economic burden caused by the change in this co-residence pattern as such changes take place in the age structure of the population . A fourth aim of this thesis is to provide policy suggestions that may be inferred from the content of this thesis.

The ratio of the aged population in Turkey displays a constant increase. The ratio of the population who are 65 or older in Turkey corresponds to 7%. When the size of elderly population is compared with the total rural and urban populations in Turkey, it appears that the ratio of aged population with respect to total population is greater in the rural population. The regions where the elderly population live in greater densities are the Western and the Central Anatolia regions. Four out of ten elderly live in Western Regions.

The education level of the older population is considerably lower when compared with the total population. As for the education difference between the male and female population, it appears that there exists a considerable difference in favor of the male population. About half of the elderly population is not literate. The analysis of 2003 TDHS data shows that one in each five elderly does not have any health insurance. The 31% of 65+ population does not have any income. The ratio of female population who did not have any income is four times higher than that of the male population. According to the results of this study, the most common household type in Turkey is the simple family households. At least one elderly member lives in one of five households in Turkey. When the household types where the elderly population live are reviewed, it appears that the elderly members live mostly within the simple conjugal family households who comprise of only husband and wife. Other common family types are nuclear and single person family households. The elderly will mostly live in simple family households in the future as is the case at present, and there shall be an increase in the elderly population living in the dissolved family household. Half of the single person family households are elderly and a significant part of this population is formed by females. The elderly individuals prefer to reside in a close physical surrounding area to their children even if they do not receive any material support and do not live in the same house with them. These results show that the support of the family for the care giving to the elderly members is still important,

The serious increases at the amount of the aged population may cause drastic pressures on the health services, social security system and the families that are the greatest supporters of the aged individuals in the emotional and financial sense, under the condition that there will be no programs and policy preparations on that field. Because of all these reasons it is necessary to repeat the social issues and the social security policies concerning the problems that may arise in connection with the ageing of the population and the aged population; and to produce new policies.

Key words: Population ageing, elderly, co-residence pattern, household projection

ÖZET

Nüfusun yaşlanması, insan ömrünün uzaması ve doğurganlık hızında meydana gelen sürekli düşüş nedeniyle 21. yüzyılda başta gelişmiş ülkelerde olmak üzere dünya çapında dikkati çeken demografik bir olaydır. Türkiye genç nüfus yapısına sahip bir ülke olmakla birlikte, zaman içerisinde nüfus yapısında meydana gelen değişim nüfusu yaşlanma sürecine sokacak ve Türkiye 2030 yılından itibaren nüfusu yaşlı bir ülke konumuna geçecektir. Günümüzde, Türkiye nüfusu içinde yaşlı nüfusun oranı genç nüfus oranına göre düşük olsada, 2005 yılında 4 090 000 olan yaşlı bireylerin mutlak sayısı Moldova ve Norveç'in nüfusundan fazla, Luksembourg'un nüfusundan 10 kat büyük ve Danimarka, Finlandiya'nın toplam nüfusuna yakın değerdedir. 2030 yılında ise yaşlı nüfusun büyüklüğü yaklaşık 9.5 milyon olacaktır.

Bu çalışmanın dört amacı bulunmaktadır. Tezin ana amacı 1998 ve 2003 TDHS verilerini kullanarak yaşlı nüfusun birlikte yaşama örüntüsünün belirlenmesi ve bu yapıdaki değişimin tespit edilmesidir. İkinci amacı ise bu yapı ve değişimden yola çıkarak 2005-2050 döneminde yaşlı bireylerin ne tip hanehalkı kompozisyonlarında yaşayacaklarının tespit edilmesidir. Bu birlikte yaşama örüntüsündeki değişimin ve nüfusun yaş yapısında meydana gelecek değişimin oluşturacağı ekonomik yükün ne olacağının demografik bir bakış açısıyla tahmin edilmeye çalışılması da bir diğer amaçtır. Türkiye'deki yaşlı nüfusla ilgili olarak, bu tezin sonuçlarının kapsamına giren politika önerilerinin sunulması ise tezin dördüncü amacıdır.

Yaşlı nüfusun oranı Türkiye'de sürekli bir artış göstermektedir. Türkiye'de toplam nüfusun %7'sini 65 ve daha yukarı yaştaki nüfus oluşturmaktadır. Kır ve kent toplam nüfusları içerisinde yaşlı nüfus oranı dikkate alındığında ise kırdaki toplam nüfus içindeki yaşlı nüfus oranı fazla olduğu görülmektedir. Yaşlı nüfusun en yoğun yaşadığı bölgeler sırasıyla Batı ve Orta Anadolu bölgeleridir. Her on yaşlıdan dördü Batı Anadolu Bölgesinde yaşamaktadır.

Nüfusun geneli ile karşılaştırıldığında yaşlı nüfusun eğitim düzeyi oldukça düşüktür. Erkek ve kadın nüfusun eğitim durumu arasında erkeklerin lehine önemli farklılıklar bulunmaktadır. Yaşlı nüfusun yaklaşık yarısı okumayazma bilmemektedir. 2003 TDHS verilerinin analizi sonucunda her beş yaşlıdan birinin herhangi bir sağlık sigortası bulunmadığı tespit edilmiştir. 65 yaş ve üzeri nüfusun %31'inin herhangi bir geliri bulunmamaktadır. Geliri olmayan kadın nüfusun oranı, geliri olmayan erkek nüfusun oranından dört kat fazladır. Bu çalışmanın sonuçlarına göre Türkiye'de en yaygın hane tipi basit aile hanehalkıdır. Türkiye'de beş hanehalkından birinde en az bir yaşlı birey yaşamaktadır. Yaşlı nüfusun yaşadığı hanehalkı tipleri incelendiğinde, yaşlı bireylerin en çok evli çiftlerden oluşan karı-koca hanehalkılarında yaşadıkları gözlenmektedir. Diğer yaygın aile tipleri ise çekirdek ve tek kişilik hanehalklarıdır. Yaşlılar günümüzde olduğu gibi gelecekte de çoğunlukla basit aile hanehalklarında yaşayacak ve dağılmış aile hanehalklarında yaşayan yaşlı oranlarında da artış olacaktır. Tek kişilik hanehalklarının yarısını oluşturan nüfus yaşlıdır ve bu yaşlı nüfusun önemli bölümünü kadın bireyler oluşturmaktadır. Yaşlı bireyler çocuklarından maddi destek almasa ve aynı evde yaşamasalar bile onlara yakın yerlerde oturmayı tercih etmektedir. Bu sonuçlar yaşlı bakımında aile desteğinin hala önemini koruduğunu göstermektedir.

Yaşlı nüfusun sayısında meydana gelecek önemli artışlar, bu alanda program ve politika hazırlıklarının olmadığı durumlarda sağlık hizmetleri, sosyal güvenlik sistemi ve yaşlı bireyin duygusal ve finansal açıdan en büyük destekçisi olan aileler üzerinde baskı yaratacaktır. Tüm bu nedenlerle, nüfusun yaşlanması ve yaşlı nüfus ile ilgili ortaya çıkacak sorunsallara yönelik sosyal ve sosyal güvenlik politikalar üzerinde tartışma gereği ve yeni politikalar üretme gereği bulunmaktadır.

Anahtar kelimeler: Nüfusun yaşlanması, yaşlı, birlikte yaşama örüntüsü, hanehalkı projeksiyonu

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LIST of ABBREVIATIONS

Bağ-Kur	Social security Organization of Craftsmen
DHS	Demographic and Health Survey
EU	European Union
HLFS	Household Labor Force Survey
HUIPS	Hacettepe University Institute of Population Studies
SHÇEK	Social Services and Child Protection Agency
SIS	State Institute of Statistics
SPO	State Planning Organization
SSK	Social Insurance Institution
TDHS-1998	1998 Turkey Demographic and Health Survey
TDHS-2003	2003 Turkey Demographic and Health Survey
THE	Total Health Expenditure
TurkStat	Turkish Statistical Institute
UN	United Nations

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CHAPTER I

INTRODUCTION AND OBJECTIVES

I.1. INTRODUCTION

One of the important demographic changes that will characterize the early decades of 21st century will be the increased ageing of human populations. Both the number and proportion of people aged 65 years and older are growing, although at different rates in different parts of the world. According to the United Nations (1992), a population is said to be ageing when “for any age over zero, a proportion of the population over that age is increasing”. An alternative definition would be to consider as ageing those populations for which the mean (or median) age is consistently increasing over a given period of time. Another definition of population ageing is the alteration in the age structure of a population in the direction of an increase in the relative importance of old persons (those over 65) and usually reflected in an increase in the average age of the population (Wilson, 1985). Such alteration generally takes two forms as *ageing from the base* (bottom) and *ageing at the apex* (ageing from the top). Ageing from the base means that the proportion of younger persons in a population declines while ageing at the apex states that the proportion of older persons in a population increases (Botev, 2004).

The range of an age to designate a person as “elderly” is not uniform throughout the world. It is subjective and depends on demographic factors together with various other determinants like time, location, prevailing conditions in health, etc. (Aykan, 1997). While the criterion adopted by the 1982 World assembly on ageing, and by the World Health Organization (WHO), for instance, is age 60 and over, age 65 has conventionally been used as the criterion in research in developed countries.

Population ageing is inherently a demographic phenomenon. It is essential to understand the mechanisms underlying the changes in a population's age distribution in order to better comprehend the trends and patterns of ageing, and their economic and social implications. There are the two factors contributing to population ageing: increasing longevity as a result of the mortality decline¹ and the "altered" cohort succession² as a result of fertility decline (Botev, 2004). These factors have different implications. Increasing longevity affects the number of person-years lived in old age, while the effect of "altered" cohort succession is limited to changes in the proportion of different age groups.

The world of the twenty-first century is experiencing an extraordinary revolution in longevity. During the latter part of the 20th century, life expectancy has increased by about 20 years, and is expected to extend a further 10 years by 2050. The number of elderly population (age 65+) has risen from approximately 130 million in 1950 to 419 million in 2000 in the world, with the elderly share of the population increasing from 4 percent to 7 percent during that period (Waite, 2004).

I.2. RATIONALE OF THE STUDY

The number of older adults is as important as their proportion. We have to estimate the number of elderly in the future in order to predict how many hospital beds, geriatricians, home health aids, and nursing home beds will be needed. The proportion of the elderly population tells us magnitude of the demand for working-age adults who will be needed to provide financial support to the elderly and to serve as home caregivers. A large number of older adults naturally have different implications in a large overall population than in a small one.

¹ As fertility has already reached very low levels in the developed countries and there is not any level for further decline, decreased mortality in older ages in many of these countries has taken over as the primary factor for population ageing. This is because in the last few decades in the most advanced countries mortality declines have become concentrated at the older ages (Botev, 2004).

² Fertility decline has been altering cohort succession (by lowering the ratio of children to mothers and of mothers to grandmothers), and the slope of the age distribution.

Turkey is undergoing demographic transformation like many parts of the world. Even though the proportion of the elderly is small, and other indicators of ageing³ indicate that the age structure of Turkey is still relatively young when compared to the populations of developed countries, the increase in the elderly population in “absolute numbers” is significant and the number of older adult is equal to total population of some small European countries. It is projected that the population over age 65 will be 4.8 million in 2010 (6.3% of the population), 7.9 million in 2025 (9% of the population), and 17 million in 2050 (17.6% of the population) in Turkey (TurkStat, 2007).

All the men and women in Turkey who will be elderly in 2050 are alive today. Their maximum numbers can be predicted. But how long these men and women will work, how long they will live, what kind of family type they will live in, what proportion of them will need institutional care, and what their resources and their needs will be are not known.

The significant increase in older population will exert powerful pressures on health care delivery systems, on programs such as social security, and on social institutions such as family that provide financial and emotional support for the elderly.

The number of adults potentially available to support the older population can be summarized using the old-age dependency ratio. Although all older adults receive support, but not all young adults provide it, the ratio allows us to view the outlines of at least potential generational exchange. In Turkey, old-dependency ratio will probably triple between 2000 and 2050, from about 9% in 2000 to about 28% in 2050.⁴ This means that at the end of this period each working-age adult will have three times as many older adults to support as is the case in year 2000.

³ i.e. increase in median age, decrease in the proportion of children, and increase in the ratio of the elderly to children.

⁴ *Source:* United Nations (online version, *2003 World Population Prospects, the 2002 Revision*, United Nations Population Division, available from <http://www.un.org/esa/population/unpop.htm>).

Due to this continuous increase in the elderly proportion of the total population, it is necessary to examine their needs and concerns in order to answer the question of how to care for these growing numbers of elderly. The number and characteristics of older adults that are expected to survive in the future will determine how much the government must pay in future benefits, and the number of working age adults at that point will determine how many workers are potentially available to support the expected number of beneficiaries.

The changes in the share of the older population and its size have profound implications for families. In most of the developing countries it is assumed that family as an informal care institution will continue its traditional role of taking care of the elderly. This approach or view causes the state in these countries to be inactive regarding ageing issues. Similarly in Turkey, it is often assumed that the households' members or relatives will automatically take on the responsibility of caring for the elderly. In addition, social security system is based primarily on social insurance, funded mainly from contributions by employers and employees, and the state does not make any regular contributions to financing of social security. But, the state pays for deficit of the publicly mandated insurance organizations. As of the year 2000, the pension programs in Turkey covered approximately 87 percent of the population. However, the social security system in Turkey has undergone a reform process in order to improve the system.

There are some debates regarding whether population ageing causes economic burden or creates a new economic opportunities for countries. The standard development or modernization model postulated by Caldwell claims that the elderly are supported by upward wealth flows. According to Caldwell's wealth flows theory, wealth flows from the offspring to the parents. Because of this, adults can have high fertility. In developed countries, the flow of wealth is reversed, and parents cannot afford many children, thus reducing fertility (Caldwell, 1982). In Turkey, weak social security-type programs make children, and especially the elderly and those who are ill to depend on family members for assistance.

Another theory is life cycle theory for savings. Bloom (1999) stated that the interaction between economy and demography is a dynamic process and each side affects the other. According to life cycle theory, increase in life expectancy will lead people to save more, but only if they have sufficient trust in a well regulated and efficient financial sector. These savings must be invested in a way that benefits the economy. It is also stated that increase in the size of the workforce can be transformed to demographic dividend. If these people find productive work, this will provide higher output. If the labor market fails to absorb the large cohort, then the potential gains will probably be wasted. The development of financial system can reduce the parent's dependence on children for support in their old age. Eventually, according to the life cycle theory, low death rates lead to higher proportion of old age dependents, but this need not be a drain on income per capita if old people live off their accumulated capital, and is even less of a threat if they continue to save. In fact the presence of an old generation living off their capital increases the wages of young workers, whose productivity rises due to high level of capital intensity (Bloom, 1999).

The question of ageing has gained increased importance in countries that have reached a certain level of economic development and industries. It has been analyzed, not only in relation to the nursing of the elderly, but their integration with the society and the increase in functionality as well, and the societal value of the elderly has been gaining new dimensions. Turkey, the population of which is in the process of swift development and change, has to deal with the question of ageing in terms of traditional and modern approaches.

The main approach in developing countries (including Turkey) has been to rely on families to deal with the needs or circumstances of the older generation. This study intends to determine what kind of family and household type elderly will live in, and what proportion of them will need institutional care in the future. To accomplish this, family and household types are projected using TDHS data and

headship rate projection method. It is also planned to estimate the required number of care centers or institutes for elderly people.

Isolation of elderly is another problem. The elderly may lead an isolated life even if they receive health care at home or at institutional scale. The conditions that cause this isolation should be analyzed as well.

Objectives of the study

There are five different, but highly interrelated, main objectives of this study. The objectives of the study can be outlined as the following:

- i. To determine co-residence pattern of the elderly from TDHS-2003 data is the main objective of this study (the typology developed by Laslett (1981) and Timur (1972) will be employed),
- ii. To comprehend the changes in the co-residence patterns through using TDHS-1998 and TDHS-2003 data sets,
- iii. To determine what sort of co-residence pattern, in the future, the elderly population will live in by employing household projection method (Using headship rates method).
- iv. Secondary objective of the study is to demonstrate, with a demographic point of view, the economic demand the co-residence change will create and to perform forecasts regarding the issue.
- v. Another secondary objective of the study is to set the political priorities on the elderly population in Turkey.

Comparisons also will be made between population ageing stages and patterns of some European Union countries and that of Turkey.

In light of the objectives of the study, the hypotheses are:

- “The change observed in the co-residence pattern of the elderly will lead them to demand more institutional care service in the future.”
- “This demand will create burden on the economy”.

I.3. CONTRIBUTIONS

The main objective of this study is to observe the current co-household pattern and socio-economic features of the aged population and to project in what kind of households the old aged people will live in the future in Turkey.

This is the first attempt to project family and household types by modifying projection methods and by taking into consideration 65 and over aged person who live in household.

In Turkey, demographic literature related to the elderly population mainly focus on social problems and living arrangements of elderly people, religious life of aged people, life conditions, adaptation, life satisfactions and attitudes of aged people, and socio-cultural characteristics of retired person and elderly housing (Ünalın, 2000; Çelik and Çelik 2001; GEBAM, 2004; Kutsal and Troisi, 2006; Bandırma, 2006). There are small numbers of studies involved in the future cost of that population like social security possession, their household composition, and effects of ageing population on economic growth (Aykan, 1997b; Kılıç, 2000; Biçer, 2002). Taking into account the limited studies of the issue; this study aims to fill this gap in the literature. The ageing processes of European population and its comparison with that of Turkey is also one of the objectives of this study.

Data from 1998 and 2003 Turkey Demographic and Health Surveys (HUIPS, 1999 and 2004) will be analyzed from an ageing point of view.

I.4. ORGANIZATION OF THE STUDY

This thesis is structured in nine parts. In the first section, I define briefly ageing, reasons of population ageing, ageing stages of developed and developing countries, some figures and determinations regarding ageing population in Turkey. This chapter also includes rational, objectives and expected contributions of the study.

Chapter 2 is a literature review summarizing the studies regarding population ageing and economic impacts of population ageing in the world and Turkey. Summaries regarding the studies about the household and family structures are also mentioned in this section.

In Chapter 3 related to the theoretical frames of the study. The economic impacts of population ageing will be investigated from a demographic point of view and in this section the theories related to ageing will be studied under 3 subgroups. The first of these groups is the economic theories on ageing. In this part, the approaches towards the burdens and the opportunities that can result from population ageing and mainly “wealth flow theory” and “life cycle theory” will be employed. Moreover, the theorem of human capital and the change in the age structure of the population or the interaction between economy and demography will be explained. In the second subheading of the theoretical framework, theoretical models will be investigated which cover different perspectives on ageing and the life of the elderly population. In this section, some interesting and striking theories and approaches in gerontology, their comparison with each other and how ageing has been conceptualized will be emphasized. In the third part, the approach will be set to be derived from the synthesis of the approaches mentioned in the first two parts and this new approach from the main theoretical framework of the this study.

In Chapter 4, data source, variables, basic methods and/or indicators used to describe aged population are discussed. In this chapter, projection techniques for

population, household, family, labor force participation and health expenditure are explained in detail.

Chapter 5 explains the demographic transition stages in Turkey. Comparisons of population ageing stages of some countries are also made in this chapter. Present policies and practices on the elderly population in Turkey are summarized in this chapter as well. Statistics on ageing and the elderly population in the world and Turkey are also included in this chapter.

In Chapter 6, the descriptive statistics on population ageing will be given. Basic demographic indicators regarding ageing were calculated by employing TurkStat projections. The social, demographic and economic characteristics of elderly population using data from latest nationwide 2003 Demographic and Health Survey and the last population census in Turkey are also described.

In Chapter 7 the co-residence pattern of the elderly population in Turkey was investigated by analyzing the results of 2003 TDHS data. A household projection had been made in order to present the change at the structure of the households in Turkey and at the co-residence pattern of the old people according to headship rate method.

In chapter 8, the economic impacts of population ageing will be investigated from a demographic point of view. The data sources required to perform the related analysis, which are the economic consequences of the ageing population, are quite insufficient in Turkey. In this chapter, due to lack of data, some simple and crude calculations are performed for estimation of economic burden of population ageing.

In the last part of the study, the contributions of the study in general, the elderly population profile in the future in Turkey and the impacts of the changes on the structure of the population will be explained. Moreover, there will be suggestions on what should be the policy priorities on the elderly population in Turkey.

CHAPTER II

LITERATURE REVIEW

The population of the world is getting older and older and the elderly population has been on the increase both in quantity and proportion. The literature on ageing is abundant. In this part of the thesis, the studies used the data of Turkey and across the world related to the elderly population, the ageing of the population, economic impacts of the ageing population, statistics on ageing and the ageing population will be reviewed.

II.1. STUDIES REGARDING POPULATION AGEING

In Turkey demographic literature related to the elderly population is mainly focused on social problems of elderly people, aged people's religious lives, life conditions, adaptation, life satisfactions and attitudes of aged people, socio-cultural characteristics of retired person and elderly housing.

In the study presented by Aykan in 1997 attention was drawn to Turkey's population ageing potential. Placing emphasis in this study on the fact that Turkey has population ageing potential, Aykan has stated that Turkey would reach the ageing level of the developed countries in 1997 within 30 years. The author, stating that the year 1997 is not an early date for placement of importance on issues of ageing of population for Turkey, tried to draw attention to some issues that the ageing of population would bring forward in economic and social areas. Retirement age and changes to take place in role distributions between formal and informal sectors are some of the factors mentioned.

Altun and Ersoy (1998) examined the health problems of elderly and stated that the elders constitute 6 per cent of total population and 90 per cent of the people

of 65 years-old or older have usually chronic health problems. According to them, adequate training for the problems of old age is not provided in the medical and nursing schools. Lack of information concerning the elderly of the health employees makes them consider elder-caring services as a problem. It is noted that there is an insufficient number of institutions where the elders can live without causing internal family problems in Turkey and that the share allocated from the national income for this purpose is very small. In this study, scarce economic resources, urbanization, concern for nuclear families, and changing family values are reasons why the elders and adult population become anxious about their old age.

In 1994 the 2nd Convention of the Elderly, to which the representatives from 33 provinces participated, was held in Ankara by General Directorate of Social Services and Children's Protection Organization (SHÇEK) (1998). In this convention, the resolutions from the proceedings were grouped under three headings: the expectations of the elderly from the society, their expectations from the government and their expectations from local authorities. In general terms, the expectations of the elderly from the society can be summarized as making use of their knowledge and experience, keeping up with daily life, the provision of hobbies that do not tire them, and being knowledgeable about elderly psychology. Their expectations from the state were making use of health care services not affiliated with social security system free of charge, an easier means of pension payment, provision of home care for those living at home, opening centers for the geriatric in big cities, improving income distribution, attracting the elderly and the retired to active work life, taking the precautions towards the improvement of their living standards, the improvements of the conditions of nursing homes, opening centers for rehabilitation for the bedridden patients and the participation of the elderly in the administration of nursing homes. The expectations of the elderly from the local administrations can be summarized as the elderly gathering houses to be with their peers, establishing centers for support and culture, constructing park and leisure areas, making public transport free of charge for the elderly, and taking the precautions towards the facilitation of life in urban planning.

Hacettepe University Research Centre of Geriatrics Sciences (GEBAM) was founded in Turkey in 2000. Its aim is to develop multi-disciplinary research designs in order to produce data on Turkey's ageing population and to conduct longitudinal research based on the long-term interrelationships between the health, economic and social status of older persons, and their family relations (Kutsal and Troisi, 2006).

In a study conducted by Kılıç (2000), the extent that the elderly staying with family or alone and over 65 years of age are able to meet his / her daily needs and how they could settle the problems they face were examined. Kılıç states that a majority of the elderly suffers from economic problems and has insufficient income. According to the results of the study, 78 per cent of the elderly over 65 years of age have a chronic illness. In the study, also, it is emphasized that the elderly confront problems in reaching and benefiting from institutions offering health-care service and, especially, in bank service delivery, going to hospitals, buying medicine, and paying bills. They are dependent on other people to access these services and cannot get enough support.

In the study carried out by Ünalın (2000) utilizing 1998 TDHS and 1990 Population Census data, the socioeconomic and demographic characteristics and living arrangements of the old age population were examined. Ünalın stated that the majority of the elder population is female and the urban ratio of elderly is less than that of rural. It has been stated in this study that elderly population have less educational level, and, in comparison with overall households in Turkey, elderly live in households with less income. It has further been stated in the study that old aged population is dependent on their close family and is in need of their assistance.

In their article, Çelik and Çelik (2001) stated that Turkey has a great need to improve the quality of lives of the elderly. They expressed that the majority of the elderly were living in undesirable conditions and the government or related institutions have to improve these conditions. Another fact that they mentioned is

that Turkey, like other ageing countries, will have to face some financial burdens and problems to offset the aging problem. For this reason, although Turkey is a country that is not presently under the big pressures of the aging problem, it has to take necessary steps in advance address the aging problem in near future and to be ready to handle aging. They strongly emphasized that Turkey should share the experiences of European countries and has to conduct more detailed studies concentrating on aging and its problems in the future.

In the study conducted by Biçer (2002), it was pointed out that ageing in Turkey is a concealed societal problem stemming from the features of social structure and the ageing of population will make itself apparent in time. The rapid transition from traditional family structure to nuclear family structure owing to industrialization and urbanization made the nursing and care for the elderly complicated, and services oriented to the elderly are needed at an accelerated pace. In that study, the general concepts related to ageing and the elderly were explained. The study also addressed the problems of the elderly and the universal principles and precautions to settle these problems, as well as the need to take approaches pertaining to “the rights of the elderly” into account. According to Biçer, among the services, the quality of nursing homes come first in the frame of social security and social service programs and these services are not at an adequate level.

A study was conducted by Hacettepe University Geriatrics Research Center (GEBAM, 2004) in 2003 within the boundaries of Ankara Municipality into people over 65 and above years of age on their health status, physical activities and social life. The study was conducted through stratified-multi stage set sampling method. According to the results, nearly all of the elderly (91.7%) stated that they don't want to live in nursing homes. Half of them (50.1%) are content with living with their families. 21% of the children of the elderly parents are against nursing houses. However, most of the elderly living alone prefer to live in nursing homes.

There are also some studies carried out by government organizations such as The State Planning Organization (SPO). One of these studies is “The Situation of

Elderly People in Turkey and National Plan of Action on Ageing” which prepared by the SPO Ageing National Committee in 2004. This report includes international and national studies, regulations regarding aged people, elderly and country development and “Elderly and Development Action Plan” of the SPO (2004).

First Middle East Aging Congress was held in March 2006 with the partnership of Turkish Geriatrics Foundation (TÜGEV), European Refugee Federation of Elderly (ERFEM), İstanbul Greater City Municipality and with the support of General Directorate of Social Services and Children's Protection Organization (SHÇEK). The purpose of the congress was to increase the interaction and cooperation among the countries in the region, and to take the first step in the preparation of regional action plans about the aging of the population.

In the “Aging in Turkey” publication edited by Kutsal and Troisi (2006), the results of the survey in which health and social living conditions of 1300 elderly people 65 years of age and over are presented. Medical, nursing, public health and social issues of the elderly are covered in this book. The survey, which constitutes the content of the book and is applied to senior citizens living in various districts of Municipality of the Greater City of Ankara, was carried out by GEBAM. The purpose of the survey is to obtain realistic and high quality data on the medical, social and economic conditions of the senior citizens in Turkey. Through the interviews with elderly people 65 years of age and over , information on subjects like public health and chronic diseases, the use of drugs and medications, oral and dental health, nutrition and diet, physical independence and quality of life, nursing services, social and economical life, social services were collected.

European countries especially are taking the lead in developed countries with regards to aging issues and have produced a wide range of literature reviews and resources on population aging and its consequences. Within the scope of this study, a variety of studies and reports have been reviewed. Some of them will be summarized below.

At the United Nations General Assembly in 1982 in Vienna on the first World Ageing Assembly, problems and characteristics pertaining to process of ageing were presented. During that assembly, the principles of independence, participation, care, self-fulfillment, dignity were adopted and led the way for planning and thought on the issue of ageing.

In 1987 the International Institute on Ageing (INIA) was established in Malta. There is an agreement between the United Nations and the Malta Government in order to train participants from developing countries in several ageing fields. Such education programs are regularly carried out in Malta and various places in the world annually. I also attended “International Programme in Demographic Aspects of Ageing and Its Implications for Socio-Economic Development, Policies and Plans” in Malta in 2007 November, in order to contribute to this thesis study.

The works of 1999 International Elderly Year are significant in its contribution to create a society where there is no discrimination, which is based on equality with the full participation of the elderly, and its contribution to protection and development of all fundamental rights and human rights for all age groups. In that year, the main theme of which was “A society for all the elderly” the four major issues were brought up;

- situation of older persons
- individual lifelong development
- relationship between the generations
- interrelationship of population ageing and development

and it was ensured that the issue of ageing would be included in all sectors, all facilities and opportunities of life would be increased, the problem would be realized worldwide and political actions would be enhanced.

In the 20 years leading up to the second World Assembly on Ageing, it was felt necessary that in order to enable global ageing to participate in the process of development, along with the guiding principles policies on ageing, should have a point of view towards development and a holistic approach to society.

The action plan prepared in the Second World Assembly on Ageing in Madrid covered 33 objectives and 117 recommendations (United Nations, 2003). In the plan there are three priorities, which are

1. Older people and development
2. Advancing health and wellbeing into old age
3. Enabling and supportive environments

With this action plan, the things that are targeted are the recognition of human rights, fundamental rights for the elderly, ending the elderly poverty, enabling ageing in a secure manner, full and active participation of the elderly in the economic, politic and social aspect of the society, life-long learning, access to the facilities of society, provision of the opportunities and facilities in their further years, sustaining the personal development and personal satisfaction and wellness, provision of equality by eliminating gender discrimination, provision of health-care services, support and social protection and the facilitation of collaboration between the elderly and the government-civilian society and private sector to apply the plan.

World Elderly Day has been also celebrated in Turkey since 1983 in order to draw attention to the problem of ageing.

A study called “The Survey of Health, Ageing and Retirement in Europe (SHARE)¹” aiming to gather micro data on health, socio-economic status and social and family networks of individuals aged 50 or over under the coordination of “Mannheim Research Institute for the Economics of Aging” is being carried out in different parts of Europe. Eleven countries (Denmark, Sweden, Austria, France, Germany, Switzerland, Belgium, the Netherlands, Spain, Italy and Greece) have contributed data to the 2004 SHARE baseline study. Data for Israel have been collected in 2005-06. The Czech Republic, Poland and Ireland have joined SHARE in 2006. The SHARE data collection has been primarily funded by the European

¹ www.share-project.org

Commission through the 5th framework programme. The data collected in the 2004 SHARE baseline study are available for scientific use as free of charge. According to data gathered at the end of the research, being knowledgeable about health, family networks, employment and economic situation of older Europeans is one of the main targets of the study.

Besides, under the coordination of UNECE and Social Affairs and Equal Opportunities of the European Commission, a program named “The Generations and Gender Programme (GGP)” is conducted. This programme is a system of national Generations and Gender Surveys (GGS)² and background databases, which intends at improving the knowledge base for policy-making in UNECE countries. The GGS is a panel survey of a nationally representative sample of 18-79 year-old resident population in each participating country. It includes at least three panel waves and an interval of three years between each wave.

In a book prepared by Eriksonn and Wolf (2005) with the support of European Union, the problems of the elderly have been examined in theoretical, demographic, cultural, and historical perspectives. In this study, population ageing will be dealt with gerontological sciences’ theories and methods. In addition to this, critical life events and status passages with impact on the ageing process are argued. The book was specifically designed for education purposes and aims to disseminate information on social position of the elderly in Europe, gerontological theories, and research methods and to discuss the role of society in elderly-care and to enhance the knowledge of those trained in the field related to ageing process.

II.2. STUDIES REGARDING HOUSEHOLD AND FAMILY STRUCTURES

As the population gets older, in society the family performs the function of a buffer that aims to decrease the social and economic impact of population ageing.

² <http://www.unece.org/pau/ggp/Welcome.html>

Especially, demographic ageing changes both the family structure and the family size. Similarly, in the societies whose population is ageing, the size of the households where the decisions of employment, consumption and savings are taken also diminishes. Empirical observations indicate that in many countries with an elderly population the percentage of large households is lower than the developing countries and the percentage of small household is higher (UN 1988, pp13).

The number of women living alone all over the world outnumbers the men. The most important reason for this, no doubt, is the increased life expectancy of women compared to that of men. The proportion of men living alone in developed countries varies from 5% in Japan to 25%, in Sweden. This proportion for women is more than 50% in countries such as Denmark, Germany, and Switzerland. These figures are lower in the developing countries. The increase of this proportion in developed countries coincides with 1960, when the welfare state implementations intensified (Kalaycıoğlu et al, 2003).

The most commonly seen living arrangement in developing countries is to live with children or grandchildren. According to the study conducted by World Health Organization in 1984, 72% and 79% of the elderly live with their children in countries such as Malaysia, the Philippines, Fiji and South Korea. Similar results can be observed in many countries such as India, Indonesia, Singapore and many Latin American countries. Living arrangements vary from country to country as well as within ethnic groups in the country (Kinsella and Velkoff, 2001:67-8).

The results of the study by Bongaarts and Zimmer (2001) in order to assess the living arrangements of the elderly in developing countries coincide with the arguments put forward by Kalaycıoğlu (2003) and Kinsella and Velkoff (2001). In this study, DHS Household Surveys (1990-1998) data of 43 countries were employed. They compared patterns by gender, world regions, and macro-level measures of socioeconomic development. Indicators that are used in this study are household size, headship, relationship to head, and co-residence with spouse, children and others. They examined the living arrangements dimensions of “Goode’s

convergence theory”³. The results of the study show that average household size is large in the countries included in the study, but a significant portion of the elderly adults live alone compared to individuals in other groups. It was found out that the rate of elderly females living alone is higher than the males living alone and also the rate of living with household head or husband in female population is low. While living with children is observed in Asia most, this type of living arrangement is seen the least in Africa. Another finding of the study is to coreside more frequently with sons than with daughters in both Asia and Africa, but not in Latin America. In the study, it was also found out that as the level of education increases in the countries, many indicators of living arrangements change and families become more of nuclear family nature. It was found that urbanization and GNP do not have significant impacts on living arrangements.

Bongaarts (2001a), in his study named “Household Size and Composition in the Developing World” has stated that the decrease taken place in respect of fertility in the now-industrialized countries in the 20th century is the main driving force concerning the decrease taken place in the “average household size” in Europe and North America. According to the author the second reason forming the ground for the decrease in household size is the decrease in the number of adult per household. It is stated that this decrease reflects the transition from the “traditional very complex household” structure to the “simpler nuclear household” structure in the contemporary industrialized communities.

Turkey abounds rich resources on the living arrangements. Of the studies done within the scope of “family and household demography” in Turkey, the one conducted by Timur (1972) is the oldest. In this study, the family typologies used in this study were used extensively and developed by other demographers such as Kunt

³ Goode (1963) foresees the convergence of family systems around the world to the conjugal type: “Wherever the economic system expands through industrialization, family patterns change. Extended kinship ties weaken, lineage patterns dissolve, and a trend toward some form of the conjugal system generally begins to appear- that is nuclear family becomes a more independent kinship unit”. According to Goode, the most important indicator of this transition is the weakening of the ties with the elder generations. By referring to “weakening of the ties”, lack of support for the elderly financially and physically, lack of social interaction and the increase in separately living.

(1978), Hancıoğlu (1985a and 1985b), Ünalın (1986), Koç (2000) and Yavuz (2002). In this study, Timur (1972) puts that in the mid-60s 60% of Turkish families is nuclear family, 19% patriarchal extended, 13% transient extended and 8 % dissolved family or non-family households. Koç (1997) argues that the rate of extended family receded to 19.4% in 1993, while it was 31% in 1978. A similar tendency was noted by Ünalın (2000). According to Ünalın, the elderly do not prefer to live with the other members of the family in the same house. They want to live nearby their children to continue to meet psychological needs, but want to live alone to lead an independent life (Ünalın, 2000:3-4). These arguments, based on the statistical data and put forward by Ünalın and Koç, are justified by the observations and field studies conducted by TÜBA (Kalaycıoğlu, 2003).

Another study regarding the patterns and composition of household were investigated by Aykan and Wolf (2000). They used data from the 1993 Turkey demographic Health Survey. Their analysis focused on traditional pattern of co-residence and parent-child co-residence. According to this study's results, co-residence with the husband's parents are very high in Turkey. They also stated that continued economic development and social changes can reduce the prevalence of parent-child co-residence in Turkey.

A study regarding family living arrangements of the elderly was presented by Hancıoğlu and Ergöçmen (2001). Household based data from the 1998 TDHS was used in order to assess family living arrangements of the elderly. Hancıoğlu and Ergöçmen emphasized that 10 percent of elderly live in a single person households while a fifth are in all-elderly households, mostly with a spouse. The rest of elderly lives with younger generations. 39 percent of elderly depend on their children for their welfare. As stated in the study, more than half of the elderly have some kind of income and there is positive correlation between the absence of income and living with younger generations.

Aytaç (2002) sought answers for whether the reasons for co-residing with elderly, in the urban areas in Turkey, stem from traditional concerns or necessity by

using the data come from the 1988 Turkish Family Structure Survey⁴. According to this research, there is a significant negative relationship between economic development and individual modernizing and co-residing with elderly members due to tradition. Aytaç claimed that the impact of processes of development is not the same for all countries, with specific cultures and family and kinship patterns playing an important role in intergenerational relations. She supported her ideas by using Japan case. In this much more economically developed country, two-thirds of elderly co-reside with their children. She said that the impact of economic development on family relations is not unilinear as was suggested by modernization theorists. Another finding of that study is about a relationship between ages and co-residing with elderly. She stated that there is a negative relationship between them and younger generations are less likely to co-reside with elderly.

Bandırma (2006) also investigated determinants of living arrangement patterns of older people in Turkey by using the data from 2003 TDHS. According to results of this study, almost half of the elderly co-reside with their children while most of the other half lives nearby their children. Ten percent of elderly live alone in Turkey and a female elderly person is more likely to live alone compare to males.

In a study conducted by Yavuz (2002) the percentages for single person family were calculated as 2.9% in 1978, 4.3% in 1993, 5.2% in 1998. In a study carried out by Özbay in 1990 it was stated that there was a slight decline in the late 1970s in the rate of nuclear family from 60% to 57.4%, and a significant decrease in patriarchal extended families from 19% to 11.6%. Besides, in the study, it was also stated that in dissolved or non-family household families there was an increase from 8% to 14%.

According to the results of the Family Structure Research conducted in 2006 in collaboration of Turkish Statistical Institute (2006) and General Directorate of Social and Familial Research, in Turkey, on the whole, households are comprised of

⁴ This survey was conducted by the Turkish State Planning Organization and the State Institute of Statistics.

solitaries in 6%, nuclear family in 80,7%, extended family in 13%, and 0,3% in other types of households. The sampling size of the study was designed to offer estimates at the level of urban/rural, NUTS1 and three designated provinces (Istanbul, Izmir and Ankara) and in 12 280 households with 24 647 individual over 18 years of age were interviewed. In the research, there is a questionnaire module related to elderly.

According to the findings of this study, in Turkey on the whole, the ratio of households includes elderly who constantly-needing care is 5.3%. This ratio in the rural areas is 8%, in the urban areas 3.9%. 55% of the individuals younger than 60 years of age stated “I would stay with my children” when they get older to the extent they cannot undertake their own care, 17.8% “I would get home care services”, 16.8% “No idea”. The ratio of those stating “I would stay at nursing home” is only 9.3%. These ratios do not differ significantly by gender. The ratio of female population stating “I would stay at nursing home” only is 10.4%, where as for males it is 8.2%. The majority of the males (56.2%), like the female population (53.6%), would like to stay with their children. The most important reason stated by those preferring nursing homes, with the percentage of 55.1%, is that they do not want to be burden on their children. This is followed by the reason that they may not want to live with them, with the percentage of 15.6%. Those over 60 years of age and living in a different place stated the reason why they do not co-reside with their children as the unwillingness to change the place they live in and they do not want to co-reside with their children, with the percentage of 28.7%. The ratio of individuals that do not co-reside with their children since they are self-sufficient is 25.3%. Among the reasons why individuals co-reside with their children, with 23.7% in the rural and 22.3% in the urban areas is “I am happy with living with my children”. The ratio of those living with their children due to customs and traditions and in order to support each other is 18.1% and 14.4%, respectively. These ratios in the rural areas are 17.6% and 15.6% (Turkish Statistical Institute, 2006).

In the presentation named “Family Formation and Household Types in Turkey” made by Yavuz⁵ it is stated that nuclear family household and dissolved family household ratios in Turkey in the 1968-2003 period have increased, while “extended family household” ratio has decreased. The TDHS results for 1978, 1998 and 2003 have been compared in the same study. In view of the same, it is stated that there is increase in married couples with children, single parent, solitaires and no family household types, while there is constant decrease in extended and multiple family households. In this presentation it is stated that there is significant increase in single person households, and taking into consideration the age structure of households, elder individuals form the majority of such households and traditional families have eroded. According to the 1998 TDHS results, nuclear families take the highest ratio in the Southern and Western regions, while extended family households are located in the Eastern and Northern regions respectively. As for dissolved family households, Western and Central regions take the highest rate. It is stated in this study that individuals tend to live with their spouses without children after the age of 44, there is a high ratio of increase in the number of couples without children after such age and this ratio reaches the highest rate in the “70-74” age group. Author, expressing observation of decline in the ratio of couple without child due to probable decease of one of the spouses after “70-74” age group, has stated that elderly live in “non-nuclear” households.

Some of the available statistics related to the elderly is on the household headship. Age is important determining factor for declaration of the household head in Turkey. Usually, the oldest member of the family irrespective of the sex is declared the household head. As stated by Koç (1997), in 1978 the declaration of the oldest member as the household head was 91.7% for females, 79% for males. These proportions were 88.7% for females and 82.1% for males in 1993. The obvious reason why the proportion of household headship rate is higher than that of males is attributed to longer life expectancy of females (Koç, 1997).

⁵ www.demogr.mpg.de/Papers/workshops/050509_paper09.pdf (accessed August, 2008)

When the studies done with the method of headship rate were examined, it was observed that the majority of these studies were done for the purposes of developmental planning and the identification of housing for the country concerned. In a study by Park and Kim (1991), using headship rate method, a projection was performed for 2010. Census data were used in the study belonging the period of 1960-1990. In the study, the fall in the rate of household head living in rural areas and living alone or divorced in all age groups. In China, the effect of the household change on residential areas and demographic structure were investigated by using household headship rate method (Dankert, et al., 1990). According to the results of the study, two-third of the household are composed of nuclear family. In cities where the study was conducted, the rate of being a household headship is high for males, as in traditional societies, low for females. In these cities, it was found out that the rate of living with parents was high due to housing problems.

In England, household projections were applied for national and sub-national areas, using household headship method. In the study, it is stated that economic changes have an impact in the composition and the change of household and headship rate method is not sufficient in explaining these changes. For this reason, it is pointed out that new projections explaining life-cycle should be developed (Corner, 1989).

Similar studies were carried out in such countries as Thailand, the USA, France and Canada and the size of housing, the percentage of the elderly living with families were explored (Kamaras, 1988; Poapongsakorn, 1988; Smith et al, 1984).

Tosun (1999) tried to estimate the household number in Turkey using the data of population census and headship rate method. The main objective of the study was to estimate the need for housing in Turkey through household size, drawing upon the number of households. Though the main purpose of the study was the need for housing, among the results of the study were some outcomes identified through the help of demographic methods. One of them is that the dissolution process in the structure of traditional families started and a transition to nuclear family has been

gone through. In this study, when the indicators of household were examined, it was emphasized that there is a rising household size parallel to the rate of population rise in 1950-1970, in 1950-1970 household size was in majority 5-7 people whereas in 1985-1990 the household size was mostly 2-4 people and the number of households with 8 and more people decreased. In 1955 55.6% of the households were composed of 4-7 members, in 1990 households with 1-4 members has the share of 50.5% among the entire household.

Besides, in this study, the complexity coefficient was calculated and according to the results it was stated that every married person is inclined to have a separate household. Another point emphasized was the fact that the number of households is on the increase faster than the rate of population rise. This change was put down to the dissolution of traditional family structure.

It pointed out that all over Turkey household heads in the age group of “20-24” had the lowest rate of increase. As the reasons of this situation, the increase in educational years, tendency delay the age of marriage and decreasing fertility were put forward. The region where household head in the age group of 34-44 was observed most was found to be Southeast Turkey. In the West Anatolian region, household headship was observed to be “35-39” years of age. It was estimated that the rate of household heads over 65 years of age was 15%, and this would reach 19% in 2025. In this study, in Turkey overall, it was calculated that the group with the highest household head rate in 2025 would be those with 60+ years of age.

In a study conducted by Soylu (2004) size of household projections were performed using population census data and household headship rate method. With this method it was estimated that in 2005 the number of households would be 16 736 406, in 2010 18 133 346. In the same study, it was found out that the size of the households was turned into nuclear families, as for the age of household head there was an increase. When the percentages of one-person households in the total were examined, it was observed that West Anatolian region was at the highest level. This percentage was 48% in 1990; it was found out that in 2010 it would rise by

53%. The lowest percentage was of North Anatolian region with 7%. It was estimated that there would be a decrease in the East Anatolian region in the number of household with six and more people, the value, 8% in 1990, would decrease by 7% in 2010.

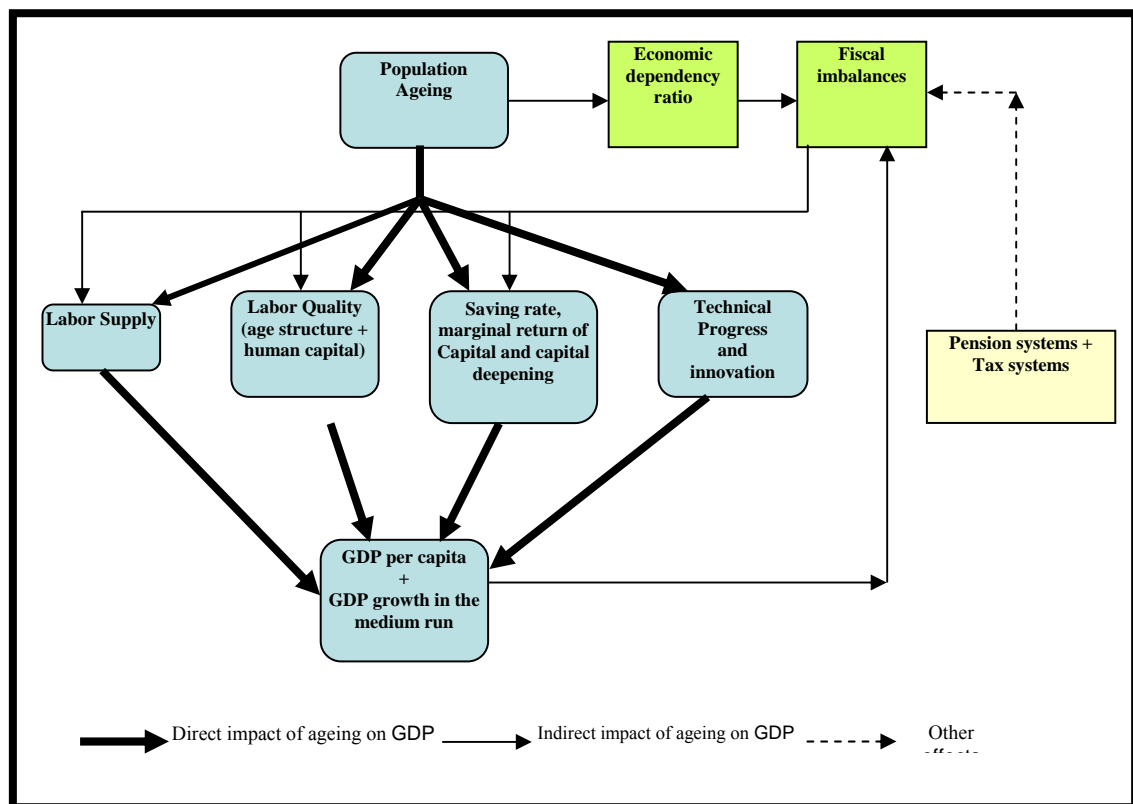
II.3. STUDIES REGARDING THE ECONOMIC IMPACT OF AGEING

The literature on ageing and the economic impacts of it is very abundant. The literature survey in this section focuses on the impact of an ageing population on labor supply, economic growth, productivity, as well as indirect “feedback” effects that can occur arising from the budgetary impact of ageing like health expenditures, institutional care needs, and social security payments. Figure 2.1 shows population ageing and its economic impacts.

Population aging has a direct impact on economy through labour input and productivity. Productivity is nurtured through three processes, which are (1) the quality of labor inputs, (2) capital/labor ratio and (3) labor-enhancing technical process (European Commission, 2005). The quality of labor inputs depends on the age structure and the human capital accumulated by the workforce.

In many industrial countries, working age population increased until the 2000s and after this period it gradually declined. The increase in the old age dependency ratio accelerated after 2005 when the post-war baby boom generation entered retirement ages.

Figure 2.1. Selected economic effects of ageing on overall economic performance



Source: European Commission (2005), Graph 1 in page 8

The maintenance and the preservation of the health and of life for the ageing population are of great importance with respect to social and economic aspects of society. The impact of an ageing population will be more prominent and will lead to a number of changes in the life styles of families, life arrangements, employment areas, health care services, retirement system and economic situation.

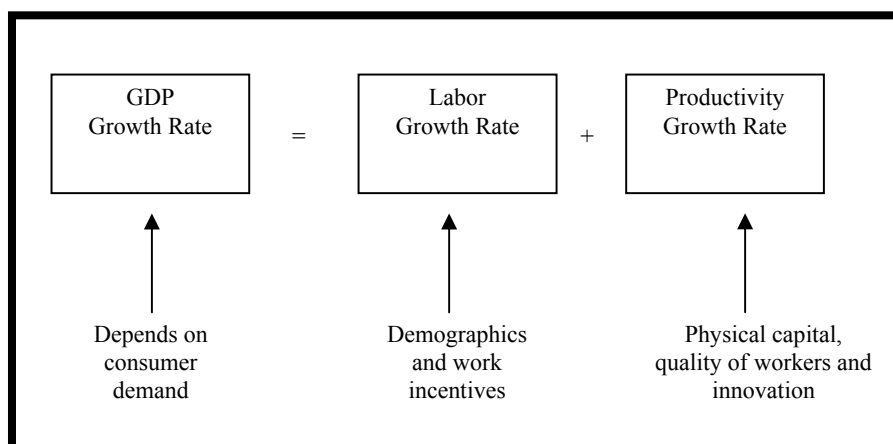
In present day circumstances, families have fewer children, and, after they are grown, children live far from their families. In developed countries, the female population takes their place in business life, vacating their roles as child or elderly nurse. Thus, it is quite clear that regarding the family and, especially females, as a solution in nursing and caring for the elderly is not a solution for a developed economy and there is a strong necessity in offering the public and institutional support services. Valid for the developed countries, this situation will be applicable for Turkey in the period when the elderly population reaches significant amount both in number and rate. It is necessary that the government and local administrations

should perform service planning related to nursing and care for the elderly. In addition, plans and investments should be conducted relating to social services, home visits and services, hospitals, nursing homes and a variety of establishments and facilities. There are serious discrepancies between the institutional care and the care in the place where the elderly population live in terms of cost, and the emotional state of the elderly population.

II.3.1. Impact of Ageing on Economic Growth

Economic growth equals to the sum labor force growth and worker productivity growth. Labor and productivity growth rates depend on three main inputs: human capital, physical capital, and innovation (Figure 2.2). Individuals comprising the labor force and their work-related capabilities constitute human capital. Human capital can be increased in two ways. These are increasing number of workers and increase in hours worked. As for innovation, it covers the level of knowledge and know-how in the production process. Expansion the human capital causes high production. Quality of workers has an effect on productivity. New attributes or skills make workers more productive.

Figure 2.2. The interaction between macro economy and demographic events



Source : Nyce and Schieber, 2005, pp155.

Axel Börsch-Supan (2005) emphasizes that global ageing has an impact on labour, product and capital markets. Though global, the speed and the extent of ageing vary by countries and these differences triggers trade and “factors movements”.

Feyrer (2005) examined the relationship between workforce demographics and aggregate productivity. This study is regarding the macro level of impacts of ageing on productivity. He stated that cross country regressions show changes in the age structure of the workforce to be significantly correlated with changes in aggregate productivity according to empirical evidence. He supposed that almost one quarter of the persistent productivity gap between the OECD and low income nations may be related to different demographic structures.

In many developed countries, low increases in population lead to considerable declines in economic growth. Decline in economic growth paves the way for lower living standards. In order to eliminate these problems occurring in ageing populations, one solution is to attract more workers to the workforce. Especially the participation of women should be increased and productivity should be increased by developing the abilities and the skills of workers. New methods in production, in other words technological innovations, are other strategies thought for the problem.

Thoughts related to the effects of population increase and age distribution of the population on economic growth spills over into a wide spectrum of empirical analysis and economic theory. Oftentimes, it is argued that fast population increase has a negative effect on economic growth; however, there are counterarguments for this. Since the early 1980s, according to a dominant point of view, population increase neither prevents nor encourages economic growth systematically (Van Dalen, 2007). Lately, there has been substantial evidence suggesting that the change in the age distribution if the population is an important determinant on economic performance (Bloom and Williamson, 1998; Lee at al., 2003).

Patterns of savings and consumption change over life cycle⁶. This pattern is connected with the number of retired and working age individuals and the young who make up the total amount of savings and consumption of the population (Van Dalen, 2007).

Demographic transition can affect economic growth at various levels. The effect of decrease in fertility rate (also called as second demographic transition) will first cause a fall in the share of economically active population in the total population then increase and re-fall. The first effect is called the stage of “demographic burden”, second stage called “gift” represents the period in which dependency ratio is low. The last stage is known as “demographic dividend” (Van Dalen, 2007). Since age distributions are determined with the changes occurring in fertility, mortality and migration, while analyzing the effects of demographic transition on economic growth, these factors should be taken into account. Bloom and Canning (2004) stated that growth of working-age to total population is a positive sign. They think that this effect is basically equivalent to a supply-side boost to the economy. They said that *“the impact of demographic change may be to increase labor supply but how well this extra supply of workers is put to productive employment depends on the economic system and policies being used”*. Age composition of the population is just one factor that determines economic growth. Since the subject of this study is the results of the changes occurring in the age structure of the population, age composition is studied in more detail.

There is no single path in which population change affects economy. As seen in figure 2.1, population ageing has an impact on economic growth through indirect and direct channels.

⁶ There are detailed explanations of life cycle theory in the theoretical frame chapter of this study. Briefly, according to this theory, a person consumes more than s/he earns at the young times of his/her life, planning that s/he will earn more as s/he ages. S/he meets the gap by getting into debt. When her/his earning increases, s/he pays the debt back, and starts saving. When retired, s/he lives spending the savings. The theory suggests that the consumptions of people depend on their expected life time income rather than their current earnings.

Economic growths depend on three Ps as (Productivity Commission of Australia, 2005):

- *Population*: the total number of people and the number of people of working age;
- *Participation*: the amount of work measured as the number of hours of work undertaken in any given year; and
- *Productivity* — labour productivity (output per hour.)

Therefore, since population age structure and population ageing affect the number of working-age population, and productivity of the labor, as seen in Figure 2.1, they have a considerable impact on economic growth.

There are three mechanisms in the analysis of the effects of age structure on economic growth: labor-market effect, effect on savings and capital accumulation, and the effect on educational enrollment and human capital (Bloom and Canning, 2003).

In a study conducted by Bloom et al. (2003) employing a cross-country panel data set, the effects of these three mechanisms on economic growth were examined. In the study, it was stated that the increase in life expectancy lead to an increase in savings. Individuals prefer to finance the increase in life expectancy by extra savings and not working for a long time. In many of the European countries, a tendency towards early- retirement is observed and this trend is tried to be offset by rearranging the pension policies and increasing the individual responsibilities in retirement. In this study, total period of time spent in education and life expectancy are used in order to determine the health of the workforce proxy and labor force quality.

In the case of East Asia economies, accelerated economic growth is associated with factor inputs rather than total factor productivity (Bloom and Canning, 2003). The triggering force behind the growing inputs is stated to be increasing savings and investments and the authors associate this with higher life

expectancy. Besides, they point to the importance of strong financial incentives and institutions to facilitate savings for retirement.

In fact, the effect of mechanisms of savings and capital accumulation influencing the age structure on economic growth is not as clear and obvious as labour market effect. It would be wrong to say the higher the amount of the saving, the higher the amount of investment. It depends on perfect operation of the market. The relation between age structure and savings is related to change in the income distribution between generations. Expected economic growth should increase the life-long expected income of the younger generation compared to elder generations and this should have an influence on the decisions of younger generations to make other savings and investments. If the increase in life expectancy means an improvement in the general health of the population, the increase in life expectancy should increase the duration individuals had in labour life. If expected life is on the increase, there will be an enormous amount to finance the pensions (Lee et al, 2003). Both factors encourage high rate of savings.

The effects of prolonged human life are not similar in developing and developed countries. As stated earlier, the rise of life expectancy stems from the addition of years to human life in their elderly period and this has a negative impact on economic growth in developed countries. In underdeveloped countries infant mortality is high and the rise in life expectancy means the rise in youthful years. The rise in life expectancy in these countries has a positive impact on economic growth (Boucekkine et al, 2002).

Population ageing is a global fact and the differences in the rate of ageing are of importance in economic development. Europe and Japan take the lead in the issue of population ageing. Other regions and countries will reach their level in the coming years. The population ageing in Africa expected to occur after the year 2050 (Van Dalen, 2007). Africa and India make use of demographic dividend and developed countries may lose the chance of this dividend. Furthermore, this demographic dividend represents only potential for economic growth. The losses or gains in

demographic structure depends very much on level capital accumulation, social infrastructure, innovation and state policy

Sometimes, population ageing can be regarded as an indicator for the level of development (Aykan, 1997). The underlying reason for this population ageing and problems related to it is that they are usually found in developed countries and studied there.

Effects of population ageing on productivity, working age population and labor force participation will be mentioned in the next chapters.

II.3.1.1. Labor supply

Population aging does not only lead to an increase in the median age of the population but a decrease in the magnitude of the young population as well through replacement older generations with younger generations. Grant et al. (2004) noted that the fall in the size of working population will have a negative impact on economy, the number of tax-payers will decrease, and the number of dependent population will increase due to the changes that will take place in the rate of age groups.

In some studies, it has been put that the decrease in the labour force may be offset through the participation of female population in the labour force (Carone, 2005). Besides, cultural attitudes of societies and social norms have had important impacts on the female employment rate. Change in the cultural behavior taking place within the female population paves the way for the participation of women in the labor force more than the increase in elderly females. Similarly, in a study conducted by Day and Dowrick (2004) on “ageing economics”, it was stated that as a result of the decrease in fertility, a decrease in labour force will result in an increase in the participation of females in the labour force and in an increase in average educational attainment. This situation is evaluated by the authors as something positive led by population ageing.

The fall in the labour population may increase the migration to some developed countries in order to raise labour supply. As for the migration from abroad, the newcomers will gain similar behavior in fertility and taking the social adaptation problems into account the migration is not a sustainable and permanent solution to this. In addition to this, there are different theories with regard to the impact of population ageing on the demand and supply of labor.

According to studies dealing with population ageing on labor participation rates⁷,

- ✓ At older ages, labor force rates (those with jobs and those looking for work) are pretty low.
- ✓ Ageing populations in developed countries decreases the labor participation rates considerably. For example, in Australia in the next 40 years, it is projected that labor force participation rates will decrease at the rate of 7%, from 63.5% (2004-2005) to 56.3% (2044-45). Due to high unemployment rates in Turkey, it could be conceived that labor force participation rate will not be influenced by ageing population considerably. The unemployment rate in Turkey was 10.1 % in 2007 and that was 9.6% in 2006 and 10.3% in 2005. Likewise approximately 35% of working-age people are without a job in the OECD area (OECD, 2005a, p.3). Women, youth, and older workers are particularly affected by unemployment.

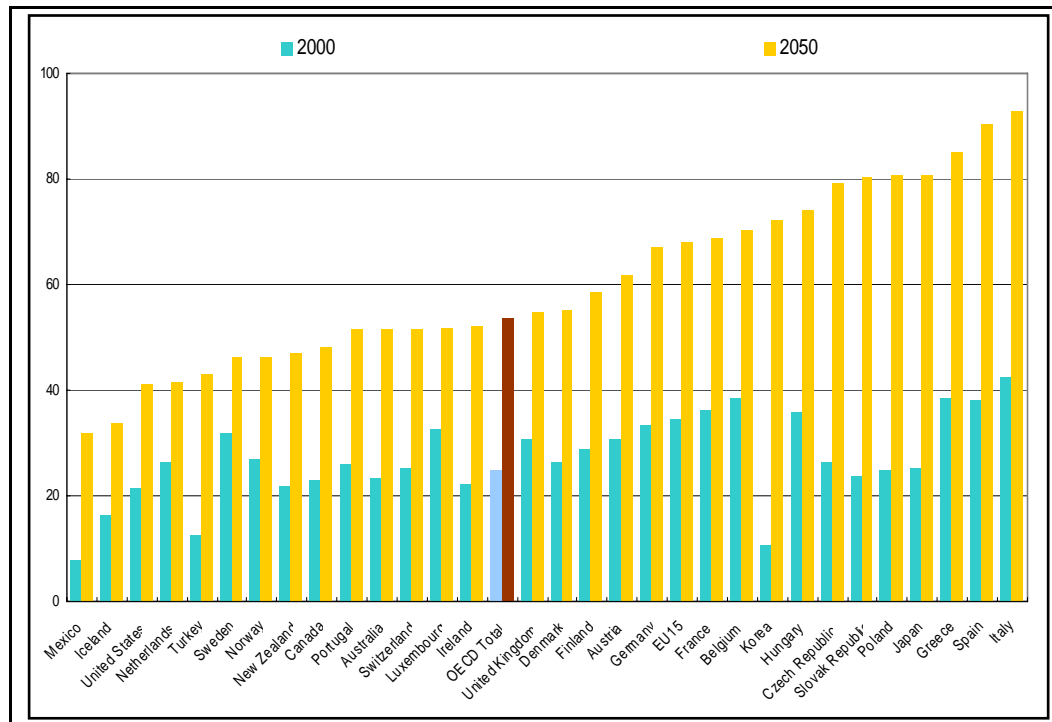
In a study by OECD (2005b), an estimate of the influence of population ageing on the labor market and productivity was attempted by numerical simulations for a population with the average level of education and the average level of productivity of the labor force. In this study, at the same time, the impacts of labor force participation on labor supply and of policies eliminating the obstacles for elderly employees were also investigated. It is stated that following 2020 ageing in

⁷ Labour participation rate is the proportion of people in a job or looking for one.

OECD countries may push the number of employees down. However, this trend is not of uniform characteristics for all OECD countries. According to this study, while labor supply would decline in Europe and in Japan, it would continue to grow in North America during the next half-century. They also stated that younger cohorts are likely to be better educated than retiring cohorts; so, large flows into retirement could increase the average level of education of the labor force. It is observed that projected average level of education would tend to increase in most ageing countries, with the exception of Germany, but would flatten out after a certain time. In conclusion, the effects of ageing on education and individual productivity are limited and tend to disperse relatively soon, although ageing may counterbalance the decline in labor supply. According to studies on the policies of the employability of non-employed old-age workers, it is stated that employers prefer old age workers less. Non-employed old-age workers lose both human capital and specific skills after stopping working and they do not feel enthusiastic about developing their skills and investing in their human capital.

Further, it was found out that in OECD countries on the whole, the education level of old workers was higher than those not in the labor. They claimed that training and participation and employment rates are well correlated in OECD countries. They suggest that the low old-age employment rates could be partly explained by a lower average level of skills among these workers.

Figure 2.3. Ratio of the inactive population aged 65 and over to the labour force



Source : OECD, 2007

“Ratio of the population aged 65 and over to the labour force” in Figure 2.3 was 12.4% in 2000 and it is expected to reach 42.8% in 2050. Turkey, with these figures, is below the averages of OECD countries. The highest value of this figure belongs to Italy. The figures related to the graphics are presented in the Annex A.

Nowadays, it is estimated that males are engaged in working for 41 years and this figure is expected to fall to 33 years in 2030. The duration of years other than working is calculated as 28 years in average and this figure is projected to rise to 41 years (Kalaycıoğlu, 2003:31).

The stated demographical changes entail new arrangements and regulations in the organization of societal life. This situation hints that a new population mass is likely to emerge, who are at rest, leisured, and who want to spend this time in a variety of ways. However, the situation of female population exerts differences compared to that of male population. Today, the expected duration of time for females at work is 15 years, while the duration of years at rest is 48 and as long as

the present demographic tendencies persist, the duration is expected to undergo no change in 2030 (Kalaycıoğlu, 2003:31).

II.3.1.2. Productivity

In general, labor productivity can be explained as how much a worker can produce in a certain period of time. Economists typically consider it as hourly output.

As mentioned before, aging is assumed an important problem as a result of demographic transition process. In this section, studies on how population ageing influences labor productivity growth will be summarized.

According to some scientists, together with the ageing population, the average age of the population increases too, and the problem of productivity arises. According to Kupiszewski (2006), certain skills, memory, physical power, perception and learning capacity, openness to novelties and power of adaptation are features that decrease by age and will directly affect the quality of labour force and its added value. The approach of Kupiszewski is the examination of impact of ageing on productivity at individual level.

Some research suggests that there are significant effects of ageing on productivity. In a study, on 23 OECD countries, conducted by Lindh and Malmberg (1999), it was pointed out that age is influential on productivity and they calculated that age on its own right led to a 0.2 % decrease in a year on the average productivity between 1990-1995.

One field that negatively affects productivity due to ageing population is the fall in private savings (Auerbach et al., 1989; Roseveare et al., 1996; Fougère and Mérette, 1998). According to Kupiszewski et al. (2006), this is expected to result in an increase of the cost of credit, a drop in the investments in the physical capital, additional decrease in returns from such investments, and ultimately in a productivity fall.

In his study examining the productivity at individual level, Skirbekk (2005) said that population ageing is likely to lead to lower productivity than what the situation would be if the population did not age. Skirbekk points to labour ageing and population ageing (at a lower rate) as the reason for this. According to Skirbekk older employees exert lower productivity level compared to middle-aged employees. He stated that his finding has been confirmed by a range of analyses of workers at different age groups. According to him, several physical and mental abilities (such as muscle mass, stamina, sensory abilities, health, learning ability and speed) tend to decline as one grows older. According to him, hormone cures, mental training programmes and anti-ageing treatments are likely to remain only moderately effective, expensive, and only used by a minority of the elderly population. As Shirbekk, even if the age of retirement is increased in order to keep the inactive-active ratio constant, workforce ageing will have a negative influence on productivity. Prospective development in the field of health-care and advance in technology may boost workforce productivity but these factors should be strong in order to eliminate the negative effects of ageing and decreasing workforce.

According to Day and Dowrick (2004) population ageing will bring about an increase in educational capital and this will ensure a stronger productivity growth. Prolonged human life ensures an increase in individual and social investments in education.

II.3.2. Population Ageing and Demand for Health and Institutional Cares

II.3.2.1. Health expenditure

According to many literature sources, the process of population ageing is related to pension system as well as the rise in the expenditures in health care and the elderly care (United Nations, 2002b).

In general terms, many authors (Roseveare et al., 1996; Fougère and Mérette, 1998; Grant et al., 2004) argue that, health expenditure is seen as one of the most important effects of ageing population in the future. Elder people need more health-care services than do the young, which causes more resources to be allocated to health-care expenditure. These fiscal burdens and public debts will in consequence negatively influence economic performance. Turkey allocates 18% of public sector expenditures as health care expenditure in 2006 (Table 2.1)

Table 2.1. Proportion of health expenditures in the Public Sector-Turkey (2000-2006) ⁸

Year	Proportion (%)
2000	8.4
2001	8.9
2002	11.3
2003	12.9
2004	15.4
2005	16.9
2006	18.0

What's more, there are factors such as the increase in the demand, which is an import factor in rising the real health expenditure, new technologies and growth in prices in the health sector. Among all these factors, contribution of ageing to health expenditure is an issue of specific interests to many, especially in recent times. Particularly in Europe, media and policy makers claim that an ageing population will cause a crisis in health-care system. On the other hand, to some health economists, ageing has inconsiderable effect on health care needs in future. Some of these arguments are summarized in Productivity Commission (2005) Report on Economic Implications of an Ageing Australia Research such as:

- ✓ *Seshamani and Gray (2004) assumed that: "The widespread belief that ageing populations will automatically generate higher hospital expenditure is therefore over-mechanistic and based on a*

⁸ Source : <http://nkg.tuik.gov.tr/en/veri.xls>

misapprehension of the association between age and hospital costs.”
(p. 232)

- ✓ *Jacobzone (2003) says that: “The ‘doomsday prophecy’ which presents ageing as a threat to social and health systems is in fact a naïve fallacy, which results from a lack of understanding of the real impact of ageing. Demography by itself, is a secondary factor in the overall increase of health expenditure.”* (p. 263).
- ✓ *Gregory (1999) determines that: “The major issue in health expenditure ... is what determines expenditure within each cohort rather than the impact of the changing age structure on expenditure. This is a very important message which should be repeated and repeated because so many lay people find this message difficult to believe.”* (p. 394).

Berg (1999), stating that demographic ageing affects the health-care system as well as pension system, tried to show the impact of changes in the age structure on expenses and revenues of health insurance by using simulation technique. According to Berg, a per capita expense of health insurance is directly related to the age of the population. In this project, the effect of changes in age structure on the health system is computed through multiplication of projected numbers for each single age with the age specific per capita health expenses. According to the result of his study, the age structure of the per capita expenses persists, expense-revenue-relation index, which was 100 in 1996, will be 164 in 2035, will be 177 in 2050 in Germany. This increase is reported to result from only demographic influences. Technological innovations also increase age specific per capita expense more.

II.3.2.2. Institutional care needs

Industrialized countries have developed social security, pension and public health systems in order to support elderly individuals and provide them with individual and familial resources. However, institutional support financed by the state in many developing countries is very low or not available. The elderly living in

the developing countries in Africa, Asia and Latin America need social, economic and physical help and as a result these individuals are heavily dependent upon the family members in order to survive (Bongaarts and Zimmer, 2004).

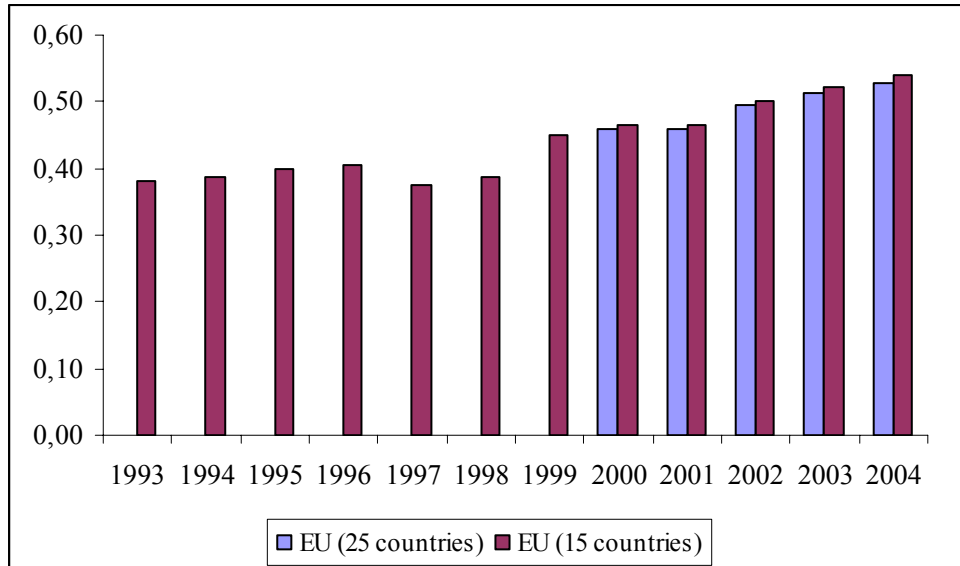
In many cultures, there are norms about respect for the elderly and responsibility to look after the elderly (Martin, 1990). In some countries such as China, such norms are in laws and constitution (Wu, 1994).

Three significant results were obtained in a study comparing the living arrangements of the elderly living in various countries by Kinsella and Velkoff (2001:65).

1. The elderly usually live in family settings.
2. In developing countries, elderly men and women live with adult sons or daughters.
3. In different regions of the world, there are significant differences in the preferences of institutions instead of families for the care of the elderly.

Institutional solution is the first suggestion that comes to mind among the question of ageing issues. Despite the fact that institutional care is abandoned and the care of the elderly is preferred to be carried out in the society, there has been an increase in the number of the institutions providing such services in the world. Needless to say that, the countries with the highest preference of institutions are the ones with the highest rate of elderly population. The most important factor that determines the amount of the expenses for the care of the elderly by the state is the number of the elderly population. Then follow the disability levels observed in the elderly population. The last two factors affecting the cost is any change in the care mix from institutional residential care to care in the community (formal and informal); and changes in the average cost of care per person.

Figure 2.4. Expenditure on care for elderly in EU, % of GDP; 1993-2004



Source: Eurostat

In Figure 2.4. the percentage of expenditures for elderly care in GDP in EU countries is seen. The indicator is defined as the percentage share of social protection expenditure devoted to old age care in GDP. These expenditures cover care allowance, accommodation, and assistance in carrying out daily tasks. As seen in the graphic, there is an increasing trend on the expenditures for the elderly care.

Since there exist no consistent international data, it is impossible to compare and contrast the countries in terms of institutional care of the elderly. Only a comparison on the basis of trends is within the reach of availability. In the 1990s, in a comparative study by OECD, the use of institutions varied between 2% and 9%, as for the developing countries this rate is very low. In these countries, western style institution models are considered inappropriate and the importance of the family is oftentimes emphasized (Kalaycıoğlu et al, 2003).

II.3.2.3. Social security payments

Social security primarily refers to a social insurance program providing social protection, or protection against socially recognized conditions, including poverty, old age, disability, unemployment and others. At the international level, Universal Declaration of Human Rights (article 22), European Social Charter (article 12) and ILO agreement, theoretical backgrounds of social security have been laid down. In these documents, it has been emphasized that social security as a fundamental human right and that the state is responsible for carrying out this task. Basic frames and standards of social security were defined in ILO agreement of dated 1952 and no 102. In ILO agreement, 9 different social and economic risks are listed in the scope of social security system. The insurances branches for these risks are old agedness, disability, death, job injuries, vocational ailments, illness, maternity, and unemployment and family benefits.

Social security systems vary in finance and administrative regulations. Generally, there are three different social security model worlds wide. The first system is called pay-as-you-go, since it runs on the system of distribution of real income among both generations and the different age groups in the same generation. In the distribution systems, beneficiaries are paid on the basis of defined benefit. Distribution system can be financed in two ways.

The first is social security expenditures can be financed through social insurance premiums (social insurance model). The second one is financed predominantly by tax income (social welfare model). There are mixed distribution systems where both tax and premium revenues are used financially. Though less common, there are social security systems organized by vocational groups. In legal terms, controlled and regulated by the governments, these systems are managed by private sector. Lastly, there are insurance systems based on individual saving accounts in the youth period in order to finance the elderly period. This system operates on the basis of full contribution and funding. Since payments are not pre-

defined, investment risk for the revenue is taken by the employees and the pensioners. The system can be based on the saving accounts made compulsory by the government or based on the funds managed by private firms.

Pension systems are designed to provide an income to those individuals who suffer a loss in earnings capacity through advanced age. They provide a mechanism whereby the individual might insure himself against the loss of future earnings. In the present day, the main source of income for elderly is pensions.

Pension expenditures of 25 EU countries utilized approximately 13% of gross domestic product in 2003 (Eurostat, 2007). The welfare of the elderly in the future depends on the income they get from their work, if they work, social insurance programs and private savings. Policies of countries affect these resources and policies and reforms proposed have both costs and benefits.

The widespread reform in this issue is the increase of age for full public pension benefits for the employees. In the last 15 years, pension age has been increased to 65 from 60 for males and to 65 from 57 for females. The highest age of pension is 67 in Norway and Iceland. The 60% of the countries have the same pensionable age both for males and females. In Turkey, retirement age is currently 58 years for women and 60 years for men. But the Social Security and General Health Insurance Law will gradually rise the statutory retirement age to 65 for both men and women by 2048.

Another strategy to support the social insurance of the elderly population is to increase the contribution of working population or to increase tax rate on workers. According to report prepared by U.S. Department of State (2007), twenty four countries (two-thirds of that are in Europe) now have payroll tax rates that equal or exceed 20% of wages.

Farrugia (2007) summarizes the unsustainable public pension system as the following;

Box 2.1. Unsustainable public pension system

<p>Workers x Contribution Rate = Pensioners x Pension Rate</p> <p><i>Present system:</i></p> <p>4 x 20% = 1 x 67%</p> <p>80% > 67%</p> <p><i>By 2025</i></p> <p>2 x 20% = 1 x 67%</p> <p>40% > 67%</p>
--

The increase of payroll taxes increase the revenue from the taxes but it has a negative effect on formal sector.

Other measures to be taken in order to increase the income of the elderly are new financial instruments for private savings, tax incentives for individual retirement savings, and supplemental occupational pension plans. Eight countries decided to make occupational pension plans mandatory (US Department of State, 2007).

II.3.2.4. Other expenditures

Though not explicitly stated in the plan and programs and practices in Turkey, other items of expenditure debated in the developed countries, where the aged population is high, can be summarized as the following:

In particular in developed countries the elderly population has more home ownership than the average of the population (Productivity Commission of Australia, 2005). The high rate of home ownership among the elderly is the reflection of life-cycle pattern. While the young and the single population tend to be a tenant, young couples, especially in developed countries, prefer to buy houses through mortgage. In time, since the repayment of mortgage is done, 80% of the population of 65 and above years of age can possess houses (Kendig and Gardner, 1997). However,

compared to the average elderly population with no house and with low income, they spend a substantial proportion of their income on rent. Hence, they will need housing assistance.

The private car will become an even more important means of transport for older people in developed countries. Ageing population creates a need for disabled and community transport. In public transport, privileges granted to the elderly and retired people cause a great deal of revenue drain.

Besides all these, it is projected that the decrease in the young population will lead to a decrease in overall crime rate (Productivity Commission of Australia, 2005). Hence, there will be a fall in expenditure on law and order, as well. However, this takes place against a background of rising community expectations in relation to safety, so there may be few net savings.

CHAPTER III

THEORETICAL FRAMEWORK

In this section, the economic impacts of population ageing will be investigated from a demographic point of view and the theories related to ageing will be dealt with under three subgroups. The first of these groups is the economic theories on ageing. In this part, the approaches towards the burdens and the opportunities that can result from population ageing, mainly “wealth flow theory” and “life cycle theory”, will be discussed. Moreover, an attempt will be made to explain the theorem of human capital and the change in the age structure of the population, or the interaction between economy and demography. In the second subheading of the theoretical framework, theoretical models will be investigated which cover different perspectives on ageing and the life of the elderly population. In this part, theories and approaches in gerontology, their comparison with each other and how ageing has been conceptualized will be emphasized. In the third part, the approach will be to derive a synthesis of the approaches mentioned in the first two parts and this new approach will be the main theoretical framework of the this thesis.

III.1. ECONOMIC AND DEMOGRAPHIC THEORIES REGARDING POPULATION AGEING

Since the behavior and the needs of individuals vary by age and different periods, the changes in the age structure of population have a significant effect on the economic performance of countries. For example, in countries where the child population is high in number, a substantial amount of the resources are allocated to the education of the population and hence it slows down the rate of development. In contrast, if the majority of the population is among the working age class, in the event that required policies are enacted, the added value of this group will have a demographic dividend. The combined effects of the policies of population and health, family, labour, financial and human capital affects the welfare level of a

country. If a significant part of the population is composed of the elderly, the expected effects are the same as the effects the young will have on the economic development.

There are some debates regarding whether population ageing causes economic burden or creates a new economic opportunities for countries.

III.1.1. The Population Ageing according to Wealth Flow Theory

There are a variety of arguments over the relation between the cost of fertility and having a child in the literature. Notestein (1945) implies that costs of children were major determinants to fertility. After this argument, Leibenstein in 1957 suggests that parents derived utility from children in two ways: child labor and old age security. Becker (1960) develops the quality and quantity trade off in the theory of demand for children. Caldwell (1976) claims that the direction of the economic value of a child and intergenerational wealth flows in a family is the main determiner in the motivation of having a child.

According to John Caldwell's Wealth Flow Theory, there is a direct relationship between family structure and fertility (Caldwell, 1976). The theory suggests that there are two major family structures varying according to the direction of wealth flow among generations. In primitive and traditional societies, net wealth flow is from the young generation to the old generation and corporate interests outweigh individual interests.

In developed nations, family structure is built upon a system in which parents provide their children with economic wealth. The direction of wealth flow here is from parents to children.

According to Wealth Flow Theory, the fertility decisions in all societies are determined according to economic rationales in accordance with the wealth flow within the family structure. That is, in societies with net upward wealth flow, the

economical rational decision tends to be towards having as many children as possible, within the constraints of the biology. The reason underlying this is that each additional child adds to the wealth of the parents and will positively contribute to their socio-cultural interests and also serves as an old age security, for they will be taken care of by them in their old ages (Kaplan and Bock , 2001).

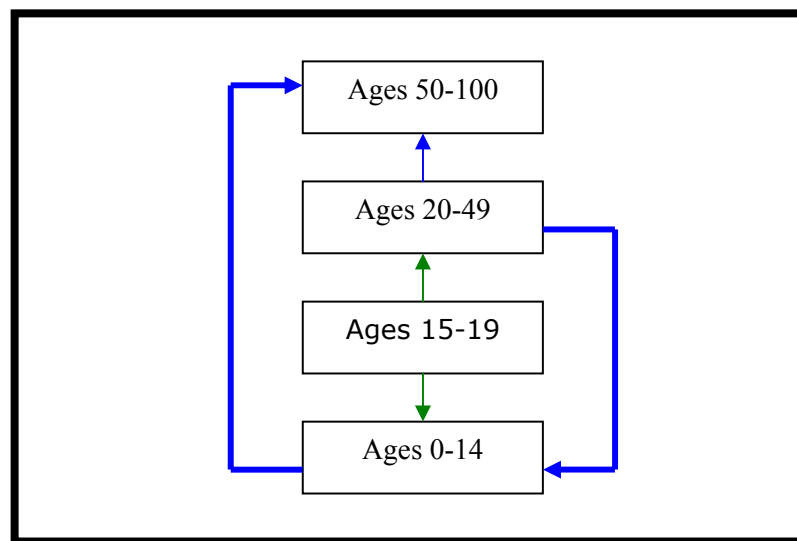
In societies with net downward wealth flows, the economically rational decision is towards not having children at all or having the minimum number of children so as to psychologically satisfy the instinctive drive and pleasure of having children/ being a parent.

The transition from high fertility level to low fertility level all around the world is due to the change from upward wealth flow to downward wealth flow (Kaplan and Bock, 2001). This change in the family structure, according to Caldwell (1980), is a result of the fact that new values related to individual satisfaction and success have become commonplace. These new values, arose in the educated and middle-class West, are exported to developing countries via mass formal education. The transition from 'traditional' to 'modern' family structure occurs in accordance with the adoption of new values by a mass amount of individuals and with low fertility preferences. The individualistic value system, which is nourished by the increase in expectations from educational materials and schools, leads to downward wealth flow.

Briefly, the standard modernization model suggested by Caldwell (1982) claims that the elderly are supported by upward wealth flows in primitive or traditional societies (Figure 3.1). Because of this, adults can have high fertility. In developed countries, the flow of wealth is reversed, and parents cannot afford many children, thus reducing fertility. According to Bloom and Canning (1999), the development of financial systems can decrease the parent's dependence on children for support in their old age.

It is a hard task to determine the direction and the amount of the wealth flow. There is little work in the literature on this issue. According to Lai (2005) wealth flow theory can be tested in two significant forms. One of them is the economic contribution of child labor; the other is the economic benefits received from children during parents' old age.

Figure 3.1. Old Age Security Flow according to Caldwell (1982)



In a study conducted by Lee (2006) on the determination of intergeneration the wealth flow was described as the average age (A_c and A_y) at which a dollar (or calorie) is consumed in the population, and similarly at which one is produced. Lee (2006) claims that if $A_c < A_y$, then consumption precedes production on average, so income is redistributed downwards across ages, from old to young. In the otherwise situation, (if $A_y < A_c$), he claims that the young population transfer the income to older individuals. A fairly suitable data set is needed in order to calculate the average years of age for consumption and production in the study. However, in Turkey, even the household budget surveys in which a great deal of data are compiled and maintained in continuity, information on consumption can only be classified, but cannot be obtained accurately, on individual basis. In addition to the consumption expenses by age, another disadvantage of the study is that it takes the average years of productive age as “labor income”. Yet, pensions of the old individual in Turkey

perform the function of the main income to live on to many families. For these reasons, the use of this method in this study to determine the wealth flow direction was regarded as inappropriate. Instead, three typology types were formed based on the criteria such as the affinity to the children, level of income and the family type in which the elderly reside and interpretations on wealth flow were performed based on this typology.

III.1.2. Life Cycle Theory and Human Capital Theory

According to the sociologists, there is a crucial effect of demographic change on the direction of economic development. The relation between demographic structure of the population and economic development is not constant, but may vary in time.

According to the opinion based on the hypothesis of life-cycle, lives of individual are composed of two parts, one being work period and the other one retirement period, and individuals want to maximize and equalize the benefit they obtain from these periods. Under the budgetary restrictions individuals confront throughout whole their lives and according to the result of the solution to the maximization problem, individuals save up during the period of work and consume during the period of retirement. According to the hypothesis of life-long formed by Modigliani in 1953, people try to perform their consumption in a stable manner (Modigliani, 1970). If the level of income they obtain is low, the rate of saving is low, if the level of income is high, they have high saving rates. In this case, young people are net debtor, whereas the elderly are in the position of net money saver at the point where their income is at the highest.

This hypothesis forms the important link between rational household behavior in microeconomic terms and the rate of savings in macroeconomic terms. From the point of this hypothesis, total savings in a growth economy are positive, since the young and working population is greater than those who don't work (children and elderly). In the life-cycle hypothesis, individuals prefer less savings in

period when they are young and old compared to the period of work when they are active.

Some research conducted claims that some countries make use of the change according in the age structure and increase support ratio and make use of the population engaged in labors as an opportunity for economic development (Bloom and Williamson 1998; Lee, Mason et al. 2000; Bloom and Canning 2001; Lee, Mason et al. 2001; Mason 2001; Bloom, Canning et al. 2002; Lee, Mason et al. 2003; Mason and Lee 2004; Mason 2005, Mason and Lee 2007). In this study it is stated that the rise of life expectancy and low fertility in the further levels of demographic transition will lead to the ageing of the population and such gains will be temporary. Though there are conditions for sustainable economic growth, the decrease in fertility and the start of the population ageing limits the window of opportunity.

Bloom (1999) stated that the interaction between economy and demography is a dynamic process and each side affects the other. According to life cycle theory, increases in life expectancy will lead people to save more, but only if they have sufficient trust in a well regulated and efficient financial sector. These savings must be invested in a way that benefits the economy. It is also stated that an increase in the size of the workforce (or high ratio of workers to dependents) can be transformed into a demographic dividend. If these people find productive work, this will provide higher output. If the labor market fails to absorb the large cohort, then the potential gains will probably be wasted. The parent's dependence on children in their old age may be very low in a developed financial system. Eventually, according to life cycle theory, low death rates lead to a higher proportion of old age dependents, but this need not be a drain on income per capita if old people live off their accumulated capital, and is even less of a threat if they continue to save. In fact, the presence of an old generation living off their capital increases the wages of young workers, whose productivity rises due to high level of capital intensity (Bloom, 1999).

The increasing life expectancy at birth leads to the acceleration of savings and education and in the long run this leads to the increase in investments in physical

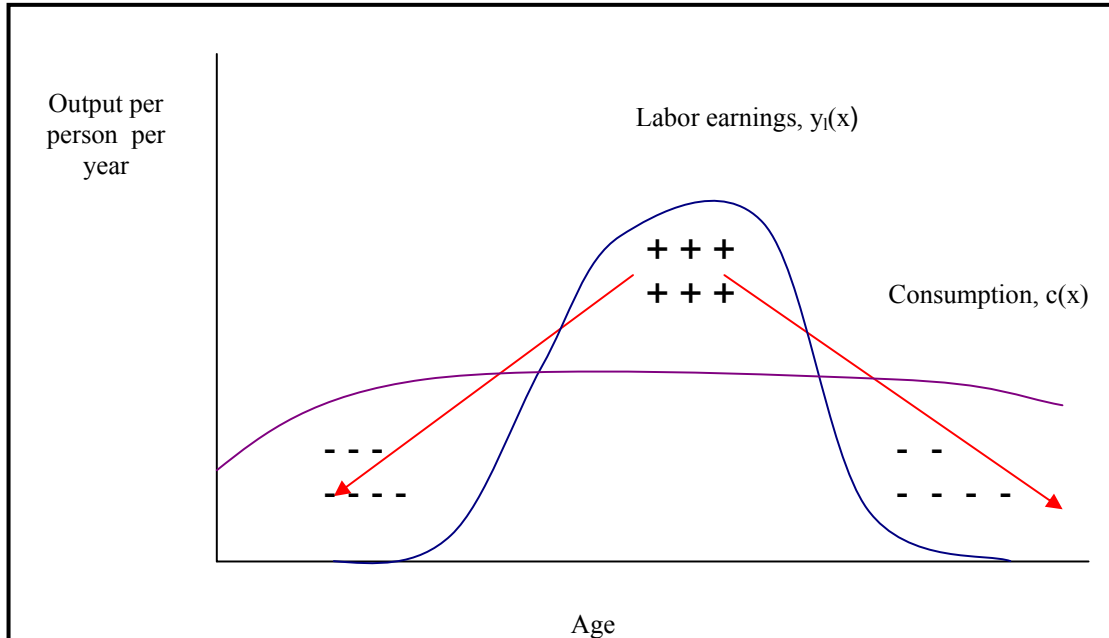
and human capital. Human capital¹, defined as the sum of knowledge, skills and other qualities people have economically, is regarded as among the main determiners of economic development. When the life expectancy increases, individuals want to provide further educational facilities and families become aware of the investments in education and schooling for their life time. Having a smaller number of children, families tend to allocate more time and money fper child. As a result of the investment in education, the population becomes more efficient and they attain higher wages and have better living conditions. However, all these aspects depend on the policies adopted by countries.

Lee (2006) states the relation of the economic life cycle, labor earnings and consumption per capita in the following figure (Figure 3.2).

When the graph of consumption per capita and distribution of income by age is drawn, it is observed that the incomes of the individuals rises upon reaching the age of labor and has the highest values in this period and decreases afterwards. In this period, by means of the institutional arrangements and mechanisms, the surplus earnings were seen to be used for the consumption expenses of the elderly and children (Figure 3.2).

¹ There have been differing approaches in the conceptualization of information and qualified labor force. In the international literature, it can be said that there is a consensus in the use of the concept of "human capital", despite some criticism. In Turkish, as the corresponding meaning for this concept, "beşeri sermaye", "insani sermaye" and "insan sermayesi" are widely used, all of which mean the same. At the same time, there are objections to the definition of the term in English and Turkish. Gürak criticizes the concepts since it has politic-based connotations. Instead of human capital concept,"qualified labor" is proposed (Gürak, 2003:27-29). The role of the equipment used in manufacturing throughout human history and the consideration of capital in terms of physical aspect is of great importance in the criticism and the objections towards the emergence of the concept of human capital in economics. And this led to the many years of delay for the studies on human capital (OECD,1998).

Figure 3.2. The economic life cycle: Average labor earnings and consumption per capita by age

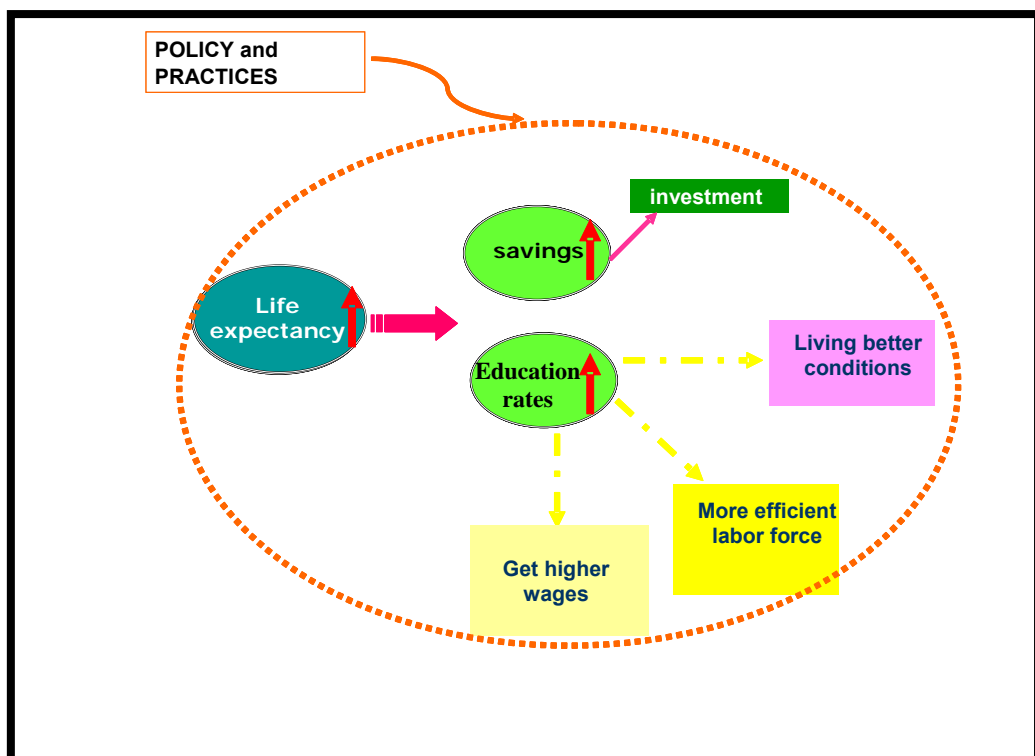


Source : Lee, 2006

The transfer of resources and the mechanisms may vary in countries and societies. For example, while public transfers are important for the American elderly, for the Taiwanese elderly, private transfers are of great importance. When bequests are taken into consideration, private transfers in the U.S.A follow a direction from the elderly to the young downwards, whereas this is from the young to the elderly upwards direction in Taiwan and Korea (Chong-Bum and Eul-Sik Gim, 2006).

When life expectancy increases, individuals are expected to be inclined to save up more for the days of elderly period. If these savings can be turned into investments, this will lead to a capital accumulation in the economy (Figure 3.3).

Figure 3.3. Life expectancy at birth affects savings and investment in the life cycle



Source : This diagram is developed within the frame of this thesis

While human development can be defined as the process of proliferating the options, it can also be defined as reaching the required resources, via leading a healthy and long life and acquiring knowledge. In brief, it is the any investment that is directed towards people. The first economists to put the concept of human capital in the economic literature are Adam Smith, J. Stuart Mill and Alfred Marshall. However, the views of these economists did not have a great influence on the modern human capital theory. Afterwards, economists such as Denison (1962), Schultz (1968) and Becker (1990) developed the theory of human capital based upon the views of Smith. In a study conducted by Denison, it was emphasized that education

improves labor, skills and productivity capacity and through this pathway it contributes to an increase of national income. Shultz, on the other hand, having reached the same conclusions stated by Denison, put the rate of growth in the USA down to the investments in education.

Primarily the quantity of the population and the age and the gender structure of the population are the quantitative factors that determine the effectiveness of human capital. Features related to education and health are related to the qualitative factors, and the qualitative and the quantitative effects of the population on human capital vary in the development levels of the countries. In the developing countries, the quantitative features of the population come to the foreground, whereas in the developed countries the qualitative features of the population draw attention. This is primarily because the quantitative features of the population have to do with the rate of population increase and the rate of population increase is higher in developing countries. The qualitative features of the population, on the other hand, comprise the features gained later and the indicator on education and health in the developed countries are quite good.

The size, age, and sex structure of the population are among the factors that provide the necessary background for the creation of human capital. All things being equal, the human capital of a country with younger and bigger population will be wider and more dynamic. For this reason, the magnitude of the population and the feature of being young are important quantitative feature that pave the way for the effectiveness of human capital. The partition of the population as male and female is of significance in terms of economics. The magnitude of the female population may create effects that cause the labor supply to shrink, since the majority of the females are not involved in the labor structure of the developing countries.

The size of population is related to age structure and the rate of population increase. The dynamism of the human capital of the countries with stagnant and ageing population is likely to be lost and expenses may be increased to sustain the

human capital. Especially, social security expenses cause problems for the countries with aged population.

III.2. AGEING AND ELDERLY THEORIES

In the traditional, primitive or contemporary societies, the concepts of “old-agedness and elderly” were dealt generally with the concepts of loneliness, dependence, and needing to be helped. Throughout the centuries, the attitude and behavior of the societies towards the elderly have displayed changes. In the tribes that maintained their subsistence with hunting and gathering, since the characteristics needed for such type of life were not found among the elderly, the elderly were of inferior value. The position of the elderly in the society began to change in a positive direction as they settled in permanent bases. In these permanent bases, the elderly took the position of decision makers, thanks to their knowledge and experience, which elevated their social status. Those times, the level of knowledge was regarded commensurate with the age (Eriksson and Wolf, 2005).

In ancient Greece, it was recorded that the elderly had power and credit in their society (Beavoir, 1971). Nowadays, in countries such as Japan and China, with their traditional societies, the respect for the elderly has become a pattern of culture. In these societies, ageing and prestige go parallel. In such societies, there are no problems of adaptation to the old-agedness.

When it comes to contemporary societies, the position of the elderly in societies is becoming weaker and weaker. It has been articulated by some researches that there is an opposite relation between modernization and the respect for the elderly. The development of technology, the ease of access to information and data of any kind led to a decrease in the position of the elderly, who were regarded as the source of information and had high social status. The dominance of the nuclear family in the industrializing countries puts strain on the care for the elderly in the family (Biçer, 2002).

With modernization, a number of sociological theories on ageing have emerged (Öz, 2002; Tufan, 2002 and TÜBA, 2003). The most striking theories among all will be dealt with specific attention in the following sections. In particular, theories such a Deficit Theory, Activity Theory and Disengagement Theory are the ones that are discussed most.

III.2.1. Deficit Theory

This theory argues that people, as they age, undergo inefficiency, decrease in their aptitude, and retardation in practical skills. The American army is said to have a great influence on the emergence of this theory. American army, willing to recruit qualified staff for the World War I, developed a test claiming to measure the intellect level of the candidate officers and having found the results of the test satisfying. The army administered the test to 1 726 966 males aged between 18-60 between 1917 and 1919. According to the results announced in 1921, a sort of “deficiency” came up in a strong manner as of 30 years old. The main criticism to the theory can be summarized as the following;

- ✓ Intelligence is not a one-dimension mechanism, some psychic functions and skills undergo changes in different ways.
- ✓ The pace factor was underestimated in the administration of the tests. In this theory, it was established that the elderly held the capacity to solve the problems but prolonged time was overlooked.
- ✓ The fact that people participating such cross sectional surveys have different educational levels led to the mis-measurement of the efficiency of intelligence. Since the aged people received education of lower levels compared to the youth, the performance decrease is not due to age but different levels of education.
- ✓ Vocational exercises were disregarded in this theory. In many studies conducted (Tufan, 2006, p. 134), it was found out that people engaged in monotonous works, which doesn't encourage intelligence , experience loss in intellect performance more compared to those engaged in works

requiring more demanding tasks in terms of intelligence, and hence leading to less loss in the performance of intellect.

- ✓ In the studies underpinning the theory, the health status of the elderly was oftentimes ignored. In many cases the elderly with unhealthy status were compared with the youth and the results were put down to deficiencies resulting from being old.
- ✓ Many studies indicate that the intellectual efficiency in the elderly do not change and as people are aged, capacities on some issues progressed as well.

III.2.2. Disengagement Theory

This theory is based on the assumption that agedness is an inevitable situation leading to isolation of the individual from society. As other theories, disengagement theory seeks answer on how the elderly may lead a comfortable and peaceful agedness period. This theory claims that happiness lie in the passiveness following an active life and emphasizes that in the process of ageing people undergo psychological decline as well as physical, and the elderly should have a rest subsequent to a long period of life time.

According to this theory, the main reason in the deficiency of the activities and relations is not the prevention by social settings, on the contrary, the fact that the elderly find the source of this deficiency in these areas in them. This theory suggests that happiness lies in the isolation of the self from the society, which is the abstraction of the self.

Disengagement theory, known to pave a scientific way for the elderly to be isolated from the society, has been exposed to great criticism. One is that it is not a scientific theory on the grounds that it helps to relieve the conscience of the youth.

The proposals of this theory gained support in the studies conducted in the early 20th century to the mid 20th century and it was claimed that the findings

obtained well supported the theory. Some of these studies put forward that the elderly in a significant amount, lost their interest in their social environment and they restricted their activities in these fields. The most striking point is they felt no regret for the decline in their relationships resulting from the restrictions they imposed.

The attempt to account for how the society works in accordance with the work life makes up the weak points of this theory, and due to the prolonged life span, the theory becomes weaker. In the present world, the period of retirement corresponds nearly to the one third of the maturity period. Hence, retirement cannot be perceived as the span left and no human kind would like be isolated from the social environment for such a period of time.

III.2.3. Activity Theory

According to the theory of Activity, the main element that separates people from each other is not the age but their activities and “effectiveness”. This theory was developed against the theory of disengagement. Contrary to the second one, the theory advocates the thesis that successful ageing is an active ageing. In this theory, the elderly have the social and psychological needs as much as the youth do. Passivism is an undesired feeling, abstracting people from the society and fueling the feeling of uselessness. The emergence of such feelings must certainly be prevented since it will lead to people unhappiness.

According to theory of activity, Öz (2002) states that the activity status of the elderly is determined by previous life style, socioeconomic status and health status

The aspect of the theory that is most criticized is the way it reflects the elderly. It tries to impose a type of people constantly active in the society and in practice this is not the situation. Besides, in terms of being able to active, the elderly should have the equal opportunities and this is completely ignored.

With this theory, there is an attempt to create an image of elderly people, having lost the roles through the long path of life, and trying to take up new roles. The question that if the elderly demand such activeness is not uttered and insists that the elderly are willing to be active.

When the theories of activity and disengagement were compared, the important point is that the elderly are able to make their own decisions on their free will as to what, when and how things will be performed and when he or she will isolate himself / herself from these. Of the elderly, the unhappiest ones are those that have to restrict their activities, though undesired, due to, especially external factors, money problems and other reasons such as health and the death of a person in close contact.

III.2.4. Other Theories

The theory of modernization attempts to explain the status of the elderly in society in a historical process by comparing different societies. It claims that industrialization is a negative development for the elderly and that as industrialization progressed, the status of the elderly regressed. Continuity theory is a more developed version of the activity theory in terms of form. Sub-culture theory derives from the proposition that in old age people have a good many mutual aspects. Because of the mutual aspects among them, the theory assumes that the elderly composes a sub-culture and claims that what the elderly yearn for a more different life style than the other social strata.

III.3. SYNTHESIS OF DIFFERENT THEORETICAL APPROACHES ON THE SUBJECT OF POPULATION AGEING

There are many of theories on the ageing of the population and its consequences. This study sets out to investigate primarily the three theories from the points of the ageing of the population, reasons, effects of ageing and how they affect

each other. Wealth-flow theory, life-cycle theory and human capital theory, mentioned in the previous sections, will be synthesized in terms of population ageing in this section.

Wealth-flow theory puts that the most important two decisions that affect the decision of fertility is the intergeneration wealth flow and the economic value of having a child. In societies where the wealth flow is from child to the parents, individuals have as many children as possible. In such societies, children are regarded as the old age assurance contributing to the welfare of the families.

Becker and Tomes (1986) expressed that if the children undertake the care of the elderly parents; parents restrict their own life-cycle savings and finance the expenses of their children. In many societies, parents at the level of poverty and middle- income level sell their assets and properties such as jewelry, gold and land, which were not obtained through the money they saved up during young age, and are funded by their children, instead of selling them. According to the analyses by Becker and Tomes (1986), such families are more dependent on their children than their assets for their elderly period, for the return of the investment on children are more than the ones in assets.

According to Becker and Tomes (1986) poorer and middle-level parents and children often have an implicit contract enforced by social customs and traditions that parents invest in children in return for support during old age. Becker emphasized that both parents and children would be in fair condition by such contracts, if investments in children yield a high return, where included in the yield is any insurance provided by children against an unusually long old age. This situation is widely observed in Turkey. In Turkey, weak social security-type programs make elderly and those who are ill to depend on family members for assistance.

In societies where the wealth flow is to the bottom, a decrease in the rate of fertility is observed. The constant fall in fertility rates leads to a decrease in children and youth rate in the total population, thus leading to ageing of the population. In

these societies, the investments in human capital and returns expected from these investments are higher. This cycle supports each other. Educational investments in human capital nurture the individualistic value system and this creates a downward wealth flow.

Prolonged life and low fertility will increase the number of the elderly and the need for wealth per elderly. Since in any population the elderly holds the wealth with them, the increase of this group in the population will result in the increase in average wealth (Mason and Lee, 2007). Besides, the fall in the number of children and the prolonged human life will cause the labor population to save more. This also increases the accumulation of wealth. The ageing of the population will lead to wealth demand in the population going up significantly, as the share of the wealth-holding elderly in the population increases. Policies and institutional contexts influences and determine the dimensions of the gains to be obtained from the “second demographic dividend.

The temporary gains can be transformed into sustainable gain by creating human and physical capital. This result, commonly called as second demographic dividend, usually results in a period of growth leading to high incomes and high level of consumption. Especially, in order to provide the financial support of the elderly, to depend much on either public Pay-As-You-Go pension programs or transfers from families removes the effect of the demographic transition on capital accumulation.

Family transfers are important for the welfare of individuals. Everywhere of the world children are dependent on the familial transfers for food and nutrition. In countries, where no affective public welfare system operates, such as Turkey, the elderly become dependent on their families for income and health-care. These transfers flow among age groups and generations. Parents give and receive transfers throughout their lifecycle. Though the direction of the transfers is as important as their amount, there has been no comprehensive research into this issue. These transfers among parents and children greatly influence decisions in areas such as human capital investments and fertility.

In countries like Turkey with young populations, in the event that the young population becomes qualified through education, the effectiveness of the young population will reach the highest point. This is an important demographic dividend.

In brief, if we study these three theories according to high fertility and low fertility processes under two scenarios;

Less investment in education, health can be made to the human capital in the families, where the wealth flow is from children to parents and where children hold an economic value. These parents decrease their life-cycle savings and finance the expenses of their children and become very dependent on their children in old age more than their assets. In such societies what determines the effectiveness of the human capital is the number of the youth, that is, the quantitative features of the population.

In the families where the wealth-flow is from parents to children and altruism prevails, the investments are more likely to be in human capital. Prolonged life expectancy and the expectancy from individual investments and the social security system cause these individuals to make more investments for their old age. In this group, what determine the efficiency of human capital are qualitative features (education, health, etc).

In terms of the economies of countries, the magnitudes of the savings and their transformation into investment are of great importance. However, this is dependent on stable and reliable policies. In the developed countries of the world, there is a transition from industrial societies to information societies. This is an important indicator of the importance attached to investment in human capital. The EU target for the year 2010 is, “the ability to grow in sustainable perspective with better employment and comprehensive social congruity and competitive and dynamic information- based economy”. To serve this purpose, investment in the human capital supporting information technology and preparing the young population for

the digital age is in the action plan of EU. If the labor force in Turkey is assessed by making investments in human capital and by creating employment, the social security problem, expect to arise in the coming years due to old age, can be decreased to a considerable degree.

CHAPTER IV

DATA SOURCE, VARIABLES AND METHODOLOGY

IV.1. DATA SOURCES

IV.1.1. Primary Data Sources

The primary data used in this study are the 1998 and 2003 Turkey Demographic and Health Surveys (hereafter referred to as TDHS-1998 and 2003).

IV.1.1.1. TDHS 1998

The Turkish Demographic and Health Survey (TDHS – 98) was conducted through an agreement with Macro International Inc. under the auspices of the MEASURE DHS + project supported by the United States Agency for International Development (HUIPS,1999). The TDHS – 98 is the second demographic survey carried out in collaboration with Macro International Inc. Contributions of the United Nations Population Fund also were critical in realization of the survey in its scope. TDHS – 98 was implemented between August and November 1998. The sample size of the 1998 TDHS is 10.000 selected households was based on the provisional results of the 1997 Population Count (HUIPS, 1999).

The TDHS–98 information was intended to contribute to and assist policy makers and administrators in evaluating existing programs and to design new strategies for improving the demographic, social and health policies of Turkey. A secondary objective was to maintain the flow of information about the Turkish population in the absence of a functioning vital registration system and to ascertain the continuity of demographic and health information necessary for sustainable development. Thirdly,

this survey aims to enhance the capabilities of institutions in Turkey to collect, process and analyze population and health data so as to facilitate the implementation of future survey of this type (HUIPS, 1999).

Four questionnaires were used for the TDHS–98: The Household Questionnaire, Individual Questionnaires for ever – married women, for never – married women, and for husbands. The Households Questionnaire was used to enumerate all usual members of and visitors to the selected households and to collect information relating to the socio-economic position of the households (HUIPS, 1999).

The results of the 1998 TDHS used in conjunction with TDHS 2003 can be used to project changes in households and to examine the trend in some indicators, though it has limited questions concerning the welfare of the elderly (HUIPS, 1999 and 2004):

- ✓ Does the elderly person have any living children? (If yes, how many?)
- ✓ Does the elderly person have any living step children? (If yes, how many?)
- ✓ Of the elderly person’s own or step children where does the nearest living child live? In the same house, very close, or another place?
- ✓ Who takes the prime responsibility for the elderly person’s needs, health and welfare?
- ✓ Does the elderly person have any income?
- ✓ What are the sources of this income?

IV.1.1.2. TDHS 2003

Demographic and Health Surveys are conducted in Turkey as part of the series of quinquennial demographic surveys conducted since 1968. The 2003 Turkish Demographic and Health Survey (TDHS-2003) is the third Demographic and Health Survey in Turkey. TDHS-2003 is a nationally representative survey of 10,836 households. The TDHS-2003 sample is designed to allow for analyses at the national level, by

urban/rural residence, and for each of five regions in the country. The TDHS-2003 sample also allows analyses for some of the survey topics for the 12 geographical regions (NUTS 1)¹ which were adopted within the context of Turkey's move to join the European Union (HUIPS, 2004).

A weighted, multistage, stratified cluster sampling approach has been adopted in the sample selection of TDHS- 2003 (HUIPS, 2004). We have the below mentioned population-group data as significant indicators:

- ✓ Turkey as a whole,
- ✓ Urban and rural areas,
- ✓ Major five regions of the country (namely West, South, Central, North and East Regions)
- ✓ The 12 NUTS 1 regions²: İstanbul, West Marmara, Aegean, East Marmara, West Anatolia, Mediterranean, Central Anatolia, West Black Sea, East Black Sea, Northeast Anatolia, Central East Anatolia, Southeast Anatolia.

With TDHS-2003, it has been aimed to obtain estimations with admissible sensitivity degrees for significant demographic indicators. TDHS-2003 embodies the total population as the population group in the household questionnaire. The aim of the survey design is to devise a household sample representing the total population, to interview an adult member of the household and to gather information about household members. In the household inventory, the questionnaire for the elderly has been applied to individuals at the age of 60 and above (HUIPS, 2004).

¹ With respect to Turkey's adaptation process to the European Union, in accordance with Decree 2002/4720, State Planning Organization and TurkStat have created three NUTS (The Nomenclature of Territorial Units for Statistics) areas of three different levels. NUTS is the statistical territorial grouping used by European Union member states. 81 provinces constitute NUTS 3 level. The 26 areas, formed through a combination of provinces, constitute NUTS 2 level and the 12 areas, formed through a combination of the 26 areas, constitute NUTS 1 level.

² for selected indicators which are based on sufficient number of observations

In TDHS-2003, the urban sampling framework has been formed by a combination of all settlements with a population over 10.000, regardless of their administrative status. The rural sampling framework consists of all the settlements outside the urban sampling framework. These definitions are the same as the definitions used in TDHS-1998. The initial information about the settlements was obtained from the results of the 2000 Population Census (HUIPS, 2004).

Table 4.1. Summary figures of coverage of the surveys; 1998 and 2003 TDHS

	Population De Facto	Population De Jure	Number of households	Household number in this study (include de jure member)
TDHS-1998	34 590	33 804	8 059	7 941
TDHS-2003	43 977	42 851	10 836	10 793

In this survey, each house in the sampling group has been visited and the questionnaires have been conducted through face-to-face interviews with individuals. Two main types of questionnaires were used to collect the TDHS-2003 data: the *Household Questionnaire* and the *Individual Questionnaire*. The data obtained from the household questionnaire, consisting of 164 questions, will be used in this study (HUIPS, 2004).

The household questionnaire was used to enumerate all usual members of and visitors to the selected households and to collect information relating to the socioeconomic position of the households. The information mentioned below was collected in the first part of the Household Questionnaire:

- ✓ Age

- ✓ Sex
- ✓ Residence
- ✓ Place of birth
- ✓ Literacy and education status
- ✓ Recent migration and residential mobility
- ✓ Employment
- ✓ Marital status
- ✓ Relationship to the head of household of each person listed as a household member or visitor.

If “eligibility to the welfare of the elderly module” (the question 48) is positive in the household questionnaire, that individual at the age of 60 and above is given an additional 13-question module. The third section of the household questionnaire was used to collect information on the **welfare of the elderly people** (HUIPS, 2004). There are 13 questions regarding elderly person in the household list:

- ✓ Total number of elderly persons in the household list.
- ✓ Number of living children.
- ✓ Where do the elderly person’s own children live?
- ✓ Does the elderly person have any living step children? (If yes, how many?)
- ✓ Where do the elderly person’s step children live?
- ✓ Who takes the main responsibility for the elderly person’s needs, health and welfare? (*himself/herself, spouse, children/step child, children in law, sibling, grandchild, sibling’s child, other close relative, distant relative, neighbor, etc*)
- ✓ Does the elderly person have any income?
- ✓ What are the sources of this income?
- ✓ Is the elderly person covered by a health insurance? Does he/she have health insurance? (if yes) Which one?: *Social Insurance Institution (SSK), Pension*

Fund (Emekli Sandığı), Social Security Organization of Craftsmen (Bağ-kur), Private Funds, Green Card, other)

- ✓ Is the elderly person confined to bed?
- ✓ Is the elderly person confined to chair/armchair all day long?
- ✓ Is the elderly person's daily life limited to house/flat or garden?
- ✓ Does the elderly person do the things I will list now easily, with difficulty or only with the assistance of another person?

Table 4.2. Variables of the 1998 and 2003 TDH Surveys (complete set of elderly data)

Questions	1998	2003
Total number of elderly persons in the household list.	✓	✓
Having any living children and if have, number of them.	✓	✓
Where do elderly person's own children live?	✓	✓
Does elderly person have any living step children? (If yes, how many?)	✓	✓
Where do elderly person's step children live?	✓	✓
Who takes the main responsibility for elderly person's needs, health and welfare? (<i>himself/herself, spouse, children/step child, children in law, sibling, grandchild, sibling's child, other close relative, distant relative, neighbour, etc</i>)	✓	✓
Does elderly person have any income?	✓	✓
What are the sources of income?	✓	✓
Is elderly person covered by a health insurance? Does he/she have health insurance? (if yes) Which one?: <i>Social Insurance Institution (SSK), Pension Fund (Emekli Sandığı), Social security Organization of Craftsmen (Bağ-Kur), Private Funds, Green Card, Other)</i>	✓	✓
Is elderly person confined to bed?		✓
Is elderly person confined to chair/armchair all day long?		✓
Is elderly person's daily life limited to house/flat or garden?		✓
Does elderly person do the things I will list now easily, with difficulty or only with the assistance of another person? <i>Lying on bed-rising from bed, dressing-undressing, Eating, Going to and using toilet, Taking a bath.</i>		✓

IV.1.2. Supplementary Data Sources

Household Labor Force Survey and Turkish National Health Accounts Study results will be used as supplementary data sources to project labor force and health expenditure projection, respectively.

IV.1.2.1. Household Labor Force Survey³

In this study the Household Labor Force Survey data will be used in labor force projections. The Household Labor Force Survey which have regularly been applied since 1988 in Turkey. TurkStat is responsible for organizing, planning and conducting the Household Labor Force Survey. The household labor force survey is the main data source on the labor market situation of country from the supply side and gives information on economic activity, occupation, status in employment and hours worked for employed persons; and information on the duration of unemployment and occupation sought by the unemployed.

The results of this survey are published every three months for the country and urban and rural areas. Results are published annually in for Turkey, urban areas, rural areas, the 7 geographical regions and 9 selected city centers. In this survey, all private households who are living in the territory of Republic of Turkey are covered. Residents of schools, dormitories, kinder-gardens, rest homes for elderly persons, special hospitals, military barracks and recreation quarters for officers are not covered. Household Labor Force Survey is applied to sample households selected by a 2 stage stratified clustered probability sample involving 8 sub samples. Addresses which are the primary sampling unit are visited four times during the 18 months period. Monthly sample size is 13,000 households.

³ Source : http://www.turkstat.gov.tr/MetaVeri.do?tb_id=25&ust_id=8 (last accessed in March, 2008)

As from 2000, the economically active population refers to persons aged 15 years or over. The Household Labor Force Survey has been applied through BLAISE software and Computer Assisted Personal Interview-CAPI method since 1995.

While the survey is conducted monthly, publication of results is quarterly. Reference period is the first week of each month starting with Monday and ending with Sunday. The field application starts after the reference week and is completed within 15 years.

Topics covered in the survey are employment, unemployment, underemployment, hours of work, place of work, informal sector employment, duration of unemployment, discouraged workers, industry, occupation, status in employment, educational level and second jobs. The HLFS Questionnaire is comprised of 7 sections and 110 questions. In Section I, contains Address and Sample Information; Section II covers Personal Characteristics of the Household Members (S1-S24); in Section III consists of Current Employment Status (S25-S76); Section IV has Income related questions (S77-S85); Section V encompasses Unemployment and Inactivity questions (S86-S101); Section VI, Work Experience in the Past (S102-S107); and finally in Section VII, there are questions on the Employment Conditions in the Prior Year (S108-S110).

The first 12 questions of the HLFS Questionnaire, which are related with the personal characteristics and migration, are asked to all members of the household. Questions from 13 to 18, which are about formal education, are asked to the household members that are aged 6 years and above. The questions starting from 19, which are about the marital status and informal education, and all the questions in the Sections III, IV, V, VI and VII, are asked to the members in the household that are aged 15 years and above.

All the information is collected by interviewers on a face-to-face basis with the help of portable computers (computer assisted personal interviewing).

IV.1.2.2. National Health Accounts (NHA) in Turkey (1999-2000)

National Health Care Accounts (NHA) categorizes a country's health care expenditure and all other expenditures according to their type and goals and according to the actors in the health care system; and it is a method for calculating all the expenditure for health care regardless of source, place and goals and for obtaining a thorough estimation (Refik Saydam Hygiene Center Presidency, School of Public Health, 2004).

This study presents an estimation of national health accounts (NHA) for Turkey for the years 1999 and 2000. It was done as part of a larger project by the Ministry of Health and the Government of Turkey, on "The Development and Implementation of National Health Accounts in Turkey" between October 2002 and July 2003. The study was carried out by a partnership between the International Health Systems Program, Department of Population and International Health, Harvard School of Public Health, Boston, USA and the School of Health Administration, Hacettepe University, Ankara, Turkey. The "Bigtas" survey research group implemented a *national household health expenditure survey* as part of this study.

Table 4.3 provides the percentage distribution of Turkey Total Health Expenditure (THE) that includes public, private sectors and household expenditures by some selected sociodemographic characteristics. *These figures are the only data for THE according to basic demographic characteristics.* Public and private sector expenditures are estimations used for prediction in Turkey National Health Accounts Study (2004). Household expenditures (Out-of-pocket expenses of the households) are obtained from 2002-2003 Turkey National Household Health Expenditures Survey. This

survey is a part of the Turkey National Health Accounts Development and Implementation project performed by Ministry of Health.

With this study, Turkey estimated health expenditure for the years 1999 and 2000 and, as the fiscal year in Turkey is the calendar year (January-December), this became the reference point for the study. The framework group discussed the possibility of estimating 2000 and 2001 – however, with inputs from the Ministry of Finance, it was understood that the realized budget expenditures of the 2001 would not be available until the end of 2002. In this thesis, data of this survey is used in government health expenditure projection.

Table 4.3. Turkey Total Health Expenditure and Population by Socio-Demographic⁴
Characteristics (%) in year 2000

	Total Health expenditure	Population
	(%)	(%)
Gender		
Male	42.76	50.51
Female	57.23	49.49
Per Capita Income Quantile (TL)		
0 – 250.000.000	15.13	22.65
250.000.000 – 688.000.000	16.85	22.67
688.000.000 – 1.200.000.000	18.8	18.96
1.200.000.000 – 2.250.000.000	25.99	21.27
2.250.000.000 +	23.23	14.46
Age groups		
0-4	11.58	10.61
5-14	11.83	19.37
15-44	36.36	49.87
45-59	19.86	11.97
60-69	10.33	5.05
70-79	7.47	2.43
80+	2.57	0.71
Region		
West	32.77	38.83
South	12.34	12.85
Central	21.97	17.94
North	10.09	11.58
East	13.18	18.81
n.s.k.	9.65	-

⁴ *Source* : Turkey National Health Accounts Household Health Expenditures 2002–2003, Republic of Turkey the Ministry of Health Refik Saydam Hygiene Center Presidency School of Public Health, Ankara 2006.

IV.2. METHODOLOGY

IV.2.1. Research Questions

To realize the purposes of this thesis, main research questions can be summarized as:

- ✓ What are the demographic and socio-economic characteristics of elderly population?
- ✓ What are the main reasons of population ageing in Turkey? (mortality, fertility or migration: these three components are responsible for the changes in the age structure)
- ✓ In what type of co-residence pattern is the elderly population living in and will live?
- ✓ What are the main differences and similarities between population ageing stages, periods and patterns of European Union and that of Turkey?
- ✓ When we simulate this in comparison to the long-term care expenditures in the EU, what is the present and future economic burden of the elderly population living in Turkey on the public sector?
- ✓ How can Turkey solve elderly people's care problem? Will the institutional care of old age population be possible in Turkey? Or will the families continue to take on the responsibility of caring for the elderly in the future?

The hypotheses of the study are:

- ✓ The change observed in the co-residence pattern of the elderly will lead them to demand institutional care service more in the future.”
- ✓ “This demand will be a big burden on the economy”

IV.2.2. Basic Measures or Indicators Related To Ageing

This study is intended as a mainly descriptive analysis of elderly population in Turkey based on demographic survey and population projection results.

Dependency ratios

Dependency ratios are usually interpreted as measuring the dependency “burden” that younger and older generations exert over the population in active (working) ages.

The total dependency ratio is the number of persons under age 15 plus persons aged 65 or older per one hundred persons 15 to 64. It is the sum of the child dependency ratio and the old-age dependency ratio. Total dependency ratio is also called as *Economic Burden Index (ebi)* in the economic sense. It describes how much the productive population is burdened with people who belong to a non-productive age group:

$$ebi = \frac{P_{0-14} + P_{65+}}{P_{15-64}} * 100 \quad (\text{Equation 4.1})$$

The child dependency ratio (young person’s dependence index) is the number of persons 0 to 14 years per one hundred persons 15 to 64 years. This index explains the reproductive power of the population.

$$di_y = \frac{P_{0-14}}{P_{15-64}} * 100 \quad (\text{Equation 4.2})$$

The old-age dependency ratio (old persons dependence index) is the number of persons 65 years (post-productive inhabitants) and over per one hundred persons 15 to 64 years (the productive population). It is a typical feature of the economic burden.

$$di_o = \frac{P_{65+}}{P_{15-64}} * 100 \quad (\text{Equation 4.3})$$

The generational support ratio

The generational support ratio measures the availability of children to a cohort of older persons for financial, emotional and other forms of assistance.

The ageing index (ai)

It measures the process of demographic ageing. In other words ageing index shows the number of persons over the age of 60 per 100 persons aged 0-14 (United Nations, 2002a). Therefore it is the ratio of the post-reproductive inhabitants (P_{60+}) to the children inhabitants (P_{0-14}).

The ageing index is calculated as the number of persons 60 years old or over per hundred persons under age 15.

$$ai = \frac{P_{60+}}{P_{0-14}} * 100 \quad (\text{Equation 4.4})$$

The potential support ratio

The **potential support ratio** is the number of persons aged 15 to 64 per every person aged 65 or older.

Sex ratio

Sex Ratio (masculinity ratio) measures the relative “supply” of the two sexes. Classically defined as a masculinity ratio, i. e. Men are in the numerator, women in the

denominator. This may not be the best definition of the sex ratio for the purposes ageing-related research. The sex ratio may be calculated for a total population or for a specific age group.

Median age

The **median age** of a population is that age that divides a population into two groups of the same size, such that half the total population is younger than this age, and the other half older.

Life expectancy at age 65+

Life expectancy at a specific age is the average number of additional years a person of that age could expect to live if current mortality levels observed for ages above that age were to continue for the rest of that person's life. In particular, life expectancy at birth is the average number of years a newborn would live if current age-specific mortality rates were to continue.

The survival rate to a specific age X is the proportion of newborns in a given year that would be expected to survive at age X if current mortality trends were to continue for at least the next X years. Survival rates are derived from the life table, which is an analytic procedure designed to produce estimates of life expectancies and other measures of mortality, based on prevailing age-specific death rates.

IV.2.3. Projection Techniques

1. Non-Institutional Population projection
2. Household and family projections
3. Labor force projections
4. Health expenditure projection

IV.2.3.1. Non-institutional population projection

In this study, for the calculation of the demographic indicators of the ageing of the population, TurkStat projections⁵ (Annex B) which are based on 2000 Census of Population and TDHS data are used

As a known fact, with the Population Services Law numbered 5490, which was enacted in 2006, a new system to be the data source of population censuses in Turkey was established (Turkish Statistical Institute, 2008). The results obtained from the new system were announced, and disseminated through the web site⁶ of Turkish Statistical Institute on 31st December 2007. Despite seeming to be up-to-date data, the Population Register System results will not be used in this study as data source. There are two main reasons for this. There are serious problems with the age distributions of the announced data. Age data collected through the system are the ages on population registers and identity cards, which in our country do not prove the real ages of most people. In that register system the ages, sexes and place of birth, etc data are matched with the addresses of the citizens based on the citizenship numbers of the citizens. Turkish Statistical Institute also hasn't produced population projections from the results of this new system yet. The analyses of this study are still going on. The second reason is that the samples of TDHS and Household Labor Force Survey are drawn from the data of 2000 Census of Population. Using the analyses based on the projections of the age distributions of the censuses will be more accurate and will provide consistency.

⁵ Turkstat, Mid-year population projections by age groups, 2000-2020 (Yaş grubuna göre yıl ortası nüfus projeksiyonları, 2000-2020), <<http://www.tuik.gov.tr/VeriBilgi.do>>, accessed in March 2007.

⁶ http://www.turkstat.gov.tr/VeriBilgi.do?tb_id=39&ust_id=11, accessed in January 2008.

The future population by sex and age of each prefecture is obtained from “Population Projection for Turkey by TurkStat⁷. Most of the population projections are calculated from the aggregate population data. In other words, it includes both the private and the institutional (such as persons in hospitals, prisons and boarding schools) populations. In this study, TDHS data are used in the numerator, i.e. householder numbers, for the calculation of the household rates. DHS data only include information about the private population, and do not cover the institutional population. The projected populations are obtained from Census of Population data. Thus, they include the institutional population. TurkStat defines the institutional population as the population who live in places where the daily life requirements are totally or partially met by private or public organizations/institutions; residents are totally or partially subject to a common authority or regime or bound by a common public objective and/or personal interests and characteristics; and where people can only determine his/her private expenditures. According to this definition, population living in schools, dormitories, nursery houses, old age asylums, hospitals, prisons, barracks and military guest houses are included in the institutional population. For this reason, in the non-institutional population projections of this study, the population distributions for which TurkStat reviewed the institutional population and which was disseminated as “non-institutional (civilian) population” by the institute, will be used. The base populations, used in non-institutional population projections, are obtained from the results of Household Labor Force Survey of Turkish Statistics Institute.

PEOPLE software (Overseas Development Administration UK and Economic Planning Unit Malaysia, 1990) was used for the population projections. As the projections are calculated in every five years and as year 2000 data is not consistent with 2000 Census of Population results, year 2005 non-institutional data (from HLFS) was used as base population. People software enables the entry of five types of fertility data

⁷ [Turkstat](http://www.tuik.gov.tr/VeriBilgi.do), Mid-year population projections by age groups, 2000-2020 (*Yaş grubuna göre yıl ortası nüfus projeksiyonları, 2000-2020*), <<http://www.tuik.gov.tr/VeriBilgi.do>>, accessed in March 2007.

for the projection of births. Age-specific fertility rates (ASFRs) for every five year interval of the projection period were used (Table 4.4). These data are based on maternity history data from 1993, 1998 and 2003 Turkey DHS, and an official estimate of total fertility from the Turkish Statistical Institute through 2005.

Table 4.4. Age-specific fertility rates for every five year interval of the projection period

Periods	Age Groups						
	15-19	20-24	25-29	30-34	35-39	40-44	45-49
1995-2000	58.43	160.67	148.62	91.69	41.54	13.08	0.77
2000-2005	45.98	135.99	134.02	78.01	38.00	12.00	2.01
2005-2010	37.46	134.11	134.58	75.91	34.93	10.12	1.50
2010-2015	29.58	132.02	134.65	73.81	32.01	8.35	0.99
2015-2020	23.02	129.91	134.43	71.83	29.56	6.86	0.59
2020-2025	17.52	127.83	133.91	70.05	27.39	5.62	0.27
2025-2030	13.38	126.01	133.18	68.56	25.75	4.68	0.04
2030-2035	12.77	125.76	133.05	68.34	25.53	4.55	0.00
2035-2040	12.77	125.76	133.05	68.34	25.53	4.55	0.00
2040-2045	12.77	125.76	133.05	68.34	25.53	4.55	0.00
2045-2050	12.77	125.76	133.05	68.34	25.53	4.55	0.00

Source : United Nation, 2007b

PEOPLE Program gives the choice of four types of mortality data in order to project deaths. In this study, expectation of life at birth (e_0) by sex for every five year interval of the projection period is used. Life expectancy at birth data is based on official estimates for 1995-2005 from the Turkish Statistical Institute. The age pattern of mortality conforms to the East model of the Coale-Demeny Model Life Tables.

In a number of countries, international migration plays significant role in the growth of the national population. According to United Nations (2007b) “World Migrant Stock: The 2006 Revision Population Database”, international migrants as a percentage

of the population is 1.8 since 2000. As the sex and age distributions of this number which is very small are not clear, it is not considered in non-institutional population projection procedures. For purposes of the present projections, it was assumed that international migration will continue to be insignificant. International migration data based on data on the migration of Turks to and from European countries and the overseas countries of immigration, and refugees' statistics compiled by UNHCR. In addition to them, estimates from the Council of Europe were also considered (United Nations, 2007b).

IV.2.3.2. Household and family projections

IV.2.3.2.1. Household and family definition

The concepts household and family are often confused. According to the summary of the definition prepared by the United Nations (1980) for population and housing census, household is "one or more persons who make common provision for food and other essentials for living". Family, on the other hand, is defined as a unit in which the individuals experience a fertility process that come into being through traditions and norms. It is a kinship unit and it can be defined in terms of kinship relationships.

Demographers consider the family concept as regards the way they involve demographic facts, and also their demographic reactions and behaviors (Hancıoğlu, 1985a). The basic differences between the family and household can be summarized as follows (Koç, 1997):

- ✓ While family is a unit established to fulfill certain functions, household is based on a locational togetherness concept.

- ✓ The number of the individuals is also a factor in the formation of these units. Households can consist of one person, whereas a family requires at least two persons. When a household consisting of more than one person is considered, it is not a prerequisite that there is kinship between the members of the household. However, in a family unit consisting of more than one person, there must be kinship.
- ✓ Household can consist of more than one family.

Most of the family typologies used today are created according to the classical classification asserted by Frederic Le Play in the mid-19th century: nuclear or conjugal, stem and consanguine or extended families (Burch, 1982). Laslett (1981) states that “....*the fact that the family group may be the agent of transfer of external influences on the behavior of procreating persons, and that its effectiveness as such an agent may differ between family form and family form*”. With this explanation, Laslett proposes that the impact of the family on an individual can differ from one family type to another.

When the studies on family structure in Turkey by demographers Timur (1972), Hancioğlu (1985A), Koç (1999), Ünalın (2005), Tosun (1999) and Yavuz (2002) are examined, it is observed that the basic variables used in the classification of the family types were *the number of the couples in the household, the range of the generations and the head of the family*. In all the studies mentioned, Turkey Demographic and Health Surveys data were used and were conducted by Hacettepe University Institute of Population Studies. Besides, while forming family types, the above mentioned main variables were used. The fact that data resources and family definitions are the same enabled the results of the study to be comparable. In this study, in order to examine the changes in family types and identify the family types the elderly stay with TDHS 1998 and 2003 data set will be made use of. In order to perform comparisons for the studies into family types conducted before, in this dissertation the same family and household definitions were used.

According to the classification performed by Timur (1972),

- Nuclear family: Household composed of parent and single children. Parents with adoptive and unmarried children were also included in this category.
- Paternal Extended Family: Type of the family with a married child and daughter-in-law, married sons with the head of the family and wife, single children combinations.
- Transient extended family: the type of the family with relatives such as, grandfather and mother, single brother or sisters. Different relative combinations apply.
- Dissolved family: the family type in which one of the parents was absent due to such reasons as death or divorce. Widow mother and single children or grandmother and single grandchildren.

Besides, households defined as incomplete family, in which there is no marriage among the members of the family or widow sisters stay together, was dealt with in the scope of dissolved family (Timur, 1972). These households were classified in a different manner by Koç (1996).

Another definition mentioned in the scope of this study is “household head”. Every private household is defined by one reference person and household types are identified by the degree of relation to the reference person. In the method to be used in this study, the number of household heads is regarded as equal to the number of households. When the concept of household headship is considered, there is no standard definition accepted. There are two approaches in the definition of “household head”. The first of these is:

“Household head is the person regarded by the members of household as such.”

According to the second definition, “*household head is the person in charge of taking care of livelihood*” (UN, 1973). There are some difficulties in the usage of the second definition since it presents some data collection difficulties. Hence, according to “United Nations Principles and Recommendations” the definition of “household head” is as the following:

- a. the person regarded by the members of nuclear family or extended family as such
- b. any member of the family or nuclear family who meets the special needs.

If the first definition is used, household head should be identified during a survey/census by asking to household members. If the second definitions used, household head should be identified by using features such as age, sex, marital status and income.

The definition adopted in Turkey is similar to the one used by the United Nations. The definition of household head was left to the reference person by TurkStat. In accordance with this, the reference person is the member with the most accurate information on the personal traits of the family members and the adult member of family in charge of livelihood⁸. In a study conducted by Hacettepe University Population Studies and in this study, the definition of household head is regarded as the person regarded by the members of household as such.

Family and Household Typology in the Study

Family and household typologies in this study are prepared based on the degree of relation of the household members to the household head. Although the household head is generally defined as the individual responsible for the income and expenditure of

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the household and as the individual capable enough to provide information about the household members, the criteria used by the household members to choose the household head may vary.

In order to assess in detail the family types the elderly live in and to perform the projections, 3 main classifications are used in this study:

1. *Simple Family Households:* This type is a nuclear family type in the classification done by Timur. In the scope of simple family, the combinations of wife-husband, parents and children were included.

- a. Conjugal (husband and wife)
- b. Nuclear family (Husband, wife and their unmarried child(ren))

2. *Complex Family Households*

a. *Extended Family Households*

An extended family household is the household type that is formed by the participation of one or more relatives other than children to the conjugal family, consisting of a husband and wife.

- ***Extended upwards***

When the relative living with the conjugal family unit is of a generation earlier than that of the conjugal family unit, such as a mother or father-in-law, then the *extension is defined as upwards*. This approach to the definition of the Complex Family Household was first used in a study conducted by Sutay (2002).

- ***Extended downwards***

Similarly, if the resident relative is of a generation later than that of the conjugal family unit, *the extension is identified as downwards* (head + wife or husband + son/daughter in law +grandchild).

- ***Extended laterally***

If the resident relative is of the same generation as the conjugal family unit, such as the brother or sister of the household head, *the household is defined as lateral extended.*

- ***Combinations in extended family***

When both vertical and horizontal generations (head + wife or husband + grandchild + parent) live together with the conjugal household unit, this household is identified as combined.

- ***Other extended***

An example for other extended household structures could be a household structure that is formed by the participation of a non-primary relative (a cousin or niece/nephew of the household head and etc.) to the conjugal family unit consisting of the household head, his or her spouse, mother, father, brother or sister.

To put in a nutshell, the household types in this category are ‘extended downwards’, ‘extended upwards’, ‘extended laterally (sideway)’, ‘combinations in extended family’ and ‘other extended’

b. Multiple Family Households

In this study, multiple family households are identified as a household type consisting of two or more conjugal family units living together. The first conjugal family unit includes household head and is called “primary unit” and other conjugal units are called “secondary” unit. This multiple family household type is identified as up, down and lateral according to relation

degree of the other conjugal family units to household head of the primary unit.

- ***Multiple Secondary Units Upwards Family Households***

If the secondary unit conjugal link includes generations earlier than that of the household head of the primary unit, such as the father or mother of the household head, (or father-in-law and mother-in-law), this multiple family unit is identified as Upwards Family Households. An upwardly extended multiple family may include offspring of the head's parents other than the head himself as well.

- ***Multiple Secondary Units Downwards Family Households***

If the secondary conjugal unit includes generations later than that of the household head, such as the son and daughter-in law, their children or daughter and son-in-law, this multiple family is identified as downwards family households.

- ***Multiple Secondary Units Lateral Family Households***

If conjugal family units extends laterally; that is, if the primary unit is living with a married brother and/or sister and their spouses, this household is identified as multiple lateral family household.

- ***Other Multiple Family Households***

If primary household unit extends into more than one direction, this multiple family unit is categorized as other.

Thus, "Multiple Family Household" is classified as 'secondary unit(s) upwards', 'secondary unit(s) downwards', 'secondary unit(s) lateral' and lastly 'other multiple family' in this study.

3. *Dissolved Family Households*

In dissolved family households, one spouse is missing due to separation, divorce, death etc. or non – family households.

a. Single person (solitaries)

b. Single parent - co resident with children and other relatives or people not evidently related. (For example, head + son/dau + grandchild, head + son/dau + parent, head + son/dau in law + other relative + adopted/foster child, etc)

c. Other means that household head lives together with relatives and other people in the household not evidently related. This structure does not include children.

In the study conducted by Yavuz (2002) to identify the change in the household and family structures in Turkey, single parents with child(ren)' and 'single parents with children and other relative(s) and/or person(s) are categorized under simple family household structure and single parent family type due to the loss of one of the parents or divorce are classified under dissolved family household structure.

Household structure is a dynamic structure that is subject to change over time. Household composition displays change over time due to several demographic events such as living arrangements, marriage, death and birth. This creates difficulties in identifying the household structure. The data obtained at a certain point of time matches household members at different phases/stages of the process and fails to consider the temporary but significant changes in the family types and the degrees of these changes.

Like household structures, the household and family structures which individuals belong to can change over time. In his study, Ünalın (2002) stated that the observations revealed that individuals mostly live in nuclear family households when they are at school age and during their fertile period; between the ages 20 and 24 and in old ages they mostly live in non-nuclear family households.

Throughout their life cycle, individuals can live in different family and household types according to their economic, demographic, social and cultural status. Marriage age, age at first child and the period of co-residence change family and household structures (Koç, 2000).

In this study, the household and family structures that are to be formed through the statistical data obtained as a result of a cross-sectional research should be evaluated considering these constraints. In this study, the above mentioned definitions are made by utilizing the 1998 and 2003 TDHS data and the study attempts to analyze these household types that led to a shift in the household composition in Turkey. The family types will also be classified according to whether they include elderly individuals (65+). Moreover, with the help of the projections prepared by utilizing the data concerning the defined household types, this study will attempt to forecast what type of household composition the elderly population will be in the future. This study will also attempt to analyze the social and economic features of the household structures including elderly individuals.

IV.2.3.2.2 Household and family projections

Information on the projected numbers and sizes of households, often taken as socio-economic units, can also be of considerable value to planners. Household projections play a role in assessing future housing needs and social services.

The projections of the future size and composition of households and families have gained importance since the end of the Second World War. According to literature, the demand of household's projections has been performed by many government departments and sectors of private industry, particularly in developed countries. Generally, household and family projections are used in order to plan housing and

building, the development of public utilities and the production and distribution of consumer durables such as electric appliances, furniture, and automobiles, for which the unit of consumption is household rather than individual.

Specifically, planners often want to know the future number of households, whether the future increase in households is likely to be greater or smaller than population growth, and how many new households will be formed in the next year, the next ten years, etc. Concern has sometimes also centered on the future growth of the number of families, the number of married couples, and the distribution of families by type (nuclear, patriarchal, etc.). Especially in this study, the characteristics of the family and household types in 1998 and 2003 are examined using the data from 1998 and 2003 Demographic and Health Surveys (TDHS-1998/2003) conducted by HUIPS, in Turkey.

Household projections are key components of analyses of several issues of social concern. Especially, the living arrangements of the elderly are a key determinant of their needs for socio-economic, physical and psychic assistance, and household projections are therefore critical to understanding challenges in this area (Lutz et al., 2004).

Although several types of household projection models have been developed over the past few decades (Kuijsten and Vossen, 1988), most existing household forecasts are based on a headship rate approach (static macro-demographic models). The prototype of the model was formed by the United States National Resources Planning committee in 1938. The recognition and the acceptance of it were after the census in the 1950s. Kono (1987) and Linke (1988) discussed headship rate model in detail. If the basic population projections by sex and age are adequate, it can provide a reasonably accurate picture of the future number and composition of households. It is straightforward and requires simple input data. On the other hand, however, it cannot take into account a dynamic aspect of formation, growth, contraction and dissolution of households and it cannot provide numerical figures of entries into and exits from the

stock of households (Kono, 1987). Besides, headship rate is not a rate in demographic sense like labor force participation rate (“occurrence-exposure”) and it concentrates on the changes in stocks not changes in the flow. It is this structure of headship rate that led to the development of dynamic household models. Dynamic house models are concerned with household formation and household dissolution. Unlike static models, these models can be used to provide answers to the following questions:

- ✓ If the children leave parents’ house two years later than is the case presently, how will this affect household structure?
- ✓ How will the increase in divorce rate affect the number of families with one parent?

Because the structure of the data used in this study cannot answer the questions necessary for dynamic household models and the present registration system on vital statistics is insufficient, dynamic projection models weren’t used in this study. Two items of software called Profamy and Lipro, containing dynamic models (Van Imhoff, 1991), were examined in detail during the preparation period for the study. Since there is a need to create a wide assumption/hypothesis set for the rates to be used as input and limitations in data resources, it was decided that the software mentioned above cannot be used within the scope of the study.

On the other hand, the WORKERS software (Overseas Development Administration UK and Economic Planning Unit Malaysia, 1992), which was used in this study for labor force projections, enables a maximum of 5 types of household in the projection of household/family types (Workers software allows at least 2 at most 5 types of family households.). However, in this study the household types are examined with the classification of three main household types; namely nuclear, dissolved and extended. And, in order to determine in which family /household structure the elderly people live, it was planned to project the 1998 and 2003 TDHS data by dividing them into 6 groups using the headship rate methodology:

- i. Simple family households
 - a. With elderly
 - b. Without elderly
- ii. Dissolved family households
 - a. With elderly
 - b. Without elderly
- iii. Extended family households
 - a. With elderly
 - b. Without elderly

Due to the limitation of the software in the number of household types, the projections of the households of the elderly population were done by projection calculations in excel using “headship rate” method which will be explained in detail below.

These calculations are done under two assumptions. First, the headship rates are assumed to be constant till 2050. Nevertheless, in order to obtain a more accurate and consistent projection, this constant rate was calculated for year 2005 considering the difference (increase and decrease) in headship rates. Thus, both the tendencies in the five years period were considered, and projection years starting from 2005 and ending in 2050 quinquennially, which are covered in all of this study, are harmonized.

The second assumption is the extrapolative method, which uses the average annual difference in the previous rates. In this method, a simple mathematical formula is used to fit the past trends.

Headship rate method for projections of household size and family type

The headship rate method has been the most commonly used method of household projection in recent years. If the basic population projections by sex and age are adequate, it can provide a reasonably accurate picture of the future number and composition of households. There are methodological advantages of headship rate method over other methods of household projections as:

- ✓ It employs available population projections by sex and age (and sometimes by marital status) as its base, so it can reflect underlying changes in population composition which have a large effect on the size and composition of households and families.
- ✓ Since the population composition is determined by the past fertility and mortality, and migration, the method can indirectly reflect these three elements of population change.

The headship rate method is based on the assumption that the number of households is equivalent to the number of head of households. The following formula, which multiplies population by headship rate (percentage of householders in the population), is used to estimate the number of households.

$$(Number\ of\ households) = (number\ of\ household\ head) = (number\ of\ population) * (headship\ rate)$$

The initial number of households and population categorized by head of household' age and family type are obtained from 2003 TDHS. These three basic types of family households are identified as (i) Simple family household, (ii) Dissolved family households, and (iii) Complex family households.

To clarify the headship rate method, it may be useful to express the steps by an algebraic equation. Let $P(i,j,t)$ be the population of sex i , age j and at time t , and let

$H(i,j,t)$ be the number of heads of households or families by sex i , age j and time t . Then the headship rate specific for sex and age at time t , $h(i,j,t)$ is expressed by the following formula:

$$h(i, j, t) = \frac{H(i, j, t)}{P(i, j, t)} \quad (\text{Equation 4.5})$$

The formula for projecting the number of households may be presented as follows. Suppose that for year $t+x$ (x years from the base year) the population projections by sex and age have already been prepared and the (sex)-age headship rates have been prepared by using equation 4.5 and the headship rates by age have been estimated, then the number of households for the year $t+x$ can be obtained by the following equation:

Total number of future households in year $t+x$

$$\sum_i \sum_j H(i, j, t + x) = \sum_i \sum_j P(i, j, t + x) \cdot h(i, j, t + x) \quad (\text{Equation 4.6})$$

These equations (4.6) show that there is no distinction between private (“family” or “ordinary”) and institutional (“collective” or “quasi”) households.

Table 4.5 Tabulation plan for headship age and household type (includes elderly individuals or does not)

Age groups of head of households	Family Household Types						Total
	Simple family with elderly (1)	Simple family without elderly (2)	Dissolved family with elderly (3)	Dissolved family without elderly (4)	Complex family with elderly (5)	Complex family without elderly	
15-19							
20-24							
.....							
65+							
Total							

Although specific headship rates often are assumed to be constant in projections by the headship rate method, for many countries changing headship rates would present a more realistic picture. For example, massive migration of young workers to cities and metropolitan areas can increase per capita income, and can change in the value system centering on the family and married life. They can cause a rapid process of nucleation and formation of one-person households in both rural and urban areas.

According to Kono (1987), the main methodological problem of this method is how to estimate accurately future levels of headship rates specific for sex and age or for sex, age, and marital status. In UN (1973) it is stated that the basic assumptions about future specific rates may be classified within the following four categories:

1. Constant rate method
2. Regression method, using either cross-sectional or sub national data on headship rates on the one hand, and economic and social indicators on the other;
3. Normative approach, using target rates based on the Government's housing policy and social and economic development programmes.

4. Extrapolative method, using annual average change of rates in the past, or applying a simple mathematical formula fitted to past trends;

Projections of the number of households and families are usually made by the constant headship rate assumption, if data are available from only one census or survey (UN, 1973).

The regression approach is commonplace in econometrics, but it is not so frequently applied in demographic projections. This projection method is fundamentally based on the ascertainment of the statistical relationship between the headship rates (Y) and some economic and social variables (X1, X2, X3, ...) which may be per capita income, percentage share of the agricultural sector in the total economically active population or other similar variable. The headship rate (Y) is treated as the dependent variable and the economic and social variables (X1, X2, X3 ...) as the independent variables. The regression may be based on time-series or cross-sectional data. It is obvious that economic factors such as an increase in real income and in rents and mortgage rates (it's very new subject for Turkey), and social factors like urbanization have large effects on changes in headship rates.

The normative approach has been extensively used in the projections for the United Kingdom and for Denmark and Norway (Kono, 1987). Unlike the mathematical extrapolative method and the regression method, future headship rates are estimated by a theoretical approximation of the future potential formation of households and families by using the current headship rates and the probable future economic and social development and implementation of the Government's housing policy.

When more than two censuses have recorded data on heads of households and families classified at least by sex and age, it is possible more or less to establish the trend of headship rates (whether they are increasing or decreasing). With this

information, future headship rates can be extrapolated. To extrapolate is to extend the trend in order to obtain estimates or forecasts for years beyond the data used in fitting the trend. Thus, the availability of sex-age headship data from more than two censuses will clearly increase the validity and accuracy of projected headship rates and population (UN, 1973). In this study, fourth methodology (extrapolative method) will be used to produce projection of households and families. So, this method requires further discussion.

Extrapolation by modified exponentials

An alternative method is to assume that the ten-year or five-year change from year to year in the headship rate forms a continuous series.

In these projections, extrapolation was made by modified exponential functions and the following exponential formula was used to obtain headship rates specific for sex and age in future years.

$$h(i, j, t + x) = 1 - [1 - h(i, j, t - n)] * \left[\frac{1 - h(i, j, t)}{1 - h(i, j, t - n)} \right]^{\frac{(t+x)-(t-n)}{n}} \quad (4.7)$$

where $h(i, j, t)$ indicates the headship rate specific for sex i , age j , and time (year) t . The notation $h(i, j, t+x)$ denotes the headship rate specific for sex i , age j , and time (year) $t+x$ (x years after t), and $h(i, j, t-n)$ symbolizes the headship rate specific for sex i , age j and time (year) $t-n$ (n years before t). The notation n in this equation specifically signifies the base period between the two census years for which the headship as well as the population data is available.

Although other types of modified exponentials such as logistic or Gompertz function needs at least three past observed points as base data, this type of modified exponential function possesses the advantage of requiring only two past observed points as the base data for the future trajectory of headship rates.

This method implies that the headship rates in all age groups will continue to rise indefinitely but at a gradually diminishing pace. In some cases, it can be observed that certain age groups can show decreases. It is of course possible to apply the same formula (4.8) for the extrapolation of headship rates in these age groups. However, applications of the formula to these age groups yield decreases in headship rates at a rather accelerating pace, which is clearly in opposition to the present purpose. Accordingly, for these age groups the following formula is used:

$$h(i, j, t + x) = h(i, j, t - n) \left[\frac{h(i, j, t)}{h(i, j, t - n)} \right]^{[(t+x)-(t-n)]/n} \quad (4.8)$$

IV.2.3.2.3. Co-residence pattern of elderly

In the part related to theoretical frame of the study, economic effects of the ageing of the population will be dealt with from demographic point of view and demographic theories will be examined under three sub-groups. In the study, 2003 Turkey Population and Health Survey data will be employed in large extent in order to test the theoretical frame. In order to test Wealth Flow Theory, the elderly will be examined in 3 categories by their co-residence patterns and family structure.

- i. The elderly staying with their sons and daughters and the elderly receiving home- based care (wealth flow theory, 1st stage)
 - a. those living with unmarried sons and daughters (18+)
 - b. those living with married sons and daughters
- ii. The elderly with an income, living alone, sons and daughters living around and with no financial support from sons and daughters. (Wealth Flow Theory, 2nd stage)
- iii. The elderly with no financial family support, no sons and daughters living around and those living alone (not complying with Wealth Flow Theory)

In order to test “Life-Cycle Approach” the individuals in 2003 TNSA Elderly Wealth Module will be examined under 3 elderly typology stated above in 65-69,....85-89, 90+ age groups and it will be tried to determine what sort of differentiation they exhibited and whether their isolation increases as they get older through the use of Life Cycle Approach.

IV.2.3.3. Labor force participation projection

Labor force projections are used by planners to understand about the future supply of labor and how it is likely to change with time. Apart from the total labor supply, planners will be interested in its sex and age composition as well as its educational attainment.

The basic elements used for obtaining projections of the future numbers of persons in the labor force are sex-age-specific labor force participation rates. These can be defined as:

$$\tau_{ij} = L_{ij} / P_{ij} \quad (\text{Equation 4.9})$$

where

τ_{ij} : is the labor force participation rate of persons of a given sex and age.

L_{ij} : is the number of persons of a given sex and age in the labor force.

P_{ij} : is the number of persons of a given sex and age.

Projecting the labor force

For labor force projection, software called WORKERS 1.0 version (Overseas Development Administration UK and Economic Planning Unit Malaysia, 1990) was

used. The software concerned is a package program employed for the projections of labour force, household and education.

In methodology of software, assumed future age-sex specific labor force participation rates τ_{ij}^t are applied to the projected non-institutional mid-year population P_{ij}^t classified by sex and age to obtain the future labor force. Thus:

$$\hat{L}_{ij}^t = \tau_{ij}^t (\hat{P}_{ij}^t)$$

$$\hat{L}^t = \sum_i \sum_j \hat{L}_{ij}^t \quad (\text{Equation 4.10})$$

Where:

\hat{L}_{ij}^t is the projected labor force of a given sex and age in year t;

τ_{ij}^t is the assumed labor force participation rate of a given age and sex in year t; (in this study, it is obtained from 2005 HLFS)

\hat{P}_{ij}^t is the projected population of a given sex and age in year t, and

\hat{L}^t is the projected total number of persons in the labor force in year t.

The above equations represent the basic approach used in projecting the future labor force.

IV.2.3.4. Health expenditure projection

In this study, the projections concerning the health expenditure includes public and private health care expenditure. Public health care expenditures are the ones allocated by the Ministry of Health, General Directorate of Coast and Frontier Guards, universities, the Social Services and Child Protection Organization, other ministries and governmental institutions, local governments, state organizations, government officers and social security institutions such as Social Insurance Institution (SSK), Pension Fund and Social Security Organization of Craftsmen (Bağ-Kur). Private health care expenditure includes personal payments, medication and treatment expenditure supplied by individuals and the households and individuals and firms that pay for personal insurance systems; and these are not included in this study. The projections in this study are about government health expenditure as a proportion of GDP and government health expenditure for individuals according to age and gender groups. The data concerning the health expenditure will also be compared with international data.

In this study, in general all expenditures made for prevention, development, care, nutrition and emergency programmes with an aim of improving and protecting health are accepted as "Health Expenditure".

The pharmaceutical and health care expenditure projections are based on traditional models. In these models, the age profile of health care expenditure is associated to the changes in the projected population and costs per capita.

Traditional approach

The data required to project government health expenditure are:

- ✓ The age profile of the health care expenditure, (the latest data is obtained from the National Health Accounts 1999-2000 in Turkey)

- ✓ Projections belonging to age structure and growth rates were (obtained from TurkStat projections⁹),
- ✓ The change in the costs per capita in each age group (assumed as not changed).

These calculations fail to take the unexpected expenditure that may occur as a result of an epidemic, as a result of the new advancements in technology and increase in prices into consideration. This growth pace in the health care expenditure occurring as a result of these factors is called non-demographic growth rate. Another shortcoming of this method is the assumption that the age-related expenditure profile is stable over time. The advancement of technology, the latest methods used in the diagnosis and treatment of illnesses will contribute to the change in the profile. The results of the projection should be evaluated considering the fact that all the said factors are ignored in the calculations.

Table 4.6. Turkey health expenditure (%) per capita by age group and sex; 1999-2000

Age group	Males (Share %)	Females (Share %)
0-4	11.58	10.61
5-14	11.83	19.37
15-44	36.36	49.87
45-59	19.86	11.97
60-69	10.33	5.05
70-79	7.47	2.43
80+	2.57	0.71

⁹ Turkstat (2007), Mid-year population projections by age groups, 2000-2020 (Yaş grubuna göre yıl ortası nüfus projeksiyonları, 2000-2020), <<http://www.tuik.gov.tr/VeriBilgi.do>>, accessed March 2007

Table 4.7. Turkey health expenditure per capita by age group; 1999-2000

Age group	Total Health expenditure (trillion TL)
0-4	745.78
5-14	762.40
15-44	2,342.93
45-59	1,279.36
60-69	665.65
70-79	481.10
80+	165.62
TOPLAM	6,442.84

(Detailed figures are in Annex C)

The expenditure was projected by multiplying age specific average costs (for the period 1999-2000) with the projected population for each year.

The projected expenditure of health expenditure in year (t) is :

$$\sum_{age=0}^{85+} (HE_{age} POP_{age}(t)) \quad (\text{Equation 4.11})$$

Where

HE_{age} : age specific per capita health expenditure (1999-2000)

$POP_{age}(t)$: the number of persons of a given age in a given year

$age \in (0, 85+)$: the reference age range for per capita health expenditure and population size, 85 represents those aged 85 and above.

$t \in (0, T)$: the reference year of expenditure prediction, where the year 1999 is given by $t=0$

Due to lack of data, expenditures were calculated for the total population instead of gender differentiation (male, female).

CHAPTER V
STATISTICS ON ELDERLY POPULATION IN THE WORLD AND IN
TURKEY, AND POLICIES ON THE ELDERLY POPULATION
IN TURKEY

Turkey, like other developing countries, is in transition towards an ageing population. While this change brings along some positive demographic and economic factors (like improved life expectancy, etc), it would also affect the public expenditures in amount and distribution.

In this chapter, the dimensions of the demographic transition in Turkey, statistics on ageing population, the stages and the statistics of the ageing of population in European Union and some EU countries, and the current policies and actions on the ageing of population in Turkey will be discussed.

V.1. THE DEMOGRAPHIC TRANSITION IN TURKEY

Research on changes in the structure of population in Turkey usually discuss the subject in terms of the ‘Ottoman period’ (pre-1923) and ‘Republic period’ (1923-present) groupings. It is possible to examine the developments in ‘Republic period’ more broadly and accurately with demographic methods. In this study only the developments in the ‘Republic period’ will be considered.

The process to collect information about the Population in Turkey began with the establishment of the ‘Central Statistics Office’ affiliated to Prime Ministry in 1926 with the directives of Atatürk (DİE, 2004). The first census of population in the ‘Republic period’ was carried out in 1927. Between 1935 and 1990, the censuses of population were carried out quinquennially in years ending with 5 and 0. It was decided that after 1990 the censuses of population should be carried out decennially

in years ending with '0', and according to this decision, the fourteenth census of population was carried out on 22nd October 2000.

Very important changes in the population structure of Turkey can be observed since the declaration of the Republic. When the 1927 census of population is taken as base, it can be observed that the population of Turkey increased five-five-fold between the first census and 2000 (Table5.1).

Table 5.1. Population and Population Growth Rates in Turkey (1927-2000)

Census Years	Total Population (1000)	Annual population growth rate (‰)	Population density	Sex ratio	Crude Birth Rate (‰)	Crude Death Rate (‰)	Percentage of urban population
	(1) ¹	(1)	(1)	(1)	(2) ²	(2)	(1)
1927	13,648		18	92.7			24.2
1935	16,158	21.1	21	96.5	45.6		23.5
1940	17,821	17.2	23	99.7	43.1	31.4	24.4
1945	18,790	10.6	24	101.1	45.9	33.9	24.9
1950	20,947	21.7	27	101.9	48.2	27.0	25.0
1955	24,065	27.8	31	103.4	46.8	23.5	28.8
1960	27,755	28.5	36	104.2	42.9	19.8	31.9
1965	31,391	24.6	41	103.9	39.0	16.4	34.4
1970	35,605	25.2	46	102.3	34.5	13.5	38.5
1975	40,348	25.0	52	105.8	32.2	11.6	41.8
1980	44,737	20.7	58	103.0	30.8*	10.0	43.9
1985	50,664	24.8	65	102.7			53.0
1990	56,473	21.1	73	102.7	24.8**	6.9*	59.0
2000	67,804	18.3	88	102.7	22.2**	7.1*	64.9

*Üner, S (1984), Türkiye Nüfusu, Boyutlar Sorunlar Yorumlar, HUNEE, Ankara

** estimate for one year

**TurkStat, <http://www.die.gov.tr/>

Turkey is mentioned as the 17th most populous country in the world according to UN estimates. According to the 2000 Census results, Turkey's population is

(1) ¹Population of Province and District Centers (Başbakanlık Devlet İstatistik Enstitüsü, 2000 Genel Nüfus Sayımı Nüfusun Sosyal ve Ekonomik Nitelikleri)

(2) ²Shorter, F.C., Macura M, (1982), **Trends in Fertility and Mortality in Turkey, 1935 – 75**

counted as 67.8 million and 56.5 million in 1990. Population growth rate is calculated within this 10 year period as 18 per thousand.

In order to make estimates about the population or the age distributions of Turkey for future years, it is necessary to obtain accurate birth, mortality and migration information. It is difficult to make future estimates due to the possibility of unforeseen trends in demographic events such as birth, mortality and migration. For instance, according to the results of Address Based Population Register System survey carried out by TurkStat, 70 586 256 people were registered by 31st December 2007. This number completely changes the all of the population estimates and projections up to that time. The analyses indicate that the age distribution of the population obtained from this study is not accurate, and especially there is insufficient coverage of the 0-4 age group. In the above mentioned study, only the population which is registered in the Central Population Administration, in other words, the ones with an identity card and citizenship number were covered. In addition, birth dates of persons registered on the identity cards are taken instead of real ages. In Turkey, the ages on identity cards do not prove the real ages of most persons. The studies on correction of age distributions and production of new projections are being conducted at TurkStat by a commission gathered among TurkStat experts and academicians. In this study, the projections made by TurkStat, based on the results of 2000 Census of Population and TDHS, which are considered to be more accurate and up to date, are used. According to the projections³ of the Turkish Statistical Institute, the population of Turkey is approximately 73 875 000 in the year 2007 and will reach 77 million in the year 2010 and 88 million in 2025. The total population is expected to be stabilized around mid 21st century between 95 and 98 million (TurkStat, 1995).

As it could be understood from the above explanations and the values in Table 5.1, there have been important changes in the population structure of Turkey

³ It should be considered that the projections are conditional estimates. The projections demonstrate the number of population if the assumptions become valid and current policies continue.

from the declaration of the Republic until today. It can be seen that when the 1927 census of population is taken as base, it can be observed that the population of Turkey has increased five times until 2000 (Table 5.1). When population growth rate is observed by population census years, it can be seen that though the population of Turkey increases continuously, the lowest increase was seen between 1940 and 1945, and the highest increase was seen between 1955 and 1960. Though the population size increased permanently, a decrease can be observed in population growth rate from 1980 to today. When the changes in the population size and population growth rates are considered together with the demographic, economic and social processes which are the determinants of this change, as mentioned in a recent publications (DİE 1995, Koray 1997, Ünalın 1997, TÜSİAD 1999, Yavuz 2008), it can be said that the current Turkish population is in the last stage of ‘demographic transition’ process of demographics. The term ‘demographic transition’ briefly defines the process where the fertility and mortality rates decrease to lower rates when they are relatively high, and thus resulting in the ending of the population growth. Due to the unique conditions of every country and society, the changing process which is defined as the demographic transition is defined by different timing, rate and determinants. The conclusion of this proposition is not only affected by the evaluation of the past seventy years process, but also by deduction from the short and medium term estimates.

In Turkey, demographic transition is generally divided into 3 stages. These stages are:

- ✓ First stage of transition (1923-1955)
- ✓ Second stage of transition (1956-1985)
- ✓ Third stage of transition (1986 -)

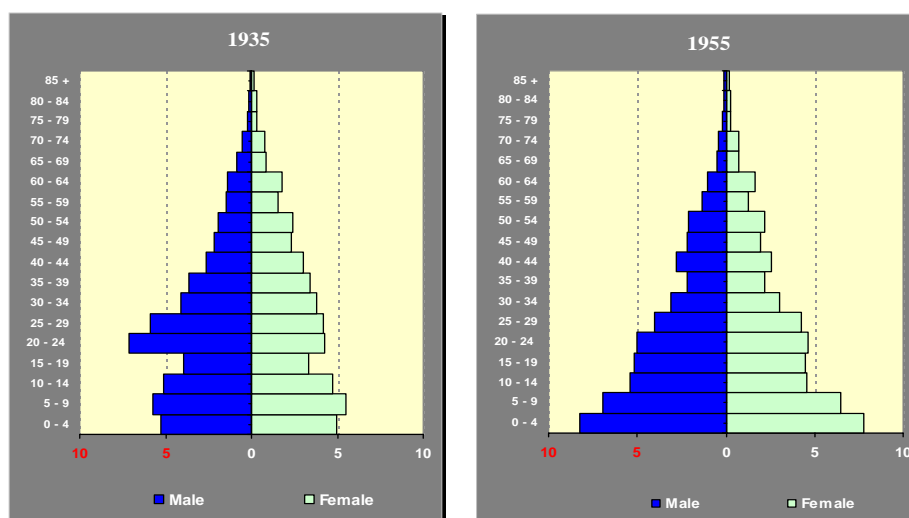
First stage of transition (1923-1955)

There are studies showing that the demographic transition process started in the İstanbul and İzmir, the two big cities of Ottoman State, at the end of 19th century (TÜSİAD, 1999 and Yavuz, 2008). The period defined to be the ‘first stage of

transition' where the transformation is spread to all of the country, is the period between 1920s and 1950s (DİE, 1995). Demobilization and peace conditions have been achieved in this first stage which coincides 1923-1955 periods. The population of Turkey which was determined to be 13.6 million people in the first census of population in 1927 was found to be 16 million people in the second census of population. The main factors which are related with this 2.5 million increase in this eight years period can be explained as follows. Firstly the growth trends in fertility in line with the normalized living conditions are effective; i.e. the married couples who have been separate during the war period came together and new marriages are made. Also, marriage age decreased. (TÜSİAD,1999). The second factor can be defined as being the migrations from the countries which are lost by the war. Population Exchange which was done according to the agreement between Turkey and Greece is an important factor (Ari, 2000). Last factor is that approximately 400.000 people were missed in 1927 census of population, and they were covered in the next census of population (HUNEE, 1975).

In order to understand the population structure in the beginning of this period, the population pyramid which is given in Figure 5.1 and based on 1935 Census of Population can be seen. It is possible to follow the previous processes related with the population by using the population pyramid which is a type of graphic showing the distribution of male and female population by age groups. In other words, the population pyramid shows the effects of past political, military, and economic events on population, rather than just giving an instant image of the population. Figure 5.1 coincides approximately the middle of the period where the commonly agreed demographic transformation starts countrywide. Here, three important issues appear for the population of Turkey, and population dynamics. Firstly, the difference between male and female population distributions is observed at adult ages starting from 25-29 years of age.

Figure 5.1. Changing age structure of the Turkish population, 1935-1955



Source : DİE, 1995

For example the “40-44” age group in 1935 constituted the “29-33” age group in 1923-1924 years which was the end of the wars. The difference in the distribution of the male and female population within the total population was at 1 % level in the advantage of female population, in the above mentioned cohort. The male population of this childbearing cohort, alongside with the related childbearing cohort, constitutes the population exposed to high mortality risk in the continuous war times starting from the Balkan War in 1910s to the end of Independence War in 1923 (Yavuz, 2008). Another indicator of the difference of male and female population in the advantage of the latter is observed at difference of values of sex ratio; while there were 93 men per 100 women in 1927, this ratio changes to 102 men per 100 women in 1950s (Table 5.1). Secondly, for similar reasons, relative deficiency in childbearing cohorts is observed at First World War and Independence War periods. This effect appears more at 15-19 population groups in year 1935. Thirdly, as a result of living normalizing conditions with the declaration of the Republic, in those days the most important demographic trend, the increase in the level of fertility, is seen. Crude Birth Rate value, which was given in Table 5.1., increased from 45 per thousand in 1930-1935 periods to 48 per thousand in 1945-1950 period. Similarly, the difference in the total fertility rate value which was calculated by retrospective projection method based on the data of the censuses indicates the same fact. In this

period, an increase was also observed in reproduction rate. Although high mortality rates are dominant, steady decline was observed in death rates. In this period, where life expectancy is 55 years, the maximum value of population growth rate was 2.8. Doubling time in this period was 32 years.

Second stage of transition (1956-1985)

The period between 1956 and 1985 is the second stage of transition', i.e. it is the period when fertility starts to decrease due to changing social conditions. A rapid decrease was observed in death rates in this period. There was an increase in the quantity of life expectancy, which reached 62 years in this period. There was a steady decline in fertility in this period. Doubling time was 28 years. In this period where a rapid urbanization was observed, internal mobility rate is at a high level. Labor force immigrations to Europe also started in this stage. Out-migration was at the highest level at this period. There was also a change in family formation or structure.

Third stage of transition (1986-)

'Third transition stage' is seen together with gradually lowering trends of fertility and mortality levels from 1980s to today. Demographic transition stages are in relation with births, deaths and natural population growth rate factors. The decrease in mortality rates also continued in this period, and life expectancy at birth rose above 65 years. At this stage where a rapid decrease is observed in fertility, total fertility rate decreased below 3, and population growth rate is below 2%. Doubling time was 44 years.

Recent decades have witnessed dramatic declines in fertility and mortality rates in Turkey. In the early 1970s, the total fertility rate was around 5 children per woman, whereas the recent 2003-TDHS results indicate a value slightly above the replacement level. Life expectancy of the population steadily improved and according to TurkStat projections life expectancies at birth reached 69 years for

males and 74 for females in the year 2007. Increases in life expectancy during the recent decades were mainly because of improvements in the survival probabilities of children and partially because of improvements in survival probabilities of the adult population (Table 5.2).

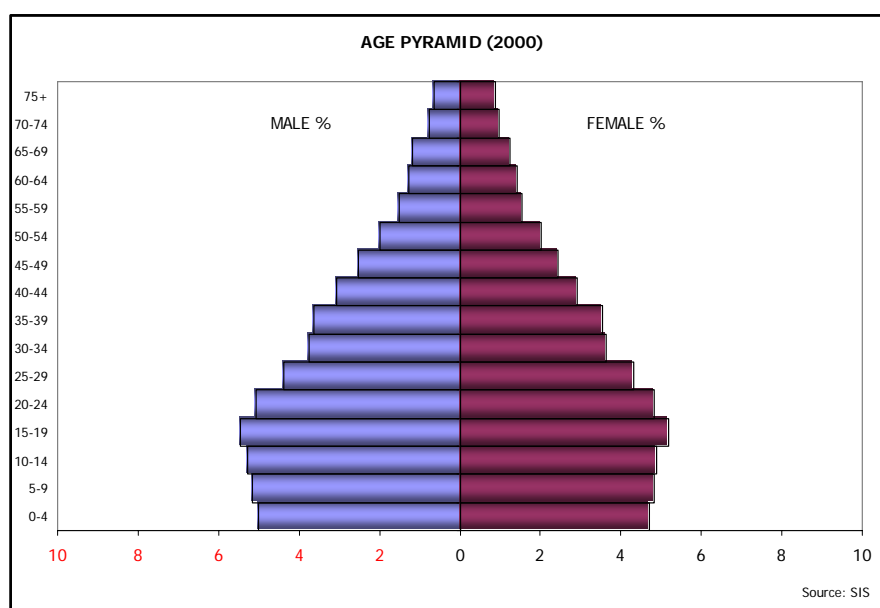
Table 5. 2. Selected Demographic Indicators of Turkey

Year	Total Fertility Rate	Infant Mortality Rate	Life Expectancy
1973	4.6	150	
1983	4.2	95	
1993	2.7	53	
2003	2.2	29	71*
2007*	2.2	22	72*

Source: Hacettepe University Institute of Population Studies and

* Turkish Statistical Institute (TURKSTAT) Projections www.tuik.gov.tr

As a result of the high fertility and growth rates of the recent past Turkey has a young population structure. One-third of the population is under 15 years of age, while the proportion 65+ comprises only 6 percent of the population according to 2000 Population Census. The pyramid of the year 2000 reflects transition from a high fertility and high mortality regime to a declining fertility and mortality regime with the constricted base for the young age groups indicating rapid fertility decline and putting 15-24 ages as the largest age group (Figure 5.2).

Figure 5.2. Changing age structure of the Turkish population, 2000

Source : Başbakanlık Devlet İstatistik Enstitüsü, 2002

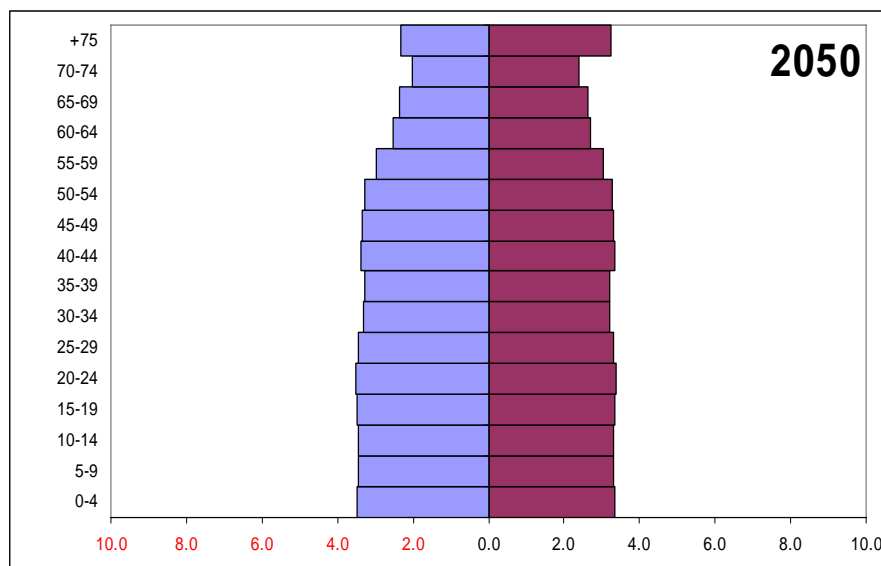
Today's prevailing demographic forces of the population are altering the age structure in new ways. As a consequence of rapidly decreasing mortality and fertility rates, the age composition of the population transformed from a young population to a structure with a potential for rapid ageing. The proportion of elderly in the population that has never exceeded 5 percent during the 20th century is now faced and the proportion of older population is expected to rise more rapidly than any other age group in Turkey. It is projected that the proportion of elderly will reach almost 20 percent by 2050 exceeding the estimated world average which is 16 percent (Figure 5.3).

Table 5.3. Percent distribution of the population by age group, Turkey 1960-2000

Age Groups	1960	%	1970	%	1980	%	1990	%	2000	%
0-14	11.447.589	41.2	14.881.829	41.8	17.499.430	39.1	19.760.959	35.0	20.227.079	29.8
15-64	15.326.796	55.2	19.157.262	53.8	25.116.359	56.1	34.292.844	60.7	43.716.577	64.5
65+	980.435	3.5	1.566.085	4.4	2.121.168	4.7	2.419.232	4.3	3.860.272	5.7
	27.754.820	100.0	35.605.176	100.0	44.736.957	100.0	56.473.035	100.0	67.803.927	100.0

Sources: 1960, 1970, 1980, 1990 and 2000 Census of Population

Figure 5.3. Changing age structure of the Turkish population, 2050



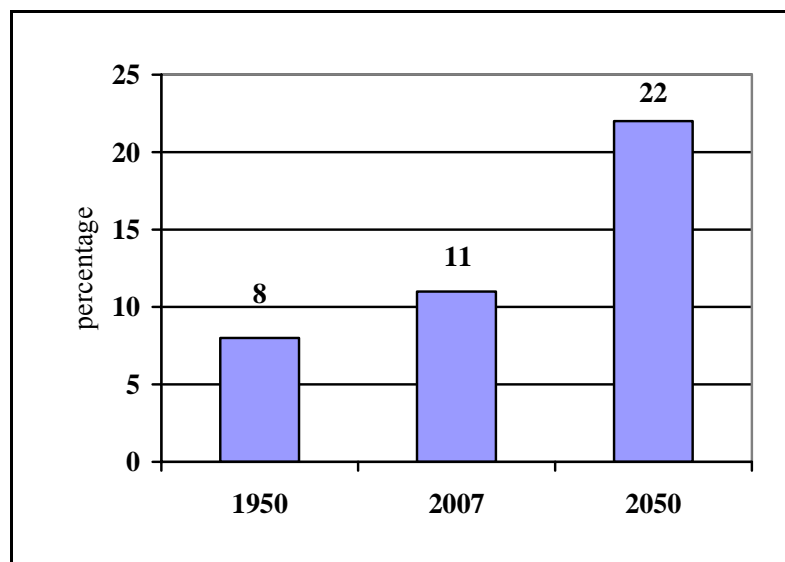
V.2. STATISTICS ON AGEING AND THE ELDERLY POPULATION IN THE WORLD

Ageing will increasingly become a feature of the world's population in the 21st century. By 2020, 13,5 per cent of the population is expected to be aged 60 or older; 70 per cent of the elderly will live in developing countries (United Nations, 2007b). According to a published *World Population Prospects: The 2006 Revision* and *World Urbanization Prospects: The 2005 Revision*, during 2005-2010 period the world's total population is growing at a rate of 1.17 percent per year. The population aged 60 years and above is increasing by 2.6 percent per year; the population of older persons is itself ageing. The number of persons aged 80 years and over-called as oldest-old, is rising by 3.9 percent annually (United Nations, 2007a).

The ratio of elderly population, 8% in 1950, went up by 11% in 2007 and this ratio is expected to go up by %22 in 2050 in the world (United Nations, 2007a), (Figure 5.4). Continually declining mortality rates and low fertility rates will lead to

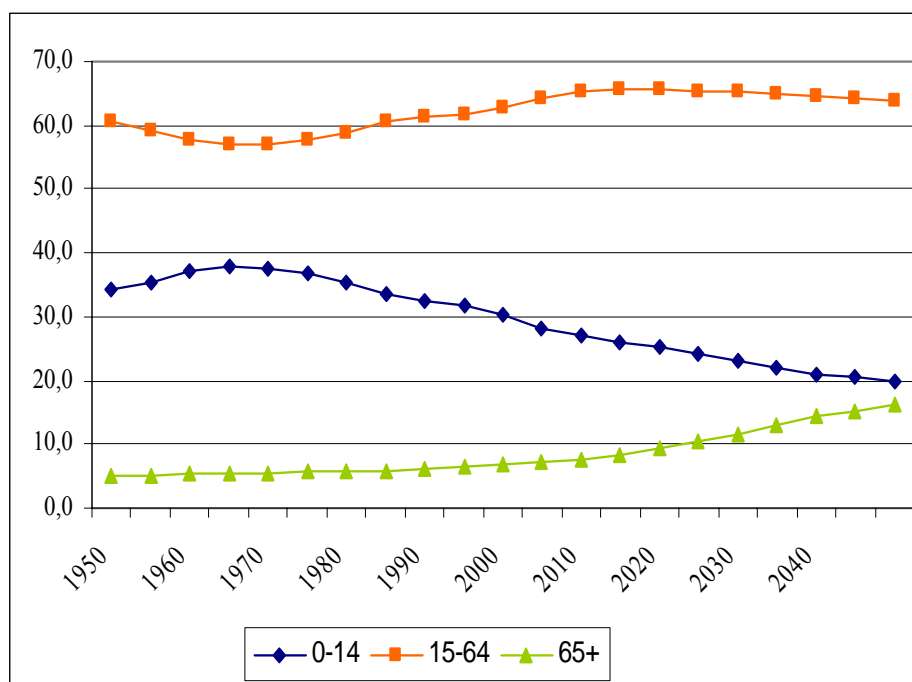
the increase in the population of the elderly. It is estimated that all over the world the number of the elderly will rise by 223% in 1970-2025 period (UN, 2007a).

Figure 5.4. Proportion of population 60 years or over: World, 1950-2050



Source : United Nations, 2007a

According to the 2006 Revision of World Population Prospects, in 2045 the number of the population of 65 and above years of age will outnumber the population of the children in the group of “0-14”(Figure 5.5.).

Figure 5.5. Percent distribution of World population by age groups, 1950-2050.

Source : United Nations, 2007b

Another factor affecting the population ageing is the decrease in mortality rates of adults. Global life expectancy at birth has increase in the period of 1970-2010 by 9 years and is expected to reach at 75 (Table 5.4). The highest values of life expectancy at birth are more in developed regions and Europe.

Table 5.4. Life expectancy at birth for both sex combined, 2005-2010 and 2045-2050

	2005-2010	2045-2050
World	67.2	75.4
More developed regions	76.5	82.4
Less developed regions	65.4	74.3
Europe	74.6	81.0
Turkey	71.8	78.5

Source : United Nations, (2007b)

In 2000, the ratio of the population aged 65 and above to the total population was 6.9 % in the world, whereas the same ratio was 14.3% in more developed regions and 5.1% in less developed regions. The same ratio will reach to 16.2%,

26.1% and 14.7% in the world, more developed and less developed regions in 2050, respectively (Table 5.5).

Table 5.5. Percentage of elderly populations (65+) in World, more/less developed regions, Europe and Turkey; 1950-2050

	1950	1990	2000	2025	2050
World	5.2	6.1	6.9	10.5	16.2
More Developed Regions	7,9	12,5	14,3	20,7	26,1
Less Developed Regions	3,9	4,3	5,1	8,6	14,7
Europe	8,2	12,7	14,7	20,7	27,6
Turkey	3,2	4,0	5,2	9,0	18,4

Source : United Nations, (2007b)

There is also an increase in the population aged 80 and over. In 1950 the population aged 80 and above was 14 million in the world and this rose by twenty-nine times and reached approximately 402 million. In 2050, it is expected that the share of this population group will rise to 4.4% (UN, 2007b).

Table 5.6. Selected indicators on ageing in the world, major areas and regions, 2007

	Ageing Index	Median Age	Potential Support Ratio	Parent Support Ratio	60+ (%)
<i>World</i>	<i>38.7</i>	<i>28.1</i>	<i>8.7</i>	<i>4.5</i>	<i>10.7</i>
More Developed Regions	124.2	38.6	4.4	9.0	20.7
Less Developed Regions	28.0	25.6	11.3	2.7	8.4
Least Developed Countries	12.4	18.9	17.0	1.6	5.1
Africa	12.9	18.9	16.2	1.6	5.3
Asia	35.8	27.7	10.1	3.1	9.6
Europe	136.2	39.0	4.3	8.1	21.1

Source: United Nations, (2007a)

The ageing index reaches its highest value in Europe and more developed regions. While the worldwide median age is 28 in 2000, this is 39 in Europe, 28 in

Asia, 19 in Africa, 26 in less developed regions and 39 in more developed regions (Table 5.6). According to the data included in “World Population Ageing 2007” published by the United Nations in 2007, the country with the youngest population is Uganda with a median age of 15. Half of the population in this country is younger than 15 while the other half is older than 15. On the other hand the oldest country is Japan. Median age in Japan is 43. It is estimated that median age of the world shall reach to 38 by increasing 10 years in 2050. Burundi and Uganda are expected to be the youngest countries with a median of 20 in 2050, while on the other hand, “Macao SAR China” and “Republic of Korea” to be the oldest countries with a median of 54 (United Nations, 2007a).

The potential support ratio (PSR) is the number of persons aged 15 to 64 per each older person aged 65 years or over. PSR indicates how many potential workers there are per older person. As the population becomes aged, the potential support ratios decrease. The decrease in potential support ratios has important impacts on social security schemes. The region with the lowest potential support ratio is Europe with a value of 4.3. In other words, there are 4 potential workers for each elderly. The highest value in the potential support ratio is 17 in the least developed regions (Table 5.6).

As they age, the health of elder individuals tends to become poorer. This means that long-term care need shall increase as the number of aged individual increases. “Parent support ratio” illustrates the ratio of individuals in 85 age and over to the individuals of range “50-64” and gives hints concerning the family support level to be provided to the aged members of the family. While throughout the world, there were 2 individuals of 85 age and over for 100 individuals of “50-64” age group in the year 1950, in 2007 this figure has become 4.5 (Table 5.6). It is estimated that the parent support ratio shall rise to 12 for each 100 individuals in “50-64” age group in 2050 (UN, 2007a). This means that a middle aged individual shall be three times more responsible for the care of her/his elder relative in 2050 than a middle aged individual today.

V.3. STATISTICS ON AGEING AND THE ELDERLY POPULATION IN TURKEY

As an important increase is expected in the ratio of the elderly population in Turkey, quantitative studies in this field have increased. The increase in the elderly population ratio is accelerating.

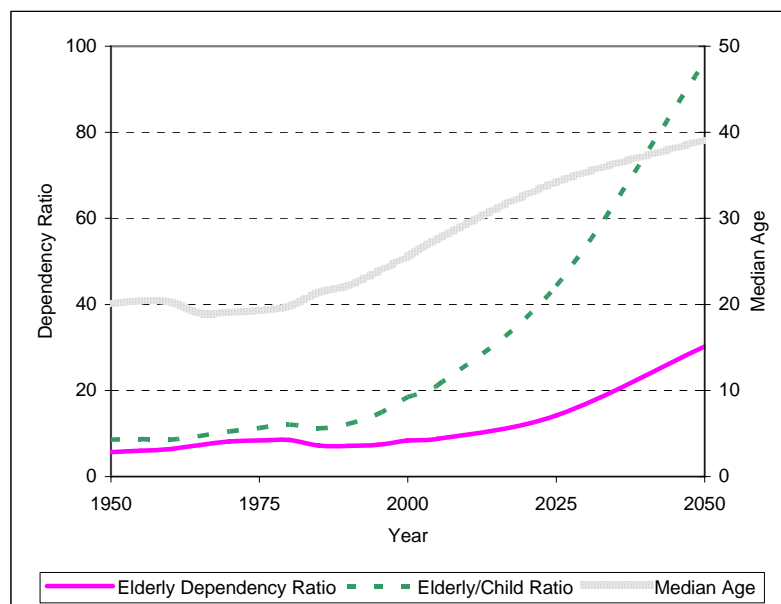
The share of the population aged 65 and above was 3.2% in 1950, whereas this share rose to 4.0 % in 1990 and it rose to 5.2% in 2000. It is expected that this share will rise to 18.4% in 2050 (United Nations, 2008). at the same time, the share of the population aged 80 and above to the total population has increased throughout the years. The share was 0.3% in 1950 and in 2000 it rose to 0.5%. It is estimated that this share will rise to 3.8% in 2050 (United Nations, 2008).

Although Turkey has a young population structure, the population profile is in the gradual process of aging. According to the results of 1950 population census, the median age was 20.1 whereas in 2000 population census it increased to 24.8. It is estimated that median age was 26.7 in 2007 and will be 33.7 in 2025⁴ (medium variant).

⁴ <http://esa.un.org/unpp/p2k0data.asp>

Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2006 Revision* and *World Urbanization Prospects: The 2005 Revision*, <http://esa.un.org/unpp>, Thursday, April 17, 2008; 7:52:19 PM.

Figure 5.6. Dependency ratios and median ages in period 1950-2050, Turkey

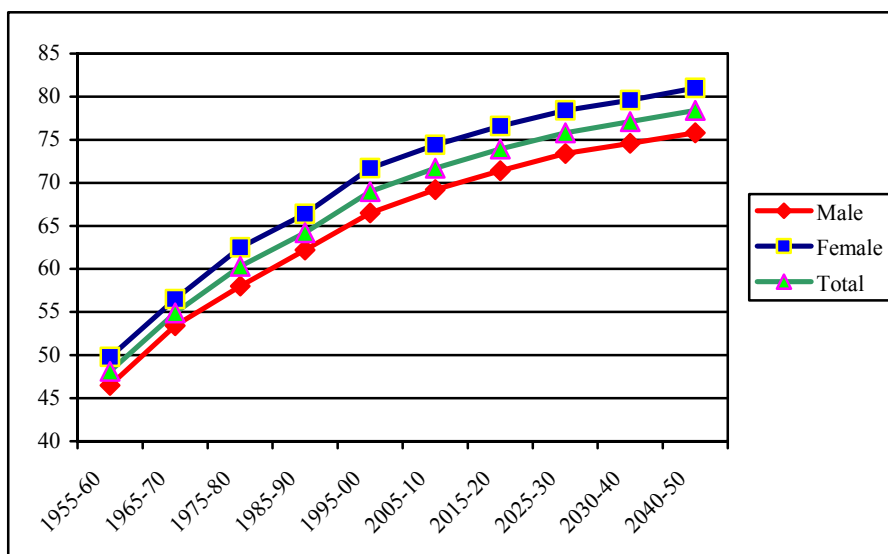


Source : TurkStat, 2007

Another indication that the population is in the ageing process are the figures related to the life expectancy at birth. According to the national population projections of TurkStat⁵ life expectancy at birth for male population in 2000 is 65.8, for female population 70.4. In the 1960s this was 51 for male population, 54 for female population. In 2030, these figures are expected to be increase for both the male and female population to 69.0 and 73.8, respectively (Figure 5.7). As seen clearly, life expectancy for both males and females will increase, but as they get older the gap between males and females will be wider. In the population census of 1990, the sex ratio, which was 82.3, among the elderly population shows the over plus continuity of the women with 83 they had in 2000. This situation coincides with the worldwide trends.

⁵ [TurkStat](http://www.tuik.gov.tr/VeriBilgi.do), Mid-year population projections by age groups, 2000-2020 (*Yaş grubuna göre yıl ortası nüfus projeksiyonları, 2000-2020*), <<http://www.tuik.gov.tr/VeriBilgi.do>>, accessed March 2007.

Figure 5.7. Life expectancy at birth for 1950-2050 period; Turkey



Source : TurkStat

According to the results of the census in the 1950-2000 period, the ratio of currently married elderly population has shown constant increase after 1975 (Table 5.7), while constant decrease is observed, as of 1985, in the ratio of those whose marital status is widowed. There are significant differences between the marital status of the elderly female and male population due to the differences in gender regarding mortality rate and marriage age. In addition to this, males tend to re-marry while such is not the case for females. 47.1% of female population of 65+ age is currently married, while this ratio in male population is 84.6%. Likewise, 50,4% of female population is widow, while such ratio in male population is 13,2%.

Table 5.7. Percent distribution of elderly by marital status and years in Turkey

Census Year	Single	Married	Widowed	Divorced	Total
1950	3,4	42,6	53,0	1,0	100
1955	3,2	46,2	49,6	1,0	100
1960	1,5	50,0	47,5	1,0	100
1965	1,6	51,3	45,9	1,1	100
1970	1,6	57,1	40,2	1,1	100
1975	5,9	56,9	35,7	1,5	100
1980	1,7	58,4	38,9	1,1	100
1985	1,6	57,6	39,9	0,9	100
1990	1,6	60,2	37,2	1,0	100
<i>1990 Males</i>	<i>1,9</i>	<i>81,2</i>	<i>15,9</i>	<i>0,9</i>	<i>100</i>
<i>1990 Females</i>	<i>1,4</i>	<i>42,9</i>	<i>54,6</i>	<i>1,0</i>	<i>100</i>
2000	1,2	64,1	33,5	1,2	100
<i>2000 Males</i>	<i>1,3</i>	<i>84,6</i>	<i>13,2</i>	<i>0,9</i>	<i>100</i>
<i>2000 Females</i>	<i>1,2</i>	<i>47,1</i>	<i>50,4</i>	<i>1,3</i>	<i>100</i>

Source : Başbakanlık Devlet İstatistik Enstitüsü, (2002) and Ünalın (2000)

When the employment status of the elderly population in 2000 is examined (Table 5.8), it is observed that high ratio of male population have declared their employment status as self employed. Compared to the results of 1990 Population Census, this ratio, which is 80.2% (Ünalın, 2000), has increased to 86%. 71% of the elderly female population has declared respective employment status as unpaid family worker. This ratio is 82% in the 1990 Census. When the distributions for the two census years are compared, it is observed that the ratio of elderly who have declared their employment status as “self employed” and “employer” has increased, while the ratio of “unpaid family workers” and “employee” tends to decrease.

Table 5.8. Percentage distribution of elderly population by age group, sex and employment status in Turkey, 2000 ⁶

	Employee	Employer	Self employed	Unpaid family worker	Total
Male	6,3	2,0	86,0	5,7	100
Female	2,6	0,3	26,1	71,0	100
Total	4,5	1,2	57,8	36,4	100

Source : Başbakanlık Devlet İstatistik Enstitüsü, 2002

⁶ These rates are calculated from the data of 2000 Population Census, by using the figures in its article No. “5.32 Employed population by age group, employment status and sex” table and by distributing the “not known” alternative proportionately.

V.4. COMPARISON OF POPULATION AGEING STAGES OF TURKEY WITH THOSE OF EUROPEAN UNION

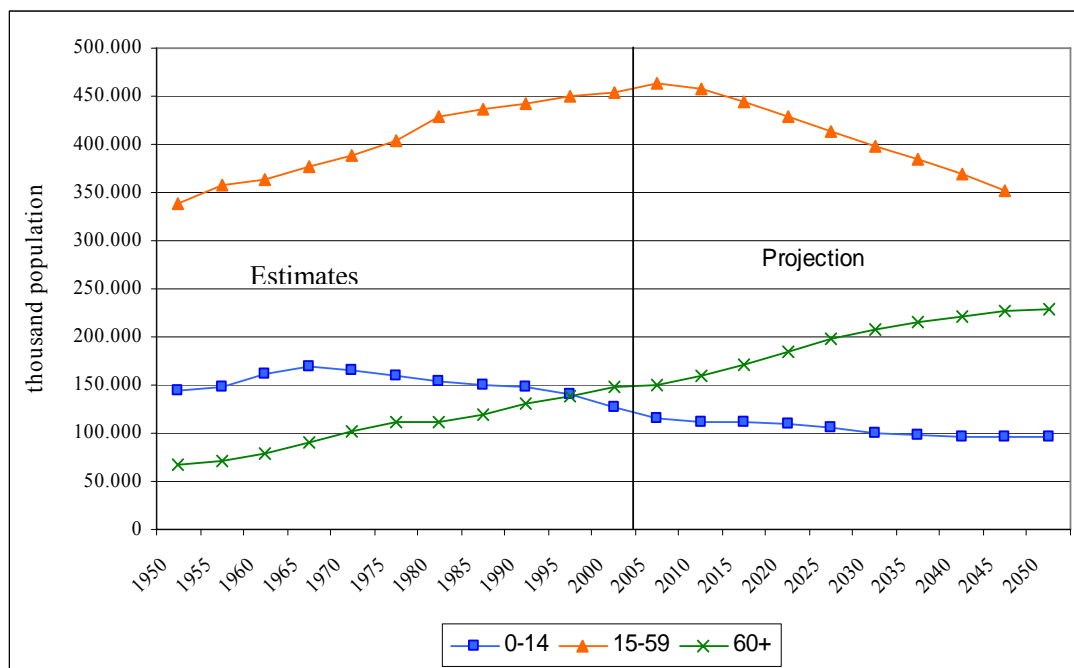
The region most affected by population ageing is Europe. Being a continent with the most intense population increase in the eighteenth century, Europe is facing in the 21st Century a rather large demographic problem with rather low levels of population increase. The population of European continent rose to 548 million from 422 million by one-third through the period 1900 to 1950. In the second half of the century European continent showed the same rate of increase and reach 727 million in 2000. However, today in Europe the crude birth rate is around 8-10 per thousand. According to statistics released by European Council, population of 17 (Belarus, Bulgaria, Croatia, Czech Republic, Estonia, Germany, Greece, Italy, Latvia, Lithuania, Moldova, Romania, Russia, Slovenia, Sweden and Ukraine) countries in European continent is declining (Demeny, 2003).

In Europe, problems have arisen as a result of decreasing marriages, dropping fertility rates, decreasing parenting desire in married couples, rooting of a way of living in solitude and gradual isolation and trivialization of family structure, and the share of aged population in the total population has increased by the decrease in the young population share. While the share of those in 65 age group and over is approximately 15% in Europe in 2000, it is estimated that this ratio shall rise approximately to 28% in 2050⁷. That is, more than one out of every four people shall be in the 65 age group or over in 2050. Southern Europe, where aged people constitute 17% of the population in 2000, is the oldest region of the world. This ratio is expected to reach 31% in 2050. While the ratio of child population is 17.5% in Europe in 2000, this ratio is estimated to drop to 15% in 2050; and the ratio of the elderly (60+) is estimated to rise from 20% to 35%. Therefore, 2.4 elderly are

⁷ Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2006 Revision and World Urbanization Prospects: The 2005 Revision, <http://esa.un.org/unpp>, Friday, August 08, 2008; 9:03:41 AM.

expected against 1 child in Europe. Again, it is expected that the median age, which is 38 in 2000, is estimated to rise to 47 in 2050⁸ (Figure 5.8).

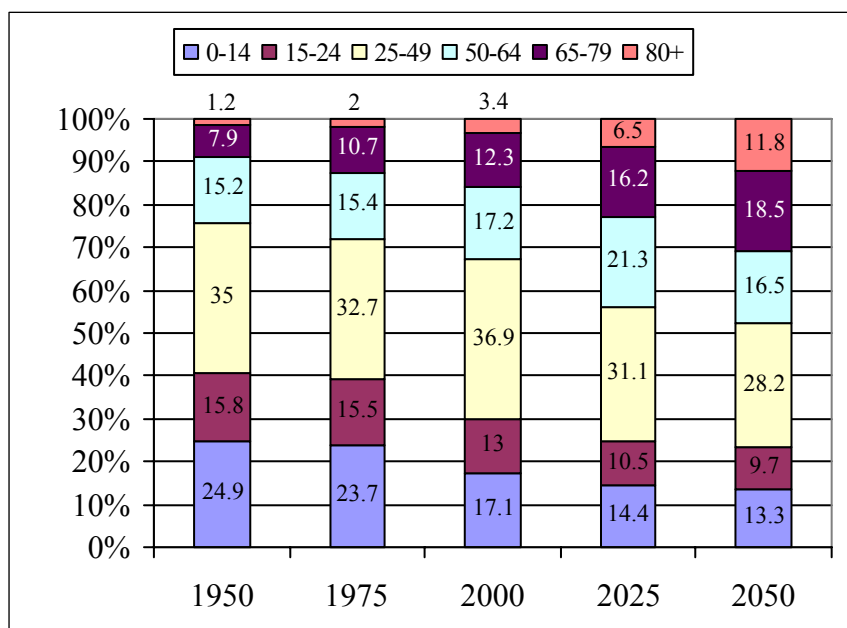
Figure 5.8. Europe's Population by age groups, 1950-2050



Source : United Nations, 2007b

When Figure 5.9. including the variation of the percentage of the age groups of 25 countries which are members of European Union as per years, a continuous drop is observed in “0-14”, “15-24”, “25-49” age groups. On the other hand a continuous increase is estimated in “65-79” and “80+” age groups in 1950-2050.

⁸ <http://esa.un.org/unpp/p2k0data.asp>

Figure 5.9. The population distribution of EU25 by age groups, 1950-2050⁹

The dependency ratio, one of the demographic indicators, is an important indicator concerning the ageing of population. Those who participate in production have to produce adequately for those not participating in production in order to provide the production and consumption equilibrium. This is named “dependency ratio”. It is seen that dependency ratio of Europe is at the level of 47% in 2005 while this is 51% in Turkey (Table 5.9). While the dependency ratios of young and old populations have similar weights in Europe, young dependency ratio in Turkey (43%) is rather higher than aged dependency ratio (8%) in 2005. The highest dependency ratio of 2050 is expected to be realized in Italy (65%) and Spain (68%), and the lowest ratio in Luxembourg.

⁹ Source : UN World Population Prospects (2002 Rev.) and Eurostat 2004 Demographic Projections (Baseline scenario)

Table 5.9. Dependency Ratios in Europe¹⁰ and Turkey (Medium variant) 1950-2050¹¹

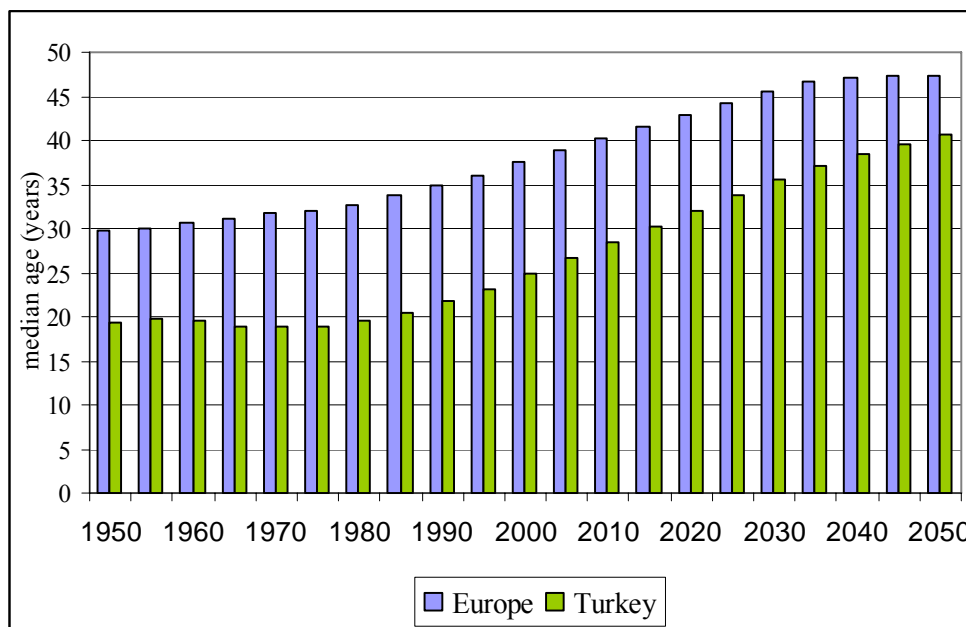
Year	Europe ¹⁶			Turkey		
	Total	Child	Old-age	Total	Child	Old-age
1950	52	40	13	76	71	6
1955	52	39	13	79	73	6
1960	55	41	14	85	78	6
1965	56	41	15	88	81	7
1970	56	39	16	85	77	8
1975	54	37	18	84	76	8
1980	53	34	19	82	73	8
1985	50	32	18	74	67	7
1990	50	31	19	66	59	7
1995	50	29	21	60	53	7
2000	48	26	22	55	47	8
2005	47	23	23	51	43	8
2010	46	22	24	47	39	9
2015	48	23	26	45	35	9
2020	52	23	29	44	33	11
2025	55	23	32	44	31	13
2030	59	23	36	45	30	16
2035	62	23	39	47	28	18
2040	66	23	42	49	28	22
2045	69	24	45	53	27	25
2050	73	25	48	56	27	29

When the ages of individuals constituting the population are sorted from the smallest to the biggest, the age just at the middle shows the “median age”. It is seen that population becomes younger when median age drops, and older when it rises. Median age in Europe is approximately 39 in 2005 and it is predicted to reach 47 years in 2050. As seen, the difference between Turkey and Europe is rather high (Figure 5.10).

¹⁰ Europe means Eastern, Southern, Northern and Western Europe. It includes all countries (49 countries except Turkey) in Europe Continent.

¹¹ <http://esa.un.org/unpp/p2k0data.asp> Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, *World Population Prospects: The 2006 Revision and World Urbanization Prospects: The 2005 Revision*, <http://esa.un.org/unpp>, Friday, May 23, 2008; 4:50:08 PM.

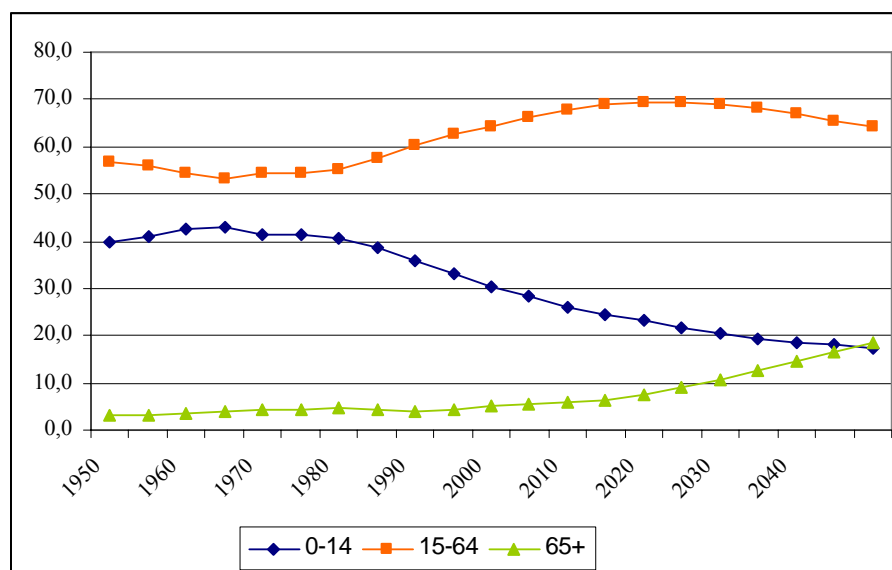
Figure 5.10. Median age (years) in Europe and Turkey (Medium variant) 1950-2050



Source : United Nations, 2007b

The increase of aged ratio in total population of Europe is expressed by some sociologists in the direction that Europe shall be known in the future as an old continent. Some studies even say that Europe shall feed an aged population almost as large as Turkey and be forced to pay social security, social support policies to such a population mass (Murat, 2002).

Turkey has experienced the process which western countries had experienced in more than 100 years in 40-50 years and is expected to complete this process in 20-30 years. The most serious variation in the population structure in Turkey in 30 years is that the productive population in the working age, between 15-64 ages, shall increase both in numbers and ratio (Figure 5.11). This situation is qualified as a development which shall produce a complex impact on labor force market. As long as the employment possibilities are increased in economy, this development shall have significant contributions in the growth process of the country, but otherwise it leads to very serious problems and drastic drops in the wages.

Figure 5.11. Change in age groups share in Turkey, 1950-2050.

The ageing processes of European Population, as shown in ageing index figures that appear in Table 5.10, show some regional variations.

Table 5.10. Ageing Index values of Europe, Spain, Denmark and Turkey

Ageing Index	1950	1975	2000	2025	2050
Europe	46.3	69.1	116.0	211.9	262.7
Eastern Europe	34.7	61.5	102.9	192.6	261.5
Western Europe	64.1	84.2	127.5	223.6	254.1
Northern Europe	62.9	81.7	107.6	192.9	223.0
Southern Europe	40.8	59.6	138.2	252.0	317.5
Denmark	50.9	82.8	109.5	201.6	209.9
Spain	40.4	52.1	147.9	283.1	386.4
Turkey	15.5	17.1	27.3 ¹²	61.2 ¹²	131.4 ¹²

Source : United Nations, 2007a

In order to compare the ageing process of the populations of Europe and two different countries in Northern and Southern Europe with Turkey, median age, ratio of aged population (65+ and 80+), life expectancy at birth and fertility rate indicators are considered. Population ageing processes in the countries located in Northern Europe such as Denmark, Estonia, Finland, Iceland, Ireland, Norway and Sweden show differences from those of the countries such as Italy, Portugal, Greece and

¹²

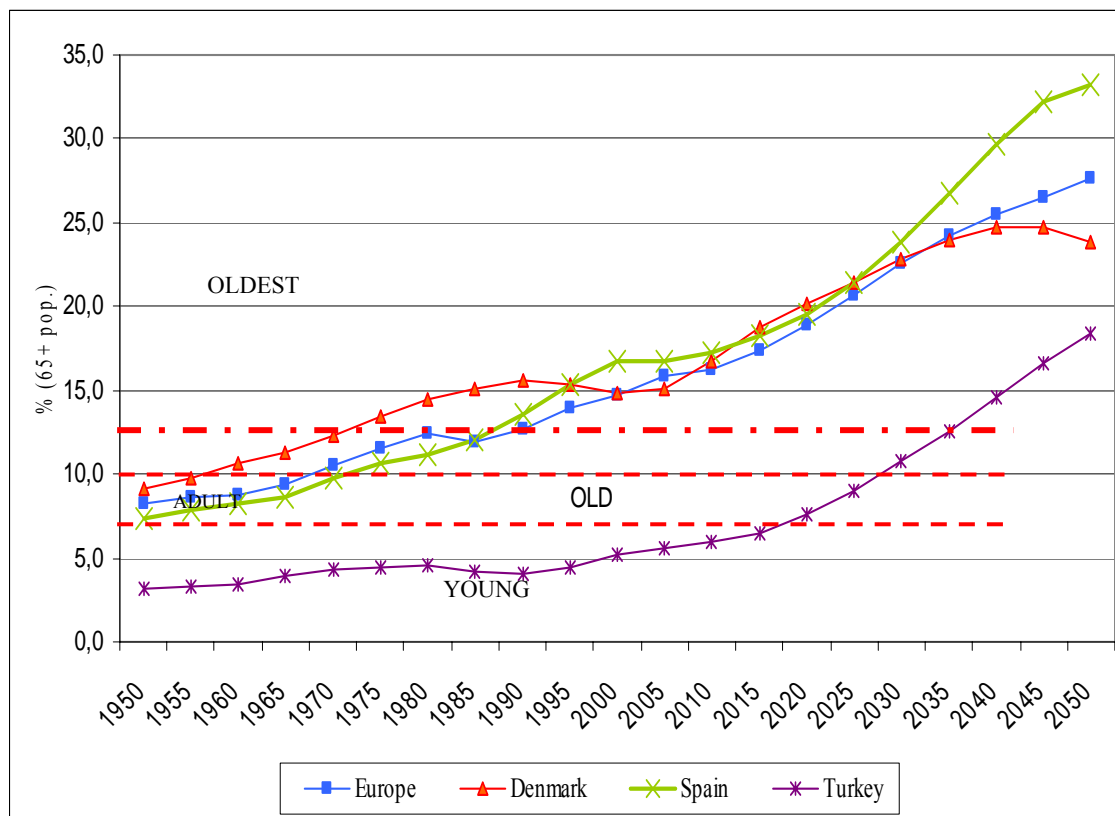
From this thesis calculation

Spain located in Southern Europe. For comparison, Denmark which 65+ population percentage was above the European average until 2005, but tend to drop later, and Spain which had a younger structure than European average until 1985, but has entered a rapid ageing process are selected representing the Northern and Southern Europe regions.

While a comparison is made between countries in this study, “World Population Prospects: The 2006 Revision Population Database” formed by the United Nations for regions, continents and countries according to development level is used as a data source. There are three basic reasons to use this database. First and most important, it is a database including the basic indicators concerning the population of all countries that enable to compare all countries altogether. Second, it points to the source of data while this database is formed, and these sources are in majority the official statistical offices of the countries. Third reason is the assumption that the comparison made by the data obtained from this single source containing many statistics shall reduce bias.

When Figure 5.12 including 65+ population ratios is explained, it is seen that Europe in general and the two subject countries (Denmark and Spain) have an aged population structure by the beginning of 1950s since the population ratio of 65+ age is higher than 7%. While the share of 65+ population in Spain is attaining values below Denmark and European average until 1995, 65+ population rate in this country has shown a rapid increase after that year. According to projection results, in 2020 Turkey shall reach the 65+ age population ratio of Europe in 1950, ratio of Denmark in 2025, and ratio of Spain after 2015. Turkey follows these countries with a difference of 35 years.

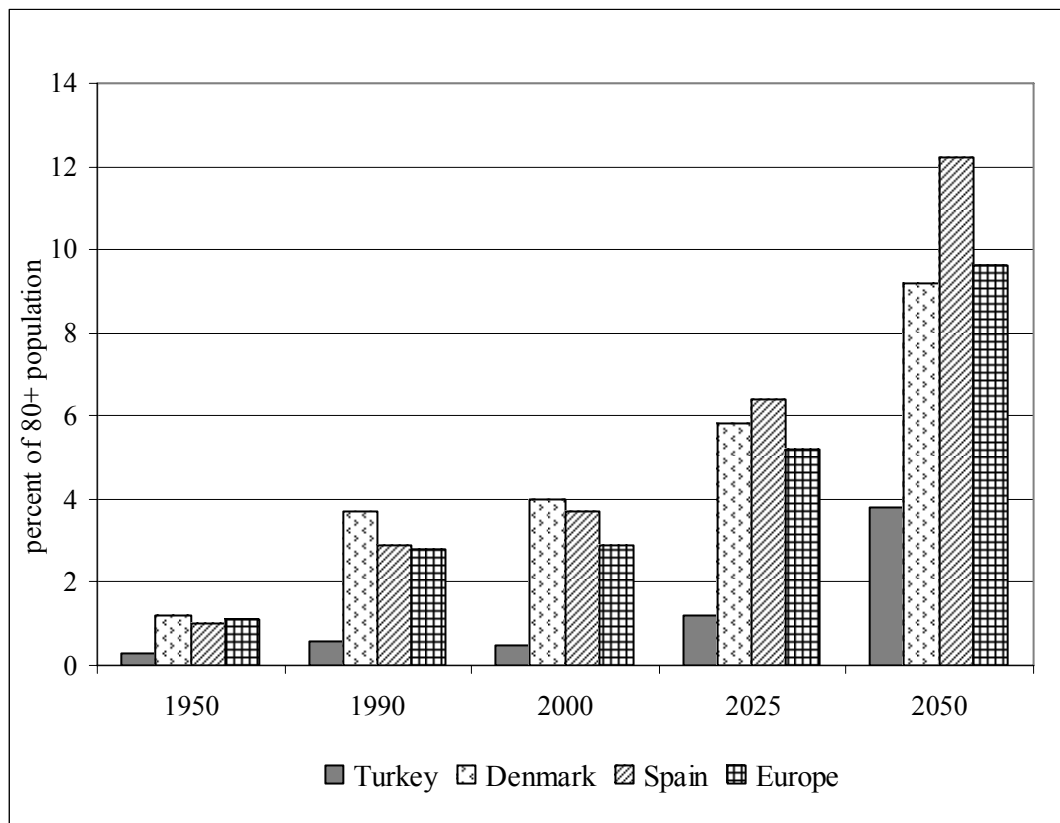
Figure 5.12. Proportion of population aged 65+ for Europe, Denmark, Spain and Turkey, 1950-2050



Source : UN, 2007b

When the variation of 80+ population ratio is examined (Figure 5.13), it is seen that 80+ population ratio of Turkey is considerably lower than that of Europe in general, Denmark and Spain. From the point of oldest-old population, Spain is estimated to exceed the ratios of Denmark and Europe by 2000, and the ratio of 80 and over population in Spain reach 12.2% in 2050. Since Spain is one of the countries of Europe where life expectancy at birth is highest, having a high ratio of oldest-old population may be an expected situation. Turkey is estimated to reach the ratio of 3.7% by 2050, where Denmark has reached this ratio in 1990 and Spain in 2000. However, the absolute population magnitude corresponding to this ratio is 3.8 millions for Turkey whereas it is 1.5 millions for Spain and 190 thousand for Denmark.

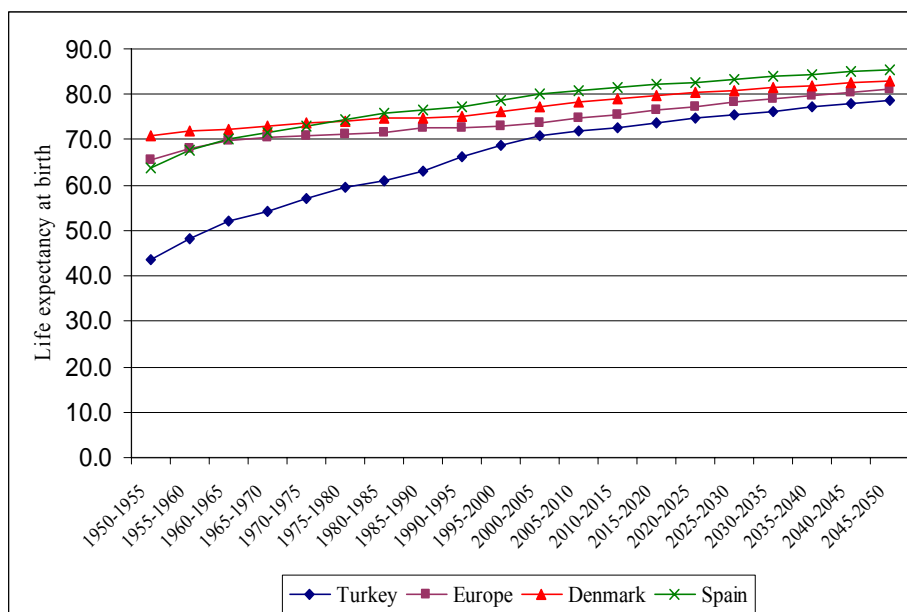
Figure 5.13. Proportion of population aged 80+ for Europe, Denmark, Spain and Turkey



Source : UN, 2007b

Looking at the life expectancy at birth values (e_0) (Figure 5.14), it is seen that Turkey tracks a trend to reduce the “life expectancy at birth” difference in 1950-2050 period, which is 22 years with Europe, 27 with Denmark, 20 with Spain in 1950. The e_0 difference in 2005-2010 period drops approximately to 3 years with Europe, approximately 7 years with Denmark and approximately 9 years with Spain; and according to the projection results, this difference is estimated to be 2.5, 4.5 and 7 years in turn in 2045-2050 period. While e_0 value of Denmark is both higher than Europe average value and Spain’s value in 1950-1980 period, by 1980, Spain has experienced a great improvement in the life expectancy at birth value. Today, Spain ranks second after Japan in the female life expectancy at birth value ordering with 83.1 years.

Figure 5.14. Life expectancy at birth (e_0) for Europe, Denmark, Spain and Turkey¹³

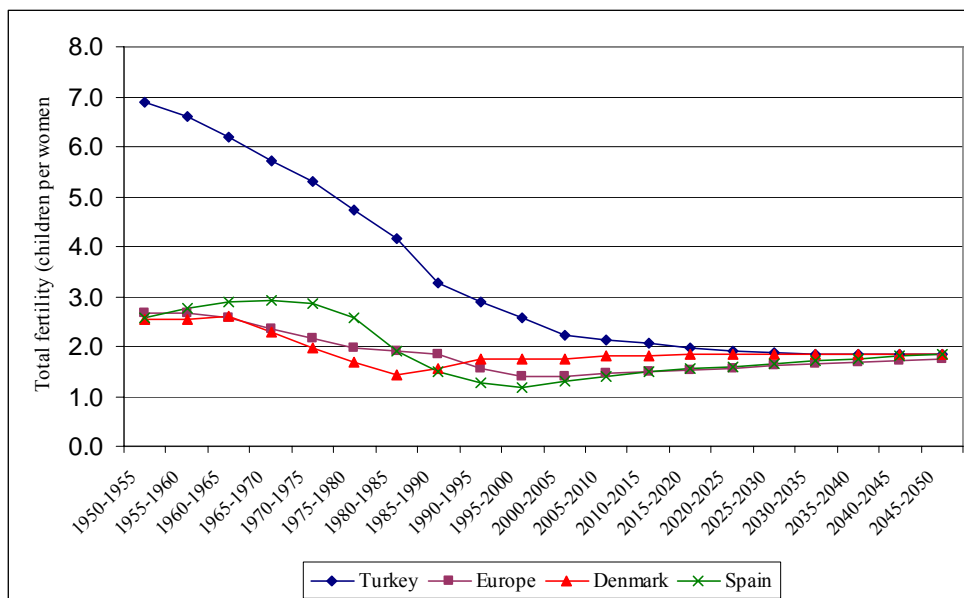


When 3 countries are compared from the point of total fertility rate, the relatively high fertility rate of Turkey, having a decreasing tendency following 1950, is estimated to reach the total fertility level of Spain and Denmark in 2020-2025 periods (Figure 5.15).

¹³

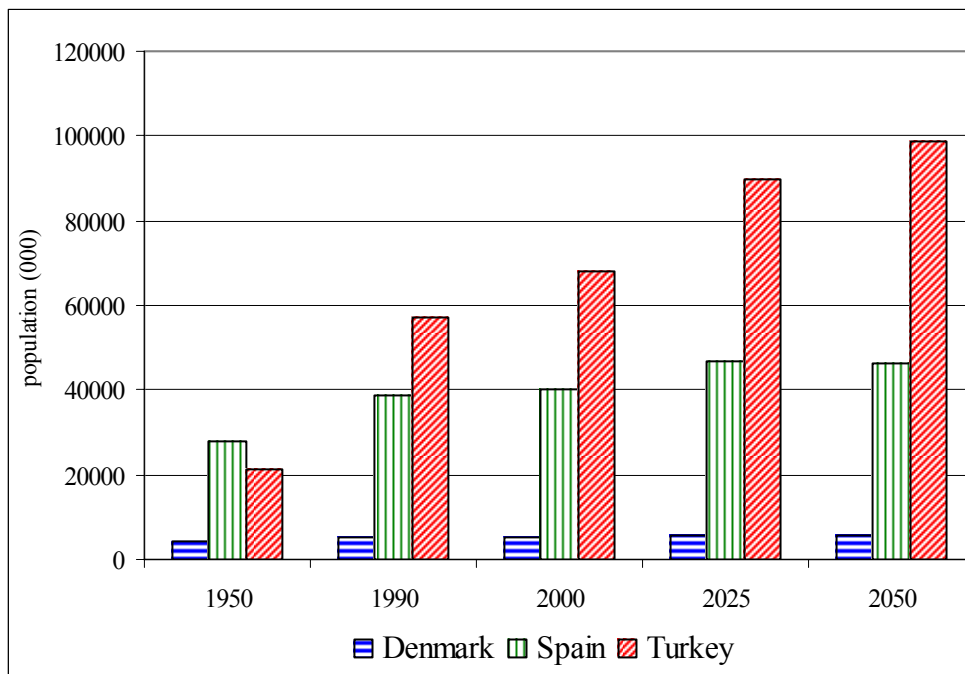
Source: Population Division of the Department of Economic and Social Affairs of the United Nations Secretariat, World Population Prospects: The 2006 Revision and World Urbanization Prospects: The 2005 Revision, <http://esa.un.org/unpp>, Friday, August 08, 2008; 3:20:42 AM.

Figure 5.15. Total fertility rate (children per women) for Europe, Denmark, Spain and Turkey; 1950-2050



Finally, since many comparisons are made with indicators such as ratio and rate, it is necessary not to overlook which population magnitude these ratios or indicator values indicate. With the purpose of emphasizing this, the population magnitudes and future estimates of the three countries are demonstrated in Figure 5.16. The absolute population magnitude of Turkey equivalent to 65+ population ratio by 2015 is equal to the total population of Denmark in 2000.

Figure 5.16. Total population for Denmark, Spain and Turkey for 1950, 1990, 2000, 2025 and 2050 years



Source : UN, 2007b

V.5. PRESENT POLICIES AND PRACTICES ON THE ELDERLY POPULATION IN TURKEY

The service provided to elderly people is conducted in two fields in Turkey. These are social security system and social service programs. Social security and social insurance issues ought to be thought of in the context of a social security system. Various services given to elderly people are in practice in Turkey. These are the certain services given to elderly people, social security applications, institutional care and social aid services. It has been pointed out in the five-year development plan that these issues are necessary. The Law of the Social Services and Association for the Protection of the Children was legislated with the aim of gathering the services together, against the unprogrammed and disorganized services conducted by some charities and public corporations.

V.5.1. Historical Development¹⁴

When the history of the services given to elderly people is examined, it is seen that the types of the aids have taken on shape according to the social and cultural structure and the beliefs of the communities. In the past, elderly people were protected in accordance with the beliefs and customs and with the supply aid from the public. It is understood from the existence of the old institutions that the elderly people were helped and protected in every period of Turkish Society. The first institute which gave the protection service to the elderly people was established in Selçuk Period in the 11th century. It has been found that there were a Darülreha¹⁵ by Reha Oğulları in Sivas in the 11th century. It is known that alms houses, soup kitchens and lodges served to elderly people who were in need in the Ottoman period. Alms houses, the acts of foundations and the hospitals fulfilled the services related to the nursing of the elderly people. As is known, social services were provided by foundation boards until the 19th century. The public corporations and charities serving in this field began to be founded in the 19th century. Besides serving the groups in need, these foundations also served to elders. Among these, Turkish Red Crescent Society (KIZILAY) founded in 1868 and Alms House founded in 1895 are the ones which were established in the Ottoman Period and have stood till present day. Alms House firstly came into service in order to protect disabled and poor men, women and homeless children in 2nd Abdulhamid Era. Today, it is a foundation belonging to Istanbul Municipality and is ruled by circulating capital. Its aim is to provide a comfortable life, shelter the people who are in need and provide jobs for them, save the people from hopeless feelings without discrimination based on religion and race¹⁶.

¹⁴ http://www.shcek.gov.tr/hizmetler/yasli/Yasligiga_Genel_Bakis.asp (accessed in 10 August 2008)

¹⁵ rest or retirement home

¹⁶ http://www.shcek.gov.tr/hizmetler/yasli/Yasligiga_Genel_Bakis.asp

V.5.2. The Present-Day State¹⁷

Various services and institutions are available in order to meet the needs of the elders in Turkey at the present day. Also, there are foundations founded with the aim of protecting, healing, rehabilitating the elderly people in need and meeting the psychological and social needs of them. The task of the care and aid to old people was given to municipalities in 1930 under the Law of Municipality. Municipal aid to elderly people was established under this law and municipalities and begin to open rest houses to shelter those people.

With the legislation of the law in 1963, Social Services Head Office was founded and was linked to the Ministry of Public Health and Welfare. From that date, the government has undertaken the responsibilities of the plans, programs and executive role of the services related to the elderly people directly. The 2828 Law of Social Services and Association for the Protection of Children (SHCEK) was adopted in 1983: With this law, the foundation undertook all the tasks related to welfare of the elderly people and a new administrative structure was formed.

The aim of the Law of Association for the Protection of Children is to arrange the social activities brought to families, children, disabled and old people and others who are in need of assistance. In the same law, a definition was created for rest houses where old people are sheltered and protected: 'Rest homes are the boarding social service foundations founded with the aim of protecting and taking care of elderly people in a peaceful atmosphere by meeting the social and psychological needs of them'. Studies have been performed in accordance with the ultimate principals stipulated in the Law of Social Services and Association for the Protection of Children by reexamining the services country-wide, to improve the existing services and to launch new services. Opening nursing homes are at the head of the studies. In the politics of the opening rest houses, these foundations are thought to be

¹⁷ Source: http://www.shcek.gov.tr/hizmetler/yasli/YasliLiga_Genel_Bakis.asp

put in the investment plans considering the social and economics structure, the public and private sectors are encouraged and guided.

Below is a brief summary of the email I received on January 10, 2008, providing information about the Geriatric Nursing Homes in Turkey, the distribution of these Geriatric Nursing Homes, the services provided by this institution for the elderly and the disbursement for the elderly population, as an answer to my application in January, 2008 to the Social Services and Child Protection Agency, The (SHÇEK) within the context of Right to Information Act:

- In Turkey, the first rest home under the General Directorate of the Social Services and Child Protection Agency,(SHÇEK) was founded in Konya in 1966. The first Geriatric Solidarity Center was opened in İzmir in 1991.
- At present, affiliated under this General Directorate, in 45 provinces there 70 Geriatric Nursing Homes, sleeping 7552.
- It is explained that the description of the elderly that are in need of care¹⁸ , identification and the analysis of the elderly, and all the procedures to be applied concerning the issue are held in accordance with the Decree regarding Rest Homes and Geriatric Health Care and Rehabilitation Centers Regulations, which was published and put into force on 21.02.2001 in the Official Gazette number 24325.

Geriatric Solidarity Center

To satisfy the social and psychological needs of the elderly that do not need residential institution care and that live in homes regardless of their socio-economic status, to prevent their being isolated Geriatric Solidarity Centers were established in accordance with the Decree 2828, article 9, item 'j' , to provide support for the

¹⁸ It includes individuals who are at the age of 60 and above, who are in need, who needs continuous care and rehabilitation, who are socially and economically incompetent, and who need protection and care.

elderly that live alone or with a family for involving them in activities to do in their spare time, to improve their life standards, to help them with their daily activities, to provide vocational consultancy and guidance, to provide support for things they have difficulty handling depending on their own resources, to provide opportunities for them to develop social relations and activities are all under the responsibility of the Social Services and Child Protection Agency. The SHÇEK provides support and service for the elderly through 5 Geriatric Solidarity Centers; two of them in Ankara, one in Çanakkale, one in İzmir and one in Eskişehir. The total number of the elderly members is 965 (757 female, 208 male); the distribution is as follows: 207 in Ankara Emek Geriatric Solidarity Center, 44 in Mamak Geriatric Solidarity Center, 185 in Çanakkale Geriatric Solidarity Center, 458 in İzmir Geriatric Solidarity Center, and 71 in Eskişehir Geriatric Solidarity Center .

Geriatric Service Center

Considering the changing and improving social needs in Turkey, the description of Daily Care and Home Care Services, intended to diversify the geriatric services and the description of the Geriatric Service Centers, which will undertake the services, were included in Decree 5579, concerning “The Amendment in the Social Services and Child Protection Agency Law”, which was put into force on 01.02.2007. In this respect, to determine the principles for assisting the elderly who would not prefer nursing through geriatric service centers to live independently at their homes, the quality of home care and daily care services and determining the type and quality of the protective and preventive psychological and social services to improve the life quality of the elderly, the studies on “The Regulations Concerning the Day Care and Home Care Services to be offered at the Geriatric Service Centers”¹⁹, which is estimated to be put into practice in 2008, are under construction.

Below is a summary of the studies conducted to specify and improve the social service methods and techniques that will be provided for the elderly who are in

¹⁹“Yaşlı Hizmet Merkezlerinde Sunulacak Gündüzlü Bakım İle Evde Bakım Hizmetleri Hakkında Yönetmelik”

need of care and/or who are poor by the SHÇEK Social Services Education Center Institution from 2000 on:

“From 01.01.2000 on, our institution conducted the below given in-service training programs, intended for the personnel working in affiliated institutions (Rest Homes- Rest Home Geriatric Care and Rehabilitation Centers) to improve the efficiency of the services; September 24-28, 2001 “In-service Training Program intended for Rest Home Managers”, with 58 participants; January 12-16, 2004, “In-service Training Program intended for Assistant Managers of Rest Homes”, with 59 participants; September 11-15, 2006 “In-service Training Program intended for Rest Home Managers”, with 64 participants; September 25-29, 2006 “In-service Training Program intended for Professionals Working in Rest Homes (Social Workers, Psychologists, Physiotherapists)”, with 59 participants...”

Table 5.11. The budget allocated for the elderly between 2000-2007 by SHÇEK

Year	Budget
2000	5.549.000.000.000 TL
2001	8.920.240.000.000 TL
2002	11.798.000.000.000 TL
2003	31.834.400.000.000 TL
2004	56.062.300.000.000 TL
2005	60.418.500.000.000 TL
2006	71.076.000 YTL
2007	78.801.600 YTL

As a result of my application numbered 38388, dated 29.02.2008, the average annual cost of an aged person accommodating at nursing homes run by SHÇEK, obtained from the Division of The Elderly Care Services, is exhibited in Table 5.12. Within the cost involved are expenditures such as health-care, clothing, and meal.

Data related to 2007 couldn't be obtained since the studies into cost haven't been finalized yet.

Table 5.12. The average annual cost of an aged person accommodating at nursing homes run by SHÇEK (including all expenditures such as health-care, clothing, meal)

Year	Average annual cost per elderly	
	YTL	Euro
2004	10.056	5.691
2005	10.464	6.266
2006	13.416	7.466
2007	17.100	9.618

Source : My formal application numbered 38388, dated 29.02.2008

Table 5.13. The number and the percentage of the elderly at 80 and above 80 age in nursing homes and center for elderly care and rehabilitation²⁰

Year	80 and over (number)	Per cent (%)
2000	1 402	25
2001	1 465	30
2002	1 307	26
2003	1 513	29
2004	1 528	26
2005	1 293	23

According to Table 5.13, the number of the elderly in nursing homes and center for elderly care and rehabilitation is 1402 in 2000, in 2003 1513 and as for 2005, 1293.

²⁰ Source: Social Services and Child Protection Agency, 2007

When the Rest Homes in Turkey are considered in terms of their provincial, institutional and capacity distributions, the following are observed:

- The first one being in 1832, the oldest Rest Homes were founded by minorities and all the Rest Homes founded by minorities are in İstanbul.
- Of all the Rest Homes in Turkey, SHÇEK-run Rest Homes have the highest capacity by 38%.
- The number of the Rest Homes opened by local governments is restricted to one per city; in big cities like İstanbul and Ankara, which is too few for a service among the responsibilities of local governments.
- There are only 485 social workers employed in Provincial Directorates, Rest Homes and Geriatric Care and Rehabilitation Centers under SHÇEK.

Table 5.14. Numbers, per cent and distributions of Rest Homes in Turkey

Institute	Capacity	%	Number of Province
SHÇEK-run Rest Homes	7.607	38	Total (71)
Governmental Rest Homes	2.442	12	Ankara (1), İstanbul (3), İzmir (1), Manisa (1), Toplam (6)
Local government-run Rest Homes	1.990	10	Adıyaman (1), Ankara (5), Aydın (1), Balıkesir (1), Burdur (1), Bursa (2), Erzurum (1), İstanbul (1), İzmir (3), Kayseri (1), Manisa (1), Muğla (1), Samsun (1), Sivas (1), Şanlıurfa (1), Yozgat (1), Toplam (19)
Rest Homes run by Unions and Associations	2.360	12	Afyon (1), Ankara (5), Antalya (1), Balıkesir (3), Çanakkale (2), Düzce (1), Eskişehir (1), Isparta (1), İstanbul (11), İzmir (3), Manisa (1), Mersin (1), Nevşehir (1), Sakarya (1), Toplam (33)
Private- run Rest Home	4.457	22	Adana (1), Ankara (18), Antalya (5), Aydın (2), Bursa (1), Denizli (1), İstanbul (44), İzmir (25), Kırıkkale (1), Mersin (6), Nevşehir (1), Sivas (1), Uşak (1) Toplam (107)
Minority Rest Homes	991	5	İstanbul (7)
TOTAL	19.847	100	

Home-based care

To support the elderly in their own houses in a family atmosphere financially and psychologically was adopted as a basic principle in the 5th five-year development plan. Aged population and the problems and needs of this population in the changing community tend to increase. The basic principle in this field is to support them in

their own houses, in a family atmosphere financially and psychologically. The allotment of the certain parts of the existing rest homes for the elders confined to bed will ease the burdens of the families and the rate of the bed occupation of the health foundations will decrease.

Nursing homes (or rest homes) were founded with the aim of protecting and meeting all kinds of needs of the elderly people who are socially and financially poor, who don't have the need of consistent medical care and who aren't disabled and don't have difficulty in doing his own bodily wants.

The observation related to the income of the elderly people's education performed by SHÇEK Older Peoples Services in the December of 1992, gives a section about the elderly people that stay in the rest homes. Old men are more than old women in nursing homes. More than half of the elderly are taken care of at charge. The elderly staying at nursing homes located in the major three provinces, Ankara, Istanbul and Izmir, make use of these facilities at a set charge. A monthly allowance is provided for those staying at no charge, the amount of which is fixed, in accordance with the regulation of nursing homes article 41, by the multiplication of coefficient of the salary of the civil servants by 60. Nearly half of those staying at nursing homes are illiterate. The rate of those holding a higher school degree is very low. The rate of illiteracy in women is higher than that of men. The source of income of those staying at a fix charge stems from the salary provided by social security institutions. As well as the present institution services, new service models are tried to be developed to provide these services closely within the society and with their family.

CHAPTER VI
DATA ANALYSIS:
DESCRIPTIVE STATISTICS ON POPULATION AGEING

This chapter of the study presents results of the descriptive analysis of population projections regarding population ageing in Turkey. Basic demographic indicators regarding ageing were calculated by employing TurkStat projections. The social, demographic and economic characteristics of elderly population using data from latest nationwide 2003 Demographic and Health Survey and the last population census in Turkey are also described.

VI.1. BASIC INDICATORS REGARDING POPULATION AGEING

The analysis utilizes basic demographic indicators including age structure of the population, the economic burden on the productive population, changes in the age structure of the population, ageing index, etc. In this study, for the calculation of the demographic indicators of the ageing of the population, TurkStat projections¹ (Annex B) which are based on 2000 Census of Population and TDHS data are used.

TurkStat generates its population projections with three alternatives as high, medium and low. The results of the medium level projection have been used in this study. The change in the rate of fertility in this projection has been assumed to be similar to the expected change of the world average in the future. In respect of mortality, the experience that the continental Europe has experienced over the last 50 years has been accepted as what will be encountered in Turkey. In a program titled as FIVFIV in which five-year programs that are prepared for personal computers (IBM-PC compatible) projections are made according to cohort component method. Said

¹ [TurkStat](http://www.tuik.gov.tr/VeriBilgi.do), Mid-year population projections by age groups, 2000-2020 (*Yaş grubuna göre yıl ortası nüfus projeksiyonları, 2000-2020*), <<http://www.tuik.gov.tr/VeriBilgi.do>>, accessed March 2007.

program makes projections according to single year and also to other alternatives as well. When the TurkStat, Address Based Population Registration System is completed, it shall revise the both the national and address dependant population projections.

VI.1.1. Ratio of elderly

In order to categorize a community as old, the share of 65+ population in the total population should at least be 7% according to the definition of the United Nations. According to this definition, the communities or country populations divide into 4 groups from the point of old population:

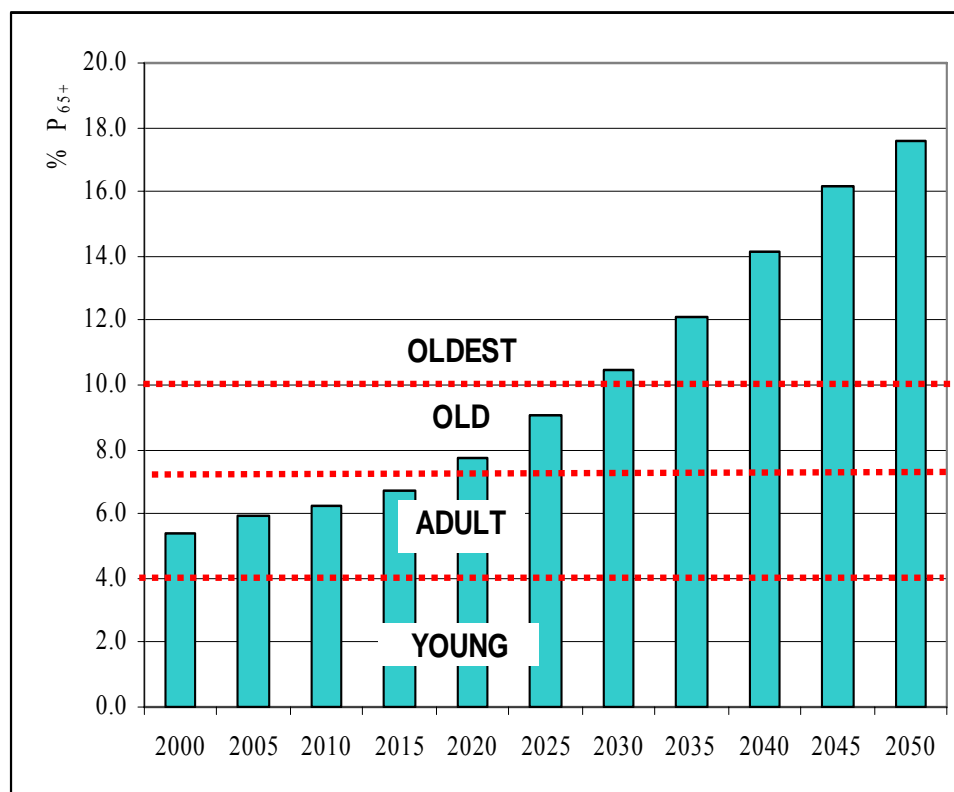
- i. Young population : Population over 65 ages is less than 4%,
- ii. Adult population : Population over 65 ages is between 4-7%.
- iii. Old population : Population over 65 ages is between 8-10%.
- iv. Very old population : Population over 65 ages is over 10%

Table 6.1. Changes of share of 65+ population in total population by years, 2000-2050

Years	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
P₆₅₊ (000)	3.622	4.251	4.798	5.440	6.537	7.920	9.486	11.281	13.463	15.536	16.983
Total population (000)	67.420	72.065	76.505	80.523	84.302	87.757	90.805	93.285	95.061	96.103	96.500
% of P₆₅₊	5,4	5,9	6,3	6,8	7,8	9,0	10,4	12,1	14,2	16,2	17,6

It is seen that the population in Turkey over 65 ages which is 5.4% in 2000 shall be 7.8% in 2020. This ratio is expected to be 10.4% in the year 2030 (Table 6.1 and Figure 6.1). Considering the situation of the distribution of 65 ages and over within the total population, Turkey can be assessed as an adult population. However, when the trends are considered, it is observed that Turkey shall soon enter the old population category. Accordingly, Turkey shall be placed in the very old population class from 2030.

Figure 6.1. Share of 65+ population in total population by years, 2000-2050



VI.1.2. Dependency ratios

The ratio of the population of 0-14 ages and 65 ages and over to the population of 15-64 ages shows the “dependency ratio” in a country. This ratio expresses the supporting population in working age to the population which is not in the working age and going out of the working age. The dependency ratio in Turkey shall decrease until 2025 and then increase steeply after 2035 (Table 6.2). The coming 17 years may convert to a “window of opportunity” being a period of increasing work-capable population. If adequate social security funds can not be deposited in this period, considerable funding for the finance of the old population through the government budget shall be unavoidable.

Table 6.2. Total dependency ratios by years in Turkey; 2000-2050

Years	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
P₀₋₁₄	20,208	20,499	20,321	19,671	19,552	19,374	19,182	18,768	18,195	17,611	17,071
P₆₅₊	3,622	4,251	4,798	5,440	6,537	7,920	9,486	11,281	13,463	15,536	16,983
P₁₅₋₆₄	43,590	47,315	51,386	55,412	58,213	60,463	62,137	63,236	63,403	62,956	62,446
Total dependency ratio	54.7	52.3	48.9	45.3	44.8	45.1	46.1	47.5	49.9	52.6	54.5

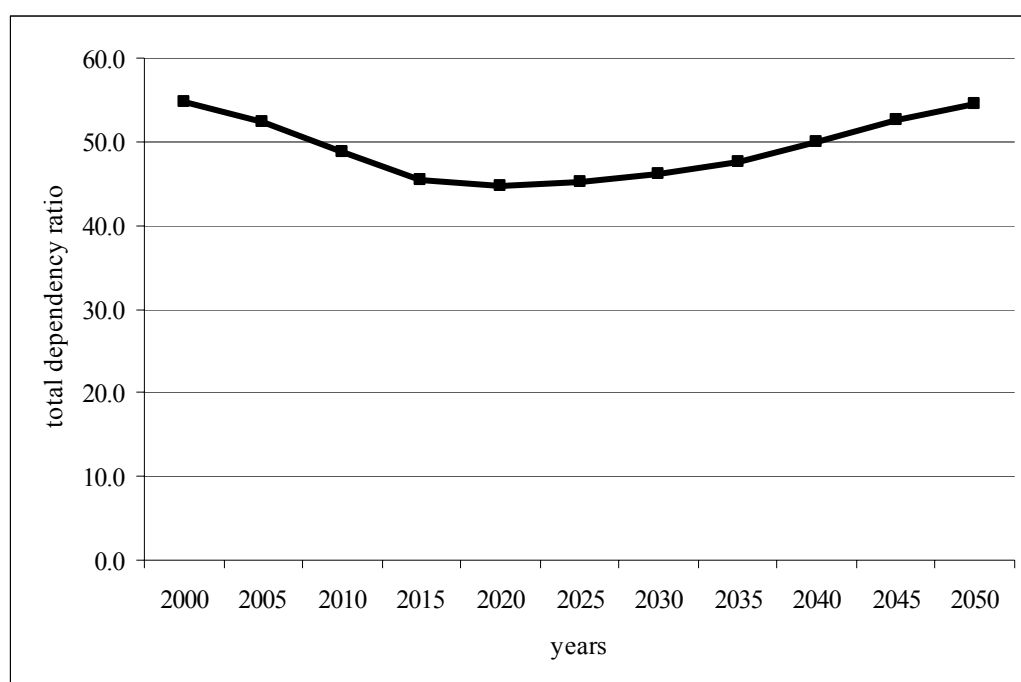
Figure 6.2. Total dependency ratios by years in Turkey

Figure 6.3. The child dependency ratios in 2000-2050 periods

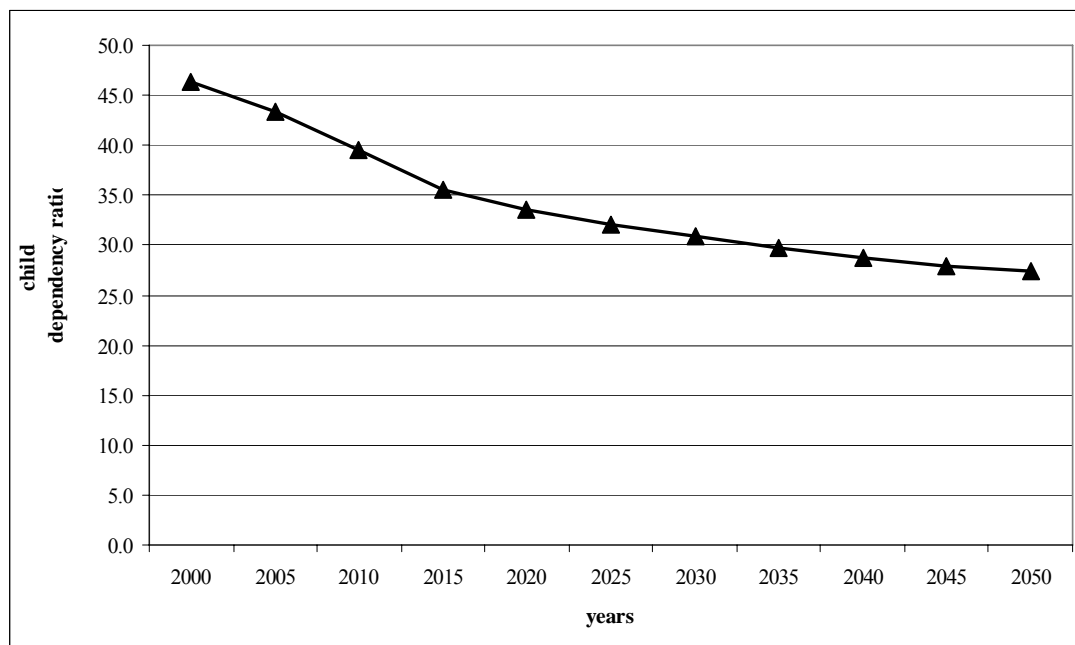


Table 6.3. The child dependency ratio in Turkey, 2000-2050 period

Years	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
P₀₋₁₄	20.208	20.499	20.321	19.671	19.552	19.374	19.182	18.768	18.195	17.611	17.071
P₁₅₋₆₄	43.590	47.315	51.386	55.412	58.213	60.463	62.137	63.236	63.403	62.956	62.446
Child dependency ratio	46,4	43,3	39,5	35,5	33,6	32,0	30,9	29,7	28,7	28,0	27,3

While the child dependency ratio in Turkey drops every year as expected, the old-age dependency ratio increases. Similar status has been observed also in developed countries. Old-age dependency ratio is increasing for at least 150 years in the developed countries. The increase rate of this ratio dramatically dropped after the period of baby boom experienced following the Second World War. However, when the retirement age of this generation arrives, the old-age dependency ratio shall unavoidably increase. Especially in Japan and Europe, this ratio is expected to rise dramatically. For instance, the share of the population of 65 ages and over in the total population in Japan is expected to rise from 17 percent to 30 percent in 2030

Table 6.4. The old-age dependency ratio (old persons dependence index)

Years	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
P_{65+}	3.622	4.251	4.798	5.440	6.537	7.920	9.486	11.281	13.463	15.536	16.983
P_{15-64}	43.590	47.315	51.386	55.412	58.213	60.463	62.137	63.236	63.403	62.956	62.446
di_0	8,3	9,0	9,3	9,8	11,2	13,1	15,3	17,8	21,2	24,7	27,2

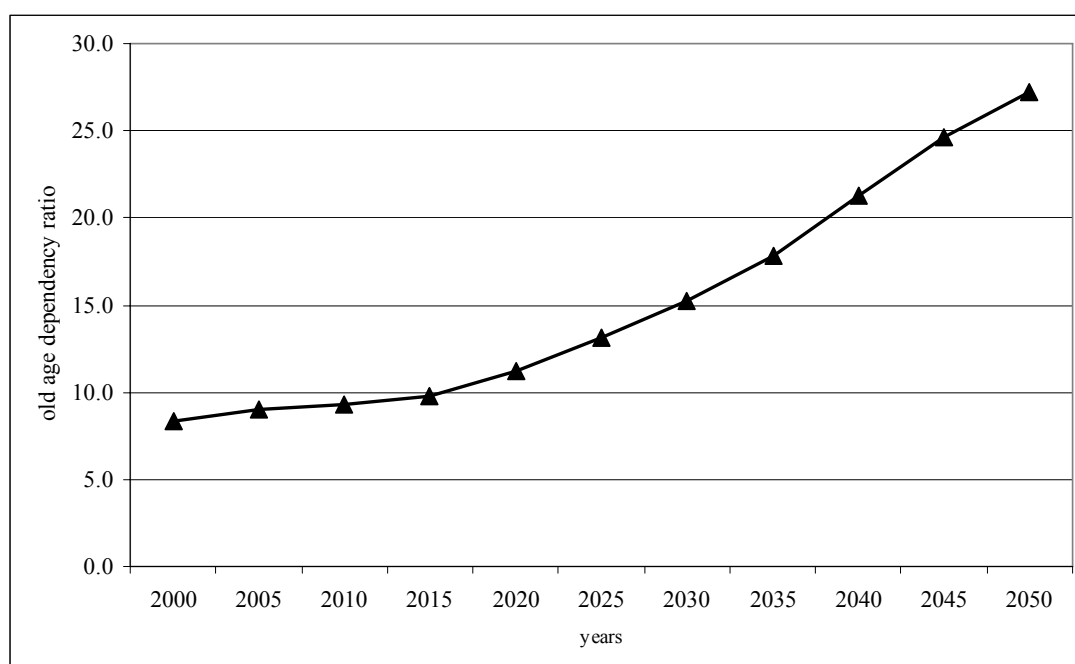
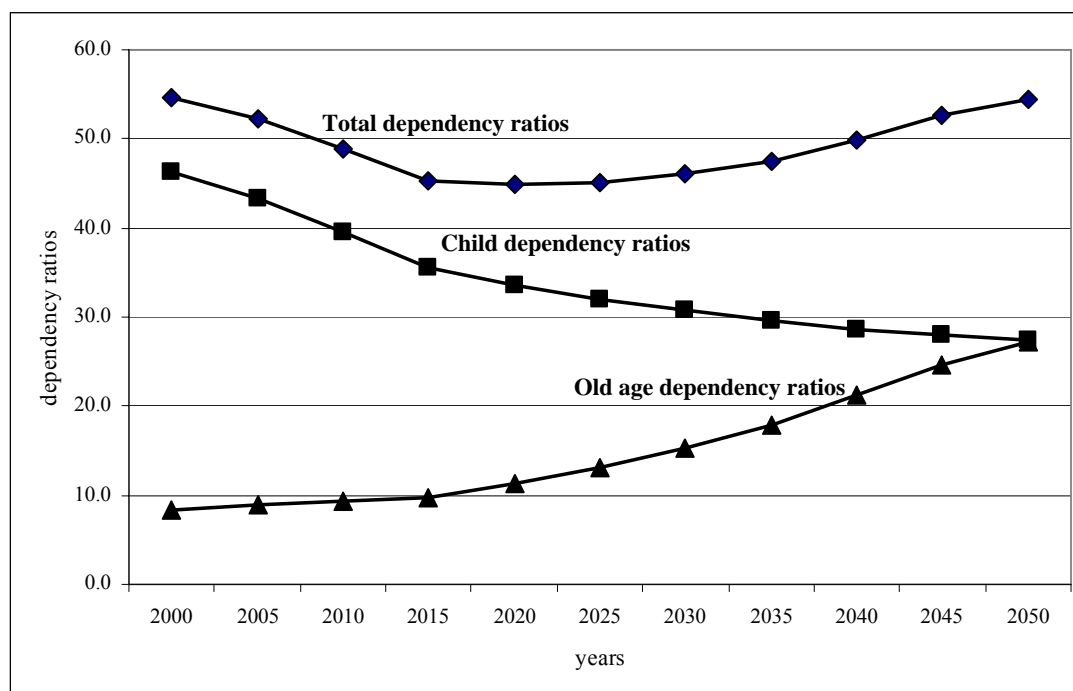
Figure 6.4. The old-age dependency ratio in 2000-2050 period

Figure 6.5. All dependency ratios in Turkey; 2000-2050



VI.1.3. The ageing index

One basic indicator of age structure is the ageing index, calculated here as the number of persons 60 years old or over per hundred persons under age 15. This indicator is briefly the ratio of the two groups which are qualified as “dependant” within the population and it is termed as the elderly-child ratio. At the end of the calculations that are made according to said definition, the elderly-child ratio that are 15% or less are qualified as young population, and those that are higher than 30% are qualified as old population. (Shryock ve Siegel, 1976).

Table 6.5. Ageing Index of Turkey, 2000-2050 period².

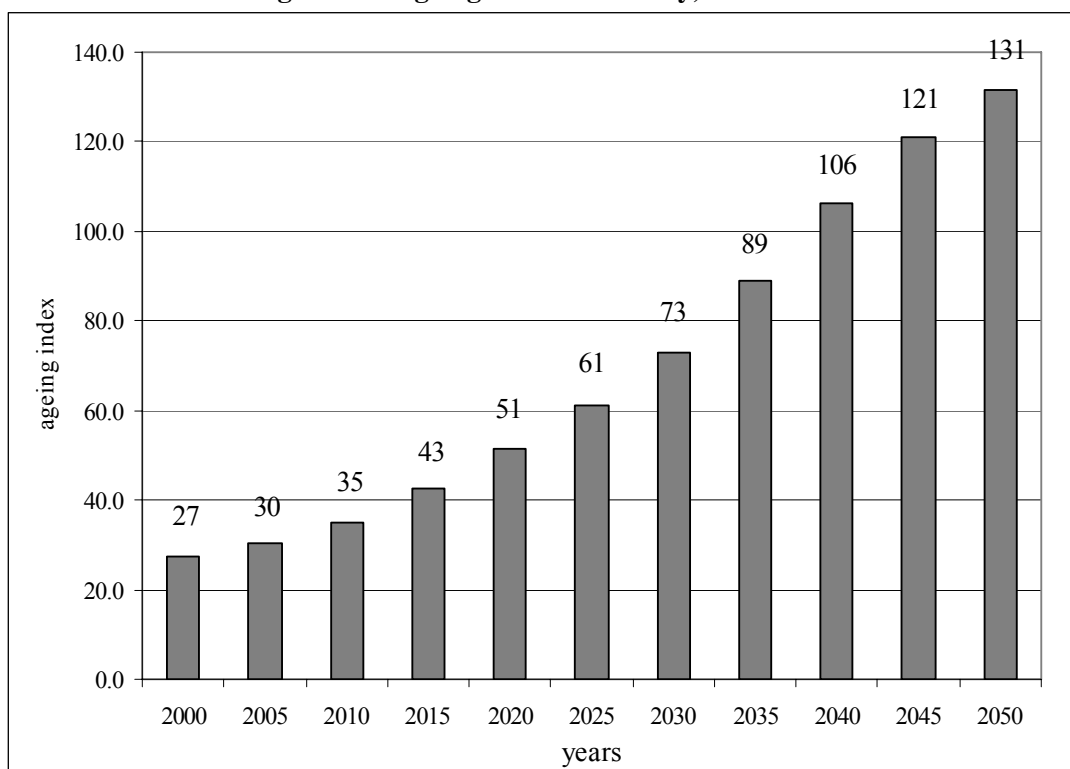
Years	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Population 60+ (Thousands)	5,520	6,232	7,078	8,380	10,019	11,862	14,004	16,699	19,363	21,296	22,436
Population 0- 14 (Thousands)	20,208	20,499	20,321	19,671	19,552	19,374	19,182	18,768	18,195	17,611	17,071
Ageing Index	27.3	30.4	34.8	42.6	51.2	61.2	73.0	89.0	106.4	120.9	131.4

In Turkey, the ageing index grows continuously during the 2000-2050 period. This means that the disproportion between the pre-productive and post productive population becomes more pronounced, to the disadvantage of the youngest population.

According to the projections, in 2030, it is estimated that ageing index in almost the whole of the developed countries shall attain at least a value of 100. On the other hand, the ageing index is predicted to be more than 200 in some European countries and Japan³. The ageing index value of Turkey shall exceed 100 in 2040. According to the ageing index indicator, Turkey follows the developed countries with a difference of 10 years (Table 6.5).

² Source : Population source is TURKSTAT porjections. [TurkStat](http://www.tuik.gov.tr/VeriBilgi.do), Mid-year population projections by age groups, 2000-2020 (*Yaş grubuna göre yıl ortası nüfus projeksiyonları, 2000-2020*), <<http://www.tuik.gov.tr/VeriBilgi.do>>, accessed March 2007.

³ Kevin Kinsella and David R. Phillips, "Global Aging:The Challenge of Success" By Population Bulletin Vol. 60, No. 1 2005

Figure 6.6. Ageing Index of Turkey, 2000-2050.

VI.1.4. The potential support ratio

Support ratios (the potential support ratio and parent support ratio) are another widely used indicator of fundamental changes in a population age structure. The standard definition of a potential support ratio (PSR) implies that all people over age 64 are in some sense dependent on the population of working age (15 to 64). It is assumed that people ages 15 to 64 support older people indirectly through payroll taxes and contributions to social welfare programs. This ratio describes the burden placed on the working population by the non-working elderly population.

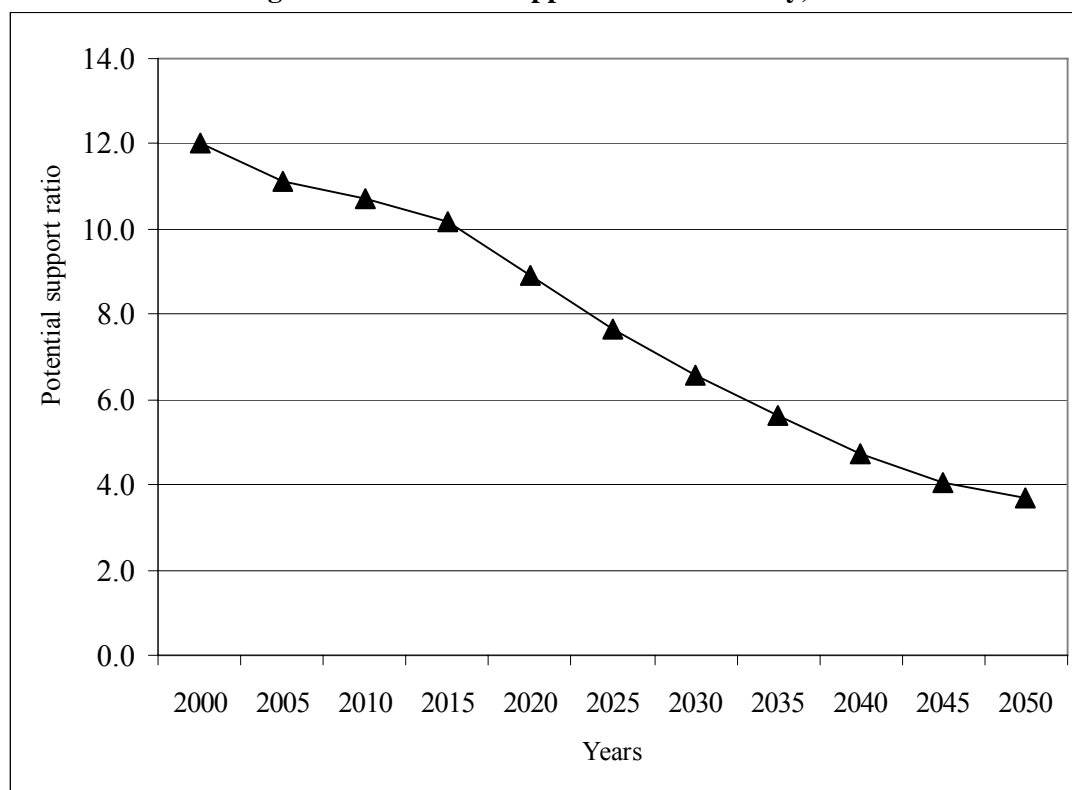
Table 6.6. The potential support ratio in Turkey, 2000-2050 period⁴.

Years	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Population 15-64 (Thousands)	43,590	47,315	51,386	55,412	58,213	60,463	62,137	63,236	63,403	62,956	62,446
Population 65+ (Thousands)	3,622	4,251	4,798	5,440	6,537	7,920	9,486	11,281	13,463	15,536	16,983
Potential support ratio	12.0	11.1	10.7	10.2	8.9	7.6	6.6	5.6	4.7	4.1	3.7

In Turkey, the potential support ratio will have dropped from 12 to 3.7 during 2000-2050 period (Table 6.6). The most important impact of the demographic ageing may be observed by the potential support ratio figures. PSR, generally tending to drop in the developed countries, shows the dependency burden over the potential labor force. Between 2000 and 2050, the potential support ratio will decline from twelve to approximately four working age persons per each older person in Turkey, and it is smaller fraction in most developed regions, from 5 to 2⁵. The demographic change in the value of PSR shall effect social security arrangements, especially in the systems where the current employees pay for the current pensioners.

⁴ Source : Population source is TurkStat projections. [TurkStat](http://www.tuik.gov.tr/VeriBilgi.do), Mid-year population projections by age groups, 2000-2020 (*Yaş grubuna göre yıl ortası nüfus projeksiyonları, 2000-2020*), <<http://www.tuik.gov.tr/VeriBilgi.do>>, accessed March 2007.

⁵ <http://www.unis.unvienna.org/unis/pressrels/2002/note5713.html>

Figure 6.7. Potential support ratio in Turkey, 2000-2050.

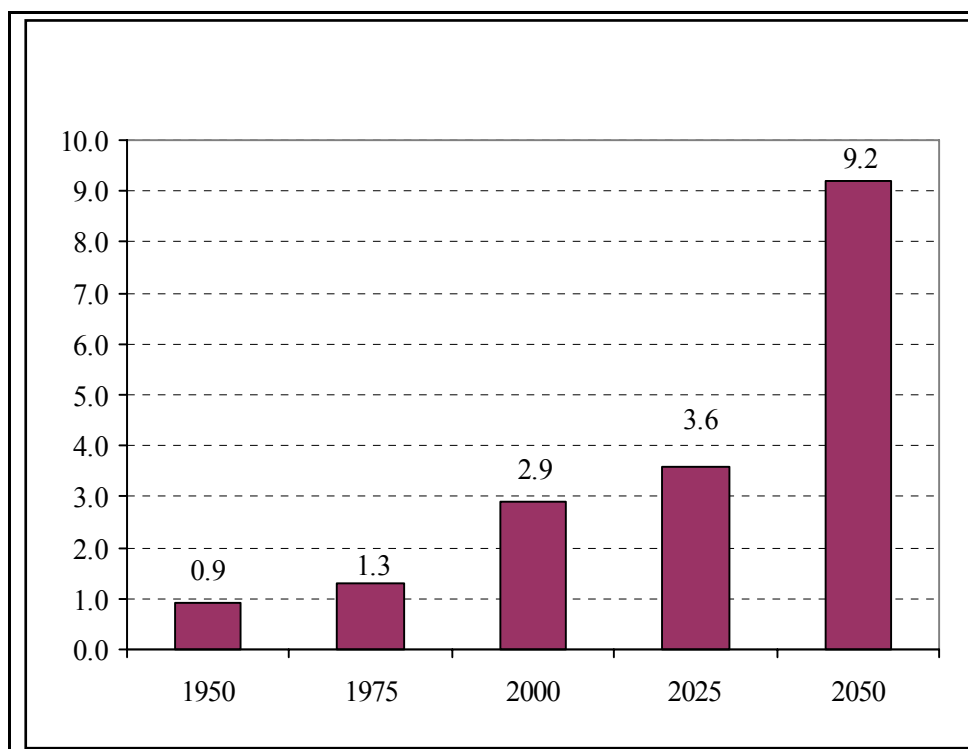
VI.1.5. Parent support ratio⁶

In general, the health of aged individuals goes downhill as their ages increase. This event especially increase the long-term care necessity by the increase in the number of the individuals of 85 ages and over, designated as oldest old group. The parent support ratio indicates that the ratio of the population 85 or older to those aged 50 to 64. It provides an indication of the support families may need to provide to their oldest members. While there are less than 2 elder individuals of 85 ages and over against 100 individuals in the group of 50-64 age group in 1950 worldwide, this figure has increased to be 4 against 100 individuals in 2000. This ratio is estimated to reach 11 in 2050. The parent support ratio is estimated to reach 28 in 2050 in more developed regions. In 2050, Japan is estimated to have the highest parent support

⁶ Source : United Nations, Population division, DESA, World Population Ageing 1950-2050 pp 449-450.

ratio in the world with the value of 56⁷. As 75+ is taken as the final age group in the projections produced by TurkStat (2007), the figures involved in the Figure 6.8. are obtained through the estimates of UN again based on the census results of 2000. Accordingly, the parent support ratio in Turkey has acquired the value of 2.9 in 2000 while it is 0.9 in 1950. According to the estimates of the United Nations, there shall be 9 individuals of 85 ages and over in Turkey against every 100 individuals of 50-64 age group in 2050. The parent support values in Turkey are lower than the figures for the world and European countries in the said periods.

Figure 6.8. Parent support ratio in Turkey; 1950-2050



VI.1.6. Sex ratios

The sex ratio is an indicator used to measure the sex differences in the population. Because differences are formed between the female and male age

⁷ <http://www.un.org/esa/population/publications/worldageing19502050/pdf/81chapteriii.pdf>
(downloaded in June 2008)

structures as a result of mortality influencing the sexes due to varying reasons in different ages. The sex ratio is calculated as the number of males per one hundred females in a population. It can be calculated for a total population or for a specific age group. The sex ratio being over 100 expresses that the male population is more than the female population, or vice versa. It is accepted that sex ratio at birth is generally around 105, i.e. 105 male children are born against 100 female children. In this study, the projection values by TurkStat in 2007 based on the 2000 Population Census information are used for sex ratio computations.

Figure 6.9. Sex ratios by age groups in Turkey, 2000-2050

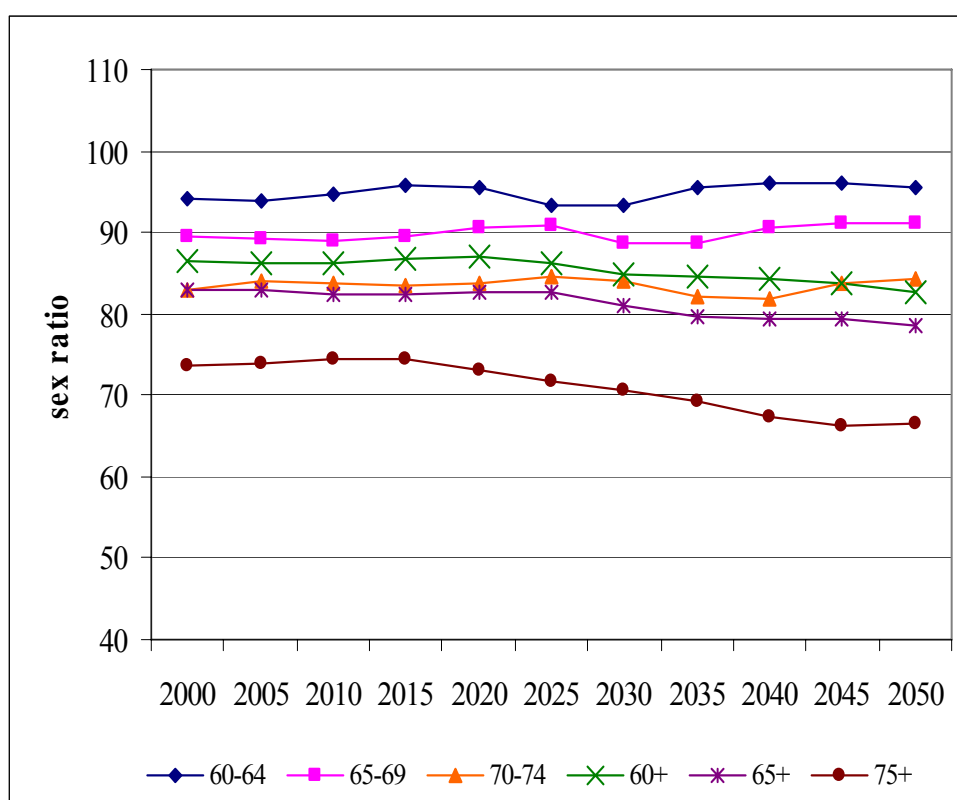


Table 6.7. Sex ratios by age groups in Turkey for 2000-2050 period

age groups	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
60-64	94	94	95	96	96	93	93	95	96	96	96
65-69	90	89	89	90	91	91	89	89	91	91	91
70-74	83	84	84	83	84	84	84	82	82	84	84
60+	87	86	86	87	87	86	85	85	84	84	83
65+	83	83	82	82	83	83	81	80	79	79	79
75+	74	74	74	74	73	72	71	69	67	66	67

According to Table 6.7, the great majority of the old population is women. (60+, 65+, and 75+) sex ratio in the aged group drops below 100, i.e. the number of women in the population goes ahead the number of men. Although the number of males in birth is higher than the number of females, the reasons why the number of males become less than the number of females in the later ages are that the male mortality levels are higher than the female mortality levels in later ages and the expected life at birth is higher for women compared to men. Worldwide, every 100 women of 60 ages and over benefit 81 men. This figure is 53 men for every 100 women in the oldest olds. When compared to underdeveloped regions, sex ratio in the old population group is rather low in developed regions⁸.

VI.1.7. Median age

One of the key indicators of population ageing is the change in median age. 50 per cent of the population is older and 50 per cent younger at the median age.

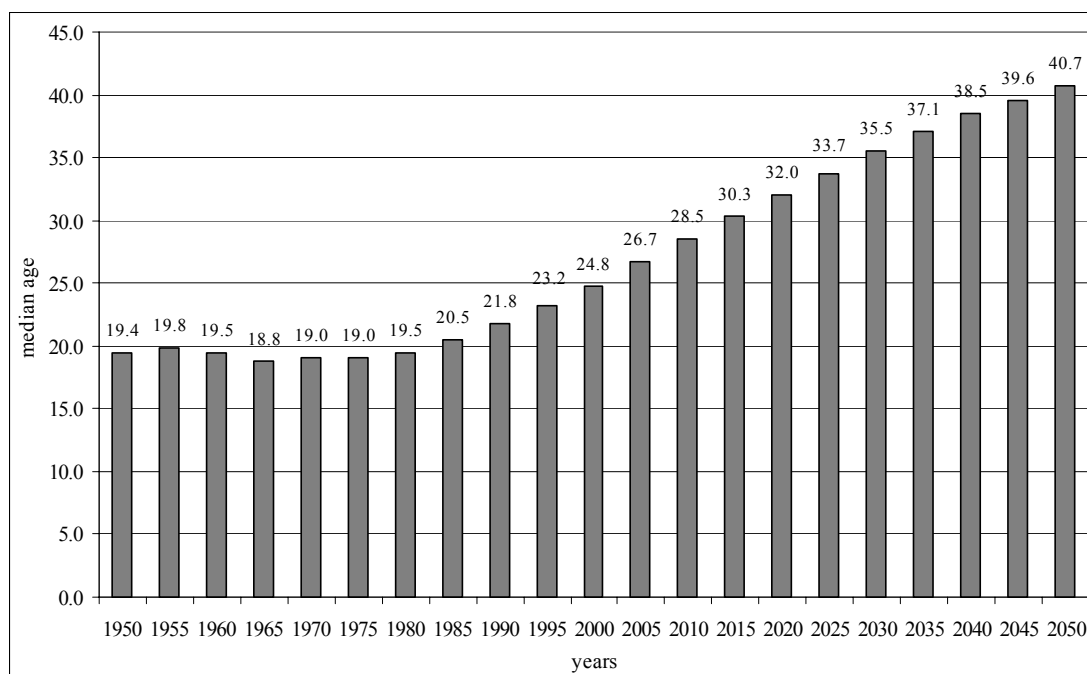
The age at the middle indicates the “median age” when the ages of the individuals composing the population are sorted from the lowest age to the highest. It is seen that the population becomes younger when the median age tends to decrease and older when it tends to increase. Shryock and Siegel (1976) consider populations as “young” or “old” according to their median ages. Populations with median age of 20 and less and those of 30 and higher are categorized as young and old respectively according to the criteria set by Shryock and Siegel. Accordingly, Turkey has a young

⁸ <http://www.unis.unvienna.org/unis/pressrels/2002/note5713.html>

population up to 1990, but an aging population after that year with the constantly increasing median age. It is predicted that median age will exceed 30 as of 2015.

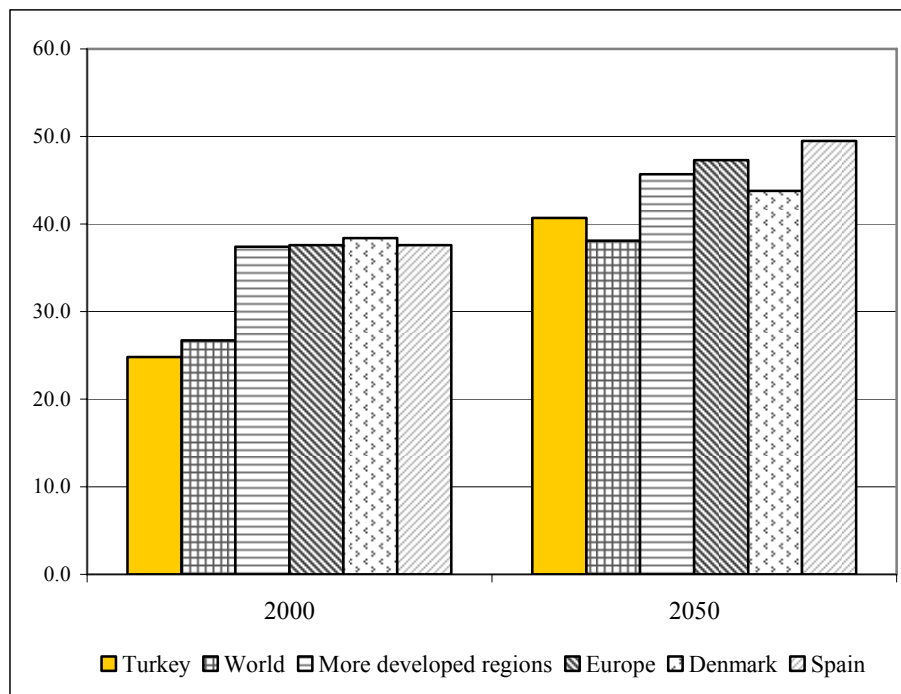
Turkey has a median age of 25 in 2000 (Figure 6.10). Median age will increase continuously. The median age is 37.6 in Europe in 2000 and 39.7 in more developed regions. Accordingly, Turkey has a population structure 13 years younger than Europe. It is estimated that median age shall have a value of 47.3 throughout Europe in 2050. On the other hand, the median age in Turkey is projected to be 40 with medium variant assumptions (UN, 2007b). In this event, the median age difference between Europe and ageing Turkey tends to diminish. There are demographic differences also in the Northern and Southern countries of Europe. Accordingly, while the median age in Denmark, a Northern country, is 38.4, in Spain, a southern country, it is 37.6. For both countries, the median age values are predicted to be 43.8 for Denmark and 49.5 for Spain in 2050 (Figure 6.11).

Figure 6.10. Median age (medium variant) in Turkey 1950-2050.



Source : United Nations, 2007b

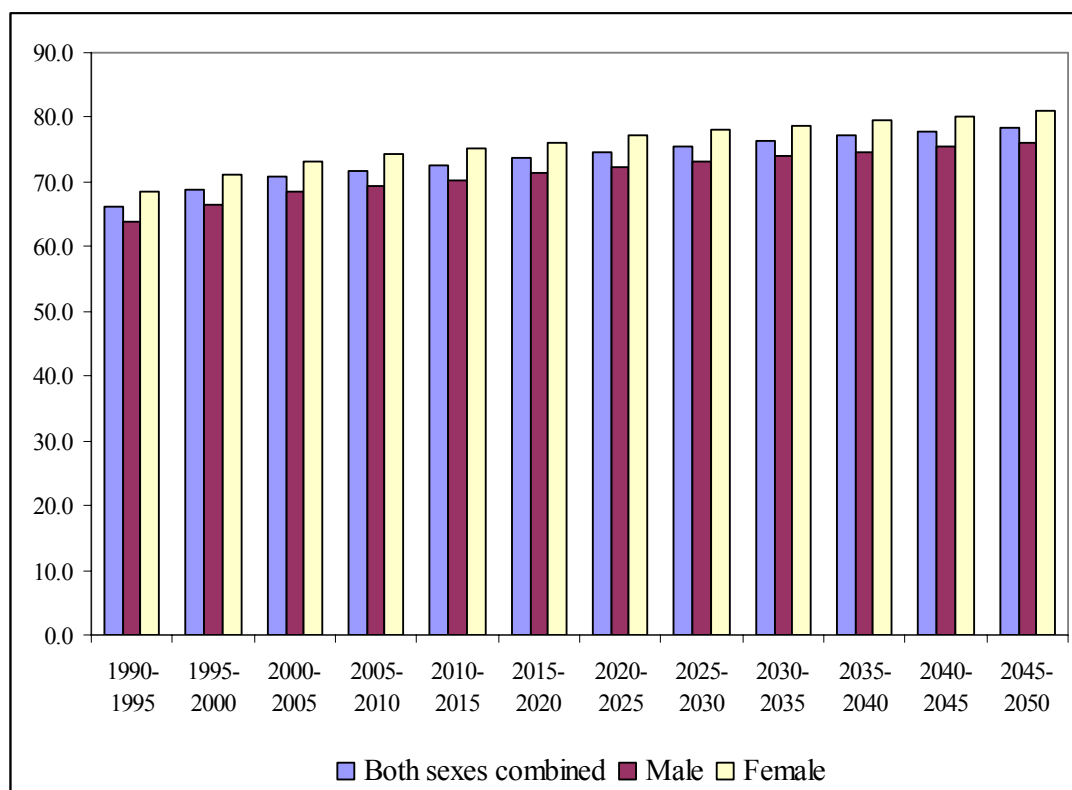
Figure 6.11. Median age figures of World, Europe, Turkey, Denmark and Spain for 2000 and 2050 years



Source : United Nations, 2007b

VI.1.8. Life expectancy

“Survival probabilities”, an indicator that reflects the general health, social and economical situation of the community, shows how much longer a person shall survive in average in birth and later ages. The life expectancy at birth of the Turkish person has increased in the last 20 years and shall continue to increase in the coming 20 years. According to the information included in “World Population Prospects: The 2006 Revision of Database” issued by the United Nations, the living duration expected in Turkey in birth in 1990 rose to 72 in 2005. It is predicted to be around 79 in 2050 (Figure 6.12).

Figure 6.12. Life expectancy at birth in Turkey; 1990-2050

Source : United Nations, 2007b

When the life expectancy at birth according to sex are examined, it is observed that the probability of the female population survival is higher than the male population. Based on this development, the difference between both sexes gets bigger over time. According to the estimates made by the United Nations for the years 2005-2010, the probability of the female in the developed countries to survive at birth is 7.3 years more compared to men while this difference is 3.5 years in the developing countries. In the same period, the difference between the life expectancy of the female and male population in Turkey is 4.9 years (Figure 6.12).

The average life expectation at birth of Turkey is located between the values of the developed and developing countries. The life expectancy at birth in Turkey in the period of 1950-1955 is around 44, but has risen to 72 in the period of 2005-2010 with the improvement of the health and socio-economical circumstances. An increase of 28 years has occurred in the process of 55 years. The decrease of infant mortality

rates to a current level of 40 per thousand where it was very high at the beginning of 1960s has had significant effect.

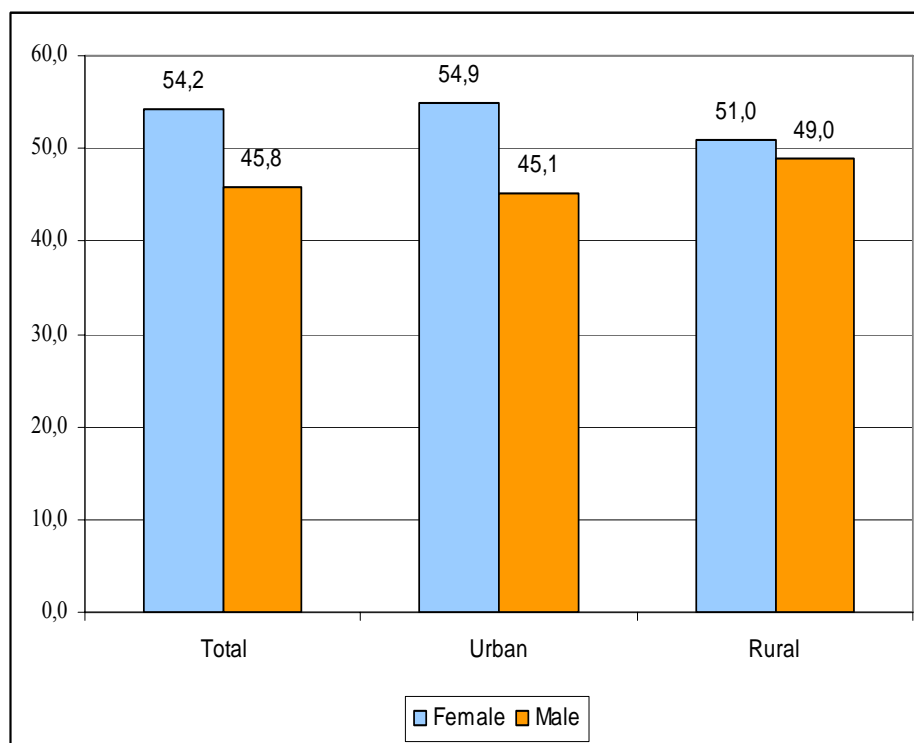
VI.2. Descriptive Statistics of Elderly in TDHS Surveys

One of the purposes of this study is to carry out descriptive analysis of the elderly population in Turkey based on demographic health survey results. In this section the 2003 TDHS data is analyzed with the assistance of SPSS software and calculations have been made to obtain the main characteristics of the old population.

According to the results of 2003 TDHS, the share of the 65+ population group within the total population in Turkey is 7%. This share is 5.4% according to 2000 Census results.

In TDHS 2003, it was observed that the percentage of female population is more than that of male population in the distribution of 65+ population. Life expectancy at birth for females being higher than that of the males results in the share of females being higher within the elderly population. 54% of the total elderly population consists of women. While the female population forms 55% of the aged population in the urban areas, this ratio is 51% in the rural area (Figure 6.13). While the difference in the age groups of the elderly people by sex is especially high in 65-69 and 70-74 age groups, this difference starts to decrease as ages increase (Table 6.8).

Figure 6.13. Percent distribution of elderly (65+ population) by sex and type of place of residence



Source : Turkey Demographic and Health Survey TDHS-2003

Table 6.8. Percent distribution of elderly by sex and age groups

Age group	Male	Female	Difference	Total	n
65-69	16.0	20.3	4.3	36.3	1 122
70-74	14.0	16.0	2.0	30.1	930
75-79	9.4	10.1	0.7	19.5	603
80-84	3.7	4.9	1.2	8.6	266
85-89	1.2	1.4	0.2	2.6	80
90+	1.4	1.5	0.1	2.8	88
All elderly	45.8	54.2	8.4	100.0	3 090
Total population	48.6	51.4	2.8	100.0	42 851

Source : Turkey Demographic and Health Survey TDHS-2003

56.5% of the 65+ population lives in urban localities while 43.5% of it lives in rural localities. In Table 6.9., we see that the difference between the urban and rural population mainly results from the difference in “65-74” age group.

Table 6.9. Percent distribution of elderly by type of place of residence and age groups

Age groups	Type of place of residence			n
	Urban	Rural	Total	
65-69	21,0	15,3	36,3	1 122
70-74	17,2	12,9	30,1	930
75-79	10,4	9,2	19,5	604
80-84	4,8	3,8	8,6	267
85-89	1,5	1,1	2,6	81
90+	1,6	1,2	2,8	87
All elderly	56,5	43,5	100,0	3 091
Total population	68,2	31,8	100,0	42 851

Source : Turkey Demographic and Health Survey TDHS-2003

While the old population living in the urban areas constitutes 5.7% of the total population, 9.4% of the total rural population is composed of 65+ population. One of the most significant reasons of the percentage difference between the rural and urban areas is that the majority of the population group immigrated from the rural to urban is composed of young population. The tendency of individuals to migrate to the rural after retirement may also be observed as the reason of the difference.

The distribution of the elderly population by five regions displays differences (Table 6.10). Approximately 40% of the elderly population lives in the Western region, while this ratio in female and male population is approximately 40.4 % and 39% respectively. The Central Region with 24% has the next highest elderly population ratio.

Table 6.10. Percent distribution of elderly population by age group, sex and region of residence

Age Groups	Region					<i>n</i>
	West	South	Central	North	East	
Male (%)						
65-69	38.0	13.5	23.2	10.3	14.9	495
70-74	39.2	11.1	27.0	10.8	12.0	434
75-79	39.2	13.0	24.6	13.0	10.2	293
80-84	40.5	13.8	18.1	7.8	19.8	116
85-89	40.5	13.5	24.3	10.8	10.8	(37) ⁹
90+	32.6	11.6	25.6	9.3	20.9	(43)
Total	38.7	12.6	24.3	10.8	13.5	1 418
Female (%)						
65-69	39.8	12.3	25.6	9.9	12.5	626
70-74	37.0	12.7	26.1	12.3	11.9	495
75-79	40.5	11.9	22.2	14.5	10.9	311
80-84	54.7	11.3	20.7	6.7	6.7	150
85-89	39.5	14.0	16.3	18.6	11.6	(43)
90+	39.1	13.0	15.2	17.4	15.2	(46)
Total	40.4	12.3	24.1	11.6	11.5	1 671
Total (%)						
65-69	39.0	12.7	24.6	10.1	13.5	1122
70-74	38.1	11.9	26.5	11.6	11.9	930
75-79	40.0	12.3	23.4	13.8	10.6	603
80-84	48.3	12.4	19.5	7.5	12.4	267
85-89	40.7	13.6	19.8	14.8	11.1	81
90+	36.4	12.5	20.5	12.5	18.2	88
Total	39.7	12.4	24.2	11.2	12.5	3 091
Total population	38.0	13.1	22.0	7.6	19.3	42 851

Source : Turkey Demographic and Health Survey TDHS-2003

When the ratio of aged population within the total population is investigated, it appears that the Northern Region has the highest aged population rate with 11%, and the youngest region is the Eastern Part with 5% aged population rate. (Table 6.11)

⁹ Parenthesis indicate that a figure is based on 25-49 unweighted cases. An asterisk indicates a figure is based on fewer than 25 unweighted cases and has been suppressed.

Table 6.11. Percent distribution of elderly population by regions

	West	South	Central	North	East	Total
Share of elderly within the total population (%)	7.5	6.8	8.0	10.7	4.7	7.2
<i>n</i>	1 227	383	749	347	385	3 091
<i>N</i>	16,295	5,633	9,415	3,248	8,261	42,852

Source : 2003 TDHS

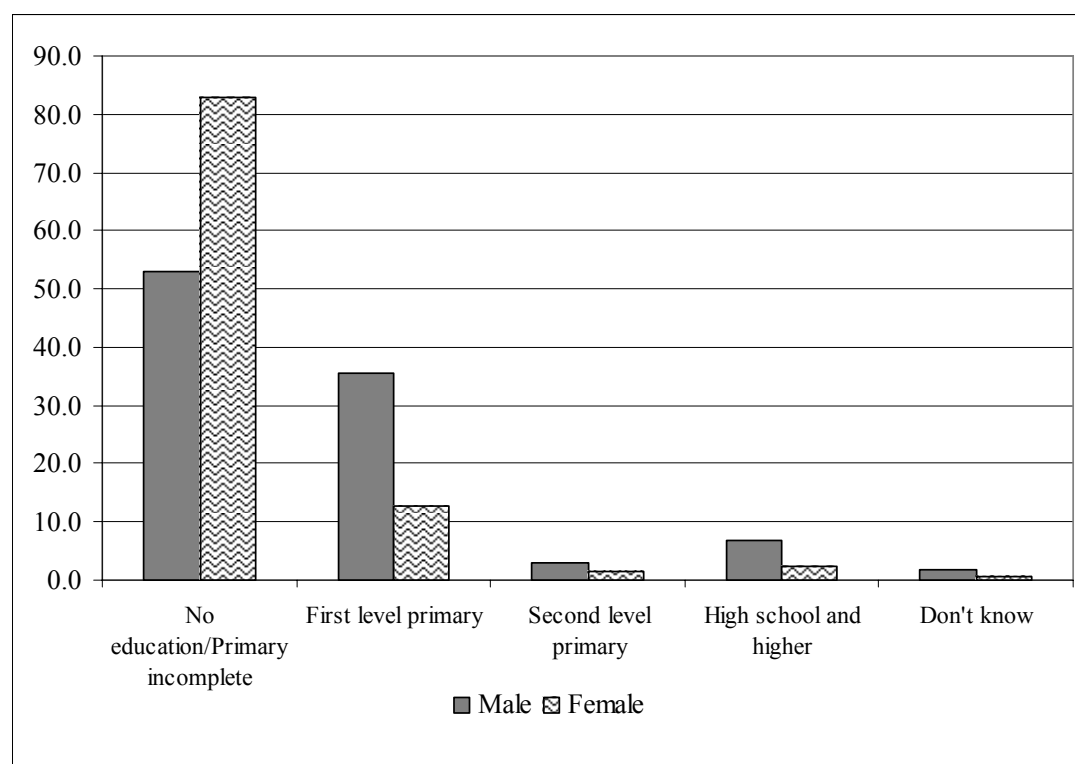
VI.2.1. Education

When the 65+ population is examined with respect to the education status, great differences are observed between the male population and female population. It is noticed that around 83% of the 65+ female population is not educated and/or not graduated from the primary school. This ratio is 53% for the male population of 65 age and over (Table 6.12).

Table 6.12. Percent distribution of elderly by education level and sex

	Male	Female	n
No education/Primary incomplete	53,1	82,8	2 141
First level primary	35,5	12,6	706
Second level primary	3,0	1,6	70
High school and higher	6,8	2,4	133
Don't know	1,7	0,6	(30)
All elderly	100,0	100,0	3 081

Source : Turkey Demographic and Health Survey TDHS-2003

Figure 6.14. Percent distribution of elderly by education level and sex

Source : Turkey Demographic and Health Survey TDHS-2003

When we examine Table 6.13, we see an improvement in literacy by cohorts. Younger elderly are more educated than oldest olds. About 49% of the old population is illiterate.

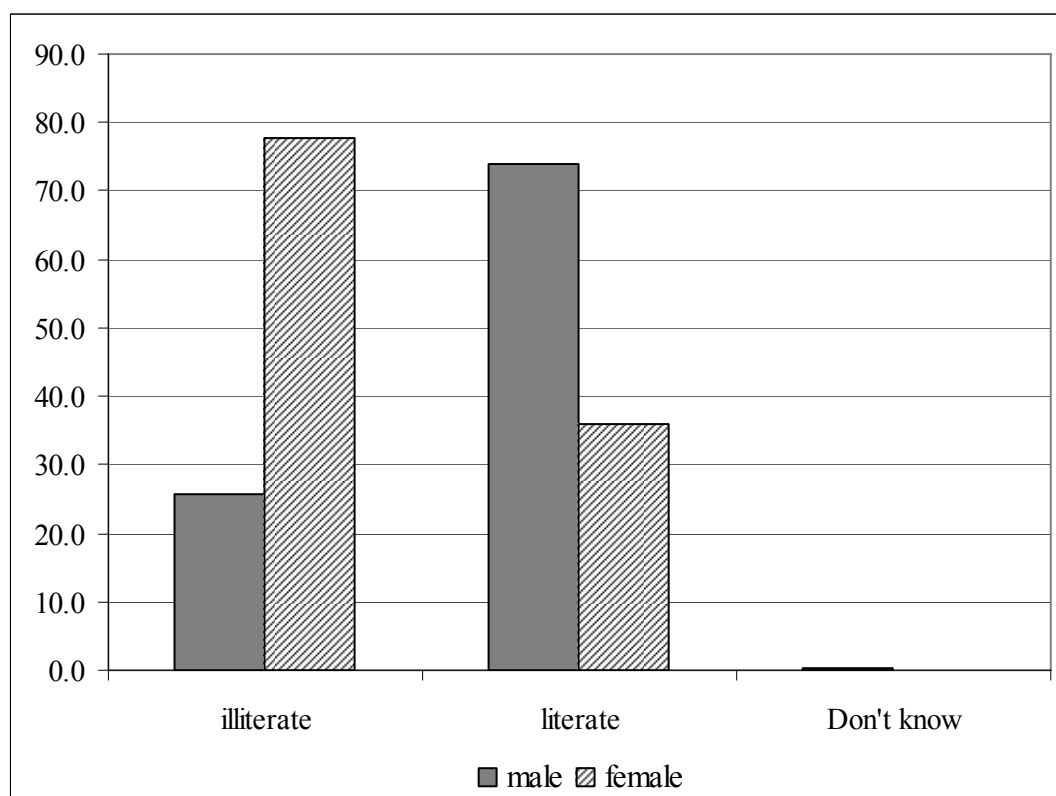
Table 6.13. Percent distribution of elderly by literacy, age group and sex

Age groups and Sex	Literacy			<i>n</i>
	Illiterate	Literate	Don't know	
65-69	42,8	56,9	0,3	1 083
70-74	48,8	51,1	0,1	881
75-79	52,1	47,7	0,2	570
80-84	54,1	45,9	0,0	255
85-89	58,4	41,6	0,0	77
90+	63,4	36,6	0,0	101
Male	25,8	74,0	0,2	1 386
Female	77,8	36,0	0,1	1 580
Total	48,4	51,4	0,2	2 966

Source : Turkey Demographic and Health Survey TDHS-2003

When the literacy within 65+ population is examined, the ratio of illiterate in the female population is about 78% and this ratio is 26% in the male population.

Figure 6.15. Percent distribution of elderly by literacy, age group and sex



Source : Turkey Demographic and Health Survey TDHS-2003

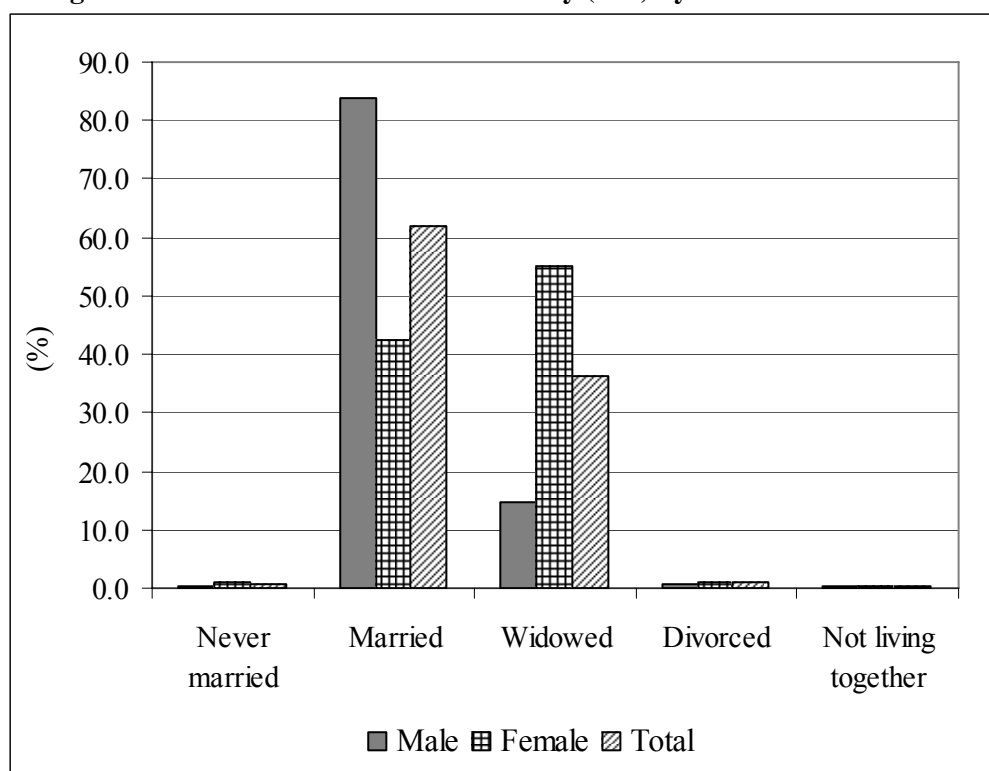
VI.2.2. Marital status of elderly

When the marital status of the population is examined with respect to age group, while the ratio of the marriage is high in the young group, it is observed that the ratio of those in the aged group whose spouse had died or divorced is high with respect to the young population.

Although about 62% of the 65+ population is currently married, this ratio is 84% in male population and 43% in the female population. In general, male

population more probably tend to marry after losing their spouses compared to female. While 55% of the female population continue living as widows, this ratio is approximately 15% in the male population (Table 6.14 and Figure 6.16)).

Figure 6.16. Percent distribution of elderly (65+) by marital status and sex



Source : Turkey Demographic and Health Survey TDHS-2003

The ratio of living as widows increases with age both in the female and male population. However, this ratio is rather higher in the female population (Table 6.14). Throughout the world, on the other hand, while 78 % of the aged men are currently married, 44% of the women are married¹⁰. Reasons such as the first marriage age being lower in female than male, the life expectancy of the female being higher than male, and re-marriage tendency of women being lower than men increases the female population ratio in the old population with spouse died or divorced.

¹⁰

<http://www.unis.unvienna.org/unis/pressrels/2002/note5713.html>

Table 6.14. Percent distribution of elderly by current marital status, sex and age group

Sex	Age groups	Current marital status (%)					Total	n
		Never married	Married	Widowed	Divorced	Not living together		
Male	65-69	0.2	91.2	7.5	1.0	0.0	100.0	477
	70-74	0.9	84.4	13.4	0.7	0.5	100.0	424
	75-79	0.0	82.7	16.6	0.7	0.0	100.0	283
	80-84	0.0	66.7	33.3	0.0	0.0	100.0	111
	85-89	0.0	65.7	31.4	0.0	2.9	100.0	(35)
	90-94	0.0	60.0	40.0	0.0	0.0	100.0	(25)
	95+	3.3	76.7	20.0	0.0	0.0	100.0	(30)
	Total	0.4	83.9	14.7	0.7	0.2	100.0	1,385
Female	65-69	0.8	56.5	41.7	0.8	0.2	100.0	605
	70-74	1.3	42.2	54.5	1.3	0.7	100.0	457
	75-79	0.7	35.7	62.2	1.0	0.3	100.0	286
	80-84	0.7	16.6	82.1	0.0	0.7	100.0	145
	85-89	0.0	14.3	85.7	0.0	0.0	100.0	(42)
	90-94	0.0	10.3	86.2	3.4	0.0	100.0	(29)
	95+	0.0	11.8	76.5	11.8	0.0	100.0	* ¹¹
	Total	0.9	42.5	55.2	1.1	0.4	100.0	1,581

Source : Turkey Demographic and Health Survey TDHS-2003

VI.2.3. Health insurance

According to the results of 2003 TDHS, 22.4% of the elderly has not any health insurance (Table 6.15). The old population mostly has SSK¹² social assurance with a ratio of 31.9%. Bağkur¹³ follows this ratio with 22%. The event of having no social assurance increases with the age.

¹¹ An asterisk indicates a figure is based on fewer than 25 unweighted cases and has been suppressed.

¹² Social Insurance Institution

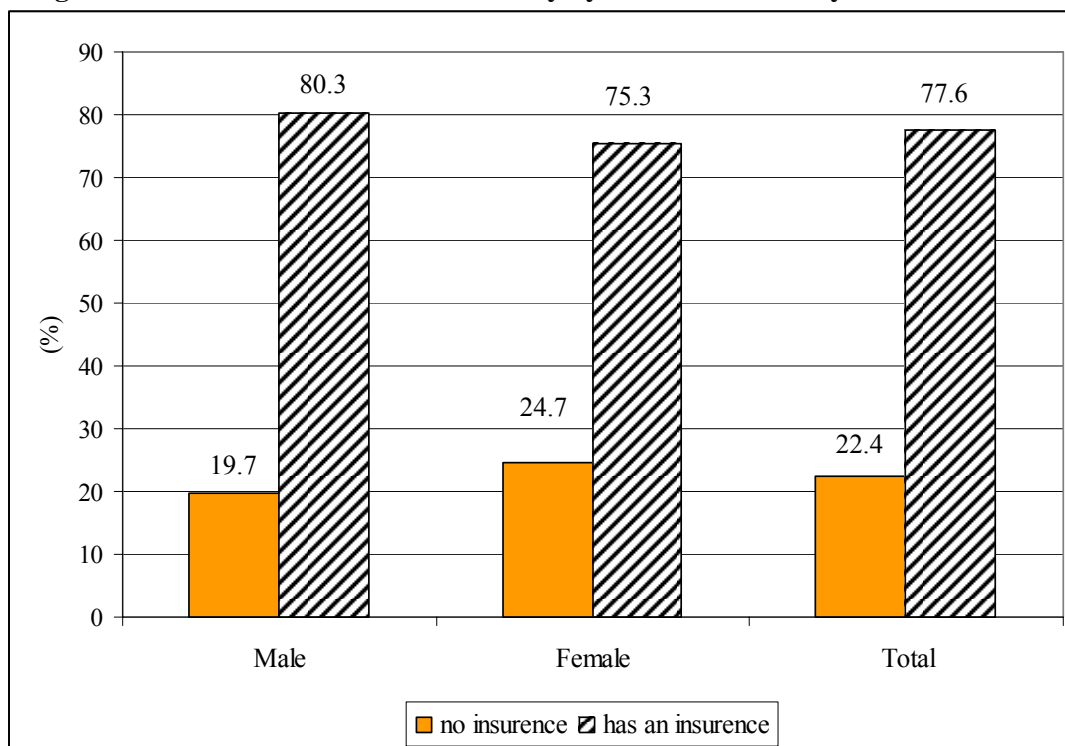
¹³ Social Security Organisation for Artisans, craftsman, tradesman and the other Self-employed

Table 6.15. Percent distribution of elderly by age group, sex and covered by health insurance

		age groups						Total	n
		65-69	70-74	75-79	80-84	85-89	90+		
Male	No	5.6	6.0	4.7	1.8	0.4	1.2	19.7	279
	Social Insurance	13.1	10.1	6.7	2.8	0.6	0.7	34.0	481
	Pension Fund	4.3	3.9	2.5	0.8	0.5	0.3	12.4	175
	Social Security Organisation for self-	9.2	7.4	4.5	1.1	0.6	0.4	23.2	328
	Private health insurance	0.1	0.0	0.0	0.0	0.0	0.0	0.1	*
	Green card	2.1	2.6	1.7	1.0	0.4	0.4	8.1	115
	Other	0.5	0.5	0.5	0.1	0.0	0.1	1.6	(23)
	Don't know	0.1	0.1	0.0	0.4	0.0	0.1	0.7	(10)
	Total	35.0	30.7	20.7	8.1	2.5	3.0	100.0	1,413
Female	No	7.5	7.3	4.6	3.0	0.8	1.6	24.7	412
	Social Insurance	13.2	8.0	5.6	1.9	0.7	0.6	30.0	501
	Pension Fund	5.2	4.7	2.2	1.3	0.7	0.2	14.2	237
	Social Security Organisation for self-	7.9	6.6	4.2	2.0	0.1	0.2	21.0	351
	Private health insurance	0.2	0.1	0.0	0.0	0.0	0.0	0.2	*
	Green card	2.6	2.0	1.9	0.5	0.2	0.1	7.2	120
	Other	0.5	0.7	0.1	0.1	0.1	0.0	1.4	(24)
	Don't know	0.4	0.2	0.1	0.3	0.1	0.1	1.2	(20)
	Total	37.4	29.6	18.6	9.0	2.6	2.8	100.0	1,669
Total	No	6.6	6.7	4.6	2.4	0.6	1.4	22.4	691
	Social Insurance	13.2	9.0	6.1	2.3	0.6	0.6	31.9	982
	Pension Fund	4.8	4.3	2.3	1.1	0.6	0.2	13.4	412
	Social Security Organisation for self-	8.5	7.0	4.3	1.6	0.3	0.3	22.0	679
	Private health insurance	0.2	0.0	0.0	0.0	0.0	0.0	0.2	*
	Green card	2.3	2.3	1.8	0.7	0.3	0.2	7.6	235
	Other	0.5	0.6	0.3	0.1	0.0	0.0	1.5	(47)
	Don't know	0.2	0.2	0.1	0.4	0.0	0.1	1.0	(30)
	Total	36.3	30.1	19.6	8.6	2.6	2.9	100.0	3,082

Source : Turkey Demographic and Health Survey TDHS-2003

Figure 6.17. Percent distribution of elderly by sex and covered by health insurance



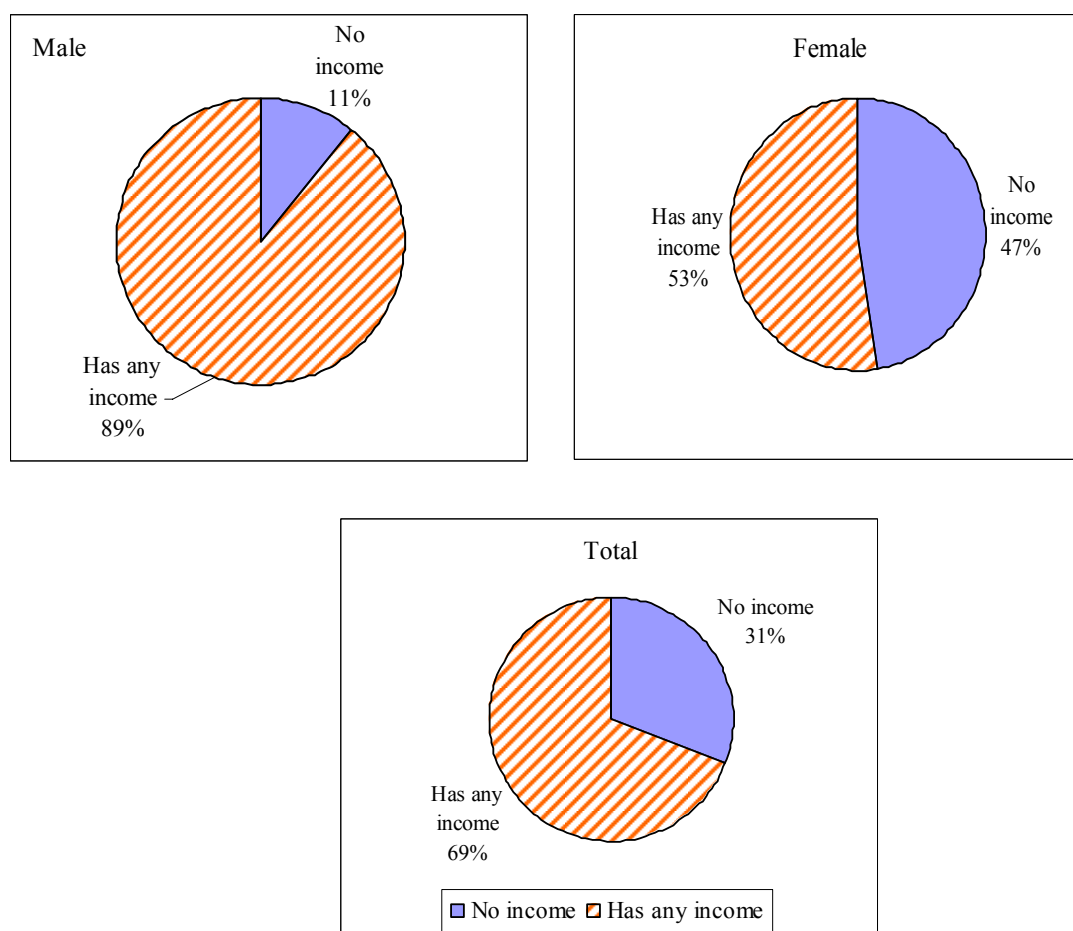
Source : Turkey Demographic and Health Survey TDHS-2003

The differences among the genders are also valid on health insurance scope. When the ratio of the female population who are not involved in any kind of health insurance is 24.7%, said ratio correspond to 19.7% in male population (Figure 6.17).

VI.2.4. Income, source of income and wealth

In Figure 6.18, it is seen that 69% of the population of 65 age and over has an income. However, there are great differences between the male and female populations in the situation of having an income. While 89% of the male elderly have an income, only 53 % of the female have an income.

Figure 6.18. Percent distribution of elderly by income status and sex



Source : Turkey Demographic and Health Survey TDHS-2003

When the income situation of the old population with respect to age group is examined, the ratio of having an income is the highest in “65-69” age group in the male population and highest in “85-89” age group for the female population. Although the case of having an income features no variations explainable with respect to the age group for both sexes the ratio of female population with income begins to get values over 50% following the “70-74” age group (Table 6.16).

Table 6.16. Percent distribution of elderly by income status, age group and sex

Has any income (%)	65-69	70-74	75-79	80-84	85-89	90+	Total	n
	Total							
No	34.6	28.6	25.9	31.6	28.4	39.1	30.8	948
Yes	65.4	71.4	74.1	68.4	71.6	60.9	69.2	2,135
	Male							
No	9.7	10.4	9.9	17.5	11.1	21.4	11.0	155
Yes	90.3	89.6	90.1	82.5	88.9	78.6	89.0	1,258
	Female							
No	54.3	44.4	41.0	42.4	40.9	54.3	47.5	793
Yes	45.7	55.6	59.0	57.6	59.1	45.7	52.5	877

Source : Turkey Demographic and Health Survey TDHS-2003

According to 2003 TDHS results approximately 32% of the elderly population has declared pension (self) as income. Approximately 60% of the elderly male population has declared pension (self) as income. Old age pension and rent/interest income have been stated as other significant sources. Approximately 18% of male are currently employed. While only 8% of old women have their own pension, the ratio of female who state their indirect pension as income source is 26%. 15% of female are entitled to old age pension, while 2% of them are currently employed (Table 6.17).

Table 6.17. Percent distribution of elderly population by age group, sex and source of income¹⁴

	Pension (self)	Old age pension	From relative in country	Currently working	Pension (indirect)	Rent/ interest	From relative abroad	Other	<i>n</i>
Total									
65-69	34.4	7.4	1.2	13.8	14.3	7.1	0.3	0.7	1,121
70-74	33.1	15.2	1.5	8.4	15.1	8.3	0.2	1.1	927
75-79	31.0	18.4	2.8	6.0	15.8	7.6	1.2	0.7	603
80-84	23.4	20.3	2.3	4.9	15.4	11.7	1.1	0.4	265
85-89	27.2	23.5	1.3	2.5	13.8	9.9	1.3	1.2	81
90+	12.5	29.5	2.3	1.1	8.0	12.6	0.0	1.1	88
<i>Total</i>	31.6	14.1	1.7	9.2	14.7	8.2	0.5	0.8	3,085
Male									
65-69	68.1	4.9	0.8	27.1	1.0	11.1	0.2	0.6	495
70-74	61.1	12.4	0.9	16.8	1.2	12.4	0.5	1.6	435
75-79	56.5	17.7	1.7	10.2	2.4	12.3	0.3	0.7	292
80-84	45.6	23.7	1.7	9.6	0.9	16.7	0.9	0.0	114
85-89	52.8	21.6	0.0	5.6	2.7	13.9	2.8	0.0	(36)
90+	19.0	38.1	2.4	2.4	0.0	23.3	0.0	0.0	(43)
<i>Total</i>	59.9	12.8	1.1	17.8	1.3	12.7	0.4	0.8	1,415
Female									
65-69	7.8	9.4	1.4	3.4	24.8	4.0	0.3	0.8	626
70-74	8.5	17.6	2.0	1.0	27.4	4.9	0.0	0.4	493
75-79	7.1	19.0	4.2	1.9	28.1	3.2	1.9	0.6	311
80-84	6.6	17.9	3.3	2.0	26.3	7.3	0.7	0.7	152
85-89	6.8	25.0	2.3	0.0	22.7	4.5	0.0	2.3	(44)
90+	8.7	21.7	2.2	0.0	15.2	4.3	0.0	2.2	(46)
<i>Total</i>	7.8	15.1	2.3	2.1	26.0	4.4	0.5	0.7	1,672

Source : Turkey Demographic and Health Survey TDHS-2003

When the welfare level of the household where elderly live is examined, (Table 6.18), it is observed that individuals of 65 years of age and higher are mostly in the “poorest” and “poorer” welfare levels with 56.5%.

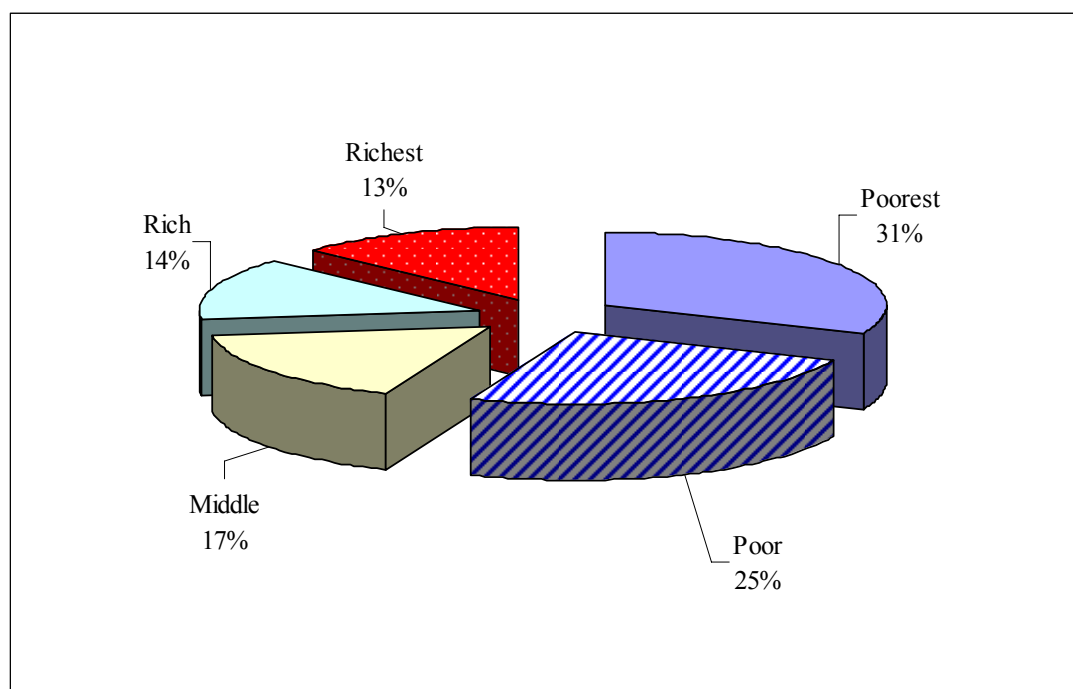
¹⁴As elderly individuals are allowed to mark more than one option in answering this question in this study, attention should be given to the fact that the percentage distributions in row and column total do not add up to one hundred percent.

Table 6.18. Percent distribution of elderly population by age groups, sex and wealth index of households

Age group	Household Wealth Index ¹⁵					N
	Poorest	Poor	Middle	Rich	Richest	
65-69	9,4	10,0	6,8	5,3	4,9	1 122
70-74	9,7	7,9	5,1	3,9	3,5	930
75-79	7,2	4,4	2,7	3,0	2,2	602
80-84	3,2	1,8	1,1	1,1	1,3	265
85-89	0,6	0,5	0,5	0,5	0,5	81
90+	1,2	0,5	0,4	0,4	0,4	89
<i>Total elderly</i>	<i>31,3</i>	<i>25,2</i>	<i>16,7</i>	<i>14,1</i>	<i>12,7</i>	<i>3 089</i>
<i>Male</i>	<i>31,0</i>	<i>25,4</i>	<i>18,5</i>	<i>12,6</i>	<i>12,4</i>	<i>1 416</i>
<i>Female</i>	<i>31,6</i>	<i>24,9</i>	<i>15,1</i>	<i>15,4</i>	<i>13,0</i>	<i>1 673</i>

Source : Turkey Demographic and Health Survey TDHS-2003

Figure 6.19. Percent distribution of elderly population by household wealth index



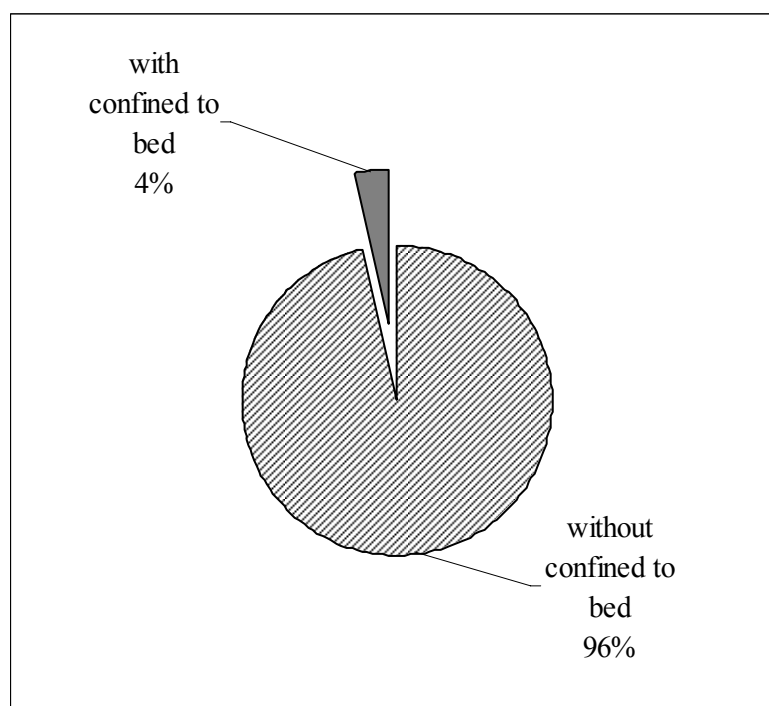
Source : Turkey Demographic and Health Survey TDHS-2003

¹⁵ Wealth index of households used in this study is calculated by Hacettepe University Institute of Population Studies from the data of TDHS 2003

VI.2.5. Functional status of elderly

While 4% of the 65+ population is confined to bed, 96% is not (Figure 6.20). The event of being confined to bed increases with the age (Table 6.19).

Figure 6.20. Percent distribution of elderly by functional status (with or without being confined to bed)



Source : Turkey Demographic and Health Survey TDHS-2003

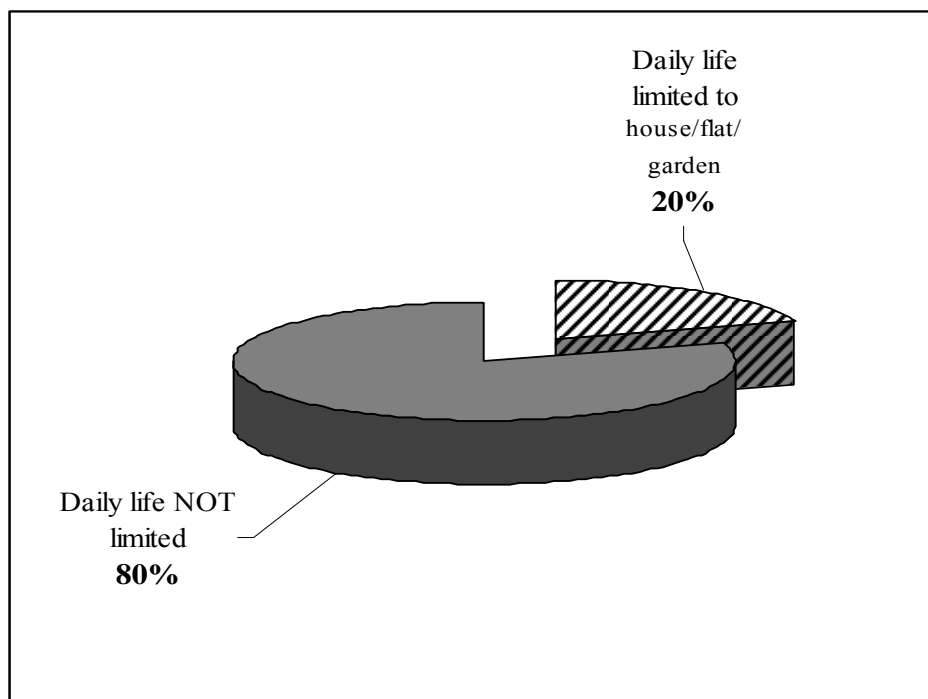
Table 6.19. Percent distribution of elderly by age groups and functional status

Confined to bed			
Age group	No	Yes	n
65-69	99.1	0.9	1 120
70-74	97.4	2.6	928
75-79	95.9	4.1	604
80-84	93.2	6.8	265
85-89	90.0	10.0	80
90+	72.4	27.6	87
<i>Total (65+)</i>	<i>96.5</i>	<i>3.5</i>	<i>3084</i>
Confined to chair/armchair			
65-69	99.4	0.6	1 110
70-74	99.6	0.4	904
75-79	96.9	3.1	579
80-84	98.8	1.2	247
85-89	97.3	2.7	73
90+	90.6	9.4	64
<i>Total (65+)</i>	<i>98.7</i>	<i>1.3</i>	<i>2977</i>

Source : Turkey Demographic and Health Survey TDHS-2003

While 1.3 % of the aged are confined to chairs and armchairs all day long, this dependency gets its highest value in “90+” age group (Table 6.19). Daily life of about 20% of the population of 65 age and over is limited to house, flat or garden (Figure 6.21).

Figure 6.21. Percent distribution of elderly by functional status (daily life limited to house/flat/garden)



Source : Turkey Demographic and Health Survey TDHS-2003

VI.2.6. Main responsibility for needs, health and welfare of elderly

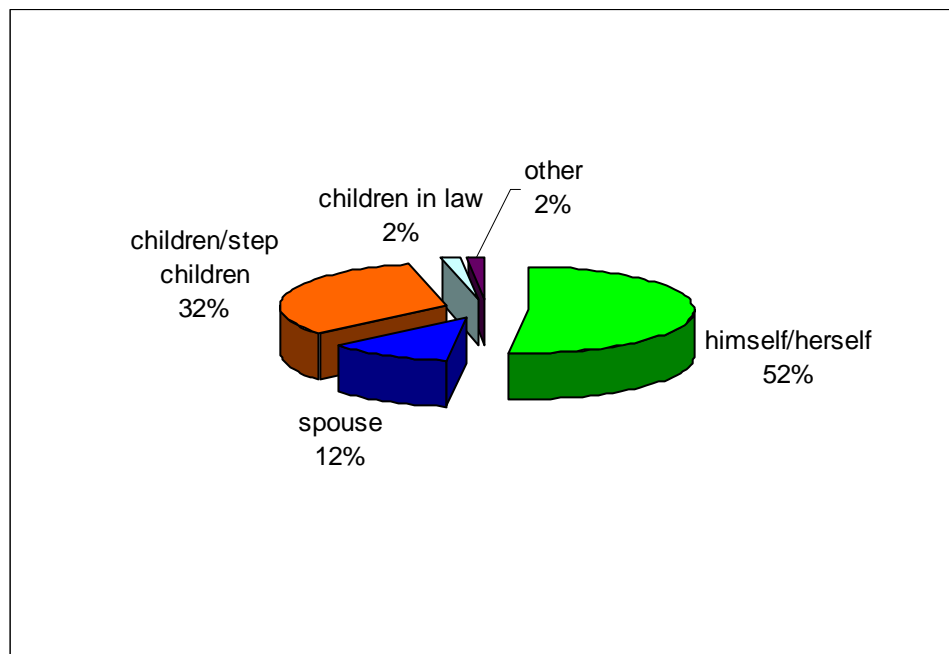
About 52% of the old population has declared that the main responsibility of meeting their needs belongs to them. This ratio is 34.3% for female and 72.6% for male (Table 6.20). The main responsibility of meeting the needs of the elder individual secondarily belongs to the children and step children with the ratio of 32.4% (Figure 6.22).

Table 6.20. Percent distribution of elderly by age groups, sex and the person who takes main responsibility for his/her needs, health and welfare

Who takes main responsibility (%)												
Total elderly												
age group	Himself/ herself	Spouse	Children/s tep children	Children-in-law	Sibling	Grandc hild	Sibling's child	Other close relative	Distant relative	Neighbour	Other	<i>n</i>
65-69	58.5	16.7	23.3	1.0	0.1	0.0	0.1	0.1	0.1	0.1	0.0	1,120
70-74	56.7	11.0	28.5	1.7	0.3	0.5	0.4	0.1	0.2	0.3	0.1	926
75-79	48.3	11.8	36.3	1.7	0.3	0.0	0.3	0.0	0.2	0.8	0.3	603
80-84	34.2	2.3	57.1	4.9	0.4	0.0	0.4	0.4	0.0	0.4	0.0	266
85-89	32.9	2.4	53.7	3.7	0.0	1.2	2.4	0.0	0.0	3.7	0.0	80
90+	11.2	6.7	67.4	6.7	0.0	2.2	3.4	1.1	0.0	0.0	1.1	89
Total	51.8	12.1	32.4	1.9	0.2	0.3	0.4	0.1	0.1	0.4	0.1	3,084
Male												
	Himself/ herself	Spouse	Children/s tep children	Children-in-law	Sibling	Grandc hild	Sibling's child	Other close relative	Distant relative	Neighbour	Other	
65-69	83.2	3.0	12.8	0.8	0.2	0.0	0.0	0.0	0.0	0.0	0.0	494
70-74	78.4	4.4	15.2	1.4	0.5	0.0	0.0	0.0	0.2	0.0	0.0	435
75-79	64.4	7.5	25.7	0.7	0.3	0.0	0.3	0.0	0.0	0.3	0.7	292
80-84	53.5	0.9	39.5	6.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	114
85-89	47.2	2.8	41.7	2.8	0.0	0.0	0.0	0.0	0.0	5.6	0.0	(36)
90+	18.6	14.0	58.1	7.0	0.0	0.0	0.0	2.3	0.0	0.0	0.0	(43)
Total	72.6	4.5	20.4	1.6	0.3	0.0	0.1	0.1	0.1	0.2	0.1	1,414
Female												
	Himself/ herself	Spouse	Children/s tep children	Children-in-law	Sibling	Grandc hild	Sibling's child	Other close relative	Distant relative	Neighbour	Other	
65-69	39.0	27.5	31.5	1.3	0.2	0.0	0.2	0.2	0.2	0.2	0.0	626
70-74	37.7	16.9	40.3	2.0	0.2	0.8	0.8	0.2	0.2	0.6	0.2	491
75-79	32.8	15.8	46.0	2.9	0.3	0.0	0.6	0.0	0.3	1.3	0.0	311
80-84	19.7	3.3	70.4	4.6	0.7	0.0	0.0	0.7	0.0	0.7	0.0	152
85-89	20.5	2.3	63.6	4.5	0.0	2.3	4.5	0.0	0.0	2.3	0.0	(44)
90+	4.3	0.0	76.1	6.5	0.0	4.3	6.5	0.0	0.0	0.0	2.2	(46)
Total	34.3	18.6	42.4	2.3	0.2	0.4	0.7	0.2	0.2	0.6	0.1	1,670

Source : Turkey Demographic and Health Survey TDHS-2003

Figure 6.22. Percentage distribution of main responsibility for needs, health and welfare of elderly



Source : Turkey Demographic and Health Survey TDHS-2003

While about 19% of the female population indicate that the main person responsible of meeting their demands is their spouse, this ratio is 4.5% for male (Table 6.20). While the children/step children have the greatest share of 42.4% being the main responsible to meet the demands of the old women, the percentage of children/step children for male population is 20.4%.

CHAPTER VII

CURRENT AND PROSPECTIVE CO-RESIDENCE PATTERN OF ELDERLY

In this chapter the co-residence pattern of the elderly population in Turkey was investigated by analyzing the results of 2003 TDHS data. A household projection had been made in order to present the change at the structure of the households in Turkey and at the co-residence patterns of the old people according to headship rate method.

VII.1. CO-RESIDENCE PATTERN OF ELDERLY

Using the 2003 TDHS data, household compositions are established according to the relationship degree of the household members to the household head. The definitions of household types are included in Chapter 4.

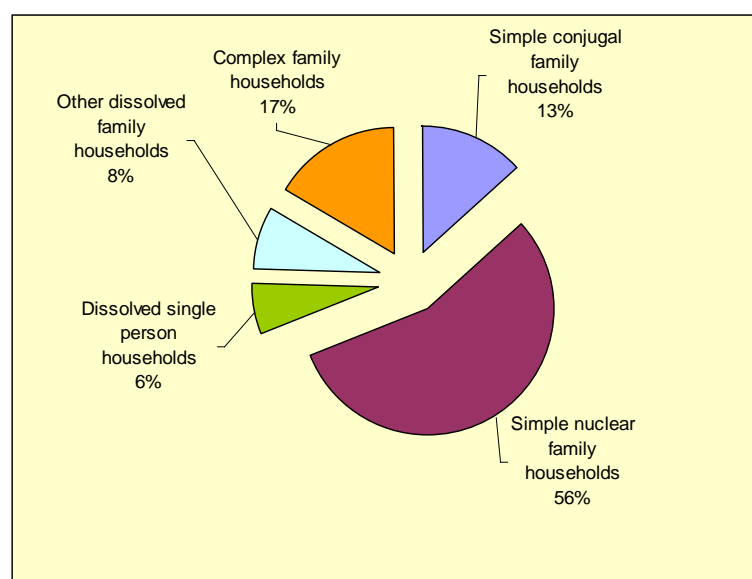
According to these analyses, simple family households constitute approximately 69% of the total houses in Turkey (Table 7.1). Simple nuclear family households formed by the married couples and single children constitutes the majority in the simple family households with an approximate ratio of 56%.

Table 7.1. Family Households Types of Turkey according to 2003 TDHS data

Household Types – TDHS-2003		n	Percent	Total percent
Simple	conjugal family	1,444	13.4	68.9
	nuclear family	5,987	55.5	
Dissolved	Single person	686	6.4	14.4
	Single parent	599	5.5	
	Other	274	2.5	
	downwards family	258	2.4	
	upwards family	404	3.7	
Complex	Extended laterally family	99	0.9	16.6
	Other family	302	2.8	
	combined family	53	0.5	
	Multiple secondary unit downwards family	652	6.0	
Total	Total	10,793	100.0	100.0
	Missing	(43)		
		10,836		

Source : Turkey Demographic and Health Survey TDHS-2003

The household type having the highest ratio following the Simple Family Households are Complex Family Households with approximate ratio of 17%. The ratio of dissolved single person family household is 6.4%.

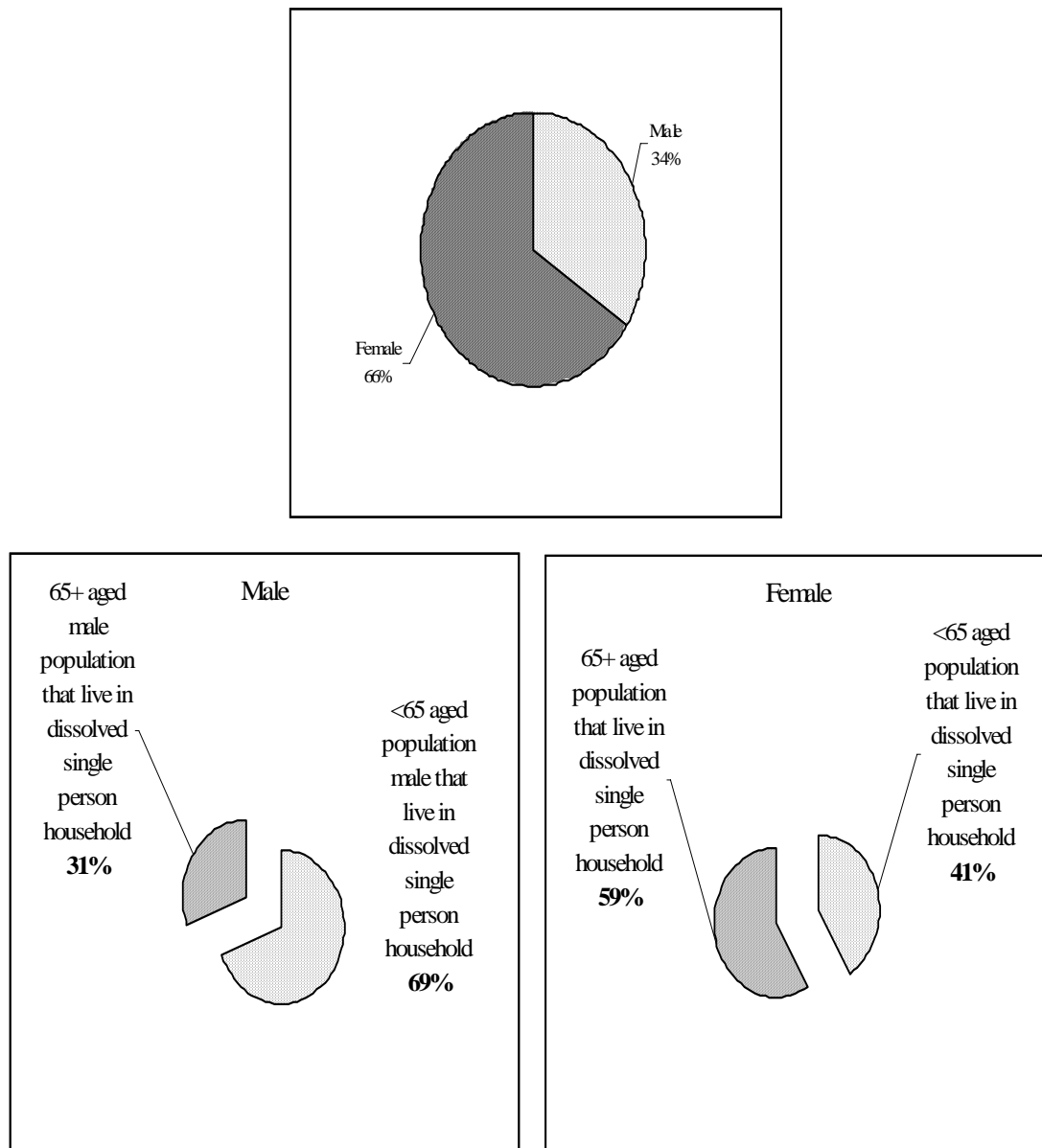
Figure 7.1. Family Households Types of Turkey according to 2003 TDHS Data

Source : Turkey Demographic and Health Survey TDHS-2003

We can see that there is at least one elderly in 22% of 10836 households (Table 7.2). When the Figure 7.3 is examined, it can be observed that 30 % of the elderly are in simple conjugal (ie. only husband and wife) household type. Nuclear family household type follows it with 15.1%. In the third type of households where elderly people live, dissolved single person family and multiple secondary downward household types take place with a percentage of 11.4%.

While 66% of the population who reside in single person households are females, said ratio corresponds to 34% for males. When the 66% of the male population who live in single person households is at age 64 or younger, the majority of the female population (59%) who live in single person households is at 65 or older (Figure 7.2).

Figure 7.2. Percent distribution of population that live in dissolved single person household by sex



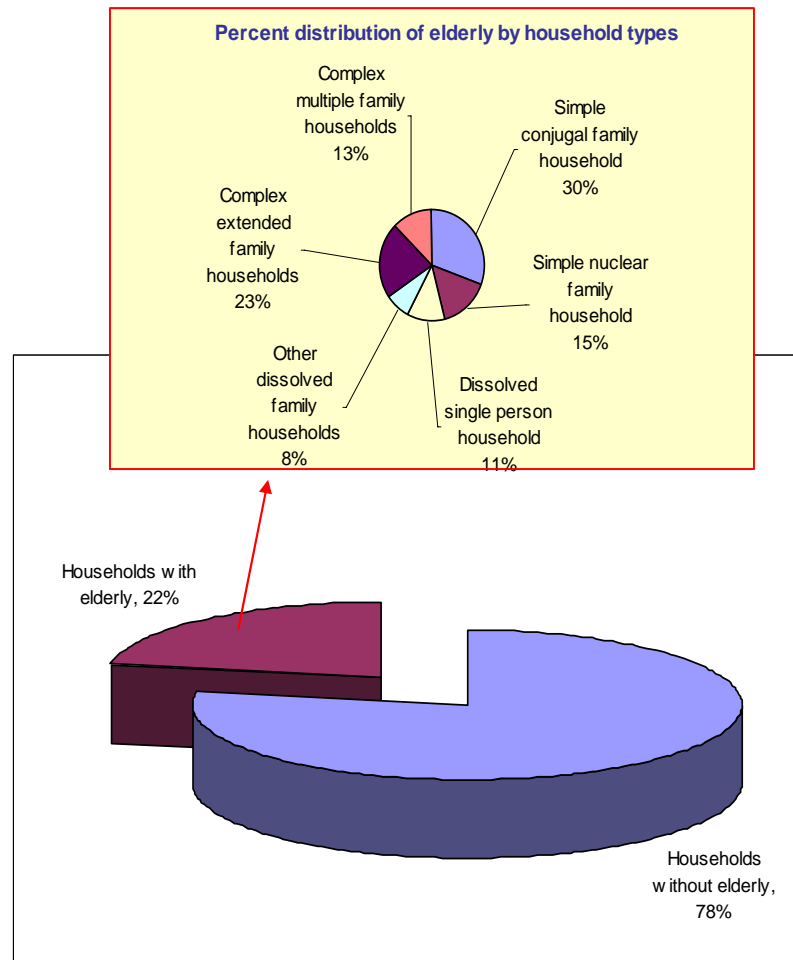
Source : Turkey Demographic and Health Survey TDHS-2003

Table 7.2. Households types of Turkey by including elderly

Household Types TDHS-2003		Household	Household	Total (%)
		without elderly (%)	with elderly (%)	
Simple	Conjugal	8,0	5,4	13,4
	Nuclear	51,9	3,6	55,5
Dissolved	Single person	3,2	3,2	6,4
	Single parent	3,9	1,6	5,5
	Other	2,0	0,5	2,5
Complex	downwards	1,1	1,3	2,4
Extended	upwards	0,9	2,8	3,7
	laterally	0,8	0,1	0,9
	other	1,8	1,0	2,8
	Combined	0,1	0,4	0,5
Complex	Secondary unit downwards	3,9	2,1	6,0
Multiple	Other	0,0	0,3	0,3
Total		77,7	22,3	100

Source : Turkey Demographic and Health Survey TDHS-2003

Figure 7.3. Households types of Turkey by including elderly according to 2003 TDHS data



Source : Turkey Demographic and Health Survey TDHS-2003

Table 7.3. Percent distribution of elderly by household types and age groups

Age Group	Household Types												Total
	Simple		Dissolved			Complex							
	Conjugal	Nuclear	Single person	Single parent	Other	Extended				Multiple			
						Down-wards	Up-wards	Laterally	Other	Combined	Secondary downward	Other	
65-69	12,1	7,4	2,9	2,2	0,6	1,9	2,3	0,2	1,8	0,1	4,7	0,2	36,3
70-74	9,7	3,9	3,8	1,6	0,5	1,4	3,2	0,1	1,4	0,5	3,6	0,3	30,1
75-79	6,3	2,4	2,6	0,8	0,3	1,0	2,7	0,1	0,7	0,3	2,1	0,2	19,5
80-84	2,0	0,9	1,3	0,8	0,1	0,6	1,5	0,0	0,3	0,3	0,7	0,2	8,6
85-89	0,5	0,3	0,4	0,1	0,1	0,1	0,7	0,0	0,1	0,1	0,2	0,1	2,7
90+	0,4	0,1	0,3	0,2	0,1	0,0	0,9	0,0	0,2	0,1	0,2	0,1	2,8
Total	30,8	15,1	11,4	5,8	1,8	4,9	11,3	0,4	4,5	1,5	11,4	1,1	100,0

Source : Turkey Demographic and Health Survey TDHS-2003

VII.1.1. Living Arrangements of Elderly

In the part related to theoretical frame of the study, economic effects of the ageing of the population were dealt with from demographic point of view and demographic theories were examined under three sub-groups. In the study, 2003 Turkey Population and Health Survey data was employed at a large extent from the theoretical frame's point of view. From the Wealth Flow Theory standpoint, the elderly are examined in 3 categories by their co-residence patterns and family structure. These typologies are categorized in 65+, 65-69,...85-89, 90+ age groups and what sort of differentiation they exhibited is examined along with whether their isolation increases as they get older through the use of Life Cycle Approach.

- i. the elderly staying with their sons and daughters and the elderly receiving home-based care (*wealth flow theory, 1st stage*)
 - a. those living with unmarried sons and daughters (18+)
 - b. those living with married sons and daughters
- ii. The elderly with an income, living alone, sons and daughters living around and with no financial support from sons and daughters (*wealth flow theory, 2nd stage*).
- iii. The elderly with no family support, no sons and daughters living around and those living alone (*not complying with wealth flow theory*)

Table 7.4. Distribution of elderly by typology and age groups

Age groups	Elderly typology (65+)			Total (%)
	I st group (%)	2 nd Group (%)	3 rd Group (%)	
65-69	3,7	29,0	3,5	36,2
70-74	2,7	24,5	2,9	30,1
75-79	1,6	16,5	1,7	19,7
80-84	1,0	6,6	0,9	8,5
85-89	0,5	1,7	0,4	2,6
90+	0,4	2,2	0,2	2,8
65+	9,8	80,6	9,6	100,0

When Table 7.4. containing elderly typologies is examined; it was observed that most elderly people with a percentage of 80.6% match with the 2nd typology and living type. This means that 80.6% of the elderly have income, live alone or close to their children, but they do not get financial support from their children. This situation suits the second stage of “wealth flow theory”. In other words, although elderly people do not need the financial support of their children, they live close to their children. Examining these numbers, we can conclude that family support is important in the care of elderly, but private lives of individuals are as important as that. Another explanation can be that although children do not live with their parents, they want them to be close. In other words, children, without having them interfere with their private lives, continue to take care of their parents.

VII.1.2. Results of Non-Institutional Population Projection

Non-institutional population projections are required to make the household/family and labor force projections. Census data are used in the population projections made by TurkStat as base year, and these data also contain the institutional population. Non-institutional population age distributions included in TurkStat 2005 Household Labor Force Statistics publication are used for the non-institutional population projections computed in this chapter.

PEOPLE software was used for the population projections. As the projections are calculated in every five years and as year 2000 data is not consistent with 2000 Census of Population results, year 2005 non-institutional data was used as base population. PEOPLE software enables the entry of five types of fertility data for the projection of births. Age-specific fertility rates (ASFRs) for every five year interval of the projection period were used (Table 4.4)¹. These data are based on maternity history data from 1993, 1998 and 2003 Turkey DHS, and an official estimates of total fertility from the Turkish Statistical Institute through 2005. The

¹ <http://esa.un.org/unpp>

tables showing the percentage distributions of the non-institutional population projections with respect to the age groups and sexes, and projected deaths in each five year intervals are included in Annex D.

Table 7.5. Projected non-institutional mid-year population by age and sex (thousand)
2005-2050 period

Age groups	2005			2010		
	Males	Females	Total	Males	Females	Total
0-4	3556.0	3449.0	7005.0	3349.0	3181.8	6530.8
5-9	3578.0	3481.0	7059.0	3540.8	3438.1	6978.9
10-14	3404.0	3317.0	6721.0	3568.8	3475.7	7044.4
15-19	3239.0	3053.0	6292.0	3390.6	3310.9	6701.5
20-24	2698.0	3185.0	5883.0	3218.2	3044.5	6262.8
25-29	3412.0	3303.0	6715.0	2677.3	3173.5	5850.8
30-34	3165.0	3069.0	6234.0	3384.4	3288.3	6672.7
35-39	2622.0	2597.0	5219.0	3135.0	3050.6	6185.6
40-44	2292.0	2263.0	4555.0	2588.0	2574.9	5162.9
45-49	2028.0	1960.0	3988.0	2245.2	2233.3	4478.6
50-54	1665.0	1627.0	3292.0	1958.6	1920.6	3879.3
55-59	1218.0	1236.0	2454.0	1571.4	1577.7	3149.1
60-64	963.0	1025.0	1988.0	1111.8	1176.5	2288.3
65-69	801.0	898.0	1699.0	839.1	943.3	1782.4
70-74	570.0	678.0	1248.0	648.8	776.7	1425.5
75+	535.0	723.0	1258.0	662.7	892.2	1554.9
All ages	35746.0	35864.0	71610.0	37889.7	38058.8	75948.4
Median age	27.0	27,2	27,1	28,5	29,1	28,8
<i>Summary</i>						
Under 15	10538.0	10247.0	20785.0	10458.5	10095.6	20554.1
15-49	19456.0	19430.0	38886.0	20638.7	20676.1	41314.8
50-59	2883.0	2863.0	5746.0	3530.0	3498.3	7028.4
60+	2869.0	3324.0	6193.0	3262.4	3788.7	7051.1

Table 7. 5. Projected non-institutional mid-year population by age and sex (thousand)
(continue)

Age group	2015			2020		
	Males	Females	Total	Males	Females	Total
0-4	3274.9	3106.1	6381.0	3236.1	3067.9	6304.0
5-9	3336.6	3173.3	6509.9	3265.3	3099.8	6365.1
10-14	3532.3	3433.4	6965.7	3330.2	3170.1	6500.3
15-19	3555.6	3470.0	7025.6	3521.4	3429.1	6950.5
20-24	3370.1	3302.7	6672.8	3537.6	3463.3	7001.0
25-29	3195.0	3034.8	6229.8	3349.7	3294.5	6644.2
30-34	2657.0	3160.9	5818.0	3174.7	3025.3	6200.0
35-39	3354.4	3270.5	6625.0	2637.2	3147.3	5784.5
40-44	3096.9	3026.7	6123.5	3319.7	3249.5	6569.3
45-49	2537.7	2543.2	5081.0	3044.6	2995.5	6040.1
50-54	2171.5	2191.0	4362.5	2463.2	2501.7	4964.9
55-59	1851.9	1865.6	3717.5	2063.3	2136.1	4199.4
60-64	1438.1	1506.0	2944.1	1706.1	1790.3	3496.5
65-69	973.8	1088.4	2062.2	1269.2	1403.0	2672.2
70-74	686.6	823.6	1510.2	802.3	957.6	1759.9
75+	796.1	1074.2	1870.3	891.7	1216.7	2108.5
All ages	39828.5	40070.6	79899.2	41612.5	41947.8	83560.3
Median age	29,5	30,8	30,1	30,9	32,4	31,6
<i>Summary</i>						
Under 15	10143.8	9712.8	19856.6	9831.6	9337.8	19169.4
15-49	21766.8	21808.9	43575.7	22585.0	22604.5	45189.6
50-59	4023.3	4056.7	8080.0	4526.5	4637.8	9164.3
60+	3894.6	4492.2	8386.8	4669.4	5367.7	10037.0
Age group	2025			2030		
	Males	Females	Total	Males	Females	Total
0-4	3214.8	3047.5	6262.3	3137.4	2974.6	6112.0
5-9	3229.1	3063.7	6292.8	3210.1	3044.7	6254.8
10-14	3260.7	3097.7	6358.4	3225.9	3062.4	6288.2
15-19	3322.1	3167.2	6489.3	3254.6	3095.8	6350.3
20-24	3507.2	3424.4	6931.6	3311.7	3164.1	6475.8
25-29	3520.5	3457.1	6977.6	3494.0	3419.9	6913.9
30-34	3332.6	3286.9	6619.6	3506.5	3451.2	6957.7
35-39	3155.7	3015.5	6171.2	3316.9	3278.9	6595.8
40-44	2614.9	3131.6	5746.5	3134.2	3003.7	6137.9
45-49	3272.6	3222.5	6495.1	2584.1	3110.3	5694.4
50-54	2966.4	2954.5	5920.8	3199.5	3185.1	6384.6
55-59	2352.7	2447.9	4800.6	2846.9	2899.5	5746.4
60-64	1914.2	2060.8	3975.0	2196.9	2372.1	4568.9
65-69	1517.4	1679.5	3196.9	1715.2	1945.5	3660.7
70-74	1052.5	1243.8	2296.3	1267.4	1501.5	2768.9
75+	1024.8	1409.8	2434.7	1279.2	1762.1	3041.3
All ages	43258.1	43710.5	86968.6	44680.4	45271.3	89951.7
Median age	32.4	34.0	33.2	33.9	35.6	34.7
<i>Summary</i>						
Under 15	9704.6	9208.9	18913.5	9573.4	9081.7	18655.1
15-49	22725.5	22705.3	45430.8	22602.0	22523.9	45125.9
50-59	5319.1	5402.4	10721.5	6046.4	6084.6	12130.9
60+	5509.0	6393.9	11902.8	6458.6	7581.2	14039.8

Table 7.5. Projected non-institutional mid-year population by age and sex (thousand)

(cont.)

Age group	2035			2040		
	Males	Females	Total	Males	Females	Total
0-4	3055.4	2887.6	5943.0	2960.5	2805.0	5765.5
5-9	3133.9	2971.9	6105.8	3052.0	2885.6	5937.6
10-14	3207.5	3043.3	6250.9	3131.4	2970.9	6102.3
15-19	3220.8	3060.4	6281.3	3202.5	3041.9	6244.4
20-24	3246.0	3092.7	6338.7	3212.3	3058.1	6270.4
25-29	3301.2	3160.0	6461.1	3235.7	3089.6	6325.2
30-34	3482.3	3414.1	6896.5	3290.1	3155.8	6445.9
35-39	3492.5	3442.8	6935.3	3468.5	3407.4	6875.9
40-44	3297.7	3266.0	6563.7	3472.3	3431.7	6904.0
45-49	3102.0	2983.3	6085.3	3263.8	3247.1	6510.9
50-54	2532.2	3074.1	5606.3	3039.7	2953.1	5992.8
55-59	3080.9	3125.8	6206.7	2438.3	3023.8	5462.1
60-64	2670.9	2809.7	5480.6	2890.5	3039.7	5930.2
65-69	1981.8	2239.4	4221.2	2409.4	2667.8	5077.3
70-74	1446.6	1739.4	3186.0	1671.5	2020.7	3692.2
75+	1587.3	2159.8	3747.1	1875.6	2609.3	4484.9
All ages	45839.1	46470.2	92309.3	46614.0	47407.6	94021.5
Median age	35.4	37.3	36.4	36.8	39.0	37.9
<i>Summary</i>						
Under 15	9396.8	8902.8	18299.6	9143.9	8661.5	17805.4
15-49	23142.5	22419.3	45561.8	23145.1	22431.5	45576.7
50-59	5613.1	6199.9	11813.0	5478.0	5976.8	11454.9
60+	7686.6	8948.2	16634.8	8846.9	10337.7	19184.6
Age group	2045			2050		
	Males	Females	Total	Males	Females	Total
0-4	2905.5	2751.1	5656.6	2871.3	2706.8	5578.1
5-9	2958.2	2803.9	5762.1	2902.6	2750.0	5652.6
10-14	3050.1	2885.0	5935.1	2956.5	2803.2	5759.7
15-19	3127.4	2969.9	6097.3	3045.3	2884.0	5929.4
20-24	3195.6	3040.2	6235.8	3117.2	2968.3	6085.5
25-29	3204.0	3055.9	6259.9	3181.9	3038.0	6220.0
30-34	3226.8	3086.6	6313.4	3189.7	3053.0	6242.7
35-39	3279.5	3151.1	6430.6	3211.1	3082.1	6293.1
40-44	3451.8	3398.9	6850.6	3256.8	3143.2	6400.0
45-49	3441.7	3415.3	6857.0	3413.1	3382.6	6795.7
50-54	3205.5	3219.1	6424.7	3375.3	3385.9	6761.1
55-59	2936.8	2911.3	5848.1	3104.4	3173.6	6278.0
60-64	2298.4	2950.9	5249.4	2791.0	2841.2	5632.2
65-69	2625.2	2902.9	5528.1	2117.9	2818.1	4936.0
70-74	2051.8	2429.6	4481.4	2295.8	2643.7	4939.4
75+	2222.2	3137.9	5360.1	2818.9	3773.1	6592.0
All ages	47180.6	48109.6	95290.2	47648.8	48446.7	96095.5
Median age	37.9	40.5	39.2	39.0	41.5	40.2
<i>Summary</i>						
Under 15	8913.9	8440.0	17353.8	8730.4	8260.0	16990.4
15-49	22926.8	22117.9	45044.7	22415.2	21551.2	43966.4
50-59	6142.4	6130.4	12272.8	6479.7	6559.4	13039.1
60+	9197.6	11421.3	20618.9	10023.5	12076.0	22099.5

VII.1.3. Household and Family Projections

Household types were formed using 2003 TDHS data and these family/household types were grouped under three basic headings: *i. Simple Family Household*, *ii. Dissolved Family Household*, *iii. Complex Family Household*. These three main family types were organized under subheadings and these were analyzed whether they include individual who are 65+. Although the TDHS elderly module was applied to those 60+ years of age, in this study the family types were grouped by having individual of 65+ years of age in SPSS syntax program since this is the commonly used age criterion.

In this study the household projections are produced by using two different techniques of the headship rate household projection method, which are “constant rate” and “extrapolative rate”. Thereby two different scenarios are applied to the household projections by assuming that the headship rate does not change over time and that the changing trend between two surveys still continue.

VII.1.3.1. Household projections with extrapolative headship rate method

Headship rates of 2005-2050 period are computed by headship rate extrapolative method. While the mentioned rates are computed, 2 separate formulas exclusive to increases and decreases are utilized considering the variations in the years 1998-2003 (Chapter 2).

Table 7.6. Headship rates according to household headshiprate extrapolative method²

Age Groups	Head ship rates for 2005						Total
	Simple		Dissolved		Complex		
	With elderly (1)	without elderly (2)	with elderly (3)	without elderly (4)	with elderly (5)	without elderly (6)	
15-19	0.000	0.000	0.000	0.012	0.000	0.000	0.012
20-24	0.000	0.031	0.001	0.042	0.000	0.004	0.078
25-29	0.000	0.183	0.001	0.028	0.004	0.022	0.238
30-34	0.007	0.335	0.004	0.024	0.013	0.030	0.412
35-39	0.008	0.366	0.007	0.039	0.019	0.028	0.467
40-44	0.009	0.391	0.002	0.045	0.031	0.031	0.509
45-49	0.020	0.420	0.005	0.025	0.037	0.040	0.546
50-54	0.011	0.342	0.006	0.061	0.033	0.075	0.528
55-59	0.012	0.369	0.003	0.068	0.031	0.104	0.587
60-64	0.012	0.288	0.009	0.121	0.029	0.090	0.550
65+	0.282	0.000	0.176	0.000	0.139	0.000	0.597
TOTAL	0.362	2.725	0.213	0.464	0.337	0.425	4.525

Age Groups	Head ship rates for 2010						Total
	Simple		Dissolved		Complex		
	with elderly (1)	without elderly (2)	with elderly (3)	without elderly (4)	with elderly (5)	without elderly (6)	
15-19	0.000	0.000	0.000	0.017	0.000	0.000	0.017
20-24	0.000	0.027	0.001	0.056	0.000	0.003	0.087
25-29	0.000	0.169	0.000	0.028	0.003	0.021	0.220
30-34	0.010	0.346	0.005	0.029	0.010	0.027	0.426
35-39	0.010	0.372	0.011	0.052	0.015	0.025	0.485
40-44	0.011	0.384	0.001	0.050	0.026	0.032	0.504
45-49	0.032	0.455	0.004	0.015	0.031	0.028	0.566
50-54	0.016	0.357	0.005	0.072	0.029	0.060	0.539
55-59	0.018	0.416	0.001	0.071	0.032	0.087	0.625
60-64	0.007	0.285	0.014	0.137	0.034	0.060	0.538
65+	0.299	0.000	0.199	0.000	0.142	0.000	0.641
TOTAL	0.404	2.813	0.241	0.526	0.321	0.343	4.647

²The areas in tables illuminated with dark colors represent the groups in which drops in headship rate ratios are observed when 1998 TDHS and 2003 TDHS data are analyzed.

Table 7.6. Headship rates according to household headshiprate extrapolative method (cont)

Age Groups	Head ship rates for 2015						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0.000	0.000	0.000	0.022	0.000	0.000	0.022
20-24	0.000	0.024	0.001	0.069	0.000	0.002	0.096
25-29	0.000	0.156	0.000	0.028	0.002	0.019	0.205
30-34	0.013	0.357	0.006	0.033	0.007	0.025	0.441
35-39	0.013	0.378	0.014	0.065	0.011	0.023	0.503
40-44	0.013	0.377	0.000	0.055	0.022	0.033	0.501
45-49	0.044	0.488	0.004	0.010	0.025	0.020	0.591
50-54	0.022	0.372	0.004	0.083	0.026	0.047	0.554
55-59	0.023	0.460	0.001	0.074	0.033	0.073	0.663
60-64	0.004	0.283	0.018	0.152	0.038	0.040	0.536
65+	0.315	0.000	0.223	0.000	0.146	0.000	0.683
TOTAL	0.447	2.896	0.270	0.591	0.311	0.281	4.796

Age Groups	Head ship rates for 2020						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0.000	0.000	0.000	0.027	0.000	0.000	0.027
20-24	0.000	0.021	0.001	0.083	0.000	0.001	0.107
25-29	0.000	0.145	0.000	0.028	0.001	0.017	0.191
30-34	0.016	0.369	0.007	0.037	0.005	0.022	0.456
35-39	0.015	0.384	0.017	0.077	0.008	0.021	0.522
40-44	0.015	0.371	0.000	0.060	0.019	0.034	0.498
45-49	0.055	0.519	0.003	0.006	0.021	0.014	0.619
50-54	0.027	0.387	0.003	0.094	0.024	0.037	0.572
55-59	0.028	0.500	0.000	0.076	0.034	0.061	0.700
60-64	0.003	0.280	0.023	0.168	0.043	0.027	0.542
65+	0.331	0.000	0.245	0.000	0.149	0.000	0.725
TOTAL	0.491	2.975	0.299	0.656	0.304	0.235	4.961

Table 7.6. Headship rates according to household headshiprate extrapolative method (cont)

Head ship rates for 2025							
Age Groups	Simple		Dissolved		Complex		Total
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0.000	0.000	0.000	0.032	0.000	0.000	0.032
20-24	0.000	0.018	0.002	0.096	0.000	0.001	0.117
25-29	0.000	0.134	0.000	0.028	0.001	0.016	0.179
30-34	0.019	0.380	0.008	0.042	0.004	0.020	0.472
35-39	0.018	0.390	0.020	0.090	0.006	0.019	0.542
40-44	0.017	0.364	0.000	0.064	0.016	0.035	0.497
45-49	0.067	0.548	0.003	0.004	0.018	0.010	0.649
50-54	0.032	0.401	0.002	0.105	0.021	0.029	0.591
55-59	0.034	0.538	0.000	0.079	0.035	0.051	0.736
60-64	0.002	0.277	0.027	0.183	0.047	0.018	0.554
65+	0.347	0.000	0.267	0.000	0.152	0.000	0.766
TOTAL	0.536	3.050	0.329	0.722	0.300	0.199	5.136

Head ship rates for 2030							
Age Groups	Simple		Dissolved		Complex		Total
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0.000	0.000	0.000	0.037	0.000	0.000	0.037
20-24	0.000	0.016	0.002	0.110	0.000	0.001	0.128
25-29	0.000	0.124	0.000	0.028	0.000	0.015	0.167
30-34	0.023	0.390	0.009	0.046	0.003	0.018	0.489
35-39	0.020	0.396	0.023	0.102	0.005	0.017	0.563
40-44	0.019	0.358	0.000	0.069	0.014	0.036	0.496
45-49	0.078	0.576	0.002	0.002	0.015	0.007	0.680
50-54	0.038	0.415	0.002	0.115	0.019	0.023	0.613
55-59	0.039	0.572	0.000	0.081	0.036	0.042	0.771
60-64	0.001	0.274	0.032	0.197	0.052	0.012	0.568
65+	0.362	0.000	0.288	0.000	0.155	0.000	0.805
TOTAL	0.580	3.121	0.358	0.788	0.298	0.171	5.317

Table 7.6. Headship rates according to household headshiprate extrapolative method (cont)

Age Groups	Head ship rates for 2035						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0.000	0.000	0.000	0.042	0.000	0.000	0.042
20-24	0.000	0.014	0.002	0.123	0.000	0.000	0.139
25-29	0.000	0.115	0.000	0.028	0.000	0.014	0.157
30-34	0.026	0.401	0.010	0.050	0.002	0.017	0.505
35-39	0.023	0.401	0.026	0.115	0.003	0.015	0.584
40-44	0.020	0.352	0.000	0.074	0.012	0.037	0.495
45-49	0.089	0.601	0.002	0.002	0.012	0.005	0.711
50-54	0.043	0.429	0.002	0.126	0.017	0.018	0.635
55-59	0.045	0.604	0.000	0.084	0.037	0.035	0.805
60-64	0.001	0.272	0.036	0.212	0.056	0.008	0.584
65+	0.377	0.000	0.309	0.000	0.159	0.000	0.844
TOTAL	0.623	3.189	0.386	0.854	0.298	0.150	5.501

Age Groups	Head ship rates for 2040						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0.000	0.000	0.000	0.047	0.000	0.000	0.047
20-24	0.000	0.012	0.002	0.135	0.000	0.000	0.150
25-29	0.000	0.106	0.000	0.028	0.000	0.012	0.147
30-34	0.029	0.411	0.011	0.055	0.001	0.015	0.522
35-39	0.025	0.407	0.029	0.127	0.003	0.014	0.605
40-44	0.022	0.346	0.000	0.078	0.010	0.038	0.495
45-49	0.100	0.625	0.002	0.001	0.010	0.004	0.742
50-54	0.048	0.442	0.001	0.136	0.016	0.014	0.658
55-59	0.050	0.634	0.000	0.086	0.038	0.030	0.838
60-64	0.000	0.269	0.040	0.226	0.060	0.005	0.601
65+	0.391	0.000	0.329	0.000	0.162	0.000	0.882
TOTAL	0.667	3.253	0.414	0.920	0.300	0.133	5.687

Table 7.6. Headship rates according to household headshiprate extrapolative method (cont)

Age Groups	Head ship rates for 2045						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0.000	0.000	0.000	0.052	0.000	0.000	0.052
20-24	0.000	0.010	0.002	0.148	0.000	0.000	0.161
25-29	0.000	0.098	0.000	0.029	0.000	0.011	0.138
30-34	0.032	0.421	0.012	0.059	0.001	0.014	0.539
35-39	0.028	0.413	0.032	0.139	0.002	0.012	0.626
40-44	0.024	0.340	0.000	0.083	0.008	0.040	0.495
45-49	0.111	0.648	0.001	0.001	0.008	0.003	0.772
50-54	0.054	0.455	0.001	0.146	0.014	0.011	0.682
55-59	0.055	0.661	0.000	0.089	0.039	0.025	0.869
60-64	0.000	0.266	0.045	0.240	0.065	0.004	0.619
65+	0.406	0.000	0.348	0.000	0.165	0.000	0.919
TOTAL	0.710	3.314	0.442	0.984	0.303	0.119	5.872

Age Groups	Head ship rates for 2050						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0.000	0.000	0.000	0.057	0.000	0.000	0.057
20-24	0.000	0.009	0.003	0.160	0.000	0.000	0.172
25-29	0.000	0.091	0.000	0.029	0.000	0.011	0.130
30-34	0.035	0.431	0.013	0.063	0.001	0.012	0.556
35-39	0.030	0.418	0.035	0.150	0.001	0.011	0.647
40-44	0.026	0.334	0.000	0.088	0.007	0.041	0.495
45-49	0.121	0.669	0.001	0.000	0.007	0.002	0.801
50-54	0.059	0.468	0.001	0.156	0.013	0.009	0.706
55-59	0.060	0.687	0.000	0.091	0.040	0.021	0.899
60-64	0.000	0.264	0.049	0.253	0.069	0.002	0.638
65+	0.420	0.000	0.367	0.000	0.168	0.000	0.955
TOTAL	0.752	3.372	0.469	1.048	0.307	0.109	6.056

By using the computed headship rates and non-institutional population distributions, the distribution of household numbers are obtained (Table 7.7).

Table 7.7. Household numbers distribution according to extrapolative headship rate method

Age Groups	Household distributions for 2005 (thousands)						Total
	Simple		Dissolved		Complex		
	with elderly (1)	without elderly (2)	with elderly (3)	without elderly (4)	with elderly (5)	without elderly (6)	
15-19	0	1	0	75	0	0	76
20-24	1	184	4	245	0	25	460
25-29	0	1227	4	186	30	150	1597
30-34	41	2086	22	150	83	188	2570
35-39	41	1911	39	201	101	146	2439
40-44	43	1779	8	206	141	140	2318
45-49	81	1675	20	98	146	159	2179
50-54	35	1126	20	201	107	248	1737
55-59	30	906	7	168	75	256	1441
60-64	24	573	19	241	59	179	1094
65+	1185	0	738	0	585	0	2509
TOTAL	1483	11468	880	1771	1329	1490	18420

Age Groups	Household distributions for 2010 (thousands)						Total
	Simple		Dissolved		Complex		
	with elderly (1)	without elderly (2)	with elderly (3)	without elderly (4)	with elderly (5)	without elderly (6)	
15-19	0	1	0	114	0	0	115
20-24	1	171	5	349	0	19	545
25-29	0	989	1	162	16	120	1289
30-34	65	2309	31	191	64	182	2842
35-39	65	2302	66	320	90	156	2998
40-44	58	1982	4	259	136	164	2603
45-49	144	2038	19	69	137	127	2534
50-54	63	1387	18	280	114	231	2092
55-59	55	1312	4	224	100	274	1968
60-64	17	653	32	313	78	137	1230
65+	1423	0	950	0	679	0	3051
TOTAL	1891	13143	1130	2279	1413	1411	21267

Table 7.7. Household numbers distribution according to extrapolative headship rate method (cont)

Age Groups	Household distributions for 2015 (thousands)						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0	1	0	155	0	0	156
20-24	1	158	7	463	0	14	644
25-29	0	975	1	174	11	118	1277
30-34	76	2079	33	192	40	144	2564
35-39	86	2505	91	428	72	151	3333
40-44	80	2310	2	336	137	201	3067
45-49	223	2480	18	49	129	103	3002
50-54	94	1625	16	362	115	205	2418
55-59	86	1710	2	273	122	270	2463
60-64	13	832	54	449	113	118	1579
65+	1715	0	1211	0	793	0	3719
TOTAL	2374	14676	1436	2881	1532	1324	24223

Age Groups	Household distributions for 2020 (thousands)						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0	1	0	188	0	0	189
20-24	1	145	9	581	0	10	746
25-29	0	962	0	186	7	115	1271
30-34	101	2285	42	231	31	139	2829
35-39	89	2221	97	448	47	119	3022
40-44	98	2435	1	392	125	223	3275
45-49	334	3136	18	37	127	87	3740
50-54	134	1922	15	466	118	184	2839
55-59	119	2102	1	319	142	255	2939
60-64	9	978	80	586	150	94	1897
65+	2165	0	1603	0	975	0	4742
TOTAL	3052	16187	1866	3435	1722	1226	27488

Table 7.7. Household numbers distribution according to extrapolative headship rate method (cont)

Age Groups	Household distributions for 2025 (thousands)						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0	1	0	208	0	0	209
20-24	1	125	10	668	0	7	811
25-29	0	935	0	196	5	111	1247
30-34	129	2512	52	276	24	135	3127
35-39	111	2406	123	555	38	115	3348
40-44	96	2093	0	370	93	202	2855
45-49	433	3561	17	25	114	67	4217
50-54	192	2377	14	619	126	173	3502
55-59	163	2582	1	377	168	244	3533
60-64	6	1101	108	726	188	71	2200
65+	2749	0	2115	0	1207	0	6071
TOTAL	3879	17693	2441	4021	1962	1124	31120

Age Groups	Household distributions for 2030 (thousands)						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0	1	0	236	0	0	236
20-24	1	101	11	710	0	4	828
25-29	0	857	0	195	3	102	1156
30-34	157	2715	62	320	18	128	3401
35-39	134	2610	152	676	30	111	3713
40-44	114	2197	0	424	85	222	3042
45-49	444	3278	13	14	83	42	3873
50-54	242	2652	12	735	123	147	3911
55-59	226	3289	0	466	207	244	4431
60-64	4	1254	144	901	236	55	2594
65+	3428	0	2728	0	1472	0	7628
TOTAL	4750	18955	3123	4677	2256	1054	34814

Table 7.7. Household numbers distribution according to extrapolative headship rate method (cont)

Age Groups	Household distributions for 2035 (thousands)						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0	1	0	264	0	0	265
20-24	1	86	12	777	0	3	880
25-29	0	741	0	183	2	87	1013
30-34	178	2764	68	347	13	115	3486
35-39	159	2784	181	795	24	105	4048
40-44	134	2309	0	484	77	245	3249
45-49	542	3659	12	9	74	32	4327
50-54	242	2406	9	704	97	102	3560
55-59	277	3751	0	519	230	220	4997
60-64	3	1489	197	1160	307	44	3200
65+	4204	0	3442	0	1770	0	9416
TOTAL	5738	19991	3922	5244	2593	953	38440

Age Groups	Household distributions for 2040 (thousands)						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0	1	0	293	0	0	294
20-24	1	74	14	849	0	2	940
25-29	0	671	0	180	1	79	931
30-34	187	2651	71	352	9	98	3367
35-39	174	2800	201	872	18	94	4158
40-44	153	2387	0	542	69	265	3416
45-49	651	4072	11	6	66	24	4830
50-54	291	2652	7	815	93	86	3944
55-59	273	3462	0	471	208	162	4576
60-64	2	1596	240	1339	358	32	3565
65+	5188	0	4355	0	2146	0	11689
TOTAL	6919	20366	4898	5719	2967	841	41708

Table 7.7. Household numbers distribution according to extrapolative headship rate method (cont)

Age Groups	Household distributions for 2045 (thousands)						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0	1	0	317	0	0	317
20-24	1	64	15	923	0	1	1004
25-29	0	615	0	179	1	72	865
30-34	203	2661	76	372	6	87	3404
35-39	179	2655	207	892	12	79	4025
40-44	164	2328	0	569	58	271	3390
45-49	760	4444	10	4	57	18	5293
50-54	345	2926	6	939	90	73	4380
55-59	323	3867	0	518	230	145	5082
60-64	1	1399	235	1258	339	19	3251
65+	6234	0	5348	0	2537	0	14120
TOTAL	8210	20959	5897	5971	3330	764	45132

Age Groups	Household distributions for 2050 (thousands)						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0	1	0	337	0	0	337
20-24	0	55	16	977	0	1	1049
25-29	0	565	0	178	0	65	809
30-34	220	2694	82	394	4	78	3472
35-39	190	2633	222	947	9	70	4072
40-44	165	2137	0	561	46	260	3170
45-49	825	4549	8	3	47	13	5446
50-54	399	3166	5	1057	85	60	4772
55-59	380	4310	0	572	253	130	5645
60-64	1	1486	276	1426	389	13	3592
65+	6908	0	6040	0	2771	0	15719
TOTAL	9089	21596	6650	6452	3605	690	48083

Table 7.8. Percent distribution of households according to extrapolative headship rate method

	Household percentages for 2005						Total
	Simple		Dissolved		Complex		
	With elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0.00	0.01	0.00	0.40	0.00	0.00	0.41
20-24	0.01	1.00	0.02	1.33	0.00	0.14	2.50
25-29	0.00	6.66	0.02	1.01	0.16	0.81	8.67
30-34	0.22	11.32	0.12	0.82	0.45	1.02	13.95
35-39	0.22	10.37	0.21	1.09	0.55	0.79	13.24
40-44	0.23	9.66	0.04	1.12	0.77	0.76	12.58
45-49	0.44	9.09	0.11	0.53	0.79	0.86	11.83
50-54	0.19	6.11	0.11	1.09	0.58	1.35	9.43
55-59	0.16	4.92	0.04	0.91	0.41	1.39	7.82
60-64	0.13	3.11	0.10	1.31	0.32	0.97	5.94
65+	6.44	0.00	4.01	0.00	3.18	0.00	13.62
TOTAL	8.05	62.26	4.78	9.61	7.21	8.09	100.00

	Household percentages for 2010						Total
	Simple		Dissolved		Complex		
	With elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0.00	0.01	0.00	0.53	0.00	0.00	0.54
20-24	0.01	0.80	0.02	1.64	0.00	0.09	2.56
25-29	0.00	4.65	0.01	0.76	0.08	0.56	6.06
30-34	0.31	10.86	0.14	0.90	0.30	0.86	13.36
35-39	0.30	10.82	0.31	1.50	0.42	0.73	14.10
40-44	0.27	9.32	0.02	1.22	0.64	0.77	12.24
45-49	0.68	9.58	0.09	0.33	0.64	0.60	11.92
50-54	0.30	6.52	0.09	1.31	0.53	1.09	9.84
55-59	0.26	6.17	0.02	1.05	0.47	1.29	9.25
60-64	0.08	3.07	0.15	1.47	0.37	0.65	5.78
65+	6.69	0.00	4.47	0.00	3.19	0.00	14.35
TOTAL	8.89	61.80	5.31	10.72	6.64	6.63	100.00

Table 7.8. Household percent distribution according to extrapolative headship rate method (continue)

	Household percentages for 2015						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0.00	0.01	0.00	0.64	0.00	0.00	0.64
20-24	0.01	0.65	0.03	1.91	0.00	0.06	2.66
25-29	0.00	4.02	0.00	0.72	0.04	0.49	5.27
30-34	0.31	8.58	0.14	0.79	0.17	0.60	10.59
35-39	0.35	10.34	0.38	1.77	0.30	0.62	13.76
40-44	0.33	9.54	0.01	1.39	0.57	0.83	12.66
45-49	0.92	10.24	0.08	0.20	0.53	0.42	12.39
50-54	0.39	6.71	0.07	1.50	0.47	0.85	9.98
55-59	0.35	7.06	0.01	1.13	0.50	1.12	10.17
60-64	0.05	3.43	0.22	1.85	0.47	0.49	6.52
65+	7.08	0.00	5.00	0.00	3.27	0.00	15.35
TOTAL	9.80	60.59	5.93	11.90	6.33	5.46	100.00

	Household percentages for 2020						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0.00	0.00	0.00	0.68	0.00	0.00	0.69
20-24	0.00	0.53	0.03	2.11	0.00	0.04	2.71
25-29	0.00	3.50	0.00	0.68	0.03	0.42	4.62
30-34	0.37	8.31	0.15	0.84	0.11	0.51	10.29
35-39	0.32	8.08	0.35	1.63	0.17	0.43	10.99
40-44	0.36	8.86	0.00	1.42	0.46	0.81	11.91
45-49	1.22	11.41	0.07	0.13	0.46	0.32	13.60
50-54	0.49	6.99	0.05	1.70	0.43	0.67	10.33
55-59	0.43	7.65	0.00	1.16	0.52	0.93	10.69
60-64	0.03	3.56	0.29	2.13	0.54	0.34	6.90
65+	7.88	0.00	5.83	0.00	3.55	0.00	17.25
TOTAL	11.10	58.89	6.79	12.50	6.26	4.46	100.00

Table 7.8. Household percent distribution according to extrapolative headship rate method(continue)

	Household percentages for 2025						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0.00	0.00	0.00	0.67	0.00	0.00	0.67
20-24	0.00	0.40	0.03	2.15	0.00	0.02	2.61
25-29	0.00	3.00	0.00	0.63	0.01	0.36	4.01
30-34	0.41	8.07	0.17	0.89	0.08	0.43	10.05
35-39	0.36	7.73	0.40	1.78	0.12	0.37	10.76
40-44	0.31	6.73	0.00	1.19	0.30	0.65	9.17
45-49	1.39	11.44	0.05	0.08	0.37	0.21	13.55
50-54	0.62	7.64	0.05	1.99	0.41	0.56	11.25
55-59	0.52	8.30	0.00	1.21	0.54	0.78	11.35
60-64	0.02	3.54	0.35	2.33	0.60	0.23	7.07
65+	8.83	0.00	6.80	0.00	3.88	0.00	19.51
TOTAL	12.47	56.85	7.84	12.92	6.30	3.61	100.00

	Household percentages for 2030						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0.00	0.00	0.00	0.68	0.00	0.00	0.68
20-24	0.00	0.29	0.03	2.04	0.00	0.01	2.38
25-29	0.00	2.46	0.00	0.56	0.01	0.29	3.32
30-34	0.45	7.80	0.18	0.92	0.05	0.37	9.77
35-39	0.39	7.50	0.44	1.94	0.09	0.32	10.67
40-44	0.33	6.31	0.00	1.22	0.24	0.64	8.74
45-49	1.27	9.41	0.04	0.04	0.24	0.12	11.12
50-54	0.69	7.62	0.04	2.11	0.35	0.42	11.24
55-59	0.65	9.45	0.00	1.34	0.59	0.70	12.73
60-64	0.01	3.60	0.42	2.59	0.68	0.16	7.45
65+	9.85	0.00	7.84	0.00	4.23	0.00	21.91
TOTAL	13.64	54.45	8.97	13.43	6.48	3.03	100.00

Table 7.8. Household percent distribution according to extrapolative headship rate method (continue)

	Household percentages for 2035						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0.00	0.00	0.00	0.69	0.00	0.00	0.69
20-24	0.00	0.22	0.03	2.02	0.00	0.01	2.29
25-29	0.00	1.93	0.00	0.48	0.00	0.23	2.64
30-34	0.46	7.19	0.18	0.90	0.03	0.30	9.07
35-39	0.41	7.24	0.47	2.07	0.06	0.27	10.53
40-44	0.35	6.01	0.00	1.26	0.20	0.64	8.45
45-49	1.41	9.52	0.03	0.02	0.19	0.08	11.26
50-54	0.63	6.26	0.02	1.83	0.25	0.27	9.26
55-59	0.72	9.76	0.00	1.35	0.60	0.57	13.00
60-64	0.01	3.87	0.51	3.02	0.80	0.11	8.32
65+	10.94	0.00	8.95	0.00	4.60	0.00	24.49
TOTAL	14.93	52.01	10.20	13.64	6.74	2.48	100.00

	Household percentages for 2040						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0.00	0.00	0.00	0.70	0.00	0.00	0.71
20-24	0.00	0.18	0.03	2.04	0.00	0.01	2.25
25-29	0.00	1.61	0.00	0.43	0.00	0.19	2.23
30-34	0.45	6.36	0.17	0.84	0.02	0.23	8.07
35-39	0.42	6.71	0.48	2.09	0.04	0.23	9.97
40-44	0.37	5.72	0.00	1.30	0.16	0.64	8.19
45-49	1.56	9.76	0.03	0.01	0.16	0.06	11.58
50-54	0.70	6.36	0.02	1.95	0.22	0.21	9.46
55-59	0.65	8.30	0.00	1.13	0.50	0.39	10.97
60-64	0.00	3.83	0.57	3.21	0.86	0.08	8.55
65+	12.44	0.00	10.44	0.00	5.14	0.00	28.02
TOTAL	16.59	48.83	11.74	13.71	7.11	2.02	100.00

Table 7.8. Household percent distribution according to extrapolative headship rate method (continue)

	Household percentages for 2045						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0.00	0.00	0.00	0.70	0.00	0.00	0.70
20-24	0.00	0.14	0.03	2.05	0.00	0.00	2.23
25-29	0.00	1.36	0.00	0.40	0.00	0.16	1.92
30-34	0.45	5.90	0.17	0.82	0.01	0.19	7.54
35-39	0.40	5.88	0.46	1.98	0.03	0.18	8.92
40-44	0.36	5.16	0.00	1.26	0.13	0.60	7.51
45-49	1.68	9.85	0.02	0.01	0.13	0.04	11.73
50-54	0.77	6.48	0.01	2.08	0.20	0.16	9.71
55-59	0.72	8.57	0.00	1.15	0.51	0.32	11.26
60-64	0.00	3.10	0.52	2.79	0.75	0.04	7.20
65+	13.81	0.00	11.85	0.00	5.62	0.00	31.29
TOTAL	18.19	46.44	13.07	13.23	7.38	1.69	100.00

	Household percentages for 2050						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0.00	0.00	0.00	0.70	0.00	0.00	0.70
20-24	0.00	0.11	0.03	2.03	0.00	0.00	2.18
25-29	0.00	1.18	0.00	0.37	0.00	0.14	1.68
30-34	0.46	5.60	0.17	0.82	0.01	0.16	7.22
35-39	0.40	5.48	0.46	1.97	0.02	0.15	8.47
40-44	0.34	4.45	0.00	1.17	0.10	0.54	6.59
45-49	1.72	9.46	0.02	0.01	0.10	0.03	11.33
50-54	0.83	6.58	0.01	2.20	0.18	0.13	9.93
55-59	0.79	8.96	0.00	1.19	0.53	0.27	11.74
60-64	0.00	3.09	0.57	2.97	0.81	0.03	7.47
65+	14.37	0.00	12.56	0.00	5.76	0.00	32.69
TOTAL	18.90	44.91	13.83	13.42	7.50	1.44	100.00

The household percentages obtained by headship rate extrapolative method are summarized in Table 7.9. In this table, the household distributions are also classified as those containing and not containing the elderly.

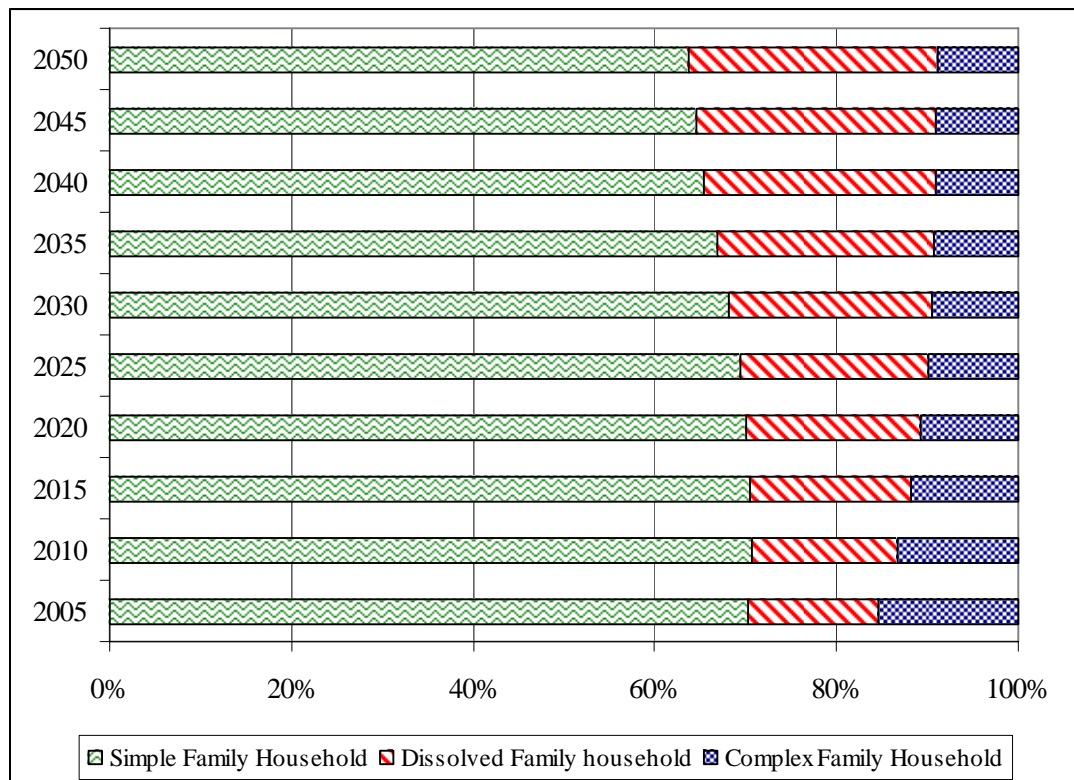
Table 7.9. Percentages of the household types projected with household headship rate extrapolative method by years

	Simple Family Household			Dissolved Family Household			Complex Family Household			10
	with elderly	without elderly	Total	with elderly	without elderly	Total	with elderly	without elderly	Total	
	1	2	3	4	5	6	7	8	9	
2005	8.05	62.26	70.31	4.78	9.61	14.39	7.21	8.09	15.30	100.00
2010	8.89	61.80	70.69	5.32	10.72	16.04	6.64	6.63	13.27	100.00
2015	9.80	60.59	70.39	5.93	11.90	17.83	6.32	5.46	11.78	100.00
2020	11.10	58.89	69.99	6.79	12.50	19.29	6.26	4.46	10.72	100.00
2025	12.47	56.85	69.32	7.84	12.92	20.76	6.31	3.61	9.92	100.00
2030	13.64	54.45	68.09	8.97	13.43	22.40	6.48	3.03	9.51	100.00
2035	14.93	52.01	66.94	10.20	13.64	23.84	6.74	2.48	9.22	100.00
2040	16.59	48.83	65.42	11.74	13.71	25.45	7.11	2.02	9.13	100.00
2045	18.19	46.44	64.63	13.07	13.23	26.30	7.38	1.69	9.07	100.00
2050	18.90	44.91	63.81	13.83	13.42	27.25	7.50	1.44	8.94	100.00

Although Simple Family Household percentages show a slight increase in 2010, they exhibit a continuous decline following this year. However, a continuous increase is observed in Dissolved Family Household type, and according to projections, the ratio of Dissolved Family Households reaches 27% in 2050. Also a continuous decline is observed in Complex Family Households and complex family household drops approximately to 9% in 2050 (Table 7.9 and Figure 7.4).

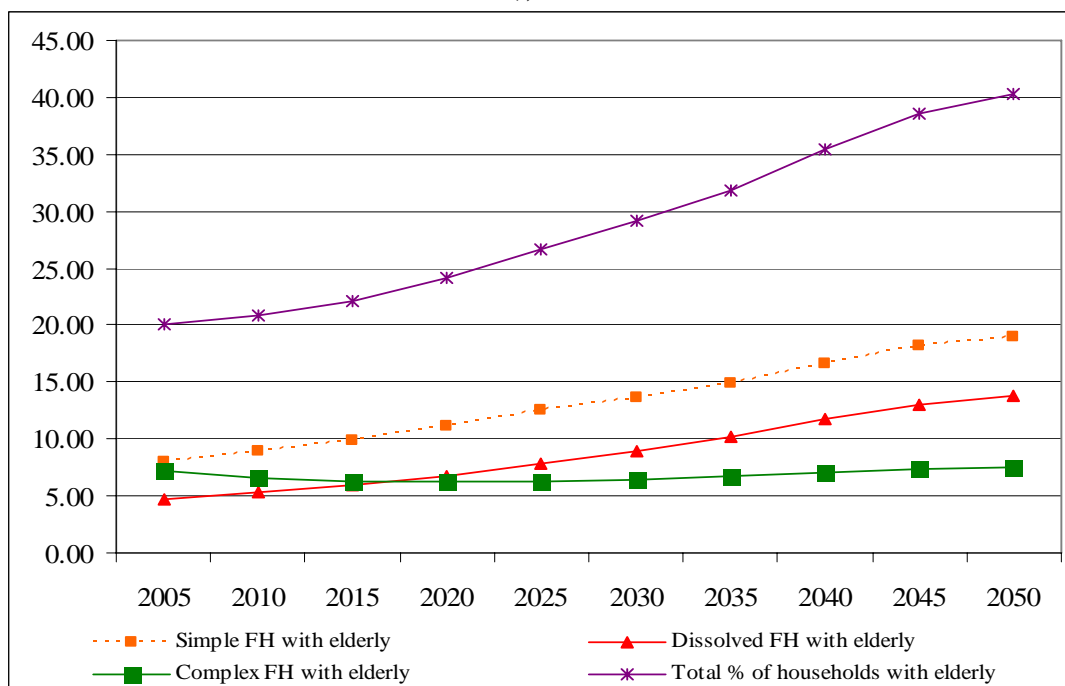
When the household types with the elderly living are considered (Table 7.9 and Figure 7.4), the households sheltering at least one elderly continuously increase in 2005-2050 period while simple and dissolved households increase regularly. While the ratio of the nuclear family having at least one elderly within is 8% in 2005, this ratio shall be about 19% in 2050. The dissolved family households shall similarly and continuously increase and reach from 5% to 14% in 2005-2050 period.

Figure 7.4. Percent distribution of household types according to extrapolative method in Turkey, 2005-2050



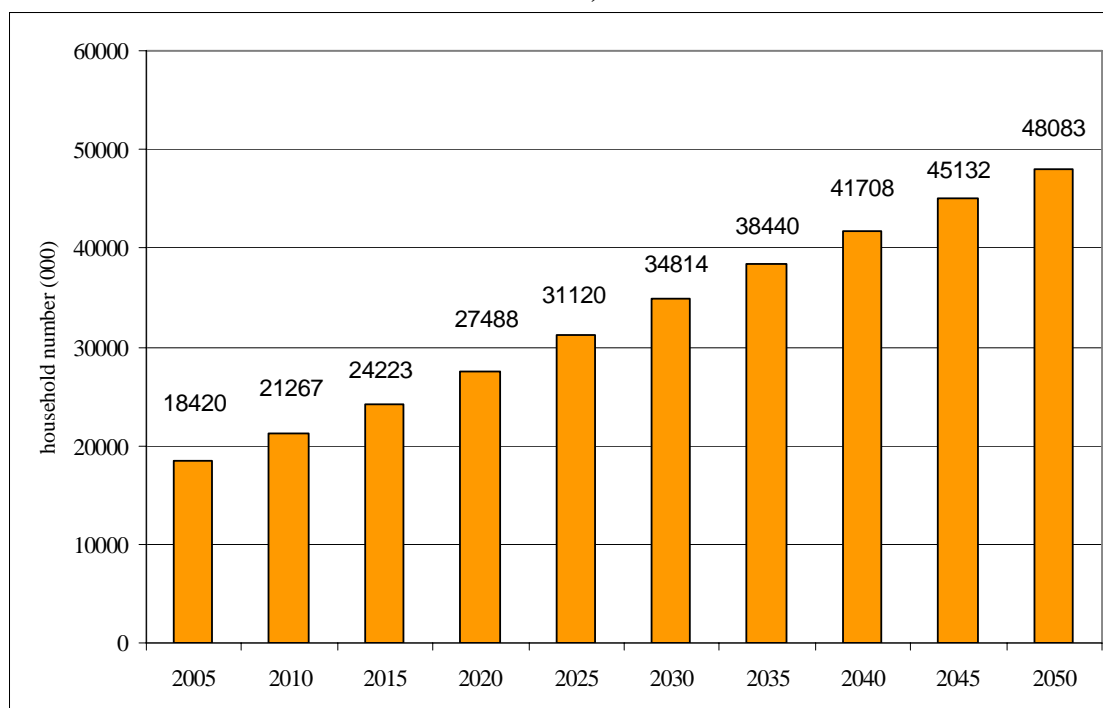
The ratio of complex family households containing elder individuals shall decrease until 2020, and show a continuous, but slow increase until 2050 following this year (Figure 7.5). In other words, it shall acquire a fixed value between 7.2-7.5% in this period.

Figure 7.5. Percent distribution of households of elderly (extrapolative headship rates method), 2000-2050



The variation in the household number in 2005-2050 period according to headship rate extrapolative method is included in Figure 7.6.

Figure 7.6. Households number in Turkey, 2000-2050 (according to extrapolative method)



VII.1.3.2. Household Projections with constant headship rate method

With the purpose of conducting the household projection with two different scenarios and to put forth the estimated variation in the household structure according to these scenarios, the headship rate values of 2005 (Table 7.10) is accepted constant and household types are projected. The rates in this table are computed by extrapolative method using 1998-2003 TDHS data and considering the variation between the two periods. These values are accepted constant for the period after 2005 and the household numbers are computed by using non-institutional population distributions. Computations of the methodology included in United Nations (1973) “Manual VII, Methods of Projecting Households and Families” are conducted in Excel medium both in the extrapolative and constant headship rate methods due to the limitations of the softwares in this field.

Table 7.10. Headship rates for year 2005

Age Groups	Simple Household		Dissolved Household		Complex Household		Total
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0.000	0.000	0.000	0.012	0.000	0.000	0.012
20-24	0.000	0.031	0.001	0.042	0.000	0.004	0.078
25-29	0.000	0.183	0.001	0.028	0.004	0.022	0.238
30-34	0.007	0.335	0.004	0.024	0.013	0.030	0.412
35-39	0.008	0.366	0.007	0.039	0.019	0.028	0.467
40-44	0.009	0.391	0.002	0.045	0.031	0.031	0.509
45-49	0.020	0.420	0.005	0.025	0.037	0.040	0.546
50-54	0.011	0.342	0.006	0.061	0.033	0.075	0.528
55-59	0.012	0.369	0.003	0.068	0.031	0.104	0.587
60-64	0.012	0.288	0.009	0.121	0.029	0.090	0.550
65+	0.282	0.000	0.176	0.000	0.139	0.000	0.597
TOTAL	0.362	2.725	0.213	0.464	0.337	0.425	4.525

Table 7.11. Household numbers (thousands) distribution according to constant headship rate method

Age Groups	Household distribution 2005 (thousands)						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0	1	0	75	0	0	76
20-24	1	184	4	245	0	25	460
25-29	0	1227	4	186	30	150	1597
30-34	41	2086	22	150	83	188	2570
35-39	41	1911	39	201	101	146	2439
40-44	43	1779	8	206	141	140	2318
45-49	81	1675	20	98	146	159	2179
50-54	35	1126	20	201	107	248	1737
55-59	30	906	7	168	75	256	1441
60-64	24	573	19	241	59	179	1094
65+	1185	0	738	0	585	0	2509
TOTAL	1483	11468	880	1771	1329	1490	18420

Age Groups	Household distribution for 2010 (thousands)						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0	2	0	79	0	0	81
20-24	2	196	4	261	0	27	489
25-29	0	1069	3	162	26	131	1391
30-34	44	2232	24	161	89	201	2751
35-39	49	2264	46	238	120	173	2891
40-44	49	2016	9	234	160	158	2627
45-49	91	1881	22	110	164	178	2447
50-54	42	1327	23	236	126	293	2047
55-59	38	1163	9	215	96	328	1850
60-64	28	659	21	277	67	206	1259
65+	1343	0	836	0	663	0	2842
TOTAL	1685	12810	998	1975	1513	1694	20676

Table 7.11. Household numbers (thousands) distribution according to constant headship rate method (continue)

Age Groups	Household distribution for 2015 (thousands)						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0	2	0	83	0	0	85
20-24	2	209	4	278	0	29	521
25-29	0	1138	4	172	28	139	1481
30-34	38	1946	21	140	78	175	2399
35-39	53	2425	50	255	129	185	3097
40-44	58	2392	11	277	190	188	3116
45-49	104	2134	25	125	187	202	2776
50-54	47	1492	26	266	142	329	2302
55-59	45	1373	11	254	114	387	2183
60-64	36	848	28	357	87	265	1620
65+	1534	0	956	0	758	0	3248
TOTAL	1916	13960	1134	2209	1711	1899	22828

Age Groups	Household distribution for 2020 (thousands)						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0	2	0	82	0	0	84
20-24	2	219	4	292	0	30	547
25-29	0	1214	4	184	30	148	1580
30-34	41	2074	22	150	83	187	2556
35-39	46	2118	43	223	112	162	2704
40-44	62	2566	12	297	204	201	3343
45-49	123	2537	30	148	222	241	3300
50-54	53	1698	29	303	162	375	2620
55-59	51	1551	12	287	128	437	2467
60-64	43	1007	33	424	103	314	1924
65+	1844	0	1148	0	910	0	3903
TOTAL	2264	14986	1338	2390	1954	2095	25027

Table 7.11. Household numbers (thousands) distribution according to constant headship rate method (continue)

Household distribution for 2025 (thousands)							
Age Groups	Simple		Dissolved		Complex		Total
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0	1	0	77	0	0	78
20-24	2	217	4	289	0	30	542
25-29	0	1275	4	193	31	156	1659
30-34	44	2215	23	160	88	200	2729
35-39	49	2259	46	238	120	172	2884
40-44	54	2244	10	260	178	176	2924
45-49	132	2728	32	159	238	259	3549
50-54	63	2025	35	361	193	447	3124
55-59	58	1773	14	328	147	500	2820
60-64	49	1145	37	482	117	357	2188
65+	2235	0	1392	0	1104	0	4731
TOTAL	2686	15883	1598	2547	2217	2296	27228

Household distribution for 2030 (thousands)							
Age Groups	Simple		Dissolved		Complex		Total
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0	1	0	75	0	0	77
20-24	2	203	4	270	0	28	506
25-29	0	1263	4	191	31	154	1644
30-34	46	2328	25	168	93	210	2869
35-39	52	2415	49	254	128	184	3083
40-44	58	2397	11	278	191	188	3123
45-49	116	2392	28	140	209	227	3111
50-54	68	2184	38	389	208	482	3369
55-59	69	2122	17	393	175	598	3375
60-64	56	1316	43	554	135	411	2515
65+	2670	0	1663	0	1318	0	5651
TOTAL	3138	16622	1881	2712	2488	2482	29323

Table 7.11. Household numbers (thousands) distribution according to constant headship rate method (continue)

Age Groups	Household distribution for 2035 (thousands)						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0	1	0	74	0	0	76
20-24	2	199	4	264	0	27	495
25-29	0	1181	4	179	29	144	1536
30-34	45	2307	24	166	92	208	2843
35-39	55	2539	52	267	135	194	3242
40-44	62	2563	12	297	204	201	3340
45-49	124	2556	30	149	223	242	3325
50-54	60	1918	33	342	183	423	2958
55-59	75	2292	18	425	190	646	3645
60-64	67	1579	51	664	161	493	3016
65+	3145	0	1959	0	1553	0	6656
TOTAL	3635	17135	2187	2828	2769	2579	31133

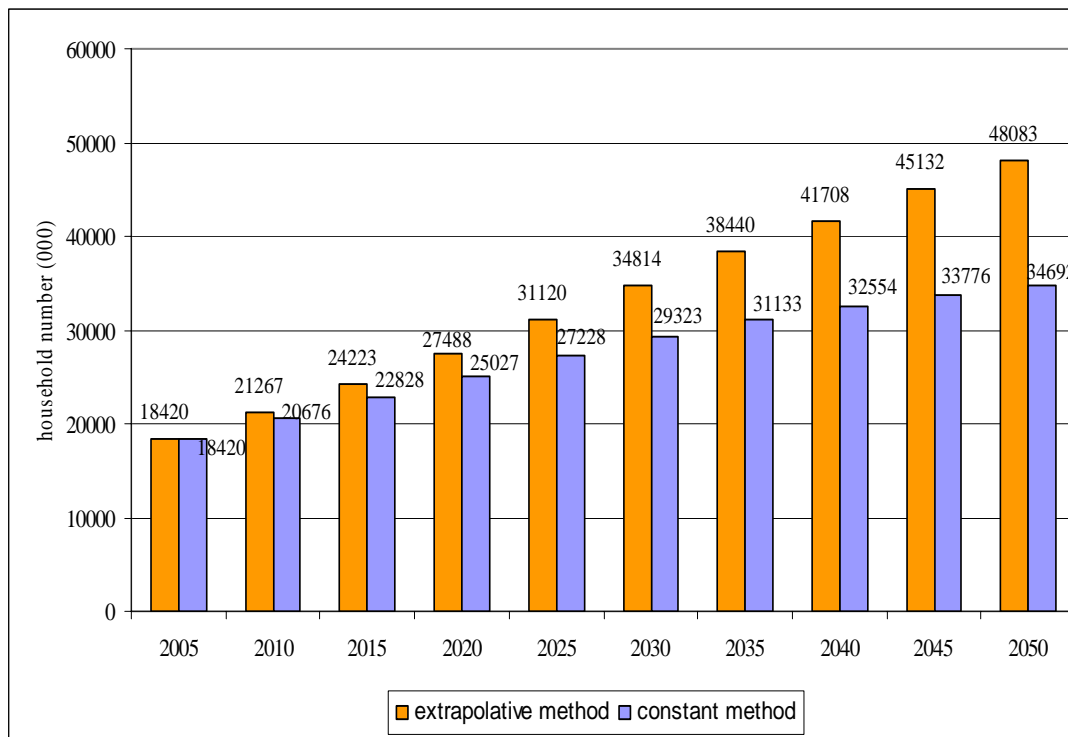
Age Groups	Household distribution for 2040 (thousands)						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0	1	0	74	0	0	75
20-24	2	197	4	261	0	27	490
25-29	0	1156	4	175	28	141	1504
30-34	42	2156	23	156	86	194	2658
35-39	55	2517	51	265	134	192	3214
40-44	65	2696	13	313	214	212	3513
45-49	133	2735	32	160	239	259	3558
50-54	64	2050	36	365	195	452	3162
55-59	66	2017	16	374	167	569	3208
60-64	73	1709	55	719	175	533	3264
65+	3737	0	2327	0	1845	0	7909
TOTAL	4236	17234	2560	2861	3083	2579	32554

Table 7.11. Household numbers (thousands) distribution according to constant headship rate method (continue)

Age Groups	Household distribution for 2045 (thousands)						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0	1	0	72	0	0	74
20-24	2	195	4	260	0	27	487
25-29	0	1144	4	173	28	140	1488
30-34	42	2112	22	152	84	190	2603
35-39	51	2354	48	248	125	180	3006
40-44	65	2676	12	310	213	210	3486
45-49	140	2880	34	168	252	273	3747
50-54	69	2198	38	392	209	485	3390
55-59	70	2160	17	400	179	609	3435
60-64	65	1512	49	636	155	472	2889
65+	4333	0	2699	0	2139	0	9171
TOTAL	4835	17232	2927	2812	3384	2585	33776

Age Groups	Household distribution for 2050 (thousands)						Total
	Simple		Dissolved		Complex		
	with elderly	without elderly	with elderly	without elderly	with elderly	without elderly	
	(1)	(2)	(3)	(4)	(5)	(6)	
15-19	0	1	0	70	0	0	72
20-24	1	191	4	254	0	26	476
25-29	0	1137	4	172	28	139	1479
30-34	41	2088	22	151	83	188	2574
35-39	50	2304	47	243	122	176	2941
40-44	61	2500	12	290	199	196	3257
45-49	139	2854	33	167	250	271	3713
50-54	72	2313	40	412	220	510	3567
55-59	76	2319	18	430	192	654	3687
60-64	69	1623	53	683	166	506	3100
65+	4643	0	2892	0	2292	0	9826
TOTAL	5151	17329	3124	2870	3552	2666	34692

Figure 7.7. Household numbers in Turkey during 2005-2050 period according to extrapolative and constant headship rates methods

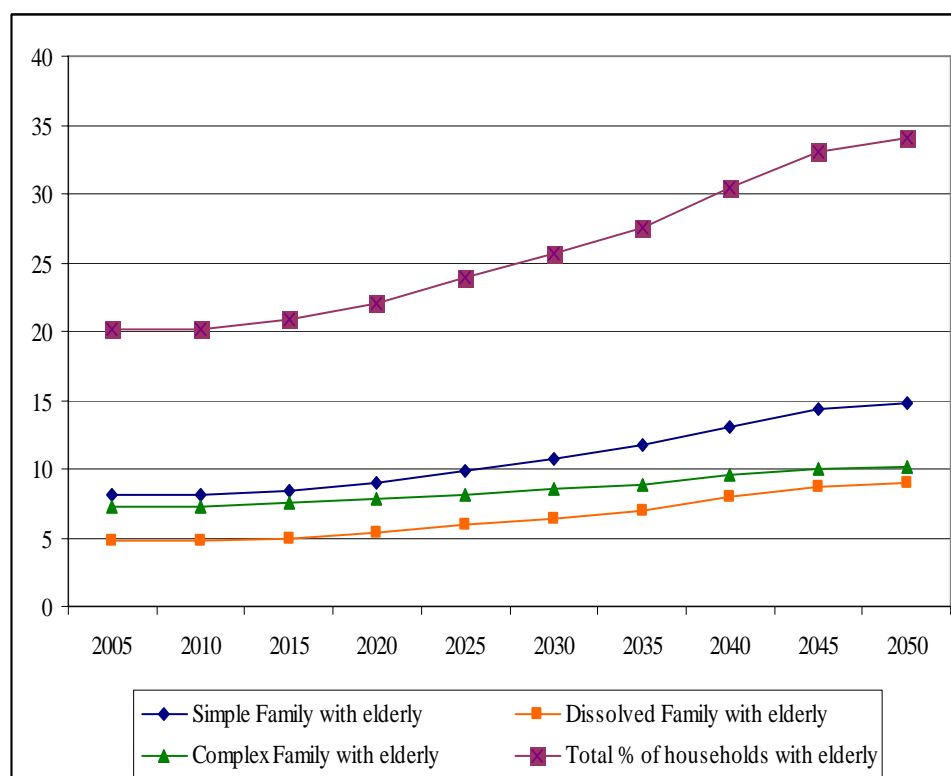


When Figure 7.7 showing the total household numbers computed in two different scenarios using the extrapolative and constant headship rate methods is examined, it is estimated that the difference increases following 2015 and the difference shall reach approximately to 13.5 million houses in 2050 under the assumptions of the computations. The tables of household distributions computed by the constant headship rate method are include in Annex E.

**Table 7.12 Percent Distribution of Household Types according to headshiprate
constant method; 2005-2050**

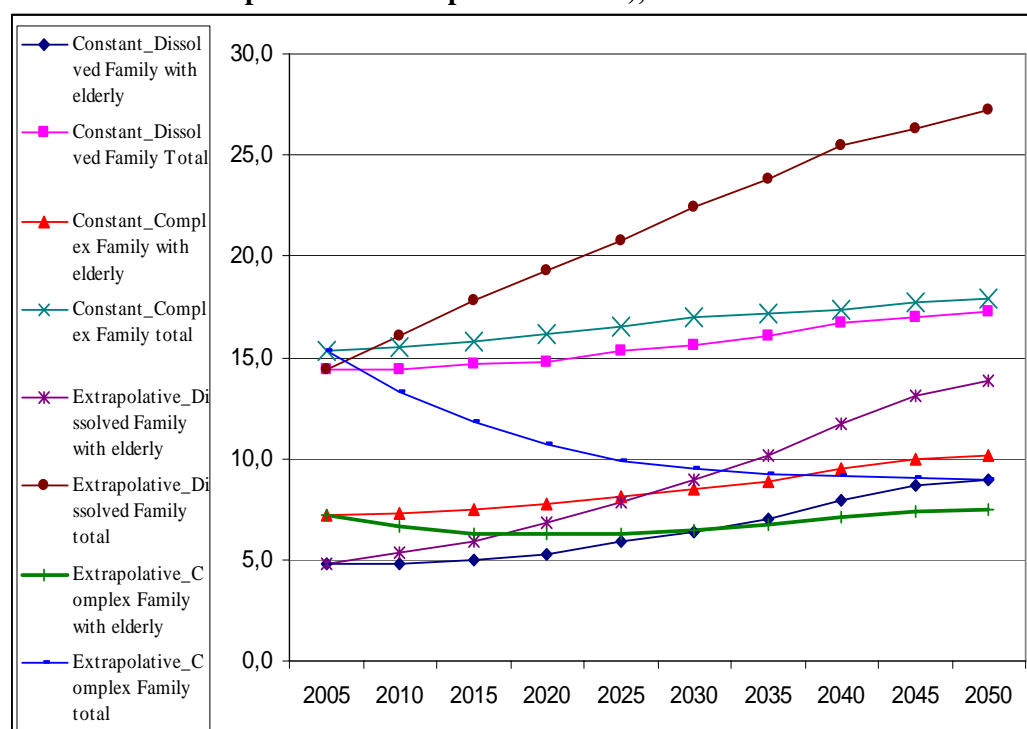
Years	Household Types Projection									Total
	Simple Family			Dissolved Family			Complex Family			
	with elderly	without elderly	total	with elderly	without elderly	total	with elderly	without elderly	total	
2005	8,1	62,3	70,4	4,8	9,6	14,4	7,2	8,1	15,3	100
2010	8,1	62,0	70,1	4,8	9,6	14,4	7,3	8,2	15,5	100
2015	8,4	61,2	69,6	5,0	9,7	14,7	7,5	8,3	15,8	100
2020	9,0	59,9	68,9	5,3	9,5	14,8	7,8	8,4	16,2	100
2025	9,9	58,3	68,2	5,9	9,4	15,3	8,1	8,4	16,5	100
2030	10,7	56,7	67,4	6,4	9,2	15,6	8,5	8,5	17,0	100
2035	11,7	55,0	66,7	7,0	9,1	16,1	8,9	8,3	17,2	100
2040	13,0	52,9	65,9	7,9	8,8	16,7	9,5	7,9	17,4	100
2045	14,3	51,0	65,3	8,7	8,3	17,0	10,0	7,7	17,7	100
2050	14,8	50,0	64,8	9,0	8,3	17,3	10,2	7,7	17,9	100

Figure 7.8. Percent distribution of households of elderly (constant headship rates method), 2000-2050



When the results of the household projections conducted with the two different methods are compared, no significant differences are observed in the total simple family household ratios. There is an important difference in the simple family households with elder individuals following 2015. In the extrapolative method applied considering the variation between 1998 TDHS data and 2003 TDHS data, a more rapid increase is featured in the simple family households containing elderly or aged individuals. With respect of the result of the extrapolative method where the variation of the rates is considered, while the ratio of the simple family household including the elderly is 19% in 2005, it is about 15% as the result of the constant rate.

Figure 7.9. Percent distribution of complex and dissolved households (constant and extrapolative headship rates method), 2000-2050



The most significant difference between the methods is seen in the dissolved and complex family household ratios. Dissolved family households with elderly feature greater increases when the extrapolative method is used. As the complex

households with elderly increase with a greater ratio in the projection conducted with the constant rate, in extrapolative method it features very slight increase. When the results of the projections made by extrapolative method are studied, the dissolved and complex family household structures present an important variation in time. While the dissolved family households continuously increase, reductions occur in complex family households (Figure 7.9). On the other hand, when constant rate method is used, both household types show an increase. This shows the importance of reflecting the variation in the rates to the projection results, even for a period of 5 years.

VII.1.3. Average size of households

While the total household numbers do not show a significant change until 2015, according to the results of both methods, after said year, the total household number that is obtained according to the result of extrapolative method is greater than that of the constant method. The changes in household number effect the side of average household size as well.

The household numbers that are calculated according to extrapolative and constant methods and the average household sizes that are calculated by using the non-institutional population projections that are produced within the scope of this study and the average household sizes that are calculated according to census results of Turkey and household size of Spain are illustrated in Tables 7.13 and 7.14. According to said tables, the average household size in Turkey indicates a decreasing trend. The household size drops to 2.0 persons according to extrapolative method and to 2.8 according to constant rate method.

It appears that there is a similarity in Turkey and some other European countries, such as Spain in the current decreasing trend in the average household size, that currently experience a continuous drop in the ageing process of population and also in fertility rates. Bogarts (2001a) states that the decrease in fertility decreases the number of children per household and has summarized the factors that influence said trend in the below paragraph:

“....This trend is attributable to changes in a number of factors other than fertility that affect household size: the age at marriage, adult mortality, the propensity of adult sons/daughters (unmarried or married) to remain in the parental household, the risk of marital disruption and remarriage, the tendency and ability of the elderly to live alone, and the presence of other relatives and nonrelated individuals such as servants or lodgers...” (Bongaarts, 2001a).

The other demographic and residential factors, apart from the continuous decrease that is observed in fertility rates that are mentioned above, are effective in shaping the composition and size of the households in Turkey as is the case in other communities as well. These factors may be influenced by several cultural and economic conditions. To investigate the contribution of each of the determinants that may lead to variations in the household size and composition is rather difficult and it is the subject of a separate research study.

Figure 7.10. Changes in average household size by year for Turkey and Spain

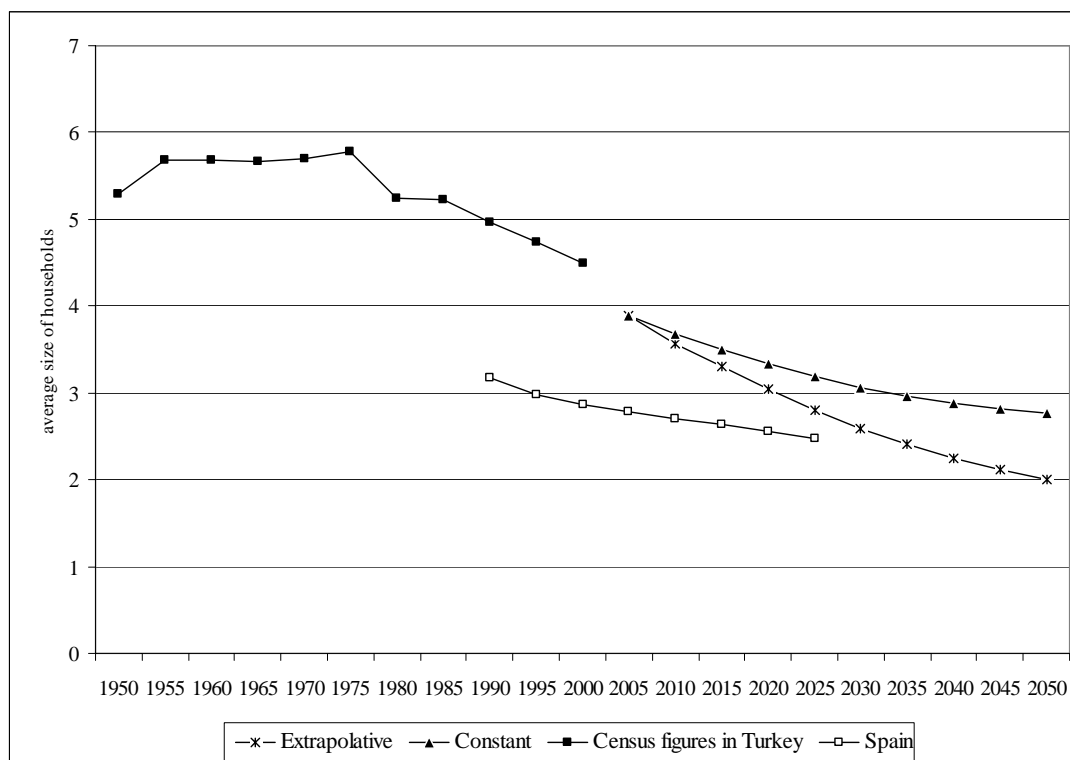


Table 7.13. Average size of households by constant and extrapolative headship rate methods for Turkey and Spain

	1985	1990	1995	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Non-institutional population (000)	-	-	-	-	71.610,0	75.948,4	79.899,2	83.560,3	86.968,6	89.951,7	92.309,3	94.021,5	95.290,2	96.095,5
Household number (extrapolative met.) (000)	-	-	-	-	18.420,0	21.267,0	24.223,0	27.488,0	31.120,0	34.814,0	38.440,0	41.708,0	45.132,0	48.083,0
Average size of households_Extrap.	-	-	-	-	3,89	3,57	3,30	3,04	2,79	2,58	2,40	2,25	2,11	2,00
Household number (constant meth.) (000)	-	-	-	-	18.420,0	20.676,0	22.828,0	25.027,0	27.228,0	29.323,0	31.133,0	32.554,0	33.776,0	34.692,0
Average size of households_Const.	-	-	-	-	3,89	3,67	3,50	3,34	3,19	3,07	2,96	2,89	2,82	2,77
Average size of households in Spain	-	3,17	2,98	2,86	2,78	2,71	2,63	2,55	2,48	-	-	-	-	-

Table 7.14. Average size of households in Turkey according to census years

	Census Years										
	1950	1955	1960	1965	1970	1975	1980	1985	1990	1995	2000
Average household size	5,29	5,68	5,68	5,67	5,69	5,78	5,25	5,22	4,97	4,73	4,5

Source : Soylu, G., (2004), "Nüfus ve Hanehalkı Projeksiyon Yöntemleri", Devlet İstatistik Enstitüsü Uzmanlık Tezi, Ankara.

CHAPTER VIII

ECONOMIC IMPACTS OF POPULATION AGEING

In this study, the economic impacts of population ageing will be investigated from a demographic point of view. The data sources required to perform the related analysis, which are the economic consequences of the ageing population, are quite insufficient in Turkey. Due to lack of data, some simple and crude calculations are performed to obtain an estimation of the economic burden of population ageing.

VIII. 1. LABOR FORCE PARTICIPATION PROJECTIONS

Labor supply is mainly determined by the population structure of the country. Therefore, a variation in the demographic structure directly influences the labor supply, and consequently labor markets. So this section includes an analysis of projections of working-age population to 2050 for the whole of Turkey.

Estimates and projections of the non-institutional population and its components by gender and age group are produced by using PEOPLE Software (based on TurkStat 2005 Household Labour Force Statistics) and those of the economically active population by the International Labour Organization (ILO). In this projection procedure, it is assumed that participation rates by age and gender unchanged at their 2005 levels. These rates are presented in Table 8.1. In Turkey, there is fluctuations in labor force rates and these figures can be changed every year. So, it should be taken into consideration that labor force projections results are very crude in this study.

Table 8.1. Participation rates by age groups, Turkey in 2005¹

Age groups	Participation rates		
	Total	Male	Female
15-19	27.3	36.0	18.0
20-24	50.9	73.2	31.9
25-29	62.6	92.9	31.4
30-34	62.4	94.9	29.0
35-39	62.9	95.1	30.3
40-44	61.3	93.5	28.7
45-49	54.7	82.6	25.8
50-54	44.0	65.7	21.9
55-59	35.6	53.1	18.4
60-64	27.3	40.1	15.3
65+	15.2	24.2	7.6

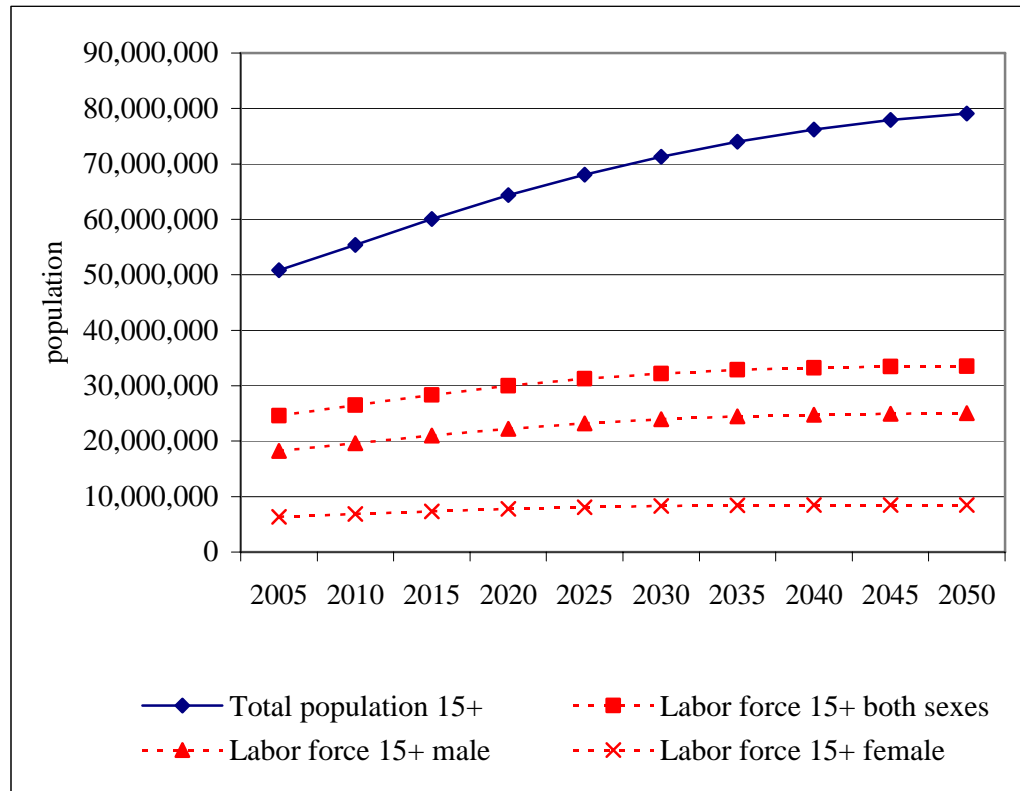
Participation rate of 15+ population continuously decreases in 2005-2050 period (Table 8.2). In this period, also 15+ female labor force participation rate, rather lower than male population, drops according to the projection.

¹ *Source* Household Labor Force survey results in 2005 (TurkStat).

Table 8.2. Projected numbers and rates in labor force population, participation rates and median age for Turkey, 2005-2050

Year	Population		Labor Force		Participation rates 15+	Outside labour force
	15+	Median age years	15+	Median age years		
Both sexes						
2005	50,825,000	32.8	24,564,102	34.3	48.33	26,260,898
2010	55,394,100	34.3	26,464,739	35.6	47.78	28,929,361
2015	60,042,300	35.7	28,343,527	36.7	47.21	31,698,773
2020	64,390,600	37.2	30,003,424	37.0	46.60	34,387,176
2025	68,055,100	38.2	31,268,446	37.2	45.95	36,786,654
2030	71,296,800	39.4	32,204,001	37.8	45.17	39,092,799
2035	74,009,700	40.6	32,873,257	38.4	44.42	41,136,443
2040	76,216,200	41.8	33,252,300	39.1	43.63	42,963,901
2045	77,936,300	43.1	33,455,981	39.7	42.93	44,480,319
2050	79,105,200	44.3	33,490,688	40.1	42.34	45,614,512
Males						
2005	25,208,000	32.7	18,214,057	34.7	72.26	6,993,943
2010	27,431,100	34.2	19,618,537	35.9	71.52	7,812,564
2015	29,684,700	35.6	20,999,539	37.0	70.74	8,685,161
2020	31,780,700	36.9	22,223,800	37.3	69.93	9,556,900
2025	33,553,600	37.4	23,181,298	37.3	69.09	10,372,302
2030	35,107,100	38.6	23,914,818	37.8	68.12	11,192,282
2035	36,442,200	39.7	24,458,490	38.5	67.12	11,983,710
2040	37,470,200	40.8	24,766,000	39.2	66.10	12,704,200
2045	38,266,700	42.0	24,949,593	39.8	65.20	13,317,107
2050	38,918,400	43.2	25,014,682	40.2	64.27	13,903,718
Females						
2005	25,617,000	32.9	6,350,045	33.2	24.79	19,266,955
2010	27,963,000	34.4	6,846,203	34.5	24.48	21,116,797
2015	30,357,600	35.9	7,343,988	35.6	24.19	23,013,612
2020	32,609,900	37.4	7,779,624	36.3	23.86	24,830,277
2025	34,501,500	38.9	8,087,148	36.9	23.44	26,414,352
2030	36,189,700	40.3	8,289,182	37.5	22.90	27,900,518
2035	37,567,500	41.5	8,414,767	38.3	22.40	29,152,733
2040	38,746,000	42.8	8,486,299	39.0	21.90	30,259,701
2045	39,669,600	44.2	8,506,388	39.7	21.44	31,163,212
2050	40,186,800	45.3	8,476,006	40.0	21.09	31,710,794

Figure 8.1. Summary of labor force projections in Turkey, 2005-2050

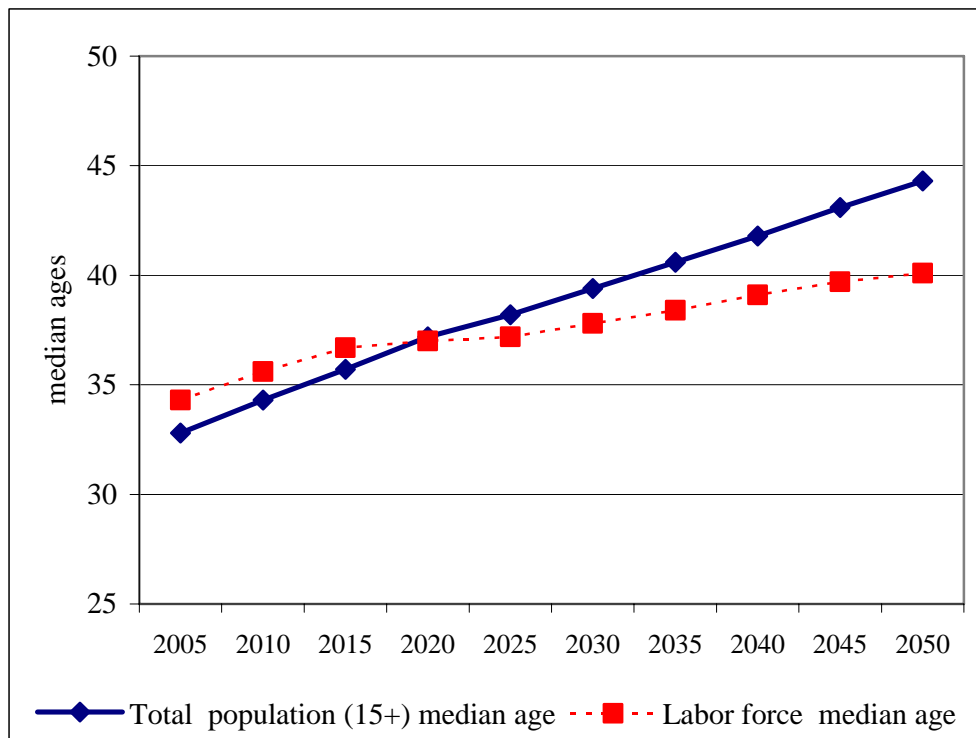


In Figure 8.1, it is seen that the 15+ population is rather higher than total labor force and “outside labor force” figures showing the difference are high. The female population within the labor force is almost one third of the male population. The variation occurring in the age structure of the population influences the labor force resources. In spite that, one of the most important problems put forth by the ageing of the population is the decrease in the labor force, with respect to these figures, Turkey experiences difficulty to employ even its young population in the labor force under the current circumstances.

The ageing of population is accompanied by the problem of ageing of labor force population, besides the decrease in labor force population. In other words, the ageing of population increases the number of old workers within the total labor force supply and decrease the number of young. This causes the result of labor force ageing. Turkey, which has a young population and consequently, a young labor

force, is rather unfamiliar to the problems arising from the result of the ageing of labor force which the developed countries, and especially EU countries are currently facine . But, this problem which EU countries now faced and allocated significant resources to fight against, shall come to the agenda of Turkey, not just now, but in a near future.

Figure 8.2. Median ages of total population and labor force population, 2005-2050



According to Figure 8.2, while the population of Turkey is ageing, the population in the labor force also ages. While some experts assume that the ageing of labor force shall lead to many problems in today's world where technology and business organizations vary rapidly, some claim that the experience of the aged labor force shall have positive impact on efficiency, and as the labor force ages, its absence and job changing frequency decreases, work accidents decrease and work satisfaction becomes relatively higher.

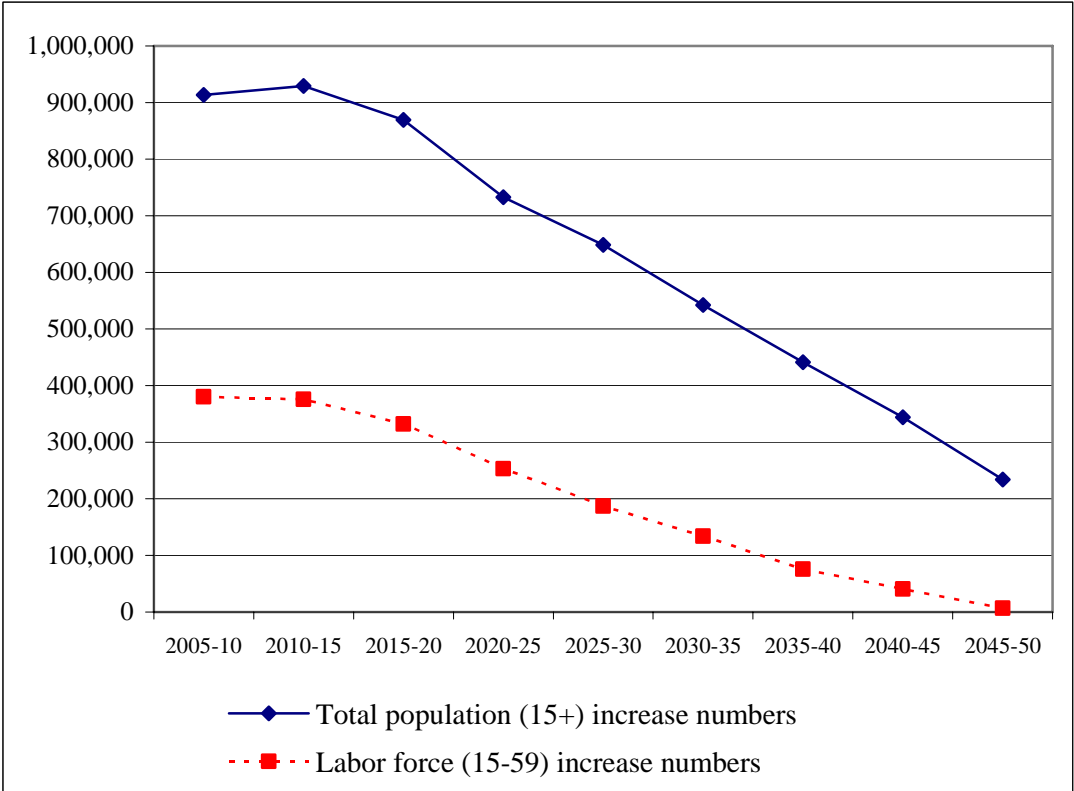
Table 8.3. Five yearly change in labor force by sex in Turkey, 2005-2050

Period	Population 15+ :		Labor Force 15+ :	
	Numbers	Rates (%)	Numbers	Rates (%)
Both sexes				
2005-10	913,820	1.72	380,127	1.49
2010-15	929,640	1.61	375,758	1.37
2015-20	869,660	1.40	331,979	1.14
2020-25	732,900	1.11	253,004	0.83
2025-30	648,340	0.93	187,111	0.59
2030-35	542,580	0.75	133,851	0.41
2035-40	441,300	0.59	75,809	0.23
2040-45	344,020	0.45	40,736	0.12
2045-50	233,780	0.30	6,941	0.02
Males				
2005-10	444,620	1.69	280,896	1.49
2010-15	450,720	1.58	276,200	1.36
2015-20	419,200	1.36	244,852	1.13
2020-25	354,580	1.09	191,500	0.84
2025-30	310,700	0.91	146,704	0.62
2030-35	267,020	0.75	108,734	0.45
2035-40	205,600	0.56	61,502	0.25
2040-45	159,300	0.42	36,719	0.15
2045-50	130,340	0.34	13,018	0.05
Females				
2005-10	469,200	1.75	99,232	1.50
2010-15	478,920	1.64	99,557	1.40
2015-20	450,460	1.43	87,127	1.15
2020-25	378,320	1.13	61,505	0.78
2025-30	337,640	0.96	40,407	0.49
2030-35	275,560	0.75	25,117	0.30
2035-40	235,700	0.62	14,306	0.17
2040-45	184,720	0.47	4,018	0.05
2045-50	103,440	0.26	-6,076	-0.07

According to the results of this projection, the demographic development in Turkey shows that the population shall age in the medium term, although not in a near future, and the compliance of this ageing population with the labor force market

shall gain importance. While Turkey meets the labor force supply with its young population, it shall try to meet this in future with older population.

Figure 8.3. Five yearly change in total population (15+) and labor force



The numerical increase in the labor force population of “15-59” age group is quite below the increase in the total population (Figure 8.3). In 2005-2050 period, both “total population (15+) growth rate” and “labor force growth rate” drops. In this period, labor force growth rate is lower than population growth rate.

Figure 8.4. Five yearly change in growth rates of population (15+) and labor force for both sexes; 2005-2050

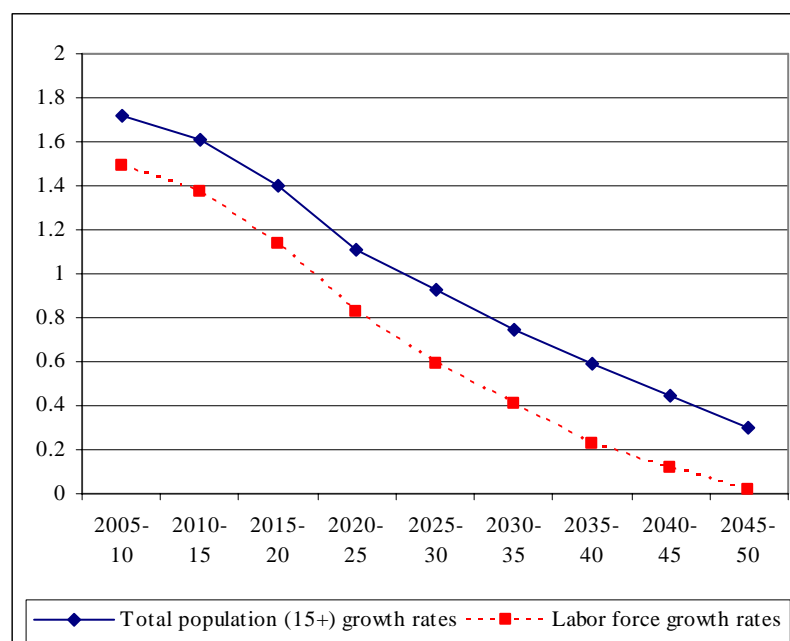


Table 8.4. Comparison of base and end year labour force (000), Turkey

Variables	Both sexes		Males		Females	
	2005	2050	2005	2050	2005	2050
Total labor force	24.564	33.491	18.214	25.015	6.350	8.476
% < 25	19,2	14,5	17,2	13,5	24,7	17,3
% 25-54	72,5	66,9	74,6	68,4	66,5	62,4
% 55+	8,4	18,6	8,2	18,1	8,8	20,3
Median age	34,3	40,1	34,7	40,2	33,2	40,0
Participation rate	48,33	42,34	72,26	64,27	24,79	21,09

In recent years, just as in developed countries, the ageing of the population shall cause an increase in the aged labor force ratio within the labor force in Turkey (Table 8.4 and Figure 8.5). As the share of 55+ population in the labor force is 8.4% in 2005, this shall reach approximately to 19% in 2050 with a more than two-fold increase. According to the results of the projection, the ratio of population of 55 and over involved in the labor force shall feature a similar increase for both sexes.

Figure 8.5. Comparison of base (2005) and end year (2050) labour force: both sexes, male and female

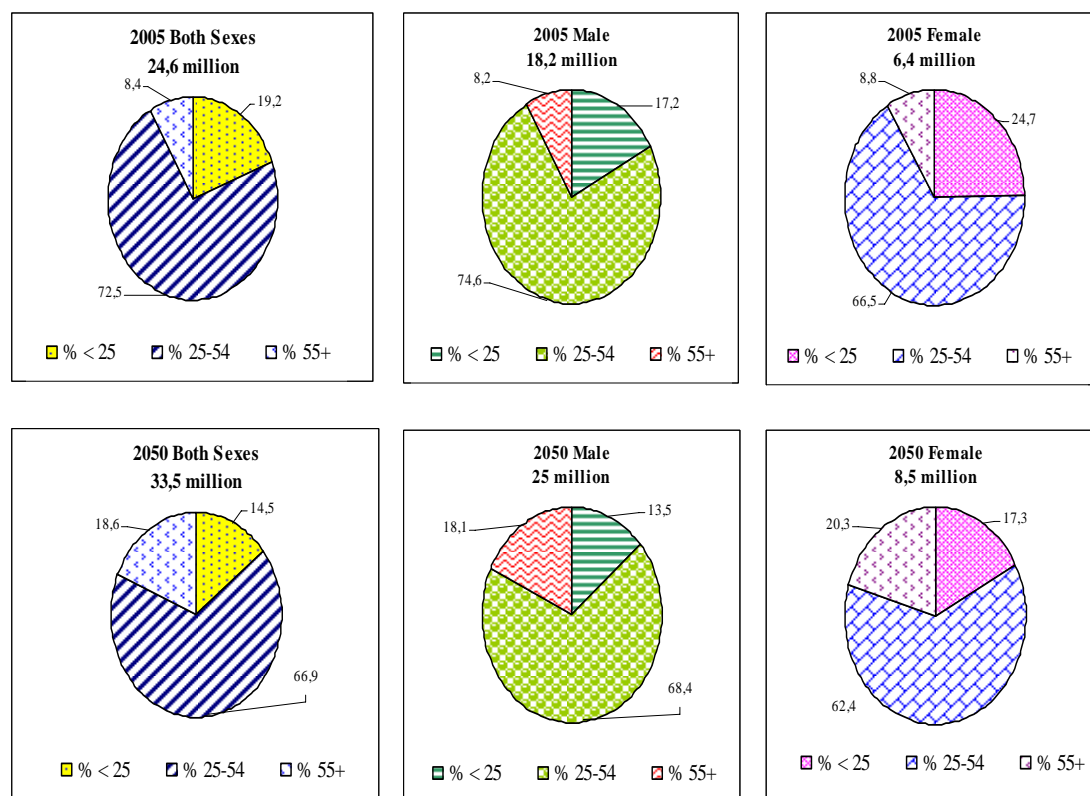
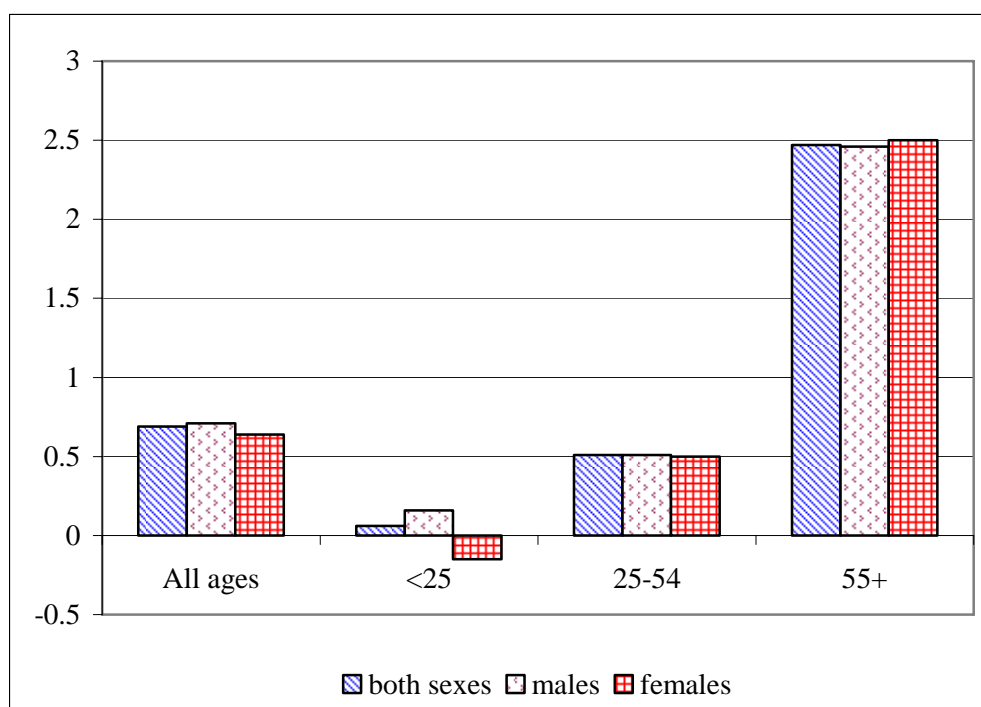


Table 8.5. Change in labor force by sex in Turkey between 2005-2050

	Both sexes	Males	Females
Total labor force	8,926,586	6,800,625	2,125,961
< 25 (percent points)	-4.7	-3.7	-7.4
25-54	-5.6	-6.1	-4.1
55+	10.3	9.9	11.5
Median age (years)	5.79	5.5	6.78
Outside labor force	19,353,614	6,909,775	12,443,839
Annual average growth rate			
All ages	0.69	0.71	0.64
<25	0.06	0.16	-0.15
25-54	0.51	0.51	0.5
55+	2.47	2.46	2.5
Participation rates			
Actual (percentage points)	-5.99	-7.98	-3.7
Due to:			
Age specific rate changes	0.00	0.00	0.00
Age composition changes	-5.99	-7.98	-3.7

As seen in Table 8.5 and Figure 8.6, in 2005-2050 period, while a decrease occurs in the labor force growth rate in both sexes in the labor force population of “below 25 age” and “25-54” age group, in “55+” age more increase is seen in female labor force population than male population. If the participation rates that are assumed constant while projection is realized do not change in this period, significant drops shall occur in labor force participation rates. It is indicated in the projection results (Table 8.5) that this drop originates from the variations in the age structure. Also, there shall be an approximate increase of 7 years in the female population and an approximate increase of 6 years in the male population in the median age of the labor force population.

Figure 8.6. Annual average growth rate of labor force by age group and sex in 2005-2050 period



The problem of an ageing labor force facing the developed countries today shall unavoidably come into the agenda of Turkey in near future. This resource can not be utilized in Turkey having the youngest population of Europe. Education directed to the young population and employment increasing policies can not be

generated, and so, this advantage has converted to a problem due to high unemployment ratios, underemployment and unqualified labor force. If necessary measures are not taken for the labor force population to get aged in the future, and policies are not established, similar problems shall be experienced on the “aged labor force” side, too.

VIII.2. IMPACTS ON HEALTH AND INSTITUTIONAL CARE EXPENDITURES

VIII.2.1. Health Expenditures

Ageing of the country population causes the re-structuring of the health systems and increase in health expenses. In this chapter, by assuming the health expenditure amount according to age groups obtained in National Health Account Survey 2000 is constant and multiplying by the population projections reflecting the changing population structure, an estimate is made for the health expenditures in 2005-2050 with respect to age groups (Table 8.6).

During this computation the impact of inflation on health expenditures must be accounted for, so the expenditures in 2000 are converted to Euros and a variation indexed to Euros is tried to be featured.

Table 8.6. Projection of total health expenditure (million euro) by age group and year according to National Health Account Survey (2000)²

Age group	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
0-4	1.308	1.209	1.212	1.188	1.186	1.178	1.152	1.109	1.073	1.044	1.010
5-14	1.338	1.423	1.403	1.350	1.339	1.325	1.320	1.301	1.263	1.219	1.183
15-44	4.110	4.355	4.598	4.809	4.838	4.810	4.791	4.817	4.779	4.682	4.619
45-59	2.244	2.702	3.196	3.654	4.217	4.778	5.126	5.122	5.121	5.257	5.342
60-69	1.168	1.261	1.392	1.712	2.107	2.439	2.791	3.291	3.746	3.852	3.707
70+	1.135	1.371	1.620	1.817	2.079	2.549	3.148	3.811	4.529	5.401	6.239
TOPLAM	11.303	12.320	13.422	14.531	15.766	17.079	18.328	19.453	20.511	21.455	22.101

² In year 2000, 1 Euro = 576710.66667 TL= 0.576710 YTL (<http://evds.tcmb.gov.tr/>)

The estimates computed in this section are rather rough due to the inadequacy of data on this subject, the recordings not being made with age and sex discrimination in the recording systems concerning the health expenditures. The technological developments also cause increases in the health expenditures. The effect of technological developments can not be accounted for in the estimations included in this thesis.

Figure 8.7. Projection of total health expenditure (Million Euro) by age group and year according to National Health Account Survey (2000)

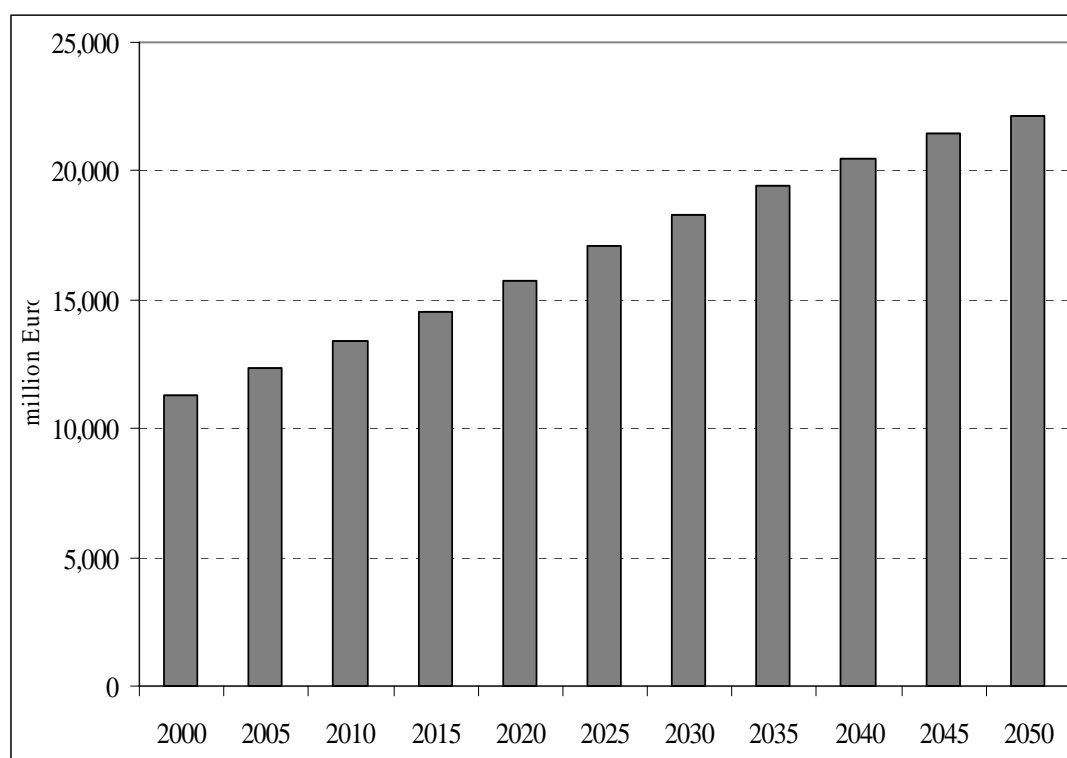


Figure 8.8. Health expenditure (million Euro) by age group and year in Turkey, 2000-2050

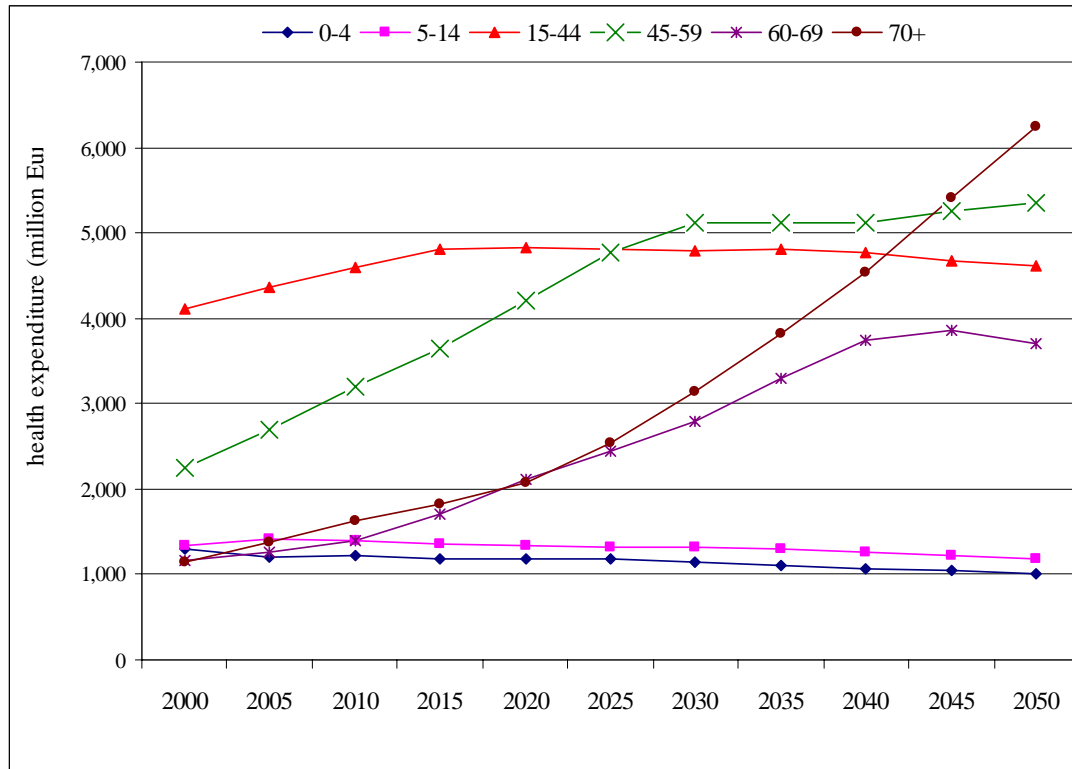
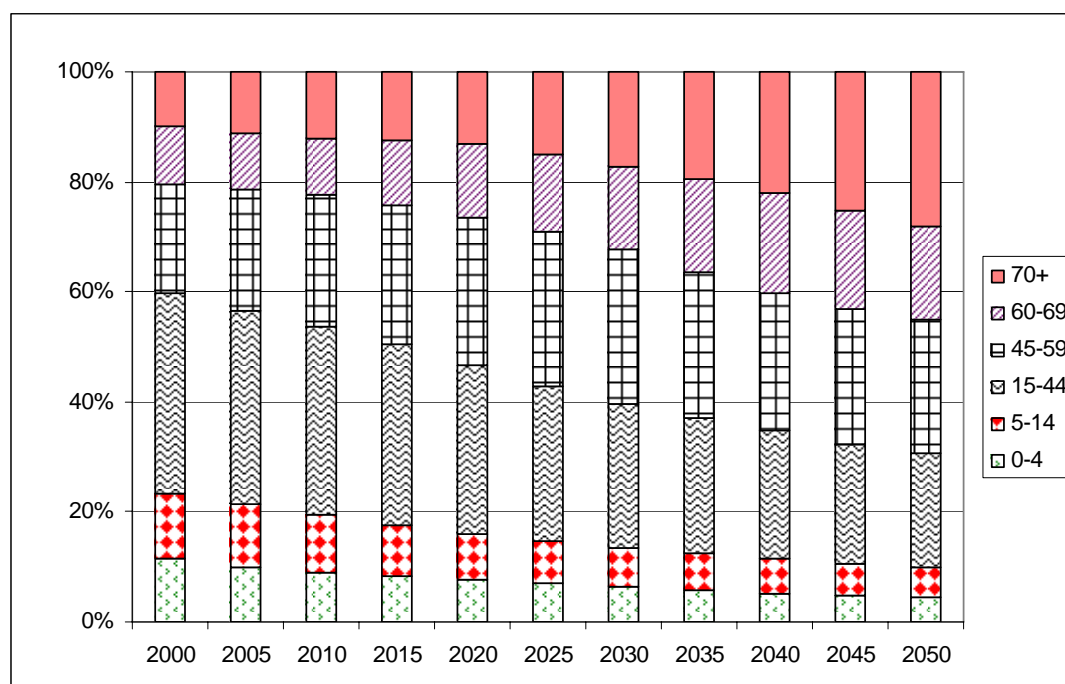


Figure 8.8. and Figure 8.9 shows that the variation that shall occur in the age structure of the population is has significant effect on the health expenditures. With the progress of age, chronic illnesses and cure durations increase, and the aged population's share in the health expenditures increase with the increase in the old population number.

Figure 8.9. Health expenditure percent distribution by age group, 2000-2050**Table 8.7. The share of the population of “0-4”, “15-44” and “70+” age groups in the total health expenditures and total population; 2005-2050**

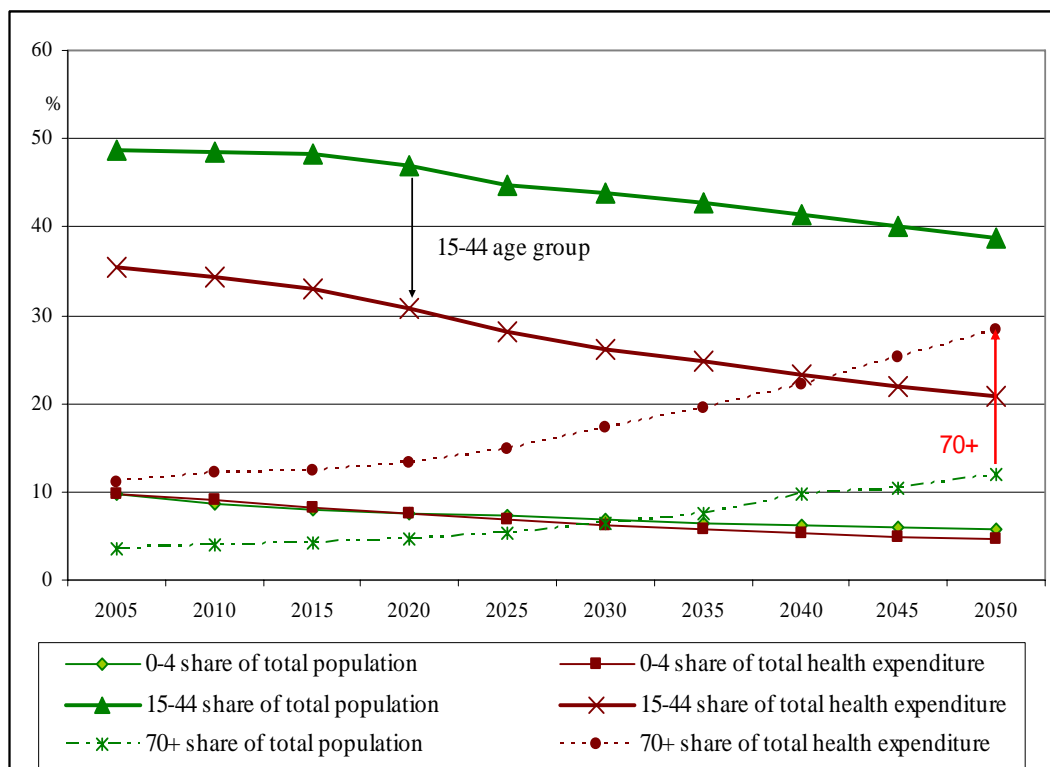
Age group	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
“0-4” share of Pop _{tot}	9.80	8.60	8.00	7.50	7.20	6.80	6.40	6.10	5.90	5.80
“0-4” share of THE ³	9.82	9.03	8.18	7.53	6.90	6.28	5.70	5.23	4.87	4.57
“15-44” share of Pop _{tot}	48.80	48.40	48.30	46.90	44.80	43.80	42.80	41.50	40.00	38.70
“15-44” share of THE	35.35	34.26	33.09	30.69	28.16	26.14	24.76	23.30	21.82	20.90
“70+” share of Pop _{tot}	3.50	3.90	4.20	4.60	5.40	6.50	7.60	9.70	10.30	12.00
“70+” share of THE	11.13	12.07	12.51	13.19	14.92	17.18	19.59	22.08	25.17	28.23

When the shares of age groups in the total population and health expenditures are studied (Table 8.7 and Figure 8.10), it is seen that the population in “15-44” age group having greater share in the total population has health expenditure proportionally less than its share in the population. However, the health expenditure of 70+ age population is rather higher than its share in the total population and the difference between these rates increases as years pass by. The

³ Total Health Expenditure

share of “0-4” age group both in the population and total health expenditure is quite close to each other and does not feature a significant variation in 2005-2050 period.

Figure 8.10. The share of the age groups within the total population and within total health expenditures, 2000-2050



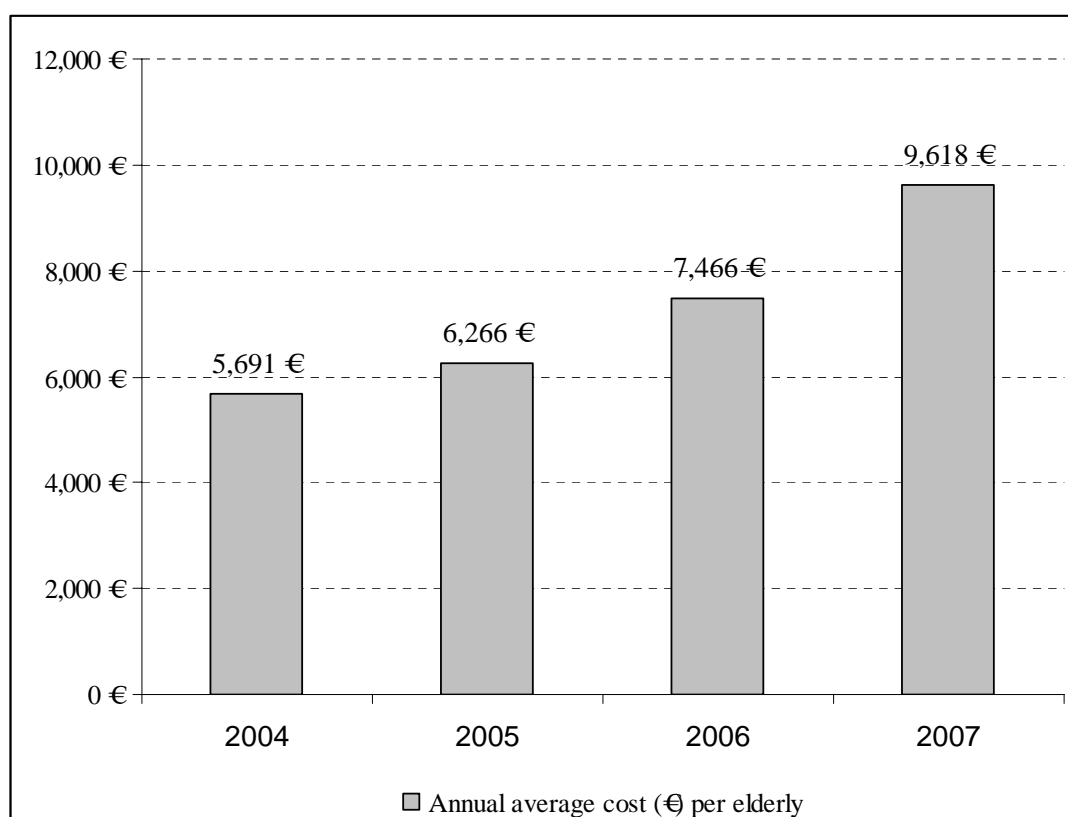
VIII.2.2. Institutional Care Expenditures

Long-term care services are very important for health of elder individuals. Long-term care covers assistance in works concerning the house such as shopping, cooking, and individual care services such as dressing, bathing and nursing. Although in Europe an important part of the long-term care is provided by informal caretakers, also residential care homes, day care centers and home-based care where care is provided by the community and family individuals are involved for the elders. An important part of these services are financed by the government, at least for the aged people having no income and assurance (Adelina Comas, et al., 2006).

How much should be spent for the long-term care of elder individuals in Turkey shall be one of the questions to be asked in the coming years by the experts who plan and schedule in this field. In this section, an attempt to estimate the amount to be spent by the government in Turkey for the long-term institutional care of the elder individual is made with certain assumptions and scenarios.

The institutional care expenditures included under this title are attempted to be projected based on the average annual expenditure for the elders having care service in the rest homes of SHÇEK. It should be considered that only health, clothing and feeding costs are included in these values. Items such as the operating costs and personnel expenditures are not included in these figures.

Figure 8.11. Average annual expenditure for the institutional care of an elder individual by SHÇEK (Within the cost involved are expenditures such as health-care, clothing, and meal)



The expenditure for the institutional care of an elder individual by SHÇEK has continuously increased in 2004-2007 period. Average annual cost containing the health, clothing and feeding expenditures by SHÇEK for an elder individual in 2007 is approximately 10.000 Euros (Figure 8.10).

Although it is observed that the care service capacity of SHÇEK has increased in 2004-2007 period, it is seen in Table 8.8 that this capacity is not used hundred percent. The rest homes of SHÇEK have serviced only 85% of the current possible elder individual care capacity in 2007.

Table 8.8. Percentage of 65+ population having institutional care service from SHÇEK and capacity of SHÇEK; 2004-2007

	2004	2005	2006	2007
65+ population (000)	4.078	4.199	4.280	4.358
Number of aged resident in SHÇEK	5.389	5.603	6.082	6.412
Capacity of SHÇEK	6.794	7.173	7.605	7.552
Percentage capacity of SHÇEK used	79,3	78,1	80,0	84,9
Percentage of 65+ elders serviced by SHÇEK in the total population	0,13	0,13	0,14	0,15

As seen in Table 8.8. which contains only information for SHÇEK, a governmental organization, 65+ population having institutional care service forms only 1 per thousandth of the total 65+ population. This is rather low as compared to the ratios in the member states of the European Union.

In the future, the individual isolation and e_0 values in the community shall increase according to the projection results. Starting from these findings, a simulation is conducted in this section with 4 different ratios (0.15%, 0.20%, 0.40%, and 1%) with the purpose of identifying the reflection of variation occurring in the ratios of population that apply for institutional care demand to the institutional expenditure (Table 8.10 and 8.11). In addition, it is attempted to generate a scenario with the ratios of long-term care of 2000 which dependent elder individuals have

obtained in 3 ways in 4 countries (Germany, Spain, Italy and United Kingdom) in the paper issued concerning the results acquired from the study named “The European Study of Long-Term Care Expenditure” realized by The European Commission “Economic Policy Committee” (EPC) (Adelina et al., 2006).

Table 8.9. Estimated utilisation by older dependent people of three forms of long-term care in Germany, Spain, Italy and the UK in 2000

	Percentage receiving		
	Informal care only	Formal home care	Institutional care
Germany (two or more ADLs ⁴)	46	21	33
Spain (one or more ADLs)	69	14	17
Italy (one or more ADLs)	37	40	23
UK (two or more ADLs)	32	36	32

Since the lowest ratio included in Table 8.9 is the “institutional care” ratio for Spain, the institutional care demand is estimated with the assumption that it shall be %17 in the total 65+ age population. The population magnitudes used in this estimation are obtained from TurkStat projections generated based on 2000 Census results. In this estimation, annual institutional care expenditure of an elder individual is taken as the expenditure from SHÇEK in 2007 (in Euros) and long-term institutional cost estimates are generated assuming that this figure does not vary with time. The values obtained according to this scenario indicate, in other words, the assumptions that only %17 of the 65+ population applies for institutional care demand and annual average care cost of an elder individual is 9.618 Euros, are included in Figure 8.12 and Table 8.11.

It is clearly seen in Table 8.10 and Figure 8.12 that the existing institutional care ratio in Turkey has an incomparably small value compared to Europe. When the current institutional care service ratio is increased in small amounts, the number of

⁴ Activities of daily living (ADLs) are "the things we normally do in daily living including any daily activity we perform for self-care (such as feeding ourselves, bathing, dressing, grooming), work, homemaking, and leisure." (Source <http://www.medterms.com/script/main/art.asp?articlekey=2152>)

the aged demanding institutional care and so the cost increases in direct proportions to the absolute magnitude of increase in the old population.

Figure 8.12. Long-term institutional care expenditure (000 Euro) (for 17% of 65+ population); 2000-2050

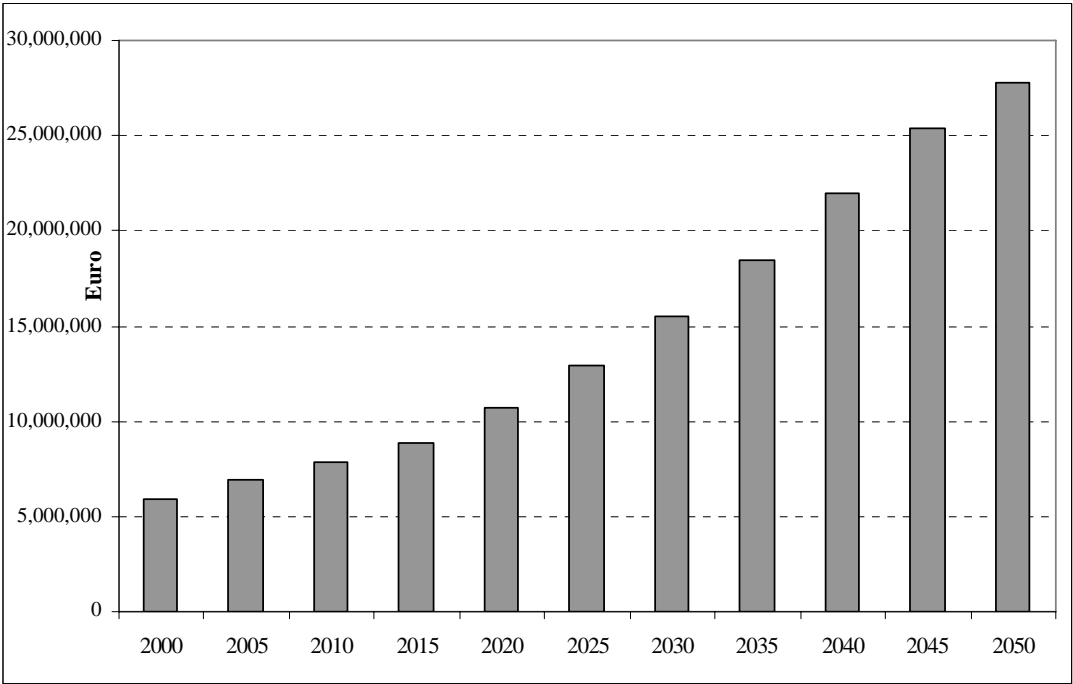


Table 8. 10. Number of persons who takes institutional care by seven different scenarios; 2000-2050

per cent and number of persons who take institutional care	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
17%	615,740	722,670	815,660	924,800	1,111,290	1,346,400	1,612,620	1,917,770	2,288,710	2,641,120	2,887,110
0,15%	5,433	6,377	7,197	8,160	9,806	11,880	14,229	16,922	20,195	23,304	25,475
0,20%	7,244	8,502	9,596	10,880	13,074	15,840	18,972	22,562	26,926	31,072	33,966
0,40%	14,488	17,004	19,192	21,760	26,148	31,680	37,944	45,124	53,852	62,144	67,932
1%	36,220	42,510	47,980	54,400	65,370	79,200	94,860	112,810	134,630	155,360	169,830
5%	181,100	212,550	239,900	272,000	326,850	396,000	474,300	564,050	673,150	776,800	849,150
10%	362,200	425,100	479,800	544,000	653,700	792,000	948,600	1,128,100	1,346,300	1,553,600	1,698,300

Table 8. 11. Institutional care expenditures (thousands Euro) by seven different scenarios (0,15%, 0,20%, 0,40%, 1%, 5%, 10% and 17% of elderly population)

Expenditures (000 Euro)	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
institutional care (17%)	5,922,187	6,950,640	7,845,018	8,894,726	10,688,387	12,949,675	15,510,179	18,445,112	22,012,813	25,402,292	27,768,224
institutional care (0,15%)	52,255	61,329	69,221	78,483	94,309	114,262	136,855	162,751	194,231	224,138	245,014
institutional care (0,20%)	69,673	81,772	92,294	104,644	125,746	152,349	182,473	217,001	258,974	298,850	326,685
institutional care (0,40%)	139,346	163,544	184,589	209,288	251,491	304,698	364,945	434,003	517,949	597,701	653,370
institutional care (1%)	348,364	408,861	461,472	523,219	628,729	761,746	912,363	1,085,007	1,294,871	1,494,252	1,633,425
institutional care (5%)	1,741,820	2,044,306	2,307,358	2,616,096	3,143,643	3,808,728	4,561,817	5,425,033	6,474,357	7,471,262	8,167,125
institutional care (10%)	3,483,640	4,088,612	4,614,716	5,232,192	6,287,287	7,617,456	9,123,635	10,850,066	12,948,713	14,942,525	16,334,249

CHAPTER IX

DISCUSSION AND CONCLUSION

IX.1. DISCUSSION AND CONCLUSION

Population ageing is a notable demographic phenomenon worldwide led by developed countries in the 21st century due to increase in longevity and constant decline in fertility rate. Although Turkey is considered to have a young population, the changes in population structure in time shall put Turkey into an ageing stage and it will become a country with an old aged population starting from 2030. However the proportion of the old population in total population of Turkey is currently less than that of the young population, the absolute number of old individuals (65+) as at 2005 (4 090 000) is more than the population of Moldavia and Norway, 10 times greater than that of Luxembourg and close to total population of Denmark and Finland. In 2030 the size of old aged population in Turkey shall be approximately 9.5 million.

This study has related but different objectives. The main objective of this thesis is to investigate the co-residence pattern of the aged population by using the 1998 and 2003 TDHS data and to determine the change in its structure. Its second main objective is -by starting from the said structure and change pattern- to determine what kind of household composition the old aged individuals shall live in. The secondary objective is to estimate, from a demographic point of view, what would be the economic burden caused by the change in this co-residence pattern as such changes take place in the age structure of the population . A fourth aim of this thesis is to provide policy suggestions that may be inferred from the content of this thesis.

One of the major reasons of ageing of population in Turkey is the constant decline in the total fertility rate, which is also observed in developed countries. As a result of normalization of living conditions together with the proclamation of the republic, we face increase in the fertility level as that of 1927 in Turkey. However, a constant decline has taken place in the total fertility rate as of 1945-1950 period. The

total fertility rate of 6.9 in this period has fallen down to 2.2 according to 2003 TDHS results. Another reason for population ageing in Turkey is the increase in longevity due to the decline in the mortality rate. The data enabling calculation of some indicators concerning adult mortality are either not available for Turkey or quite insufficient. Nonetheless, significant declines have taken place in mortality level throughout Turkey as of 1940s (Aykan, 1997). These two factors lead to different effects. Longevity increases the number of person-years in the old age period, while the constant decline in the fertility level changes the population rates of different age groups. In summary, the most important factors that directly affect the age structure in Turkey are the changes that occur in fertility and mortality rates. Migration, which is a third factor that affects the age structure, did not have any significant impact in the change of the population structure in Turkey in general. The constant decline in fertility rate leads to increase in the population of the middle aged within the total population, while similarly the drop in the mortality rates and particularly the decreasing trend in the mortality rate of adult population have led to increase in old aged population.

There are various demographic indicators in the ageing of populations. One of them is an increase in the median age. The median age tends to increase continuously in Turkey. However, Turkey had a young population in 1990, though the ever increasing median age since then, now it is considered to have an old aged population. Taking into consideration the share of the old aged (+65) population within the total population, Turkey is presently classified in the “adult population” category. However, according to the indicators that this category shows, it shall take place in “old” and “very old” categories as of 2030 and 2035 respectively. In Turkey the 65 and over age group is a population group that is growing faster compared to other age groups. The dependency ratios are extensively used among demographers in order to define the processes in connection with the ageing of the population, and constitute one of the indicators based on age distribution of the population as other indicators under this heading. In Turkey, the share of old aged dependency within the total dependency ratios increases, while young dependency ratio tends to decrease continuously. According to the indicator known as the ageing index, Turkey is an

aged country and is continuing to quickly get older. The factor affecting this ratio is not the increase in the population of 60 and older aged group. The continuous decrease in “0-14” age group changes the age structure of the population as well, causing the ageing index to increase. In other words, even if the number of the old aged population remains constant, the ever decreasing trend of the young population within the total population leads to ageing of the population.

One of the most significant contributions of this study is determination of the demographic and socio-economic characteristics of the old aged population (+65) in Turkey by evaluating the 2003 TDHS data. The ratio of the aged population in Turkey displays a constant increase. The ratio of the population who are 65 or older in Turkey corresponds to 7%. This ratio was 4.3% in the 1990 Population Census and 5.4% in the 2000 Population Census. The said ratio is presently quite a bit lower than that of the EU average at this time. However, when the increase in the rate of 65+ population group is compared to that of the young population, its prospects for future are considerable. Taking into consideration the size of the total population in Turkey, it is apparent that the size of aged population in Turkey is bigger than the total population of many countries. When the size of elderly population is compared with the total rural and urban populations in Turkey, it appears that the ratio of aged population with respect to total population is greater in rural population. This fact may be explained by the migration from rural to urban areas and that this migrating population is younger.

When the living status of old aged population in rural and urban areas is examined, it is revealed that 5.7% of urban population is composed of elderly (+65), while, in rural areas, this ratio is 9.4%, which is significantly higher than the former. One of the primary reasons of this difference is that the composition of the migrating groups from rural to urban areas consists of younger ages, thus leading to change in the age structure of urban-rural residents. Particularly the labor migration affects the living arrangements and intra-household care of “the left-behind elderly”. The elderly tend to pass from a co-residence lifestyle to a single-resident lifestyle, and this transition tends to take away the family support in the long term care of the aged

member. Also, the tendency of the individuals to migrate from urban to rural areas after having retired appears to have an impact in this trend.

The female population constitutes 54% of the aged population in Turkey. As the average life expectancy among females is longer than that of the males, it is the most significant underlying reason for the greater aged female population in Turkey. This difference in elderly population among males and females exists both in rural and urban populations. About 57% of elderly population lives in urban centers.

The regions where the elderly population live in greater densities are the Western, and secondly the Central Anatolia regions. Four out of ten elderly live in Western Regions. When compared with the figures of 1988 and 1998 TDHS results, it appears that while there is a diminishing trend in the rates of Southern and Eastern regions, there is an increasing trend in the elderly population living in West, Central and North Anatolian regions. (Ünalán, 2000; Akadlı-Ergöçmen and Hancıoğlu, 1990). This condition may be explained by migration from rural to urban regions as a result of the urbanization process in Turkey since 1950s. Starting from the said period, the trend of the population to migrate into western and central regions has increased the population densities in these regions and the younger population who have migrated into these regions for employment have transformed into permanent residence in these regions. In other words, the fact that the elderly population prevail as rather more dense in these regions is related with the relatively higher population density in these regions. Similarly the 38% of the total population live in the Western and 22% in the Central regions. When the ratio of the elderly population within the total population is reviewed with respect to regional aspects, it appears that Northern part has a relatively higher elderly population with 11%, and the youngest region is the Eastern region with 5%. According to these figures, it can be said that the Northern part is the region that gives the highest migration of young people.

The education level of the older population is considerably lower when compared with the total population. As for the education difference between the male and female population, it appears that there exists a considerable difference in favor

of the male population. The elderly females are much less educated when compared with that of elderly males. The 83% of the 65+ aged female population either do not have any education at all or they have not completed their primary school education. This ratio among males is 53%. In a study carried out by Ünalın (2000) by using the data of 1998 TDHS, the said ratios corresponded to 53.6% for elderly male population and to 83.9% for elderly female population. About half of the elderly population is not literate. The illiteracy ratio among both the male and female populations tends to increase as the age increases. This finding is confirmed by human capital theory which states that when the life expectancy increases, individuals want to provide further educational facilities and increased educational attainment. This situation was observed in literacy ratio of the elderly. The difference among genders is also valid for literacy rates. When one in each four elderly males is illiterate, it appears that three in each four elderly females are illiterate.

Marital status is one of the most important demographic indicators that provide information about how people organize their lives. According to 2003 TDHS, the majority of the elderly is either married or widowed. The ratio of currently married elderly male is double the ratio of its female counterpart; the ratio of widow females is four times higher than that of the males. This difference that is observed between the two genders is also compatible with the 2000 Population Census. According to the 2000 Population Census results, the ratio of the currently married +65 aged females is 47.1%, and this ratio corresponds to about half of the male counterpart. As the age progresses, the ratio of widows both in male and female populations tends to rise. Despite this, this ratio among female population is much higher than that of the male. Such factors including the tendency of females to remarry less after their husbands die, the average life expectancy of female population is more than that of the male, the age differences among males and females during marriage tend to increase the ratio of the widow female population whose husbands have died much more than to the contrary.

The analysis of 2003 TDHS data shows that one in each five elderly does not have any health insurance. Also it appears that the ratio of deprivation from health

insurance in higher aged elderly population higher than that of the relatively lower aged elderly population. The health insurance that the elderly has at highest ratio is SSK (Social Insurance Institution) and BAĞKUR (Social Security Organization of the Self-Employed). The ratio of the elderly population who has green card is 8%. The apparent difference in the socio-economic indicators of the genders is also correlated with their health insurance. While the 20% of the elderly male population does not have any health insurance, the said ratio is approximately 25% among that of the females.

Income and source of income of elderly were also investigated by using 2003 TDHS data. The 31% of 65+ population does not have any income. 1998 TDHS results show that this ratio was 44% (Ünalán 2000). An improvement in income levels were experienced in 5 years time for both of the genders. According to 1998 TDHS results, the ratio of elderly male population who had any income was 74.9% and that of the elderly female population was 38.1%, said ratios for the 2003 TDHS corresponded to 89% and 53% respectively.

The ratio of female population who did not have any income is four times higher than that of the male population. The majority of the elderly male population who had income declared their pension as one of their income sources. This ratio among female population is much less and is only 8%. Hence this ratio is an apparent indication that the labor force participation rate of female population during their working years was much less lower in Turkey. On the other hand, the elderly females have indicated the indirect pensions that have left from their husbands or their “old aged pension” as their income source for the most part. Although these income levels had relatively similar weight for 1998 TDHS, the ratios of indirect pension were raised from 15.6% to 26.0% and old aged pension were raised from 10.2% to 15.1% during the interim (Ünalán 2000). The fact that the elderly have any income does not indicate that their welfare level is prosperous. It seems that 56% of the household in which elderly population lives appear in the 40% lowest income and poorest economic segment which indicates that their incomes relegate them to either the poor or very poor income levels. These findings are supported by the life cycle theory.

According to this theory, the incomes of the individuals rise upon reaching the age of labor (15-64) and has the highest values in this period. After this period, incomes decrease. Consumption of individuals is higher than their income during the elderly period and so a decrease in the wealth level of elderly is expected.

Functional status of elderly was analyzed in terms of being confined to bed or armchair. The ratio of the elderly population who are confined to bed or chair/armchair continuously is relatively low and this ratio for 65+ age group is only 4% which corresponded to the population who are permanently confined to the bed and 1.3% was confined either to chair or armchair throughout the entire day. The reason why this ratio is found much less than expected may stem from the fact that the elderly who are confined to bed or chair every time, tend to live in hospitals or elderly care institutions or nurseries and therefore remained out of reach in household surveys. Coverage of TDH surveys is households. About one-fifth of the elderly population seems to restrict their lives only within the house, flat or the garden.

More than half of the elderly population state that the main responsibility in meeting their needs is undertaken by themselves. The proportion of male population who meet their basic needs is two times higher than that of the female population. When this difference in the 1998 TDHS were three times higher, it tended to decrease by time. The increase of the elderly female population in undertaking the responsibility to meet their basic needs has experienced a much higher increase over time. When comparing to the TDHS 1998 results, the husbands, declared by the wives, are undertake less activities to supply their basic needs. Although the child/step child did contributed a significant percentage in meeting the basic needs in TDHS 1998, this ratio tend to show a decreasing trend by time for both genders. When the real responsible person in meeting the basic needs was declared as the child/step child among the female population, in male population this person is declared as himself. During the five years period, the group who showed a steady increase, although slight, has become the neighbors for both of the genders. Hence this indicates that the left-behind elderly ratio tends to increase by time.

One of the most important objectives of this study is to investigate the co-residence pattern of the elderly population in Turkey by analyzing the results of 2003 TDHS data and to project them for future years according to headship rate method. Two approaches are adopted on this matter. One of them is to investigate the co-residence pattern of the elderly population by assuming the headship rates in 2005 as constant by considering the change between TDHS 1998 data and TDHS 2003 data. The other method is to calculate the co-residence pattern of the elderly population by calculating the rates according to each year separately by the extrapolative method that is applied by two separate formulas by taking the increases and decreases between 1998 and 2003. The households are classified in 3 basic compositions being simple, dissolved and complex by taking into account the relations of the household members with that of the household head.

In the majority of developing countries, like Turkey, the family is trusted in meeting the needs of the elderly and also in their care. However, the families in Turkey are changing, the traditional complex family structures are eroding, and the average household size is decreasing. Changes that occur in the population dynamics affect the family and household structures in the society. According to the results of this study, the most common household type in Turkey is the simple family households. The most dominant household type among them is the simple nuclear family household that comprise of married couples and their unmarried children. Due to the drop in fertility rates, it appears that an increase is experienced in the ratio of husband-wife family household (simple conjugal family household) as well. Next to the simple family households the other most frequent ones are the complex and dissolved household structures, respectively. The single person households show a significant increase when compared with that of the others as well. The results that are obtained by projecting the household types are compatible with other studies that are used by using the data of 1998 and former period's census records (Ünalın 2002, Yavuz, 2002).

According to the result of the study, at least one elderly member lives in each five household units in Turkey. When the household types where the elderly population live are reviewed, it appears that the elderly member live mostly within the conjugal family households (5.4%) who comprise of only husband and wife. Other common family types are simple nuclear and single person family households with 3.6% and 3.2% respectively. Five out of ten members who live in single person family households are elderly and a significant part of this population is formed by females. Irrelevant of what type of household they live in, the family members play an important role in the care of their elderly members in Turkey.

In this study the elderly individuals are classified according to their conditions including residing with their children, to be serviced and taken care by their children, whether or not the elderly have their own incomes, where their own or step children live, whether or not they receive financial support from their children, and their lone living situation in order to make some determinations about the living arrangements of the elderly individuals and refer to the theories about the ageing of the population, although, by necessity, in a superficial manner. When the typologies that are formed are reviewed it is observed that the majority of the elderly population does have some sort of income belonging to themselves, that they reside either alone or at close proximity to their children, and that they do not receive financial support from their children. This circumstance roughly confirms that wealth flow theory second stage is valid for most of the elderly. As stated by wealth flow theory, the direction of wealth flow here is from parents to children. The elderly individuals prefer to reside in a close physical surrounding area to their children even if they do not receive any material support and do not live in the same house with them. These results show that the support of the family for the care giving to the elderly members is still important, they also illustrate that the elderly people are getting less dependent, urbanization and related developments are also affecting the family structure, and private lives of individuals are also important. The children do not live together with their parents but settle in close area to where their parents live and they could thereby both manage to protect their private lives while rendering care service for the elderly members.

At that study a household projection had been made in order to present the change at the structure of the households in Turkey and at the co-residence pattern of the old people. Non-institutional population projections are required to perform household projections. As the population projections that are produced by TurkStat, which are used for computation of indicators regarding the ageing of the population in this study, contain the institutional population, in this thesis, the non-institutional population projections are produced by using software named PEOPLE. The households are divided into 3 categories being “simple”, “dissolved” and “complex” and into 6 subcategories according to whether or not each of the above maintain at least one elderly member among themselves. According scenario in which the extrapolative method is applied, when the total simple family household ratio tend to decrease continuously during the period between 2005 and 2050, there exists a continuous increase in *the simple family household ratio which settles at least one elderly individual in itself*. During this process, when the complex family household ratio shows a decreasing trend of almost half of its initial ratio, an increase of approximately 90% occurs in the dissolved family household ratio is expected to occur. When the dissolved family household ratio that contains at least one elderly in itself shall increase by three times during said period of 45 years, the complex family household randomly fluctuates and does not seem to record a meaningful trend during the interim.

When the results of the two different scenarios applied at household projection are compared, no important differences are observed at the total ratios of “simple family” households at both methods, but different trends are observed at the simple family household ratios including elderly and not including elderly. At the extrapolative method, the increase at the simple family household, including elderly, is higher compared with constant rate. The greatest difference between those two methods has been observed at “dissolved family” households. At the constant rate method the “dissolved” and “complex” household ratios have the same weight, but at the extrapolative method the share of complex household decreases and the dissolved family household share increases. According to the extrapolative method, about 21%

of the households will include at least one elderly at year 2010. In 2030 that ratio will be expected to be 29%, and 40% at 2050. The simple household ratio, including an old member will be 9% at 2010, 14% at 2030, and 19% at 2050. The ratio of the dissolved family households including elderly was 5% at 2005, and that ratio will reach 14% at 2050 with increasing acceleration. The complex family households, including at least one elder will increase about 6% and 7.5% between 2005 and 2050, which will not show a serious rational change.

These results show that the assumptions used in these calculations are very effective especially at population projections. Even for a period of 5 years, a possibility has been provided for the reflecting of the change at the household structures by extrapolative method; and thus the household projection results obtained by extrapolative method are more reliable than constant method.

If the household projection results are to be summarized again, the elderly shall mostly live in simple family households in the future as is the case at present, and there shall be an increase in the elderly population living in the dissolved family household. In the dissolved family household, the ones living alone are forming the majority. More than 49% of the people living alone do consist of the population at 65 and above; and 78% of that group consists of women. No change is expected to occur in the ratio of the elderly population who reside in complex family households.

According to the projection results, with this change that shall occur in the household compositions in Turkey, a decrease is expected to occur in the average household sizes. Theoretically the composition of the households in a country is similar to the size of household is that country. In Turkey, the increase in conjugal and dissolved family households and the decrease in the number of complex family households seem to be compatible with the decrease in both fertility and household size. In a study carried out by Bongaarts (2001a) it is determined that the countries that have relatively more elderly population tend to have smaller household structures. According to the "Convergence Theory", the households tend to be less extended, more nuclear and have smaller average sizes as societies are industrialized

and urbanization rates increase (Bongaarts, 2001a). The same trend was also experienced during the industrialization process of the European and North American societies. During the period between 1850 and 2000, the average household size was dropped from 4-6 to 2-3 members in 150 years interval. In said countries, the nuclear family household type is dominant. Demographic indicators show that the population in Turkey has also entered into the phase of ageing, and after 2030 it shall have an aged population and the expectation of smaller household sizes in the changing population and household structures seem to be consistent with the studies that are carried out on this subject.

One of the outcomes of this study is to examine the main differences and similarities between population ageing stages, periods and patterns of Europe and that of Turkey. The trends in the ageing of the population in Europe, where the influence of said process is felt most intensively, and population ageing stages in Turkey are compared in this study. The changes that have occurred in some of the demographic determinants of the ageing stages of the population are analyzed in this study. The Northern and Southern Europe regions indicate some significant differences among themselves as for their demographic ageing process and population dynamics. Therefore, two countries from each region that are selected, Denmark from north and Spain from south, for comparison. Turkey is experiencing the process that Europe had experienced over 100 years in a much shorter period of about 40-50 years. In Europe and in these two European countries, the ageing process of the population was started in 1950s. Turkey shall reach the elderly population ratio of these countries at the earliest after 2015. The ratio of the elderly population in Spain was less than the European average and lower than that of Denmark in 1995, after 1995 the elderly population in Spain has induced a remarkable increase. As for the oldest-old ratio, Turkey is currently behind Europe. Although it may be assumed that Turkey shall have a smaller oldest-old ratio than that of these countries in proportional basis, its number of absolute numbers who are 80+ years old is two and a half times than that of Spain and 20 times than that of Denmark. Hence this fact reminds us that the absolute numbers in addition to the proportions are important in considering the demographic facts.

When the average life expectancy in Turkey during 1950's was 23 years lower than the average life expectancy values of the European, Danish and Spanish people, this difference tended to diminish with time. According to the projections, said difference between Turkey and Spain, which is has highest life expectancy in Europe, shall decrease to 9 years and with that of the Europe average, to 3 years.

The secondary objective of this study is to estimate, from a demographic point of view, what the economic burden caused by the population ageing might be. In this study estimations of the cause and effect relations among the most important economic dynamics that are assumed to vary with the population trends in the literature. Namely projections of labor force participation, health expenditure and institutional care expenditure are attempted.

The data sources required to perform the related analysis, which are the economic consequences of the ageing population, are quite insufficient in Turkey. For example there is no data in the health expenditures that are paid by the state by their distribution in age and gender variables. In this study, the data, under coordination of the institution titled Refik Saydam Hygiene Center, that are used in its publication title "Turkey National Health Accounts" (Refik Saydam Hygiene Center Presidency, 2004) are used about the health expenditures and its distribution with age groups.

The ageing of the population leads to an increase in health expenditures and the expenses related with elderly care services. Some specialists claim that the most important impact of ageing society shall be on health expenditures. In Turkey, 18% of the public expenditures are allocated to health expenditures. The new technologies and the steadily increasing prices in the health sector can not be reflected in the expense projections that are produced in this study. As the inflation rate, the price increases in health sector and similar increases are not reflected into the projections, so the calculations are done in Euro currency by taking the foreign currency rate

during the year 2000 as the basis. The health expenditures have experienced a continuous increase between 2000 and 2050 and were doubled during the interim.

When the shares in health expenditures are examined according to age groups, it appears that shares of “70+” and “60-69” age groups were continuously increased and that of “0-4” and “5-14” age groups tended to decrease. When the shares of the age groups within the total population and their shares in health expenditures are compared, the age group whose health expenditure is greater than others has become, as expected, as “70+”, because they had greater sickness and health problems than the other groups. To the contrary the health expenditures share of “15-44” age group whose share in total population was the highest was relatively lower proportionately. Since the data on the health expenditures do not exist by gender, the changes at such expenditures cannot be assessed in accordance with age-gender differentiation.

The long term care service rendered to the elderly population is diversified in a long range from help to household works to individual care services. As the professional care services at home are not widespread in Turkey, the costs that are expected to occur if the elderly are provided institutional care services are be estimated by scenarios as reflecting different population percentages of the elderly population who would receive such a service. In the calculations, the average spending figures of Social Services and Child Protection Agency’s (SHÇEK) spending amounts for the elderly individuals in their elderly care facilities and institutional care service capacity of SHÇEK are taken as the bases. The average cost of the elderly who have received institutional care between the years 2004-2007, which only includes the health, clothing and food expenses, are considered. These data are obtained after making an official application to SHÇEK. It appears that this average cost was increased about two times during said period. In Turkey, only 0.15% of the population at 65+ which correspond to approximately 6.400 elderly individuals who received institutional care. This figure is very low when compared with that of developed countries. During 2000, the percentage of the elderly population who received institutional care were 33% in Germany, 32% in the United

Kingdom, 23% in Italy and 17% in Spain. The country which received the highest informal care percentage was Spain with 69% that has induced the lowest institution care percentage with 17%. Therefore, in this study it is taken as a criterion for estimating the future institutional care percentage projections in Turkey. If the 17% of the elderly population are assumed to receive institutional care, then the institutional care expenditures increase by 113 times when compared with that of the present institution care spending in Turkey. Under the condition that the rate of 0.15% will be increased to 1%, to %5 and to 10%, there takes place increases of 7, 33 and 67, respectively. These estimates indicate that financing and organizing the institutional care service requires a substantially high cost and meticulous effort in Turkey.

One of the most important changes that occurred with the ageing of the population is the ageing of the labor force and its decreasing ratio in total population. On the other hand, it is said that the ageing of the society would have some positive effect including increasing both the female's labor force participation and also the average educational attainment. In this study the projections about the labor force are produced by using the labor force participation rates during the year 2005. Data is obtained from the Household Labor Force Survey by TurkStat during that year. According to the results of this projection, the share of population that is out of the labor force between 2005 and 2050 shall continue to increase, depending on the assumptions that are used in the projection. As the unemployment rate in Turkey is substantially high, the problems that are expected to occur by the relative decrease in the number of labor force population do not seem to be valid for Turkey. The problem that the EU countries currently encounter, that is the problem related with the ageing of the labor force, shall be valid in Turkey in the distant future.

The median age of the population in the labor force shall, similar to the trend in the median age of the population, increase during 2005-2050 periods. The ageing of the labor force population is expected to induce negative effects such as difficulty to adapt to technological innovations and organizational changes that leading to detrimental influences in the efficiency of the labor force. When Turkey meets its

labor force need by its young population at present, it shall meet such need by its older population in the future. According to the projections, the share of the 55+ population in the labor force is expected to increase by two times between 2005-2050 period and that of the 25 and less age group is expected to decrease by one-quarter during this period. The change in these shares is observed in both of the genders. Although the problem that is related with the ageing of the labor force and its decrease do not seem to affect Turkey at present, it shall occupy the first line of the economic agenda of Turkey in the near future. When the dependency ratio in Turkey shall decrease until 2025, it shall rapidly increase after 2035 with the increase in the share/population of the elderly. A low death rates leads to higher proportion of old age dependents. As indicated by life cycle theory, increase in life expectancy will lead people to save more, but this condition is valid only if they have sufficient trust in well regulated and efficient financial sector. The presence of an old generation living off their capital increases the wages of young workers, whose productivity rises due to high level of capital intensity (Bloom, 1999). The 17 years ahead of Turkey, by considering it a period when the labor force population shall have an increasing trend, may be converted into a window of opportunity by adopting consistent and appropriate policies. Particularly the one-third of the economic growth that were experienced by the countries that are known as the Asian Tigers between dates 1965 and 1990, is thought to be emerged from the demographic fact that the rate of the working population has increased more rapidly than that of the elderly population during this period (Bloom and Williamson, 1998). But if the sufficient social security funds can not be collected during the interim, it shall be inevitable that to finance the retirement expenditures of the elderly population in considerable amounts from the state budget will be needed. Providing allocation for the sectors that increase economic growth shall not be found. In Turkey, which currently has the youngest population of Europe, it seems that this source can not be utilized efficiently or productively. If this gift, which can be called as a windows of opportunity, can not be utilized, the young population which is advantageous, may be converted into a serious economic burden by leading to such detrimental outcomes including high unemployment rates, unqualified labor force, insufficient employment.

In this study, one of the aims is to estimate the economic burden caused by the change in this co-residence pattern of elderly. Industrialization and economic developments affect the social structure in the countries, and lead smaller family size and to their conversion to nuclear type. This condition has led to change in the social and intra family status of the individuals who seek care. In Turkey the family structure is in a transition process when the ratio of complex household structures and average household sizes tend to decrease, the ratios of nuclear family and dissolved family tend to increase. Under these conditions the traditional methods that are employed in meeting the needs of the elderly members remain insufficient and the importance of the public services that shall be rendered to this group is getting further intensified.

As was the trend in the developed countries, the changing trend of family structure in Turkey shall evolve in the direction for rendering professional care service towards the elderly.

In Turkey, the numbers and capacities of the institutions/organizations which provide institutional service to the elderly is very restricted. The existing policies and applications in Turkey tend to undertake more responsibility to the individual and family for providing care service to the elderly. In Turkey the existing bed capacity that renders care service to the elderly is 19.073 beds in 232 rest homes and elderly nursing homes. Also according to the data that is collected from SHÇEK and the research results that are carried within the scope of this study, it appears that the demand for institutional care for the elderly is not so high stemming from the strong family structure in Turkey. Although the service quality rendered by the rest homes has increased with time, it appears that, according to the result of the study titled "Family Structure Survey" (Turkish Statistical Institute, 2006), the elderly individuals rather prefer to reside with their families and receive care service by their family members in their own homes.

The existing institutional care service capacity in Turkey is quite low when compared with the expected potential increase in its demand in the future. Already

there is no organization in Turkey regarding rendering care for the elderly. The elderly care is for the major part maintained by the effect of the traditional culture as an informal care that is provided at home. The changing trend in the household structure shall lead to providing care service for the elderly at home and to the formation of support mechanisms to both the elderly individual and to the individuals who render informal care service for the elderly.

IX.2. POLICY SUGGESTIONS

The increase rate of the elderly population is higher than other age groups in Turkey. Compared with the countries with an older population structure in percentage, Turkey seems to have a young population structure, but the number of the absolute old people in the country is quite high. In accordance with the findings of this study, the family structure and the co-residence pattern of Turkey is changing dramatically. Due to factors; such as industrialization, urbanization, labor migration, decrease in fertility, increase in the divorce rates, and individualism, the traditional family has eroded. The dominant family type in Turkey can be named as simple family household, and the dissolved family households ratios are increasing. In addition, the household sizes are decreasing and the number of the aged population, especially the elderly women that live alone, is increasing. As a result of the changes at the demographic rates, Turkey may face the ageing of the population at an earlier period than expected. The serious increases at the amount of the aged population may cause drastic pressures on the health services, social security system and the families that are the greatest supporters of the aged individuals in the emotional and financial sense, under the condition that there will be no programs and policy preparations on that field. Because of all these reasons it is necessary to repeat the social issues and the social security policies concerning the problems that may arise in connection with the ageing of the population and the aged population; and to produce new policies.

Since the number of the aged population will increase continuously, it becomes indispensable to establish care plans for the aged population. There are

many good reasons to prepare a care plan; and the most important of these may be listed as; the care plans are providing the opportunity for the early diagnosis and treatment of geriatric syndromes; they improve the quality of life and increase it; and decrease the health care expenditures. The care services for elderly people are presented as institutional care and home-based care.

The changes in the demographic structure of Turkey, changes in the family structures and the attitude of the people and individualism make inadequate the traditional methods used with the family meeting the needs of members who are in need of care. That increases the importance of the public services for the people in need, and especially makes the improving of the institutional care services for the old individuals absolutely necessary.

The structure of the institutional care may differ in accordance with the physical and mental capacity of the old people in need of care, their economic standing, their social security situation, and the policies of the countries for the care of the old and the ill people. The presenting of the institutional care services in a social and medical integrity is essential both for the life quality of the old individuals and the cost efficiency. In Turkey there are many institutions and organizations that are undertaking tasks for the care of the old people. Among these local governments, SHÇEK, many organizations and foundations, private-run rest homes and minority rest homes and rest homes of public institutions may be mentioned. In accordance with the 1580 numbered law of 1930, the municipalities are given the responsibilities to protect the elderly people, and to construct and to operate care houses for them. By the law 3017 of 1963, the General Directorate of Social Services, and by the 2828 law of 1983 SHÇEK have been given tasks in connection with the welfare of the elderly people. At the 5378 law regarding handicapped of 2005 it is being stated that; “... *the care services for the people who are in need at a level that they can not continue their living without the assistance and care of others may be given by real and legal persons that take the necessary certification from SHÇEK and by public institutions and organizations...*”. By the additional clause to the law 2828 the first step has been taken at the social care security system; “...*the people who are not*

enrolled to social security institutions, and the disabled people who are in need, and the people who do not have a family, and the people who are in social deprivation are provided care services at private or public care institutions or at their houses... ". With that additional clause for the first time the poor people in need had the chance to benefit from the free care services at their homes and at institutions.

However, despite that legitimate infrastructure, as stated before, the number and the capacity of the organizations and the institutions that the elderly people can obtain institutional care services are limited. Thus, the organization for the care of the elderly shall be reassessed, and the necessary steps shall be taken for such organization to have the capacity and the infrastructure to meet the potential request for the institutional care services in the future.

Besides, as a result of some factors; such as the expensiveness of the institutional care, the long term institutional care's possibly becoming a new source for stress, its causing depressive symptoms, and its isolating the people in need from the social life necessitates to widespread the support systems that will provide care within the close environment. For that purpose, similar with the developed countries, it is necessary to strengthen the relation of the individuals with their environment under conditions; such as disability, chronic diseases, and old age; to make them continue their lives freely and at the environment they get used to; to respond their requests and expectations; to increase their social functionality; and to adopt the public based care attitude in order to decrease the financial burden on the state resulting from institutional care. Thus, as an alternative to the institutional care services, more effective and economic strategies should be established for the care services for the people in need and the disabled individuals. One of these strategies is to provide service to the individuals at the place where they live. In developed countries the priority is to provide care services to the elderly people within their families.

It is known that providing care services at home is cheaper and it impedes the isolation of the individuals from the social life; and thus is more humanistic. The

aged population of the future will consist of more educated people who will have higher expectations in the sense of living and health services, compared with the aged population that the social-economic features are given at that study. In developed countries the individuals with those characteristics prefer to receive such services at their own houses. In short, the changing structure of the families and the aged individual profiles makes it necessary to develop new care policies and systems; such as care at home services, in Turkey at the issue of elderly people care. The home care services practices makes it necessary to establish support mechanisms for the elderly individuals and the individuals that provide informal care to these elderly people.

The family members that informally meet the needs of the elderly members of the family who are in need are in fact undertaking a task that shall be implemented by the state. Thus, the working life and the social life of these individuals are affected negatively. Some researches show that the physical and emotional health of the family members that are looking after their old parents are getting worse during such care processes. It is being suggested that such individuals shall be protected against disease, retirement and accident risks within the scope of a social insurance. In developed countries such individuals are provided tax discounts, retirement right, and some other facilities. Despite some legal limitations and shortages in Turkey, in accordance with the 30.07.2006 dated and 26244 numbered regulation of Social Services and Children Protection Institution, the people taking care of the disabled relatives at their homes are being paid a “care fee”. In Turkey, social, psychological, and financial support systems shall be established for the care givers, who are family members taking care of the old individuals at home and the existing systems shall be improved. In addition the individuals who are giving care services shall be given training and consultancy services.

The analysis performed during that study show that the elderly female population, which is higher, is less educated and less trained and alone compared with the old men population. The share of the old women population, which does not have a health coverage and an income, is more than the old men population. About

the 60% of households with the elderly takes place within the poorest 40%. It is evident that the old age pension /disability salary services, given under the 2022 numbered law, and the green card services are inadequate both in the quantitative and qualitative senses. The old people that are poor, living alone, not having any incomes or social security, and that cannot implement some of their daily life activities; such as elderly women, shall be defined as vulnerable groups, and special policies shall be applied for such groups with priority.

The estimations in connection with the costs of health services and institutional care services imply that Turkey, which has a smaller old population in proportion with the developed countries but more in number, will have problems financing and establishing the infrastructure of such expenditures. The data on the health and institutional care expenditures for the elderly population is quite limited and inadequate. A registration system shall be established for that purpose, and the existing systems shall be improved. In addition, for the purpose of preventing the increasing of the health expenditures, protective health services shall be given in order to prevent the worsening of the physical and mental health of the elderly.

For the preparing of social policies for the old people, the elderly profile in Turkey is particularly important. At the policies to be established for the old population, the heterogeneity of the old population shall be considered, and the population whose ages are above 65 shall not be handled as a homogeneous group. It has been found that many variables computed and/or analyzed during that study are differing according to the age groups, marital status, gender, income level, co-residence pattern, etc. The per cent distribution of the elderly population also differs according to the regional issues and rural and urban position. There are no databases and/or registration systems in Turkey that has been established especially for the old people. It is necessary to know about the profile of the old people in order to determine the services to be provided and in order to ensure the efficiency of them. The services to be provided for the elderly by the concerned organizations and institutions shall be compatible with the profile of the old people in Turkey.

For the old population of the future, which is expected to be numerous, the numbers and the qualifications of the concerned professionals; such as geriatricians, social service experts, etc., shall be improved; and the plans and the programs to be prepared for that purpose shall be included in the national health policies. While establishing such programs, a multidisciplinary approach shall be adopted.

On the basis of the International and the Regional Documents, the United Nations had adopted the International Action Plan for elderly including the rights and principles for the providing of the development, health and prosperity, and the supporting environments presenting possibilities at the Second World Assembly on Ageing (United Nations, 2003). In accordance with these principles, under the supervision of State Planning Organization (SPO) and Social Services and Child Protection Agency (SHÇEK) with the inter-sectoral cooperation, the Turkey “National Plan of Action on Ageing” had been prepared (SPO, 2004). In order to realize the activities taking place at that action plan the necessary coordination between the universities, NGOs, and local governments shall be provided; priorities shall be determined and an application program shall be prepared as soon as possible.

IX.3. CONTRIBUTIONS OF THE THESIS AND STUDIES THAT ARE PROPOSED TO BE CARRIED OUT IN THE FUTURE

In this study, the co-residence pattern and living arrangements of the elderly population are investigated for the first time and projections are produced in order to anticipate in what kind of households the elderly are likely to live in the future. The 2003 TDHS data are evaluated from the perspective of population ageing and the social, demographic and economic features of the elderly population in Turkey with respect to their gender and age distributions are defined. The indicators that are used in evaluating the ageing stages of the population are calculated by using the TurkStat projections for 2000-2050 periods.

The non-institutional population projections are needed in order to make the household and labor force projections. As the projections that are made by TurkStat

contain the institutional population, they could not be used. Therefore the non-institutional population projections are produced within the content of this study.

Also estimations about the health and institutional care expenditures that are most important economic burdens that expected to occur due to the population ageing are made. In addition, the change that are expected to occur in labor force population are attempted to be explained by the projections.

The demographic ageing stage in Turkey is compared with that of the European average and also with the two countries that are selected one from northern and the other from southern Europe. For this comparison the data sources of the United Nations that has accumulated a large scale data bank were used. These countries and Europe are compared with the tables and graphical representations that are formed within the scope of this study. Another outcome of this study may be that the population, labor force and household projections that are obtained in this study and the policy suggestions may give ideas or shed light to the future studies that may be carried out on this subject.

In this thesis, the impacts of the population ageing have been assessed with a demographic point of view. Econometric analysis can also be made on that topic.

The population data that appeared in the Address Based Population Registration System are not used in this study because of their incomplete or missing contents particularly in their age distribution. The Turkish Statistical Institute could not produce population projections with these data yet. Many indicators that give information about the ageing process of the population in this study may later be recalculated by using the new projection figures. Also the population dynamics may show regional variations in Turkey. Studies in which these regional variations may be analyzed by the data in registration system can be carried out.

Turkey Demographic and Health Survey that shall be carried out in 2008 contain more information on social, demographic and economic characteristics of elderly population. The characteristics of the elderly population and change within the household structures may be determined by using this data. Also ADL scale or handicap index may be formed by using the data about which of the daily activities can the elderly persons perform.

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ANNEX A RATIO OF THE INACTIVE POPULATION AGED 65 AND OVER TO THE LABOUR FORCE

OECD Factbook 2007: Economic, Environmental and Social Statistics - ISBN 92-64-02946-X - © OECD 2007

Population - Elderly population - Ageing societies

Ratio of inactive population aged 65 and over to the total labour force

Percentage

	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
Australia	23.3	23.4	25.2	28.9	33	37.4	41.9	45.2	48.1	49.7	51.4
Austria	30.7	32.2	34	35.9	38.8	43.8	50	55.2	58.2	60.1	61.9
Belgium	38.4	38.8	39.8	43.9	48.7	54.9	61.3	65.9	68.3	69.4	70.2
Canada	23	22.5	23.5	26.4	30.4	35.3	40.2	43	44.8	46.4	48
Czech Republic	26.3	26.9	29.6	34.8	40.3	44.5	48.7	54	62.6	72.5	79.4
Denmark	26.3	26.9	30.3	35.3	39.8	44.5	49.9	54.5	57.2	57.3	55.3
Finland	29.1	30.9	33.4	40.2	46.2	51.4	55.6	57.5	57.2	57.6	58.6
France	36.4	36.9	38.4	43.9	49.2	54.2	59.3	63.4	66.5	67.7	68.9
Germany	33.3	36.8	38.8	40.2	43.7	49.2	56.6	62.6	64.2	65.3	67
Greece	38.5	40.5	41.3	44	47.1	51.9	57.7	65.5	73.4	80.7	85.1
Hungary	35.9	37	39.1	42	47.7	51.8	53.9	57.8	63.3	70.2	74.1
Iceland	16.2	17.2	17.6	18.9	21.8	25.4	28.9	31.2	32.5	33.3	33.6
Ireland	22.4	21.4	22	24.3	26.9	29.8	33.1	36.9	41.6	47.3	52.1
Italy	42.5	45.6	47.5	51.2	54.8	59.9	68	77.5	86.2	91.2	92.8
Japan	25.3	30.9	37.8	45.4	51.1	54.8	58.8	63.8	70.3	75.9	80.8
Korea	10.8	12.7	15.4	18.4	22.4	29	36.9	45.8	55.7	64.3	72.2
Luxembourg	32.6	32.1	32.1	33.7	36.4	40.7	46	50.6	52.6	52.5	52
Mexico	8	8.9	9.9	11	12.5	14.4	16.8	19.9	23.8	27.9	31.7
Netherlands	26.1	26.7	28.1	32	35.2	39	43	45.6	45.6	43.5	41.5

New Zealand	21.9	20.6	21.2	23.4	26.5	30.8	35.9	40.3	43.9	45.9	47.2
Norway	27.2	26.4	26.8	29.6	32.6	36	39.4	42.8	45.2	45.9	46.4
Poland	24.9	27.6	28.4	33.2	40.5	48.2	53.5	58	63.9	71.5	80.6
Portugal	25.8	26.6	26.6	27.9	29.6	32	35.3	39.1	43.6	48.2	51.4
Slovak Republic	23.6	23.5	25.3	29.3	35.7	42	47.8	53.2	61.3	71.4	80.5
Spain	38.2	37.2	37.3	39.4	42.4	47.3	54.5	63.7	74.7	85.5	90.5
Sweden	31.9	31.8	33.5	36.9	39.5	41.9	44.4	46.3	47	46.7	46.4
Switzerland	25	26.4	28	30.6	33.4	37.3	42.1	46.4	48.9	50.3	51.5
Turkey	12.4	14.7	14	15.1	17.3	20.3	24.3	28.5	33.3	38.2	42.8
United Kingdom	30.8	30.8	31.8	35.2	38.2	41.8	46.5	50.4	52.4	53.2	54.7
United States	21.6	21.1	21.9	24.6	28.3	32.6	36.4	38.7	39.8	40.5	41.3
EU 15 total	34.4	35.8	37.2	40.3	43.8	48.4	54.4	60	63.9	66.4	68
OECD total	24.8	26	27.6	30.5	34	37.9	42.2	46	49.2	51.7	53.8
Slovenia	28.5	30.7

Note

Ratio of the inactive population aged 65 and over to the labour force aged 15 to 64.

**ANNEX B. TURKSTAT POPULATIONS PROJECTIONS BY AGE GROUPS,
2000-2050**

Female	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
(000)											
0-4	3508	3236	3242	3176	3171	3150	3077	2962	2864	2788	2696
5-9	3329	3496	3226	3232	3168	3164	3144	3073	2958	2860	2785
10-14	3064	3323	3491	3222	3228	3165	3161	3141	3070	2956	2858
15-19	3240	3058	3317	3485	3217	3224	3161	3157	3138	3067	2952
20-24	3326	3231	3050	3309	3477	3210	3217	3155	3152	3132	3062
25-29	3076	3313	3219	3040	3299	3467	3202	3210	3148	3145	3126
30-34	2604	3061	3299	3206	3028	3288	3457	3193	3202	3140	3137
35-39	2276	2588	3044	3281	3190	3014	3274	3444	3182	3191	3130
40-44	1981	2255	2566	3019	3256	3168	2995	3255	3425	3165	3174
45-49	1658	1954	2226	2534	2984	3220	3136	2969	3228	3397	3140
50-54	1271	1624	1915	2184	2488	2933	3171	3093	2930	3186	3354
55-59	1075	1231	1575	1860	2124	2424	2865	3105	3032	2872	3126
60-64	977	1021	1172	1503	1780	2038	2336	2772	3009	2939	2788
65-69	795	896	941	1083	1397	1662	1918	2215	2636	2862	2802
70-74	578	683	777	820	954	1240	1496	1749	2030	2416	2636
75+	608	746	912	1080	1226	1434	1824	2313	2835	3381	4066
65+	1981	2325	2630	2983	3577	4336	5238	6277	7500	8659	9504
Total	33367	35716	37972	40031	41987	43799	45433	46807	47838	48496	48832
Male	2000	2005	2010	2015	2020	2025	2030	2035	2040	2045	2050
(000)											
0-4	3644	3375	3384	3318	3314	3292	3219	3102	3000	2921	2825
5-9	3451	3627	3361	3371	3306	3304	3284	3212	3096	2994	2916
10-14	3212	3442	3618	3353	3364	3299	3298	3279	3207	3091	2991
15-19	3405	3199	3429	3605	3341	3353	3290	3289	3270	3199	3084
20-24	3485	3382	3179	3408	3585	3324	3337	3275	3274	3255	3185
25-29	3194	3457	3357	3156	3385	3562	3305	3319	3257	3256	3238
30-34	2648	3167	3430	3331	3134	3363	3541	3286	3300	3238	3238
35-39	2321	2622	3138	3399	3303	3109	3339	3517	3264	3278	3217
40-44	2069	2290	2588	3099	3360	3267	3078	3306	3483	3233	3247
45-49	1724	2026	2244	2538	3042	3301	3214	3030	3256	3430	3185
50-54	1287	1664	1957	2170	2459	2953	3213	3133	2955	3175	3347
55-59	1053	1213	1571	1850	2059	2341	2826	3083	3008	2837	3052
60-64	921	960	1109	1437	1702	1904	2182	2646	2891	2821	2665
65-69	712	800	838	970	1266	1508	1702	1964	2388	2609	2553
70-74	480	574	651	685	798	1047	1258	1436	1663	2023	2220
75+	448	552	679	803	896	1029	1289	1604	1912	2244	2705
65+	1641	1926	2168	2458	2961	3584	4249	5004	5963	6876	7478
Total	34053	36349	38533	40493	42315	43957	45372	46478	47223	47606	47667
General Total	67420	72065	76505	80524	84301	87756	90806	93285	95061	96103	96499

Source : TurkStat, Mid-year population projections by age groups, 2000-2020 (Yaş grubuna göre yıl ortası nüfus projeksiyonları, 2000-2020), <<http://www.tuik.gov.tr/VeriBilgi.do>>, accessed March 2007.

ANNEX C. TURKEY HEALTH EXPENDITURE PER CAPITA BY AGE GROUP; 1999-2000

FİNANSMAN KURUMLARI x YAŞ 2000 (Trilyon TL)	FK.1 Genel Devlet											FK 2 Özel Sektör								TOPLAM	
	FK 1.1 Sosyal Güvenlik Fonları Hariç Genel Devlet									FK 1.2 Sosyal Güvenlik Fonları		FK 2.5 İşletmeler									
	FK 1.1.1 Merkezi Devlet							FK 1.1.3 Yerel Devlet		FK 2.1 Özel Sosyal Sigorta	FK 2.2 Özel Sigorta Şirketleri	FK 2.3 Hane Halkı Cepten Yapılan Ödemeler	FK 2.4 Hane Halkına Hizmet Eden Kar Amaçsız Kuruluşlar	FK 2.5.1 Vakıf Üniversiteleri	FK 2.5.2 Diğer Kurumlar	FK 2.5.3 Özelleştirme Kapsamındaki Kurumlar	FK 2.5.4 Diğer İşletmeler				
	FK 1.1.1.1 Genel Bütçeli Kurumlar			FK1.1.1.2 Katma Bütçeli Kurumlar		FK 1.1.1.4 Kamu Denetimindeki Sağlık Hizmetleri	FK 1.1.1.5 Devlet Memurlarına Verilen Sağlık Hizmetleri	FK 1.1.3.1 Belediyeler	FK 1.1.3.3 Yerel Dev.Çal. Dev.Me m.Sağl. Hizm.									FK 1.2.1. SSK	FK 1.2.2 Emekli Sandığı		FK 1.2.3 Bağ-Kur
	FK 1.1.1.1.1 Sağlık Bakanlığı		FK 1.1.1.1.2 Milli Savunma Bakanlığı																		
	FK 1.1.1.1.1.1	FK 1.1.1.1.1.2																			
Sağlık Programları	Yeşil Kart																				
0-4	63.86	19.83		16.15	8.07					1.19	64.25	1.51	4.84	154.77	65.29	75.99	6.01			11.00	
5-14	60.06	16.51		15.83	6.50	1.38	65.13	1.25	4.61	144.87	69.04	81.27	6.44	11.28	241.48	2.90	10.46	22.26	0.80	0.26	762.40
15-44	203.09	64.08	51.06	26.20	3.68	202.13	4.90	15.36	492.58	204.02	237.03	18.75	34.54	681.84	8.16	32.87	59.44	2.30	0.71	2,342.93	
45-59	108.32	33.13	27.55	13.44	2.09	110.10	2.53	8.22	262.38	112.54	131.20	10.38	18.88	380.70	4.56	17.85	33.71	1.28	0.40	1,279.36	
60-69	59.50	19.51	14.74	8.05	0.99	57.62	1.49	4.48	144.56	57.17	66.11	5.23	9.80	187.85	2.25	9.41	16.01	0.64	0.19	665.65	
70-79	45.28	15.74	10.95	6.58	0.65	41.89	1.21	3.38	110.31	40.31	46.21	3.65	7.07	128.36	1.53	6.89	10.47	0.44	0.12	481.10	
80+	15.23	5.16	3.72	2.14	0.23	14.38	0.40	1.14	37.05	14.04	16.16	1.28	2.44	45.36	0.54	2.36	3.78	0.16	0.04	165.62	
TOPLAM	555.35	173.95	140.01	70.99	10.21	555.49	13.28	42.03	1,346.52	562.41	653.98	51.75	95.01	1,885.21	22.56	90.27	164.98	6.35	1.96	6,442.84	

**ANNEX D PROJECTED NON-INSTITUTIONAL MID-YEAR POPULATION BY AGE
AND SEX (%) 2005-2050 PERIOD**

Age group	2005			2010		
	Males	Females	Total	Males	Females	Total
0-4	5,0	4,8	9,8	4,4	4,2	8,6
5-9	5,0	4,9	9,9	4,7	4,5	9,2
10-14	4,8	4,6	9,4	4,7	4,6	9,3
15-19	4,5	4,3	8,8	4,5	4,4	8,8
20-24	3,8	4,4	8,2	4,2	4,0	8,2
25-29	4,8	4,6	9,4	3,5	4,2	7,7
30-34	4,4	4,3	8,7	4,5	4,3	8,8
35-39	3,7	3,6	7,3	4,1	4,0	8,1
40-44	3,2	3,2	6,4	3,4	3,4	6,8
45-49	2,8	2,7	5,6	3,0	2,9	5,9
50-54	2,3	2,3	4,6	2,6	2,5	5,1
55-59	1,7	1,7	3,4	2,1	2,1	4,1
60-64	1,3	1,4	2,8	1,5	1,5	3,0
65-69	1,1	1,3	2,4	1,1	1,2	2,3
70-74	0,8	0,9	1,7	0,9	1,0	1,9
75+	0,7	1,0	1,8	0,9	1,2	2,0
All ages	49,9	50,1	100,0	49,9	50,1	100,0
Summary						
Under 15	14,7	14,3	29,0	13,8	13,3	27,1
15-49	27,2	27,1	54,3	27,2	27,2	54,4
50-59	4,0	4,0	8,0	4,6	4,6	9,3
60+	4,0	4,6	8,6	4,3	5,0	9,3
Age group	2015			2020		
	Males	Females	Total	Males	Females	Total
0-4	4,1	3,9	8,0	3,9	3,7	7,5
5-9	4,2	4,0	8,1	3,9	3,7	7,6
10-14	4,4	4,3	8,7	4,0	3,8	7,8
15-19	4,5	4,3	8,8	4,2	4,1	8,3
20-24	4,2	4,1	8,4	4,2	4,1	8,4
25-29	4,0	3,8	7,8	4,0	3,9	8,0
30-34	3,3	4,0	7,3	3,8	3,6	7,4
35-39	4,2	4,1	8,3	3,2	3,8	6,9
40-44	3,9	3,8	7,7	4,0	3,9	7,9
45-49	3,2	3,2	6,4	3,6	3,6	7,2
50-54	2,7	2,7	5,5	2,9	3,0	5,9
55-59	2,3	2,3	4,7	2,5	2,6	5,0
60-64	1,8	1,9	3,7	2,0	2,1	4,2
65-69	1,2	1,4	2,6	1,5	1,7	3,2
70-74	0,9	1,0	1,9	1,0	1,1	2,1
75+	1,0	1,3	2,3	1,1	1,5	2,5
All ages	49,8	50,2	100,0	49,8	50,2	100,0
Summary						
Under 15	12,7	12,2	24,9	11,8	11,2	22,9
15-49	27,2	27,3	54,5	27,0	27,1	54,1
50-59	5,0	5,1	10,1	5,4	5,6	11,0
60+	4,9	5,6	10,5	5,6	6,4	12,0

Age group	2025			2030		
	Males	Females	Total	Males	Females	Total
0-4	3,7	3,5	7,2	3,5	3,3	6,8
5-9	3,7	3,5	7,2	3,6	3,4	7,0
10-14	3,7	3,6	7,3	3,6	3,4	7,0
15-19	3,8	3,6	7,5	3,6	3,4	7,1
20-24	4,0	3,9	8,0	3,7	3,5	7,2
25-29	4,0	4,0	8,0	3,9	3,8	7,7
30-34	3,8	3,8	7,6	3,9	3,8	7,7
35-39	3,6	3,5	7,1	3,7	3,6	7,3
40-44	3,0	3,6	6,6	3,5	3,3	6,8
45-49	3,8	3,7	7,5	2,9	3,5	6,3
50-54	3,4	3,4	6,8	3,6	3,5	7,1
55-59	2,7	2,8	5,5	3,2	3,2	6,4
60-64	2,2	2,4	4,6	2,4	2,6	5,1
65-69	1,7	1,9	3,7	1,9	2,2	4,1
70-74	1,2	1,4	2,6	1,4	1,7	3,1
75+	1,2	1,6	2,8	1,4	2,0	3,4
All ages	49,7	50,3	100,0	49,7	50,3	100,0
Summary						
Under 15	11,2	10,6	21,7	10,6	10,1	20,7
15-49	26,1	26,1	52,2	25,1	25,0	50,2
50-59	6,1	6,2	12,3	6,7	6,8	13,5
60+	6,3	7,4	13,7	7,2	8,4	15,6

Age group	2035			2040		
	Males	Females	Total	Males	Females	Total
0-4	3,3	3,1	6,4	3,1	3,0	6,1
5-9	3,4	3,2	6,6	3,2	3,1	6,3
10-14	3,5	3,3	6,8	3,3	3,2	6,5
15-19	3,5	3,3	6,8	3,4	3,2	6,6
20-24	3,5	3,4	6,9	3,4	3,3	6,7
25-29	3,6	3,4	7,0	3,4	3,3	6,7
30-34	3,8	3,7	7,5	3,5	3,4	6,9
35-39	3,8	3,7	7,5	3,7	3,6	7,3
40-44	3,6	3,5	7,1	3,7	3,6	7,3
45-49	3,4	3,2	6,6	3,5	3,5	6,9
50-54	2,7	3,3	6,1	3,2	3,1	6,4
55-59	3,3	3,4	6,7	2,6	3,2	5,8
60-64	2,9	3,0	5,9	3,1	3,2	6,3
65-69	2,1	2,4	4,6	2,6	2,8	5,4
70-74	1,6	1,9	3,5	1,8	2,1	3,9
75+	1,7	2,3	4,1	2,0	2,8	4,8
All ages	49,7	50,3	100,0	49,6	50,4	100,0
Summary						
Under 15	10,2	9,6	19,8	9,7	9,2	18,9
15-49	25,1	24,3	49,4	24,6	23,9	48,5
50-59	6,1	6,7	12,8	5,8	6,4	12,2
60+	8,3	9,7	18,0	9,4	11,0	20,4

Age group	2045			2050		
	Males	Females	Total	Males	Females	Total
0-4	3,0	2,9	5,9	3,0	2,8	5,8
5-9	3,1	2,9	6,0	3,0	2,9	5,9
10-14	3,2	3,0	6,2	3,1	2,9	6,0
15-19	3,3	3,1	6,4	3,2	3,0	6,2
20-24	3,4	3,2	6,5	3,2	3,1	6,3
25-29	3,4	3,2	6,6	3,3	3,2	6,5
30-34	3,4	3,2	6,6	3,3	3,2	6,5
35-39	3,4	3,3	6,7	3,3	3,2	6,5
40-44	3,6	3,6	7,2	3,4	3,3	6,7
45-49	3,6	3,6	7,2	3,6	3,5	7,1
50-54	3,4	3,4	6,7	3,5	3,5	7,0
55-59	3,1	3,1	6,1	3,2	3,3	6,5
60-64	2,4	3,1	5,5	2,9	3,0	5,9
65-69	2,8	3,0	5,8	2,2	2,9	5,1
70-74	2,2	2,5	4,7	2,4	2,8	5,1
75+	2,3	3,3	5,6	2,9	3,9	6,9
All ages	49,5	50,5	100,0	49,6	50,4	100,0
Summary						
Under 15	9,4	8,9	18,2	9,1	8,6	17,7
15-49	24,1	23,2	47,3	23,3	22,4	45,8
50-59	6,4	6,4	12,9	6,7	6,8	13,6
60+	9,7	12,0	21,6	10,4	12,6	23,0

Projected deaths in each five year interval

Period	Deaths
2005-2010	236 299
2010-2015	256 016
2015-2020	276 144
2020-2025	296 336
2025-2030	322 414
2030-2035	366 800
2035-2040	412 608
2040-2045	444 283
2045-2050	481 428

**ANNEX E HOUSEHOLD PERCENT DISTRIBUTION (%) ACCORDING TO
CONSTANT HEADSHIP RATE METHOD**

Household percentages for 2005							2005
Age group	Simple		Dissolved		Complex		
	with elderly (1)	without elderly (2)	with elderly (3)	without elderly (4)	with elderly (5)	without elderly (6)	
15-19	0.00	0.01	0.00	0.40	0.00	0.00	0.41
20-24	0.01	1.00	0.02	1.33	0.00	0.14	2.50
25-29	0.00	6.66	0.02	1.01	0.16	0.81	8.67
30-34	0.22	11.32	0.12	0.82	0.45	1.02	13.95
35-39	0.22	10.37	0.21	1.09	0.55	0.79	13.24
40-44	0.23	9.66	0.04	1.12	0.77	0.76	12.58
45-49	0.44	9.09	0.11	0.53	0.79	0.86	11.83
50-54	0.19	6.11	0.11	1.09	0.58	1.35	9.43
55-59	0.16	4.92	0.04	0.91	0.41	1.39	7.82
60-64	0.13	3.11	0.10	1.31	0.32	0.97	5.94
65+	6.44	0.00	4.01	0.00	3.18	0.00	13.62
TOTAL	8.05	62.26	4.78	9.61	7.21	8.09	100.00

Household percentages for 2010							2010
Age group	Simple		Dissolved		Complex		
	with elderly (1)	without elderly (2)	with elderly (3)	without elderly (4)	with elderly (5)	without elderly (6)	
15-19	0.00	0.01	0.00	0.38	0.00	0.00	0.39
20-24	0.01	0.95	0.02	1.26	0.00	0.13	2.37
25-29	0.00	5.17	0.02	0.78	0.13	0.63	6.73
30-34	0.21	10.80	0.11	0.78	0.43	0.97	13.31
35-39	0.24	10.95	0.22	1.15	0.58	0.84	13.98
40-44	0.24	9.75	0.05	1.13	0.78	0.77	12.71
45-49	0.44	9.10	0.11	0.53	0.80	0.86	11.84
50-54	0.20	6.42	0.11	1.14	0.61	1.42	9.90
55-59	0.18	5.63	0.04	1.04	0.47	1.59	8.95
60-64	0.14	3.19	0.10	1.34	0.33	0.99	6.09
65+	6.49	0.00	4.04	0.00	3.21	0.00	13.75
TOTAL	8.15	61.96	4.83	9.55	7.32	8.19	100.00

Household percentages for 2015							2015
Age group	Simple		Dissolved		Complex		
	with elderly (1)	without elderly (2)	with elderly (3)	without elderly (4)	with elderly (5)	without elderly (6)	
15-19	0.00	0.01	0.00	0.36	0.00	0.00	0.37
20-24	0.01	0.92	0.02	1.22	0.00	0.13	2.28
25-29	0.00	4.99	0.02	0.75	0.12	0.61	6.49
30-34	0.17	8.53	0.09	0.62	0.34	0.77	10.51
35-39	0.23	10.62	0.22	1.12	0.56	0.81	13.56
40-44	0.25	10.48	0.05	1.21	0.83	0.82	13.65
45-49	0.45	9.35	0.11	0.55	0.82	0.89	12.16
50-54	0.20	6.54	0.11	1.16	0.62	1.44	10.08
55-59	0.20	6.01	0.05	1.11	0.50	1.70	9.56
60-64	0.16	3.72	0.12	1.56	0.38	1.16	7.10
65+	6.72	0.00	4.19	0.00	3.32	0.00	14.23
TOTAL	8.39	61.15	4.97	9.67	7.49	8.32	100.00

Household percentages for 2020							2020
Age group	Simple		Dissolved		Complex		
	with elderly (1)	without elderly (2)	with elderly (3)	without elderly (4)	with elderly (5)	without elderly (6)	
15-19	0.00	0.01	0.00	0.33	0.00	0.00	0.34
20-24	0.01	0.88	0.02	1.17	0.00	0.12	2.19
25-29	0.00	4.85	0.02	0.73	0.12	0.59	6.31
30-34	0.16	8.29	0.09	0.60	0.33	0.75	10.21
35-39	0.18	8.46	0.17	0.89	0.45	0.65	10.80
40-44	0.25	10.25	0.05	1.19	0.82	0.81	13.36
45-49	0.49	10.14	0.12	0.59	0.89	0.96	13.19
50-54	0.21	6.79	0.12	1.21	0.65	1.50	10.47
55-59	0.20	6.20	0.05	1.15	0.51	1.75	9.86
60-64	0.17	4.03	0.13	1.69	0.41	1.26	7.69
65+	7.37	0.00	4.59	0.00	3.64	0.00	15.59
TOTAL	9.05	59.88	5.35	9.55	7.81	8.37	100.00

Household percentages for 2025							2025
Age group	Simple		Dissolved		Complex		Total
	with elderly (1)	without elderly (2)	with elderly (3)	without elderly (4)	with elderly (5)	without elderly (6)	
15-19	0.00	0.01	0.00	0.28	0.00	0.00	0.29
20-24	0.01	0.80	0.02	1.06	0.00	0.11	1.99
25-29	0.00	4.68	0.02	0.71	0.11	0.57	6.09
30-34	0.16	8.13	0.09	0.59	0.32	0.73	10.02
35-39	0.18	8.30	0.17	0.87	0.44	0.63	10.59
40-44	0.20	8.24	0.04	0.96	0.66	0.65	10.74
45-49	0.49	10.02	0.12	0.59	0.88	0.95	13.03
50-54	0.23	7.44	0.13	1.33	0.71	1.64	11.47
55-59	0.21	6.51	0.05	1.21	0.54	1.84	10.36
60-64	0.18	4.21	0.14	1.77	0.43	1.31	8.03
65+	8.21	0.00	5.11	0.00	4.05	0.00	17.37
TOTAL	9.87	58.33	5.87	9.36	8.14	8.43	100.00

Household percentages for 2030							2030
Age group	Simple		Dissolved		Complex		Total
	with elderly (1)	without elderly (2)	with elderly (3)	without elderly (4)	with elderly (5)	without elderly (6)	
15-19	0.00	0.01	0.00	0.26	0.00	0.00	0.26
20-24	0.01	0.69	0.01	0.92	0.00	0.09	1.73
25-29	0.00	4.31	0.01	0.65	0.11	0.53	5.61
30-34	0.16	7.94	0.08	0.57	0.32	0.72	9.78
35-39	0.18	8.23	0.17	0.87	0.44	0.63	10.51
40-44	0.20	8.18	0.04	0.95	0.65	0.64	10.65
45-49	0.40	8.16	0.10	0.48	0.71	0.77	10.61
50-54	0.23	7.45	0.13	1.33	0.71	1.64	11.49
55-59	0.24	7.24	0.06	1.34	0.60	2.04	11.51
60-64	0.19	4.49	0.15	1.89	0.46	1.40	8.58
65+	9.11	0.00	5.67	0.00	4.50	0.00	19.27
TOTAL	10.70	56.68	6.42	9.25	8.48	8.46	100.00

Household percentages for 2035							2035
Age group	Simple		Dissolved		Complex		Total
	with elderly (1)	without elderly (2)	with elderly (3)	without elderly (4)	with elderly (5)	without elderly (6)	
15-19	0.00	0.00	0.00	0.24	0.00	0.00	0.24
20-24	0.01	0.64	0.01	0.85	0.00	0.09	1.59
25-29	0.00	3.79	0.01	0.57	0.09	0.46	4.93
30-34	0.15	7.41	0.08	0.53	0.30	0.67	9.13
35-39	0.18	8.15	0.17	0.86	0.43	0.62	10.41
40-44	0.20	8.23	0.04	0.95	0.65	0.65	10.73
45-49	0.40	8.21	0.10	0.48	0.72	0.78	10.68
50-54	0.19	6.16	0.11	1.10	0.59	1.36	9.50
55-59	0.24	7.36	0.06	1.36	0.61	2.08	11.71
60-64	0.22	5.07	0.16	2.13	0.52	1.58	9.69
65+	10.10	0.00	6.29	0.00	4.99	0.00	21.38
TOTAL	11.68	55.04	7.02	9.08	8.89	8.28	100.00

Household percentages for 2040							2040
Age group	Simple		Dissolved		Complex		Total
	with elderly (1)	without elderly (2)	with elderly (3)	without elderly (4)	with elderly (5)	without elderly (6)	
15-19	0.00	0.00	0.00	0.23	0.00	0.00	0.23
20-24	0.00	0.60	0.01	0.80	0.00	0.08	1.51
25-29	0.00	3.55	0.01	0.54	0.09	0.43	4.62
30-34	0.13	6.62	0.07	0.48	0.26	0.60	8.16
35-39	0.17	7.73	0.16	0.81	0.41	0.59	9.87
40-44	0.20	8.28	0.04	0.96	0.66	0.65	10.79
45-49	0.41	8.40	0.10	0.49	0.73	0.80	10.93
50-54	0.20	6.30	0.11	1.12	0.60	1.39	9.71
55-59	0.20	6.20	0.05	1.15	0.51	1.75	9.85
60-64	0.22	5.25	0.17	2.21	0.54	1.64	10.03
65+	11.48	0.00	7.15	0.00	5.67	0.00	24.30
TOTAL	13.01	52.94	7.87	8.79	9.47	7.92	100.00

Household percentages for 2045							2045
Age group	Simple		Dissolved		Complex		Total
	with elderly (1)	without elderly (2)	with elderly (3)	without elderly (4)	with elderly (5)	without elderly (6)	
15-19	0.00	0.00	0.00	0.21	0.00	0.00	0.22
20-24	0.00	0.58	0.01	0.77	0.00	0.08	1.44
25-29	0.00	3.39	0.01	0.51	0.08	0.41	4.41
30-34	0.12	6.25	0.07	0.45	0.25	0.56	7.71
35-39	0.15	6.97	0.14	0.73	0.37	0.53	8.90
40-44	0.19	7.92	0.04	0.92	0.63	0.62	10.32
45-49	0.41	8.53	0.10	0.50	0.75	0.81	11.09
50-54	0.20	6.51	0.11	1.16	0.62	1.44	10.04
55-59	0.21	6.39	0.05	1.18	0.53	1.80	10.17
60-64	0.19	4.48	0.15	1.88	0.46	1.40	8.55
65+	12.83	0.00	7.99	0.00	6.33	0.00	27.15
TOTAL	14.32	51.02	8.67	8.33	10.02	7.65	100.00

Household percentages for 2050							2050
Age group	Simple		Dissolved		Complex		Total
	with elderly (1)	without elderly (2)	with elderly (3)	without elderly (4)	with elderly (5)	without elderly (6)	
15-19	0.00	0.00	0.00	0.20	0.00	0.00	0.21
20-24	0.00	0.55	0.01	0.73	0.00	0.08	1.37
25-29	0.00	3.28	0.01	0.50	0.08	0.40	4.26
30-34	0.12	6.02	0.06	0.43	0.24	0.54	7.42
35-39	0.14	6.64	0.14	0.70	0.35	0.51	8.48
40-44	0.17	7.20	0.03	0.84	0.57	0.57	9.39
45-49	0.40	8.23	0.10	0.48	0.72	0.78	10.70
50-54	0.21	6.67	0.12	1.19	0.63	1.47	10.28
55-59	0.22	6.68	0.05	1.24	0.55	1.88	10.63
60-64	0.20	4.68	0.15	1.97	0.48	1.46	8.94
65+	13.38	0.00	8.34	0.00	6.61	0.00	28.32
TOTAL	14.85	49.95	9.00	8.27	10.24	7.68	100.00