HACETTEPE UNIVERSITY

INSTITUTE OF POPULATION STUDIES

WELL-BEING IN OLDER MIGRANTS AND NON-MIGRANTS IN GERMANY: A SPECIFIC LOOK AT HEALTH AND POVERTY DIMENSIONS

Nur KOYUNCU

Department of Demography

Master's Thesis

Ankara

September 2023

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APPROVAL PAGE

Well-being in Older Migrants and Non-migrants in Germany: A Specific Look at Health and Poverty Dimensions

Nur Koyuncu

This is to certify that we have read and examined this thesis and in our opinion it fulfills the requirements in scope and quality of a thesis for the degree of Master of Arts in Demography.

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ABSTRACT

Well-being among older people has become an essential matter, as the ageing population throughout the world become a more widespread phenomenon. Well-being is an implicit notion, which can be approached in different ways. This thesis approaches well-being from both objective and subjective perspectives and analyses its two measurable dimensions as health and poverty. This thesis aims to examine health and poverty determinants among the older population in Germany and to find whether health and poverty status converge to or diverge from each other for older migrants and non-migrants.

Health is examined by looking at diabetes, depression, and subjective health measures. Poverty is examined by looking at income, wealth, and subjective poverty measures. As the data source, Wave 7 of the Survey of Health, Ageing, and Retirement of Europe is used. Six hypotheses were formulated based on migration status and length of residence, and outcome variables. Binary logistic regression model is employed to reveal the factors affecting health and poverty of the older migrants and non-migrants. Descriptive statistics by the prevalence of diabetes, depression, subjective health, income poverty, wealth poverty and subjective poverty are presented. For each model, binary logistic regression tables are given. By focusing the migration status and length of residence, the results are discussed within the framework of the healthy immigrant effect for the health models. For the poverty models, the results were discussed by comparing them with that of the previous research and hypotheses formulated.

The results suggest that for health models, both older migrant groups have higher odds of having diabetes than natives. Western older migrants have lower odds of having depression while non-Western migrants have similar to that of natives. Both migrant groups have similar odds of having poor subjective health when compared to non-migrants. For poverty models, both migrant groups have higher odds of having income poverty than natives. Western migrants have lower odds of having wealth poverty while non-Western migrants have higher odds of wealth poverty compared to natives. Western migrants have similar odds of having subjective poverty and non-Western migrants have higher odds when compared to natives. In general, the results point out that healthy immigrant effect is not generalizable to the all three health models. Although we provide support for most of our formulated hypotheses, model of diabetes provides results not in line with our expectations.

Keywords: older, Germany, health, migrant, poverty, well-being

ÖZET

Yaşlanan nüfus dünya genelinde daha yaygın bir olgu haline geldikçe, yaşlılarda iyilik hali tartışmaları da önemli bir konu haline gelmiştir. İyi oluş, farklı bakışlardan yaklaşılabilecek örtülü bir kavramdır. Bu tez, iyi oluşa hem nesnel hem de öznel perspektiflerden yaklaşmakta ve onun ölçülebilir iki boyutu olan sağlık ve yoksulluğu analiz etmektedir. Tez, Almanya'daki yaşlılar arasında sağlık ve yoksulluğun belirleyicilerini incelemeyi ve yaşlı göçmenler ve göçmen olmayanlar için sağlık ve yoksulluk durumunun birbirine yaklaşıp yaklaşmadığını veya birbirinden uzaklaşıp uzaklaşmadığını bulmayı amaçlamaktadır.

Sağlık; diyabet, depresyon ve subjektif sağlık ölçütlerine bakılarak incelenmiştir. Yoksulluk, gelir, servet ve subjektif yoksulluk ölçütlerine bakılarak incelenmiştir. Veri kaynağı olarak Avrupa Sağlık, Yaşlanma ve Emeklilik Araştırması'nın 7. Dalgası kullanılmıştır. Göç durumu ve ikamet süresi ile çıktı değişkenlere dayanarak altı hipotez oluşturulmuştur. Yaşlı göçmenlerin ve göçmen olmayanların sağlık ve yoksulluğunu etkileyen faktörleri ortaya çıkarmak için ikili lojistik regresyon modeli kullanılmıştır. Diyabet, depresyon, subjektif sağlık, gelir yoksulluğu, servet yoksulluğu ve subjektif yoksulluğun yaygınlığına göre betimsel istatistikler sunulmuştur. Her model için ikili lojistik regresyon tabloları verilmiştir. Göç durumu ve ikamet süresine odaklanılarak sonuçlar sağlık modelleri için sağlıklı göçmen etkisi çerçevesinde tartışılmıştır. Yoksulluk modelleri için sonuçlar daha önce yapılan araştırma sonuçlarıyla ve oluşturulan hipotezlerle karşılaştırılarak tartışılmıştır. Bulgulara göre, sağlık modellerinde, göçmen olmayanlarla karşılaştırıldığında, her iki grup göçmenin diyabet hastası olmaya yatkınlığı daha yüksektir. Batılı göçmenlerin depresyona yatkınlığının daha düşük olduğu, diğer grup göçmenlerin ise yerli nüfusla benzer depresyon yatkınlıklarının olduğu görülmüştür. Her iki grup göçmenin göçmen olmayanlara benzer kötü subjektif sağlığa sahip olma yatkınlığı olduğu saptanmıştır. Yoksulluk modellerinde, göçmen olmayanlarla karşılaştırıldığında, her iki grup göçmenin gelir yoksulluğu yaşama ihtimalinin daha yüksek olduğu; Batılı göçmenlerin servet yoksulluğu yatkınlığının yerlilerden daha düşük, Batılı olmayan göçmenlerin ise daha yüksek yatkınlığı olduğu bulunmuştur. Batılı göçmenler yerlilere benzer subjektif yoksulluk yatkınlığına sahipken, Batılı olmayan göçmenlerin bu yatkınlığı daha yüksektir. Genel olarak sonuçlar sağlıklı göçmen etkisinin bütün sağlık modellerine genellenemeyeceğini göstermiştir. Bulgular, geliştirdiğimiz hipotezlerin çoğunu desteklerken diyabet modeli beklentilerimize uygun olmayan sonuçlar vermiştir.

Anahtar Kelimeler: Almanya, göçmen, iyilik hali, sağlık, yaşlı, yoksulluk

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ABBREVIATIONS

BMI	Body mass index
CAPI	Computer assisted personal interviewing
CASP	Control, Autonomy, Self-realization, and Pleasure scale
EU-SILC	European Survey on Income and Living Conditions
HIE	Healthy immigrant effect
HRQoL	Health related quality of life
ISCED	International Standard Classification of Education
OECD	Organisation for Economic Co-Operation and Development
UN	United Nations
UNDESA	United Nations Department of Economic and Social Affairs
UNDP	United Nations Development Programme
SDGS	Sustainable Development Goals
SHARE	Survey of Health, Ageing, and Retirement in Europe
WHO	World Health Organization

CHAPTER 1. INTRODUCTION

Ageing and international migration are the two main driver demographic trends throughout the European countries that have amended the demographic structure. The share of the older population is quite large in European countries and it has been furthermore increasing. The possible consequences of population ageing and challenges that it would pose have also created new topics of interest, and well-being of the older population has been one of them since losses in well-being are natural potential outcomes of the ageing process. This study aims to demonstrate the determinants of selected dimensions of well-being of older people in Germany and to analyse how well-being differs between migrant and non-migrant elderly therein. The thesis shows the relative position of older migrants compared to non-migrants in terms of selected health and poverty measures, i.e. whether older migrants are in a disadvantaged position or not, compared to non-migrant elderly.

The older population constitutes one of the two groups of the dependent population. With the ageing of the world population, the share of the older population in the total population has increased, as well as the ratio of the old-age dependency. Changing socioeconomic characteristics of the older population such as health status, activity and productivity has become important (UNDESA Population Division, 2019). The challenges that would be faced by the older population are started to be a research interest. There are some concepts such as poverty, income security, health and health care among these main consequential challenges that are linked to population ageing. Issues mentioned above concerning the old-age population are related to Sustainable Development Goals (SDGs), too. The UNDP 2030 Agenda for Sustainable Development indicates 17 universal objectives on behalf of all people. In this regard, it recognizes older people's future challenges and admits to safeguard and empower them. HelpAge International emphasizes the UN's pledge of "leave no one behind" and thus, indispensably inclusion of older persons in development efforts (HelpAge International, 2017). For this reason, in order to reveal the current situation on the subject and to pave the way for the necessary policies to be made; studying

poverty, health and well-being of the elderly is necessary. One of the policy implications offered in World Population Ageing 2019 Highlights, distinguishes healthy ageing as an important issue when talking about older population and specifies that permanent access to treatment, preventive and long-term care services by the elderly is key to achieve healthy ageing (UNDESA Population Division, 2019).

Germany is the leading EU country having the largest immigrant population in Europe. Immigrant population of Germany is diversely composed in terms of demographic characteristics (Steinbach, 2018). Therefore, survey data for Germany can provide a basis for looking at results from diverse individual subjects.

The main research question of the thesis is "How does well-being differ between older migrants and older natives in Germany?" Through this question, this thesis investigates how health and poverty dimensions of well-being of the migrant and non-migrant elderly in Germany diverge from or converge to each other by employing logistic regression method using Wave 7 data for Germany of the Survey of Health, Ageing and Retirement in Europe (SHARE).

Definition of Well-Being and the Choice of its Dimensions

There is a wide literature on the concept of well-being, since it has been handled from many different perspectives. Well-being is mostly defined as an interdisciplinary concept. It is expressed as a state of physical well-being that goes together with mental well-being. There are two basic conceptualizations of well-being (Western and Tomaszewski, 2016). One forms well-being as the sum of good physical and mental health statuses alongside other socioeconomic aspects of life while the other one places well-being as just one of the components of health (WHO, 2012). For example, the World Health Organization (WHO) clearly separated well-being from health (WHO, 2021).

Also, Perron et al. (2021), stated that it is a polysemic concept, its meaning switches based on the context using it or the field studying it. Its meaning is

constructed depending on how it is understood. As a consequence of its versatile nature, measures are subject to change depending on the definition being referred to.

In the existing literature, well-being is categorized as objective and subjective. The main reason for distinguishing objective and subjective well-being perspectives lies in how they measure well-being. Objective well-being is focused on objectively assessable and comparable indicators. Subjective well-being refers to the evaluation of life in general terms such as life satisfaction, quality of life, moods, and cognitive skills by individuals (Diener, 1984). Two approaches are interested in shedding light on different questions, the subjective approach searches for the determinants that act on the ground, while the objective approach is able to show the entire picture of well-being of the society (Böhnke and Kohler, 2010).

WHO Regional Office for Europe (WHO, 2012) argued on the scope of well-being. First, well-being is a multidimensional concept. This view reflects one of the views in the literature. The well-being is referred to as quality of life, satisfaction with life, pleasant state of mind as a result of satisfied physical needs and mental tranquillity in the literature considering subjective perspectives on well-being. Because of its multidimensionality, it stands for the combination of all.

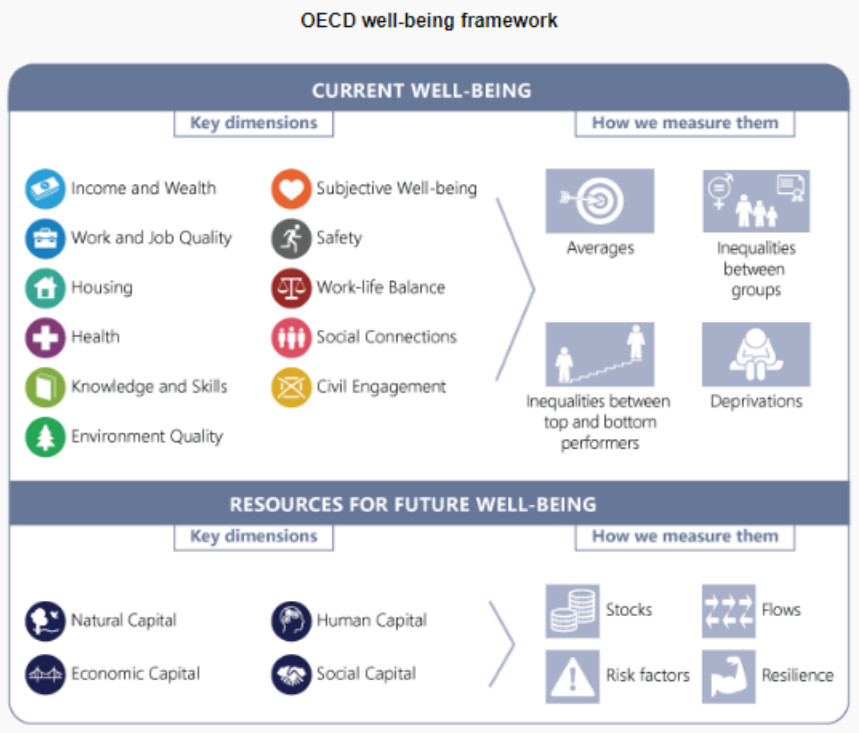
The concept reflects the person's statement of satisfaction with the overall health and life (WHO, 2012). Together with several other dimensions or blocks, health and income are included under OECD's (Organisation for Economic Cooperation and Development) framework of well-being (See Figure 1.1.).

Western and Tomaszewski (2016) also made a distinction between objective well-being and subjective well-being, and in their study, used three sets of well-being indicators as objective well-being, subjective well-being, and two additional indicators which stand for events possibly influencing well-being, and these measures were thought as inequality measures. Being dimensions of objective well-being at the same time, objective well-being was measured by income, financial hardship, health, contacts with family and friends, and leisure time. Subjective well-being was measured by life satisfaction. Additional indicators were stated as positive events and negative

events. In the first step, they aimed to explore the distribution and variations in objective and subjective well-being by socio-demographic terms, therefore employed a mixed effects hybrid model. Secondly, they intended to discover differences in objective well-being to see whether they constitute pathways for inequality. As Western and Tomaszewski (2016) claimed, variations in age, gender, ethnicity, and class signalizes permanent inequality.

Voukelatou et al. (2021) specified the dimensions of objective well-being as health, job opportunities, and socio-economic development. They included the components of material conditions such as income and wealth, societal and economic stability, the job opportunities dimension, and socioeconomic development dimension which created the base for objective well-being. Moreover, the met need of wealth and health is an important determinant in the assessment of objective well-being (Voukelatou et al., 2021). Therefore, in this study, the main concerns of analysis will be health and income dimensions of well-being as they are among the observable and comparable dimensions of well-being.

Figure 1.1. OECD well-being framework



Source: OECD, accessed on 12 December, 2021

Healthy ageing is one of the focal points of the development agenda. It is crucial whether the individuals would be healthy and independent or would suffer from life-long health problems and have care needs in the years added to human life (Parker and Thorslund, 2007). Advancing the health of the elderly means ensuring the independence and advancing the well-being of the elderly, as a consequence. Health is considered as a very important component of well-being of the elderly. When the question comes to older population health, as being the components of overall health, chronic diseases and mental health come to the fore. Physical environment and socio-cultural environment have impacts on health and well-being of the elderly. Parker and Thorslund (2007) stated some of the commonly used health indicators in analysing health patterns of the elderly as global self-rated health and specific self-reported health items.

The existing and further concerns for elderly health have gained importance with the increase in the older population. Besides, the prevalence of health problems scales up gradually with the age (Parker and Thorslund, 2007). Thus, health trends of the elderly have become an interest of the research area. Another widely debated matter in the literature is the migrant health. There are also stress factors that migrants are exposed to in the time of the migration, and right after the arrival destination country. Post-migration stress factors are various; from culture and language adaptation to entering in education and employment (Cela and Barbiano di Belgiojoso, 2021; Mui and Kang, 2006). Accumulated life-long stress may be additive in old-age poor health outcomes (Lum and Vanderaa, 2010). As mentioned before, population ageing and international migration are the two prominent demographic trends across Europe, which create challenges and have consequences. It can be argued that there is a double jeopardy against older migrants: There are vulnerabilities led by ageing, and there are vulnerabilities led by migration process (post-migration).

The following section presents the theoretical framework for the hypothesis on the immigrant health advantage and a review of literature on the differences in health and poverty between migrants and non-migrants. Third section introduces the data source used in this thesis, the variables, and the method used to analyse the data. Fourth

section presents the descriptive statistics of the study sample, and the results for logistic regression analyses for the models of health and models of poverty. Fifth section presents a conclusion by evaluating the results with a reference to the literature.

CHAPTER 2. THEORETICAL FRAMEWORK AND LITERATURE REVIEW

2.1. Theoretical Framework

Healthy Immigrant Paradox or Effect (HIE)

Existing literature has explored how immigrants and natives diverge from each other on the grounds such as mental health, chronic diseases, health care use, and poverty. Studies generally describe in which factors these two groups have different outcomes; which factors affect the outcomes and/or cause different outcomes. The explanation of the differences in health between immigrants and natives lean on the healthy immigrant paradox or also known as healthy immigrant effect (HIE). HIE is the main hypothesis regarding the discussions about immigrant health. It has two propositions. First, it claims that migrants when they arrived at the destination country are healthier than their native counterparts (Constant et al., 2018). Secondly, this health advantage dissolves with time and converges to health outcomes of natives in the host country. Not only health advantage but also mortality advantage of immigrants is included in the health immigrant paradox, some studies say. To explain the relative health advantage of immigrants, two phenomena are used, one is being positive health selection of immigrant and second is being negative health selection (Dunlavy et al., 2022).

HIE is supported by the matter of positive selection of migrants. Constant (2017) talks about the original health selection of migrants in understanding the differences between the health of immigrants and natives and claims that immigrants are a self-selected group, not a random sample representing their home country, i.e. they are distinct from their compatriots. On the other hand, natives are a nationally representative sample. Therefore, inherently immigrants have different health outcomes than their comparable native counterparts.

Self-selection refers to one’s decision to move to another country. In the decision, there should be number of factors pushing one to migrate. This explains the

fact that while some individuals do not prefer to migrate while some prefer. This means that immigrants select themselves (Cattaneo, 2007). As a result, immigrants do not constitute a random sample (Cattaneo, 2007; Constant 2017). Selection bias should be mentioned here, that is more skilled, more educated individuals participate in the migration. Before moving, there are economic costs regarding travel and accommodation. Also, after reaching the destination, these kinds of immigrants are able to make more money. Therefore, they do not belong to lower socio-economic status, and they do not suffer from poor health.

Positive selection also means that migrants are accepted according to the criteria defined by the destination countries. Countries selection processes require qualified, successful, beneficial migrants, therefore somehow healthy. Also, as some of the migration theories suggest, the drivers of the migration is based on improving economic conditions, therefore migrants choose to move to advance their socio-economic situation. According to one line of research, migrants may be seen as good as natives in economic terms, in contrast to the expectation that migrants are not better off. Therefore, the relationship between migration and health may be a two-way relationship or mutual. As Aydemir (2003) argues, selection is intertwined, and this phenomenon is called double selection process. According to him, in addition to the immigrants' self-selection, migration policies of receiving countries play a role in the migrant selection process, and immigrants are not randomly selected.

In the literature, there are also other theories that used to explain the differences and similarities of the immigrants and natives. Integration or acculturation theory are used as integral to the HIE, it helps to explain that the health advantage of immigrants to the natives becomes similar to that of natives over the years they spend in the destination country. As the length of stay in the host country increases, immigrants adapt to the host society, and as the migrants achieve integration, they would have similar outcomes with the natives (Hadjar and Backes, 2013). In this process, the ages spent in the destination country is the indicator of integration or acculturation.

Many papers in the literature studied migrant health or older migrant health using different measures. For example, some study the physical health of older

migrants such as chronic diseases, some study cognitive functions. For mental health, depression and cognitive functions were studied mostly. In addition, the use of health services, or migrants' availability to access to health services were investigated by number of studies. Sometimes taken as mental health, sometimes taken as mental well-being, in general, migrant health was analysed in terms of well-being. Disparities in health between natives and immigrants were covered by numerous studies.

Salmon Bias Hypotheses

This hypothesis is claimed to be explaining the mortality advantage of immigrants. Accordingly, immigrants prefer to return to their home country when they have poor health. Their mortality rate is low, as those who stay behind are the healthier ones (Abraido-Lanza et al., 1999). To test the validity of the salmon bias hypothesis one is required to have data for those who have made a return migration in addition to the data of the immigrant sample. Therefore, evidence supporting the salmon bias hypothesis is limited. Salmon bias hypothesis is traditionally used to explain Latino Mortality Paradox also known as Hispanic Mortality Paradox, an epidemiological phenomenon in the US (Dunlavy et al., 2022).

Latino Mortality Paradox

Latino Mortality paradox refers to the lower mortality phenomenon among Hispanic migrants in the US. What is paradoxical here is that even Hispanics are a group mostly in lower economic statuses which trigger poor health outcomes, high morbidity, and mortality, their mortality levels are lower than natives in the US which is contrary to the expected (Bostean, 2013; Shor et al., 2017).

Regarding the health of older migrants and non-migrants, the hypotheses of this thesis are based on the healthy immigrant paradox or effect (HIE). Since one of the aims of this thesis is to portray the differences in health between migrants and non-migrants, hypotheses in line with the HIE postulated to test whether there is a health advantage of older migrants in Germany.

Discussion on the Relationship between Poverty and Migration

The relationship between poverty and migration seems like an under-theorised matter. Because none of the existing theories have arguments directly aiming to explain poverty as a result of specific conditions that is shaped by the migration or as an absolute reason of migration. Migration theories talks about the direction of human mobility, urbanization, and industrialization historically and tries to understand why and how do people move. For example, Zelinsky's (1971) mobility transition hypothesis explains human mobility with regard to geospatial differences in development that acquired by human mobility. In this human mobility, one of the reasons was the search for labour in different cities. Other theories such as Lee (1966)'s theory of migration, and network theory give reference to economic reasons behind migration. In general, migration could be based on economic aims, people migrate with the aim of having better economic conditions and higher living standards. Also, migration bring some economic challenges too. On the other hand, Haan and Yaqub (2010) referred that mostly poor do not migrate because of the cost of the migration.

Besides, migration does not guarantee or does not mean improvement in economic conditions for everyone. In the post-migration process, it is a challenging condition to enter and adapt to the labour market. Hence the economic conditions of migrants stay vulnerable for a while. Moreover, motives behind the decision of migration differs from person to person. First, it can be an economic motive; one in poor economic conditions may choose to migrate. Second, people who are already in a good economic standing can migrate more.

Regarding older migrants and poverty, the accumulated and life-long challenges that are faced by the older migrants may result in poor health and poor economic conditions. Because, first, ageing creates deteriorations and losses in health and income (people get retired, and lose their job, and pension is not a substitute for money earned from active work). Second, migration does not guarantee or does not mean recovery/improvement in economic conditions for everyone.

To portray the differences in poverty between migrants and non-migrants, the hypotheses of this thesis are postulated and the results are discussed based on the previous studies.

2.2. Literature Review

2.2.1. Literature on Health of Older Migrants and Natives

Health is usually measured by conventional objective health measures and these are widespread measurements used in the literature. (Constant, 2017). Jasso et al. (2004) mentions the two health measures that are used broadly when comparing the overall health of natives and foreign-borns. First one is the, self-reported general health status which ranges from poor to excellent. Second one is the prevalence rates of major chronic conditions which are listed in the Global Burden of Disease assessments.

Valk and Fokkema (2017) made an overview of the existing literature on the health of older migrants, physical health, self-perceived health, and mental health. According to authors, health needs to be discussed with regard to different dimensions since health is a complete state of well-being in different dimensions and since they affect each other, in other words, deterioration in one may have an adverse effect on the other. Even though migrants are expected to be healthier than natives as the HIE suggests, making a generalization should be avoided because immigrants from different origins and backgrounds show different health outcomes and factors that used to explain health differences among immigrants are general mechanisms that apply to all persons regardless of being immigrant.

Kristiansen et al. (2016) presented a profile of principal factors shaping health of ageing migrants in Europe and indicated exposures specific to the migration process, especially conditions right after the arrival in the host country. Authors claimed that health status is strongly associated with ageing and socio- economic background. Ageing itself, without the effect of migration background, brings some challenges such as decline in economic sources, increased need for health care etc. On the other hand, socioeconomic background and ethnicity is seen closely related to

lower health outcomes and they explain the health inequalities between migrants and natives. Also, exposures during and after the migration has adverse effect on migrant health. Putting ageing and migration together, aging migrants are going under a disadvantaged position.

Van der Greft and Droogleever Fortuijn (2017) analysed the multiple disadvantage of non-Western migrant elderly (Surinamese, Moroccan, and Turkish) and Dutch native elderly living in deprived districts of Amsterdam. The concept "multiple disadvantage" stands for the elements that, with one accord, expands the risk of vulnerability. The article analysed vulnerability by dividing it into two levels. The first one was the individual level vulnerability, and the second one was the household level vulnerability. Findings were classified under three titles as personal functional dependency, household resources, and quality of the neighbourhood. The emphasis undertaken by the authors in this study was that a life course approach was necessary when studying multiple disadvantages and ageing together because of the fact that experiencing disadvantage in old age is interpreted as a consequence of factors that accumulate throughout the life. Health problems appeared in older ages can be attributed to the earlier ages. Furthermore, in terms of figuring out the background of the multiple advantage, to know the person's residential history is substantial. So, the environment, the neighbourhood where a person is living makes sense. The individual level vulnerability was associated with personal functional dependency. The critical point here is that having health problems may lead to functional limitations that immediately affect the capability in daily activities such as housework, preparing meals, self-care, walking etc. It was shown that poor health risk and functional dependency had risen with increasing age (Van der Greft and Droogleever Fortuijn, 2017). Economic, social, and environmental factors also affected the health status of persons. The household level vulnerability was associated with the household level resources. The essential resources were thought as a sufficient income and the existence of other household members owing to the reason that these two elements were considered as the suppliers of access to formal and informal care.

Sand and Gruber (2018) studied the subjective well-being disparity among older migrants and natives in Europe by using data from SHARE through employing random effect regression models. Subjective well-being was measured by the CASP index[1]. Migration-related factors such as length of residence, age at migration, citizenship, and region of origin were included in the analysis. Their findings have shown that that there was a major difference between older migrants and natives in subjective well-being. Regarding the differentiation of subjective well-being according to age, older migrants have lower levels of subjective well-being compared to older natives. In addition, this gap was decreasing in further ages. Also, there were geographic differences throughout Europe in terms of the difference gap. While migrants from out of Europe, Southern and Eastern Europe have lower levels of subjective well-being compared to natives, and migrants of Northern and Central European origin has similar subjective well-being levels with the natives. Also, the disparity in subjective well-being between migrants and natives was decreasing with the increasing length of residence

Cela and Barbiano di Belgiojoso (2021) noted that there are two phenomena in the contemporary demographic trends, where ageing is the first and migration is the second one. In addition, they referred that these two stand for some challenges, changes and vulnerabilities that bring stress. Even the process of ageing itself, calls forth retreats on social and economic grounds irrespective of being an immigrant. Authors studied self-rated health of the migrant elderly in Italy. They used data from the Social Condition of Integration of Foreign Citizens Survey for the period of 2011-2012 conducted by Italian National Institute of Statistics. The sample population was taken from the register data, it was a random sample and it involved regular migrants who had registered voluntarily. In addition to basic demographic variables such as age, marital status, level of education, and variables related to health such as chronic health problems, limitations in daily activities, body mass index, smoking and alcohol habits, other set of variables to portray certain facets of migrants were added such as labour market participation, family economic performance, naturalisation, language

[1] A scale to measure the quality of life, and the abbreviation of four following domains; control, autonomy, self-realization and pleasure.

proficiency, feeling of loneliness, and discrimination experience. According to their results, older migrants mostly come from East Europe, West Europe, and North Africa. Also, 60% of the older migrants are composed of females. The sample included people 50 years and older, while 50-59 age group constitute the 70%. Sixty percent of the immigrants was married, and the smallest group was single (10%). Fifty five percent of the immigrants declared high life satisfaction, 34% medium, and 11% low. In terms of self-rated health, 32% of the immigrants declared bad or very bad self-rated health. The study investigated which variables explained self-rated health of older immigrants. Self-rated health was selected as the dependent variable for the logistic regression models. Results showed the significant relevance between self-rated health and age. In older ages, a lower likelihood of good self-rated health was seen. One of the remarkable findings of this study is that partner loss was usually a risk factor, and higher education was a preventive factor for poor self-rated health. By area of origin, immigrants coming from East European countries and less developed countries were more likely to have poor self-rated health. Also, they found a significant relationship between economic status and self-rated health. Compared to inactive immigrants, actively working ones were more likely to have good self-rated health. Having chronic diseases or limitations in daily activities had an adverse effect on self-rated health. While smoking made no difference, obesity had an adverse and severe effect on self-rated health.

Alang et al. (2015) examined self-rated health differences among migrants in the US using data from the National Health Interview Survey for the year 2012. The effect of origin differences and length of residence on the differences in self-rated health was the focal point of the analysis. Migrants were divided into four groups as non-Hispanic White, non-Hispanic black, Hispanic, and Asian. The length of residence was divided into four groups as “less than 5 years”, “5 to less than 10 years”, “10 years to less than 15 years”, and “15 years or more”. Logistic regression results indicated that non-Hispanic black migrants had lower odds of poor health, Hispanic migrants had higher odds of poor self-rated health compared to non-Hispanic Whites, and Asian migrants had similar odds with the non-Hispanic whites. Regarding the effect of length of residence on self-rated health, migrants whose length of residence was 5 to less than

10 years had higher odds of poor self-rated health compared to migrants whose length of stay was less than 5 years. migrants whose length of residence was 10 to less than 15 years had lower odds of poor self-rated health compared to migrants whose length of stay was 5 to less than 10 years. Finally, after 15 and over years of residence, migrants' odds of poor self-rated health have become higher than all previous periods of length of residence.

Leão et al. (2009) examined the effect of length of residence and age at migration on self-rated health of migrants in Sweden by using the Swedish Annual Level of Living Survey (SALLS) data through employing logistic regression. The explanatory variables were age, sex, country of origin, economic status, age at migration, and length of residence. Migrant – native distinction was made under the variable "country of origin". Natives referred to individuals born in Sweden and who were born to both Swedish-born parents. Migrants were divided into two subgroups as first-generation and second-generation migrants. First-generation migrants referred to three groups as Finland-born migrants in Sweden, OECD-born migrants, and migrants from other countries. Second-generation migrants referred to four groups as Sweden-born migrants with one Sweden-born parent and one outside-born parent, Sweden-born migrants who have at least one parent born in Finland, Sweden-born migrants who have at least one OECD-born parent, and Sweden-born migrants whose both parents were born outside of Sweden, Finland, and OECD countries. Findings showed that all groups of migrants had higher odds of having poor self-rated health compared to natives. In addition, migrants whose length of residence in Sweden lower than 15 years had higher odds of having poor self-rated health, while migrants whose length of residence in the country was at least 15 years and higher had similar odds having of poor self-rated health to that of the natives.

Pudaric et al. (2003) investigated the effect of country of birth on the self-rated health prevalence differences between migrants and natives in Sweden. The reference group being Swedish natives, all groups of migrants had higher poor self-rated health prevalence rate than natives. The closest group to natives were migrants from Western countries, poor self-rated health prevalence was definitely higher among migrants

from Eastern Europe developing countries, and Southern Europe. Similarly, regarding the logistic regression results, all migrant groups had higher odds of having poor self-rated health compared to Swedish natives. Among migrant groups, migrants from Southern and Eastern Europe had significantly higher odds of having poor self-rated health compared to migrants from Western countries.

Setia et al. (2011) investigated the self-rated health among migrants in Canada. The effect of country of origin on the self-rated health differences among migrants was examined by using multi-level random effect models. Migrants were grouped as Whites, Chinese, South Asian, Arabs, and others; the reference group was Whites. The results showed that all migrant groups had higher odds of poor self-rated health compared to Whites. In addition, migrants from China and South Asian countries had higher odds of having poor self-rated health. When controlled for age, older migrants aged 50 and over had highest odds than younger ages.

Research on the topic "health and immigrant elders" is also headed by two major matters. Mental health is one of the most studied topics. Use of health services or access to health services are subsequent most studied subjects. Many studies in the literature attempted to associate the immigrant status to being more vulnerable to depression and mental health problems, difficulties in reaching and utilizing health services, and performing poorer physical health than their native-born counterparts. It should be noted that, the intrinsic concern of the research about health and immigrant elderly is the disparities between immigrants and natives or immigrants' relative position to natives. The relationship between migration and mental health has been widely discussed in the literature. Migrants are stated as a disadvantageous group in terms of reaching and utilization of health care services. Studies suggest that migrants show higher scores in mental disorders. Cultural background and migration related factors help to understand the poor mental health experiences of migrants (Bhugra and Ayonrinde, 2004).

Choi et al. (2016) studied mental health among older people in the US by analysing whether being native or migrant and the length of residence had an impact on it, and looked for evidence for the HIE. Migrant status was grouped as non-Hispanic

White, Hispanic White, Black and Other. Length of residence was defined as less than 15 years and 15 years and above. Migrants had worse mental health outcomes. Regarding the length of residence, migrants whose length of residence was lower had poor mental health compared to natives and migrants whose length of residence was higher.

Chen et al. (2022) examined the effect of migration on the depression incidence among middle-aged and older Chinese population. In the study, panel data from the China Health and Retirement Longitudinal Study (CHARLS) for the period of 2011-2018 was used. Migrant status was grouped as non-migrants, permanent migrants, and return migrants. Their findings showed that permanent migrants had lower depression incidence compared to non-migrants, and return migrants had similar level of depression risk with the natives.

Bermejo et al. (2016) studied depression among older migrants from different origins in Germany. Origin countries were Italy, Spain, Turkey, and Russia (German repatriates). Other than basic demographic variables, they used migration-related factors as follows; length of stay, well-being, and knowledge of German language. In the logistic regression model, Turkish immigrants were identified as the reference category regarding the country of origin. All three immigrant groups were found to be less depressive than the immigrant group from Turkey. Immigrants from Spain who had the lowest odds of depression among all immigrant groups, were the least depressed group. The second least depressed group was immigrants from Italy. Immigrants from Russia are the most depressed group, having the highest odds of depression. Bermejo et al. (2016) stated that country of origin was the prominent factor in terms of having depressive disorder, while there was no significant relationship between depression and other migration-related factors such knowledge of German and the length of stay. Regarding the level of education, they found the smallest odds ratio for higher education category. As employed being the reference, the retired older immigrants were 5 times more likely to have depression. Also, there was a negative relationship between well-being and the likelihood of having depression. No significant relation was found for the effect of length of residence on depression.

Van der Wurff et al. (2004) analysed depression prevalence for Dutch native elderly and Turkish and Moroccan migrant elderly and found higher prevalence rates of depression for migrants than natives, particularly highest rates for the Turkish migrant group. For all the three groups, depressive symptoms were linked to gender, chronic disabilities, and physical limitations, and there was no relevance between depressive symptoms and income level.

Aichberger et al. (2010) analysed depression prevalence among older migrants and natives throughout 11 European countries, using data from the SHARE Wave 1. Along with depression, other mental abilities were also included in the multivariate analysis. Multivariate logistic regression analysis was operationalized to measure the association between socio-demographic factors and mental abilities. Migration status was the explanatory variable and assessed through the criteria of "born in the current country of residence". Origin countries were grouped as Northern, Southern and Western Europe. Aichberger et al. (2010) looked at the effect of migrants' duration of stay in the current country on depression prevalence. Results suggested that the older migrants had higher odds of having depression compared to the natives. Among all migrant groups, migrants from Southern Europe had the lowest odds of having depression, while migrants from Northern Europe had the highest odds of having depression, compared to natives.

Foo et al. (2018) examined the depression prevalence among migrants through a meta-analysis. The study focused on the variations caused by demographic and educational factors. Length of residence, level of education, and employment status were significant factors that contribute to the prevalence of depression among migrants. A negative association was found between length of residence and depression prevalence, meaning that migrants whose length of residence in the country is lower are more prone to be having depression. Foo et al (2018) noted that this may be caused by post-migration acculturation stress, recently arrived migrants showed a higher depression prevalence.

Buchcik et al. (2017) stated that despite the high number of the studies on migrant health, results comparing different migrant groups were rare. They mainly

argued that migration can affect life quality both in a positive or a negative direction, and aimed to analyse migrant health in terms of quality of life as they see health as an important aspect of life quality which refers to more a subjective status of health. They pointed out that life quality includes psychological health as well as objective health status. Their study explored the differentiations among the health-related quality of life (HRQoL) of older Polish and Turkish immigrants and native Germans 60 years and older and seek for factors that affect the dimensions of HRQoL and in which way they affect it. The HRQoL was measured by a scale named the Short Form-36 (SF-36) which has indicators for physical and mental health dimensions. It is comprised of six items as follows; physical functioning, role physical, bodily pain, general health, vitality, social functioning, role emotional, and mental health (Ware, 1993). For each migrant group, scores of these items were calculated separately. While scores of migrants were lower than natives, for the most part, natives and Polish migrants had higher scores than Turkish migrants. For the migrants, age and gender was found to be associated with physical functioning. In fact, age was found to be significant for migrants and natives, and there was a negative relationship between age and physical functioning. For the migrant group, income was positively associated with the general health. In the case of mental health, again income was a significant factor for both migrants and natives. A gender difference was found by the study as women were found to have lower quality of life than men.

Nesterko et al. (2019) investigated the trajectories of HRQoL among immigrants and natives in Germany with a specific focus on the migration-related factors. Similar to the questions of this thesis, their study aimed to explore the differences between immigrants and natives, and to find out the effect of migration-related factors which were defined as country of origin, length of stay, and age at migration. HRQoL was measured by the Short Form-12 scale (short version of SF-36 scale) that comprised of two subsets measuring physical and mental aspects of HRQoL. The study used longitudinal data from the German Socio-Economic Panel for the period of 2002-2012. Migrants were divided into two groups as first-generation migrants and second-generation migrants. They employed hierarchical linear modelling for separate models of mental health and physical health. The results

showed a sharp decline in mental health among second-generation migrants over the time even they were better than natives and the first-generation. Mental health of natives stayed more or less around the same level in the beginning and at the end of the 10-year period, and their course of the mental health did not have sharp volatility. On the other hand, the course of mental health of the first-generation migrants was so volatile, and at the end of the 10-year period, it was worse than the beginning. At the early years of the 10-year period, natives had better mental health compared to both migrant groups, and the lowest mental score belonged to the first-generation migrants, but lately while natives' mental health score stayed relatively stable, first-generation's mental health declined sharply and got worse than even the beginning. Even though mental health score of second-generation migrants were a bit higher than the first-generation, their course of the mental health scores was almost the same as the first-generation migrants, and through the end of the 10-year period, mental health scores of the second-generation migrants got worse than even the first-generation. It is important to note that the authors found interaction between time and migration status. Throughout the 10-year period, physical health of the both groups declined. There is a clear divergence between second-generation migrants and natives; second-generation migrants were better than the natives. On the other hand, first-generation migrants and natives almost converged to each other. Among the three groups, first-generation migrants had the lowest physical health scores. In this model, no interaction between time and migration status was found. In the case of the relationship between country of origin and mental health, they did not find differentiation between natives and migrants coming from Northern, Western, Southern Europe, Poland, and Turkey, but for migrants coming from the Former Soviet Union. In addition, migrants from Eastern Europe, Poland and Turkey showed lower physical health scores than natives. The authors concluded that age predicted best the course of physical health for all groups. Another important emphasis made by the authors is that they found no evidence for the healthy immigrant hypothesis.

Hadjar and Backes (2013) examined the effect of migration on the subjective well-being by using data from the European Social Survey. The study tried to explain the differences in the subjective well-being of people with migration backgrounds and

those with no migration background by putting migrant integration on the focus. Theoretically, good subjective well-being outcomes or higher levels of subjective well-being were positioned as the indicator of successful migrant integration. The study was interested in micro and macro level determinants of subjective well-being. Micro level variables were seen as attributes related to subjective well-being because they show migrants' inclusion in the destination country's society. Macro level variables referring to host country's potential legal layout for supporting migrant integration and consequently migrant subjective well-being were seen as the institutional determinants of migrant subjective well-being. Eventually, micro and macro level variables would explain the subjective well-being differences between migrants and non-migrants. Migrant sample was divided into four groups as follows; first generation migrants living in the country less than ten years, first generation migrants living in the country more than ten years, second generation migrants and non-migrants. Migrant groupings were made because it was thought that the duration of stay in the host country was a subject matter being parallel to integration and acculturation theory's claim that the longer the duration of stay the higher level of integration. Length of stay in the host country was used as an indicator of integration because it was claimed that integration refers to a process in which migrants experience an adaptation, and it is a post-migration process where migration traumas smooth down in time. As a result, migrants are expected to perform better in subjective well-being as they live longer in the destination country. According to these, Hadjar and Backes put forward important hypotheses. Regarding migration background, first hypothesis expects that, if one has migration background, she or he shows worse subjective well-being compared to those do not have migration background. Regarding length of stay, as the length of stay increases, the distinction between migrants and non-migrants decreases, and further generation migrants converges more to non-migrants in terms of subjective well-being compared to first-generation migrants. Second hypothesis expects that, higher level of education causes lower level of income deprivation, and being employed, being in a relationship, and having no health problem is associated with higher level of subjective well-being. These are named as the individual level factors. In the study subjective well-being is measured by a two-

item scale where one is happiness, the affectual dimension, and second is the life satisfaction. Their results suggested that, individuals with migration background had lower subjective well-being compared to natives, in particular first-generation migrants had the lowest value of subjective well-being among all groups. Secondly, second-generation migrants had a little lower score in well-being than natives. Thirdly, it was found that unemployment had strong adverse impact on subjective well-being. Forth, having good health and living in a relationship contributed higher subjective well-being.

As various chronic diseases, infectious diseases, and non-communicable diseases, diabetes among the older migrants is also one of the widely studied subject (Reus-Pons et al, 2018; Montesi et al., 2016; Jaffe et al., 2016) According to Montesi et al.'s study (2016), diabetes prevalence and mortality were studied broadly in the literature. There are various studies for Europe, The US, Australia, and all examines the case for migrant and native populations (Montesi, 2016). There are some policy recommendations made by the authors regarding the diabetes care among migrants. Migrants access to healthcare systems and health services should be endeavoured as it is seen that their access to healthcare is unsatisfactory and they are undertreated, in other words there is a visible inequity in terms of getting treatment (Schouten and Meeuwesen, 2006). Montesi et al. (2016) stated that increasing international migration causes clinical problems in the national health systems of the countries due to the existence of the cases at-risk in high numbers, and the cost of the diseases. In this point, integration of migrants into the healthcare system is a very critical matter in high migrant-population countries, especially for European countries who receives migrant in high numbers. Additionally, the burden of diseases is increasing among the migrants. Therefore, this indicates a serious problem. Diabetes is also one of the crucial problems to be addressed. It was stated that, compared to the natives, prevalence and incidence rates of diabetes are higher among migrants (Kristiensen et al., 2007; Ujcic-Voortman et al., 2009). Diabetes is one of the diseases with high morbidity levels among migrants (Vandenheede et al. 2012; Montesi et al., 2016).

Jaffe et al. (2016) investigated the impact of migration on the risk of diabetes for the Ethiopian migrants in Israel by comparing them with the Israelites. The authors studied the diabetes prevalence, incidence and risk among the migrants and natives. According to results, by age group, among the natives, diabetes was prevalent the most in the 60+ age group, secondly in the 50-59 age group, and least in the 20-49 age group. In the case of diabetes incidence by age groups, again it was the most likely for the 60+ age group, secondly for the 50-59 age group, and least for the 20-49 age group. For the natives, both prevalence and incidence rates follow the same order of age groups. Regarding migrant background, diabetes prevalence and incidence among migrants were similar to that of natives', and diabetes risk of older Ethiopian migrants aged 50-59 were higher than that of older natives aged 50-59.

Andersen et al. (2016) investigated the diabetes prevalence, incidence and mortality in migrants and natives in Denmark. For migrants, regional classification was made, and regions were defined as Europe, Asia, America and Ocenia, Middle East and Mediterranean, and Sub-Saharan Africa. They found that in older ages, and both for males and females, African, Middle Eastern, and Asian migrants had higher rates of diabetes prevalence and incidence compared to natives, while American, Ocenian and European migrants in Denmark had similar rates of diabetes incidence compared to natives in Denmark. In older ages, incidence rates for migrants from Sub-Saharan Africa, Asia, and Middle East and North Africa were higher than incidence rates of natives and migrants from Europe, while migrants from America and Ocenia had lower rates of diabetes incidence compared to natives and European migrants.

Oza-Frank et al. (2011) examined diabetes prevalence among migrants in the US with a focus on the effect of length of residence and country of origin by employing logistic regression and by using longitudinal data of the National Health Interview Survey for the period of 1997-2005. Migrant status was defined based on the criteria of country of birth, and who was born out of the US was taken as migrant. Findings suggested that as the length of residence increases, the diabetes prevalence among migrants increases, getting closer to the diabetes prevalence level among natives, but still slightly lower than that of natives. Logistic regression results also showed that the

odds having diabetes increases with the increasing length of residence. In addition, non-European migrants, being from South East Asia, Mexio, Caribbean, and Central America were significantly more likely to have diabetes compared to migrants from Europe.

It was usually stated that acculturation was associated to the poor migrant health outcomes. Commodore-Mensah et al. (2016) investigated the impact of acculturation on the prevalence of cardiometabolic risk factors including diabetes, and they measured the impact of acculturation through the migrants' length of residence in the US. The hypothesis of the study claimed that length of residence was related to higher level of cardiometabolic factors among migrants. In the study, panel data of the National Health Interview Survey for the period of 2010-2014 was used and multiple logistic regression analysis was employed to find out the relationship between length of residence and diabetes and other factors. The variations among migrants were examined by origin countries of migrants. Migrant status was defined by the country of birth criterion, and origin countries were defined as Europe, Mexico, South America, the Caribbeans, Middle East, Central Asia, Africa, Russia, South East Asia, and Indian sub-continent. Length of stay was grouped as "less than ten years" and "ten years or more". Analysis results indicated that migrants whose length of residence was longer than ten years have higher odds of diabetes compared to migrants' length of residence was lower than ten years. In addition, migrants from Mexica as being the reference group, migrant from South America, Europe, Russia, and Central Asia had lower odds of having diabetes, while migrants from Middle East, South East Asia and India had higher odds of diabetes compared to each other natives. It was concluded that behavioural changes led by acculturation occurred in the post-migration process such as diet, physical activity, exposure to stress could contribute to development of cardiometabolic conditions.

Lee et al. (2012) explored the effect of length of residence on the variations in the prevalence of chronic diseases -including diabetes- among migrants in South Korea. In the study, univariate logistic regression was employed to observe the impact of length of stay on the chronic disease prevalence. It was emphasized that the data

was not a cohort data, therefore it did not measure the change in the prevalence rates through a certain period for the same sample since it does not follow migrant health starting from their arrival in the country. So, it only measures the effect of length of stay within the cross-sectional data. Findings showed that migrants whose length of stay was longer had higher odds of having diabetes compared to migrants who had stayed shorter in the country and a positive relationship between the length of stay and the prevalence of diabetes was found.

Reus-Pons, et al. (2018) studied the differences in health transitions, namely changes from good health to poor health and from poor health to good health, between migrant and non-migrant elderly in Europe. Authors stated that previous research mostly had a cross-sectional approach, they aimed to analyse longitudinally health transitions, in particular differences in health transitions between natives and migrants. The authors employed multinomial logistic regression model by using SHARE data from 2004-2015. In the study, migration status was the explanatory variable and, self-rated health, depression and diabetes were chosen as the three dimensions of health. Transitions from bad to good or vice versa refers to deteriorations or improvements in health status. Three models were employed where each of them included variables additionally. Economic status, marital status, and health-related behaviours were found associated with the health deterioration difference between migrants and non-migrants. In addition, among those whose self-rated health was good at the beginning, both Western and non-Western migrants had higher risk of having deteriorations in self-rated health compared to natives. Important to note that, being migrant was significant in transition to deteriorated health. Regarding depression, Western migrants were more likely to going into depression than natives. Again, non-Western migrants had higher risk of having diabetes rather than staying non-diabetic.

Jang et al. (2023) studied health decline among older migrants and natives in Europe from the perspective of ageing. The study investigated health differences between native and migrants by focusing on accumulation of age-related chronic conditions. In the study SHARE data for year 2004-2020 was used, the sample included older people at ages 50-79. 5-year age groups were used as a continuous

variable as they thought to find non-linear relationship between age and health. The analysis sought to find a relationship between chronic conditions, age and immigrant status. The results suggested that, compared to natives, under age 75, migrants had higher probability of having number of chronic conditions but after age 75 immigrants with number of chronic conditions tended to be lower than natives. Results also showed that being woman, being migrant, and being older was found associated to having high numbers of chronic conditions. The interaction between immigrant status and age, among immigrants, age related conditions was higher under age 65 when compared to natives, on the other hand it decreased in older ages. According to another estimate in the analysis, immigrant health disadvantage was observed for all ages. It is important to say that; health disadvantage of older migrants was highest at ages 60-64 and after 65 it decreased. When the health disadvantage was observed regionally, while migrants from European countries had similar levels with the natives, migrants from Africa, Asia and Oceania had higher number of chronic conditions compared to natives, and migrants from Eastern Europe had lower prevalence of chronic conditions.

2.2.2. Literature on Poverty among Older Migrants and Natives

An outstanding study on migrant poverty is of Kesler (2015)'s which explored immigrant poverty in the UK, Sweden, and Germany, even though it did not have specific focus on the elderly due to some data constraints. It aimed to find out variations in immigrant-native poverty gaps, and poverty levels. It investigated the function of institutional factors which are state-level and household-level factors in determining immigrant poverty. By employing logistic regression models, he analysed poverty rates. Main concern was, independently of principal socio-demographic elements, whether or how the course of immigrants of the same origin diverges in host countries. Data sources were the Labour Force Survey (LFS) for the UK, Longitudinal Individual Database (LINDA) for Sweden, and Mikrocensus (Mikrozensus, German Labour Force Survey) for Germany. Income and poverty were dependent variables. Individual poverty was determined based on the criterion "less than median household income." Independent variables were age, education, family structure, migrant origin, migrant family type, the number of years since migration, and attachment to the labour

force. They found that immigrant families in all three countries were under higher risk of poverty compared to native families.

Miething and Juárez (2023) examined income inequality in mortality differences between migrants and natives by looking at number of deaths and income outcomes for both groups through the longitudinal sample. The study focused on how length of residence affected the income outcomes of migrants. National register data for 2004-206 period was used in the study, and migrant status was determined on the basis of country of birth, Swedish-born individuals were identified as native and foreign-born individuals were identified as migrant, sample included people aged 25-64. Income was measured by disposable net income. As a result, similar to the healthy immigrant paradox, the authors found evidence for an income mortality paradox. Income mortality paradox refers to that migrants, compared to natives, have both lower level of income and a mortality advantage at the same time. Results showed a negative relationship between poverty and length of residence. As the length of residence increase, the probability of poverty decreases. Results suggested that migrants whose length of residence was lower had higher rank of income poverty compared to migrants whose length of residence was higher. Age-specific mortality rate was the dependent variable, income was the exposure variable. Miething and Juárez found evidence for the income disadvantage for migrants in mortality.

Berti et al. (2014) examined the poverty and deprivation among migrants and natives in Italy by using data from European Survey on Income and Living Conditions. Poverty was measured by integrated fuzzy and relative approach which used equivalent disposable income. Findings suggested that immigrant household were more vulnerable to poverty and deprivation. No significant gap was found between migrants who have resided in Italy longer than 10 years and migrant who have resided in Italy lower than 10 years.

Gustafsson et al. (2022) studied poverty differences between older natives and migrants in Denmark and Sweden by using register data for the year 2010. Origin countries of migrants were Turkey, Bosnia, Yugoslavia, Iraq, and Iran. Poverty was measured by 60% of the equivalent household disposable income. Probit regression

models were constructed. In both countries, poverty was more prevalent among older migrants compared to the natives. In addition, migrant disadvantage in poverty in Denmark was found. Also, it was observed that as the length of residence in the country increases, risk of poverty decreases for migrants.

Bárcena-Martín and Pérez-Moreno (2017) studied the differences in poverty between natives and migrants across Europe using EU-SILC data for the period of 2007-2012. Poverty was measured by the household disposable income, and migrant was defined by country of birth. Households were divided into three groups as native households, mixed-migrant households, and non-mixed migrant households. Native households consisted of each member was native. Mixed-migrant household referred to household that comprised of one adult who was born in a foreign country and one adult who was native-born. Non-mixed migrant household referred to household that comprised of both adults were foreign-born. Results suggested that migrant household had higher risk of poverty than native households, in addition, non-mixed migrant households were under higher poverty risk compared to mixed migrant households. Interesting finding of the study was that the migrant-native gap in poverty was higher in the countries having lower income inequality and higher level of economic development.

Bauer et al. (2011) examined the wealth differentiation between migrants and natives in Australia, Germany, and the US by using national panel data of each country, respectively. The study was interested in how household net worth varied based on household features such as migrant status and place of origin, and the wealth differentiation between migrants and natives originate from which demographic characteristics. Household, Income and Labour Dynamics in Australia (HILDA) Survey for Australia, German Socioeconomic Panel (GSOEP) for Germany, and Survey of Income and Program Participation (SIPP) for the US were used. Wealth refers to net worth and measured by total household level net worth. Net worth consisted of net financial wealth, business equity, household equity, and vehicles equity. To find out the which factor caused wealth differences between natives and migrants, decomposition method was employed. Explanatory variables were

household net income, demographic household composition (age, number of children under 18) and years of education. According to results, foreign-born households were found to be less wealthy than native-born households. Migrants in Australia were less wealthy than Australian natives, but the difference was not significant, In Germany, the difference in wealth distribution between natives and migrants were significant. The largest wealth difference between migrants and natives was found in the US.

David et al. (2012) examined the subjective poverty differences among migrants and natives in Morocco and Egypt. In the study, data from the Netherlands Demographic Institute was used, and ordered probit model was employed. Subjective poverty was assessed by a question that asked how much the person was satisfied with the financial situation when meeting their basic needs and answers presented a scale like insufficient, barely sufficient, sufficient, and more than sufficient. In addition to migrant status, independent variables were consisted of basic demographic variables as age, gender, level of education, marital status, and number of children. David et al. (2012) found that migrant status was significant for subjective poverty for migrants in Morocco. In Egypt, migrants stated that they were wealthier than migrants, but migrant status was not found to be significant in subjective poverty. Egyptians, who had better standards of living, showed lower odds of having subjective poverty, while Moroccans showed higher odds of having subjective poverty. Both in Morocco and Egypt, average poverty score was higher for migrants compared to natives; for females compared to males (vice versa in Egypt); for individuals having above secondary level education compared to those having secondary level education and primary or lower level of education. No significant relationship was found between subjective poverty and age, gender, and marital status. David et al. (2012) noted that it seems that subjective poverty was more a contextual phenomenon, and being wealthier was not enough for feeling satisfied with the present material conditions that individuals have. Individuals who had higher level of education could be aware of the poverty more compared to those having lower levels of education. Another finding of the study was that in both countries, majority of the migrants thought that migration could improve their financial condition.

An important study by Chan and Chou (2016) analysed the relationship between the living arrangements and poverty among the migrant and native elderly in Hong Kong. Individuals born in Hong Kong were stated as natives and who are born in Mainland China as immigrants. Data source of the study was census data of the year 2011. Five variable sets were constructed as living arrangements, demographic characteristics, human capital, assimilation, and household composition. Gender and age were indicating demographic characteristics, living arrangements were indicated through the following three variables; "living alone", "living with spouse only", and "living with others". Educational level and employment status were indicators of human capital. Assimilation was measured via the length of residence in the country and the language spoken usually at home. Household composition was measured by three variables; number of children, number of older persons, and number of earners in the household. Poverty was measured by OECD's 50% of the median household income adjusted by household size. Analyses were made in three steps. In the first step, the sample included both natives and migrants, and three models were employed. They employed logistic regression on three models, by adding variables gradually. In particular, the quest was to find which living arrangement is influential creating poverty differences, therefore, variables were added gradually. First model only controlled for migrant status, specifying natives living with others as the reference category. In general, migrants had higher odds of income poverty than natives. Migrants living alone had the highest odds ratio of income poverty. Migrants living alone and natives living alone have highest odds of income poverty compared to migrants and natives living with spouse only. Migrants living with others had the lowest odds of income poverty among all categories. Second model added demographic characteristics, human capital, and assimilation to the first model. In the second model, migrants living alone had the highest odds of living in poverty compared to the reference group, natives living with others. Regarding educational level, no schooling was the reference category, and gradually, the lower the years of schooling, the higher odds of living in poverty the elderly had. 20 years and over was the reference category for the duration of residence in the country. In general, migrants living in the country less than 20 years had higher odds of income poverty compared

to those living for at least 20 years. In addition, migrants living in the country for eleven to nineteen years had higher odds of income poverty than those living less than ten years. It means that as the length of residence increases, the probability of having income poverty decreases.

CHAPTER 3. DATA AND METHODOLOGY

3.1. Research Questions and Hypotheses

This thesis investigates well-being in older migrants and non-migrants in Germany by approaching well-being through its health and poverty dimensions, and the association between these dimensions and migration. In other words, it aims to find out whether health and poverty of older migrants and non-migrants in Germany diverge from or converge to each other.

Thereby, the research question of this thesis is

"How does well-being differ between older migrants and non-migrants in Germany?"

Based on this research question, which socio-demographic factors affect health and poverty of the older people, and how, are examined.

Hypotheses and expected results for health models

H1: Older migrants are expected to have lower or similar odds of having poor health compared to older natives in Germany.

H2: Non-Western older migrants are expected to have lower or similar odds of poor health compared to other groups of older migrants and natives in Germany.

H3: Older migrants whose duration of residence is lower are expected to have lower odds of poor health compared to older migrants whose duration of residence is longer in Germany.

H4: Older migrants are expected to be more likely to be poor compared to older natives in Germany.

H5: Non-Western older migrants are expected to be more likely to be poor compared to other groups of older migrants and natives in Germany.

H6: Migrants whose duration of residence is lower are expected to be more likely to be poor compared to migrants whose duration of residence is longer in Germany.

3.2. Data Source

For this thesis, data from the Wave 7 of the Survey of Health, Ageing, and Retirement in Europe (SHARE) was used. This wave was chosen as it was the last before the COVID-19 pandemic. After COVID-19 pandemic, the survey technic and structure had altered, and the effects of these changes were left out from the analyses by using Wave 7.

SHARE is a longitudinal survey held every 2 years, carried out in 28 European countries and Israel by the Max Planck Institute for Social Law and Social Policy which is a department of the Munich Centre for the Economics of Ageing. First wave of the survey was conducted in 2004 and the last wave, Wave 8 was conducted throughout the years of 2019 and 2020 due to the COVID-19 pandemic. Data collection of SHARE Wave 7 was carried out in 2017.

The data is collected by face-to-face interviews and CAPI instrument. SHARE sample includes persons who are 50 years and older at the time of sampling. Institutional respondents are excluded, and only respondents whose regular place of residence is in the respective survey country, and who live in a dwelling house, is included, and respondents who are out of the country during the whole survey period, and who are not able to speak the language of the survey country are excluded. SHARE collects and provides data on a wide variety of areas such as demographics, family, children, partners, social networks, physical and mental health, health care, employment history, working conditions, income and financial conditions, consumptions etc. (Stuck et al., 2019).

The survey collects very detailed information about both current, and retrospective life events. SHARE allows for cross-country and thus, comparable longitudinal data as it has a standardized questionnaire design that helps to minimize

errors that may stem from country-specific surveys (Schuller et al., 2021). Interviews are made in each country's official language. In some waves, SHARE may carry out different questionnaires in addition to the standard ones, and try to collect data on different themes. Therefore, some modules are not available for each wave. Moreover, at each wave, the sample is refreshed by removing some respondents from the sample and adding new respondents to the sample.

Traditionally, the survey has a regular questionnaire, but in Wave 3 and Wave 7, respondents were given SHARELIFE questionnaire. In Wave 3 all respondents were given the SHARELIFE questionnaire while in Wave 7 only the respondent who did not participate in Wave 3 were given the regular questionnaire. Basically, regular questionnaire collects data about current life events, while SHARELIFE is a retrospective questionnaire that collects data about historical circumstances such as childhood, employment and accommodation history, past partners etc. Regarding regular interviews, there are two types of questionnaires. Respondents who are included for the first time are given the baseline interview, and respondents who were included before are given the longitudinal questionnaire. As mentioned before, Wave 7 data is a combination of SHARELIFE and regular questionnaire. Respondents who did not take SHARELIFE questionnaire in Wave 3 (18 % of the Wave 7 sample) were given SHARELIFE questionnaire and a condensed version of the regular questionnaire in Wave 7, respondents who did not take SHARELIFE questionnaire in Wave 3 (82 % of the Wave 7 sample) were given SHARELIFE questionnaire in Wave 7. As a consequence of this complicated structure of the survey, Wave 7 data has missing values in high amounts (Stuck et al., 2019).

3.3. Methodology

3.3.1. Logistic Regression

This thesis employs binary logistic regression analysis to find out the determinants of poor health and poverty. A multivariate analysis was employed to figure out which factors contribute to poor health and poverty.

The logistic regression is a statistical method that predicts the likelihood of the risk of an event. Logistic regression function assumes that dependent variable is binary, and have dichotomous values as 0 or 1. The logistic regression analysis aims to predict the probability of the dependent variable taking the value 1. Independent variable categories with odds ratio close to 1 mean that they are the variable categories that do not affect the dependent variable the most. If the variable coefficients are not statistically significant, the variable is not a factor. If the independent variable is statistically significant and the odds ratio is greater than 1, it is decided that this independent variable is effective on the dependent variable's possibility to take value 1. Again, if the independent variable is statistically significant and the odds ratio is smaller than 1, it is decided that this independent variable is effective on dependent variable's possibility to be lower than 1. The exp(b) value of each parameter is defined as the odds ratio. It specifies how much the explained variable is likely to be observed with the effect of the explanatory variable, or at what percentage as a percentage (Baş, 2017).

The dependent variable is denoted as the function of the independent variables, and expected values of the response variable are obtained as probabilities according to the explanatory variables.

The following is the logistic regression function:

$$\hat{p} = \frac{\exp\left(b_0 + b_1X_1 + b_2X_2 + \cdots + + b_pX_p\right)}{1 + \exp\left(b_0 + b_1X_1 + b_2X_2 + \cdots + + b_pX_p\right)} \qquad (3.1.)$$

In the function, $\hat{p}$ represent the expected result of the dependent variable. X_1 through X_p stand for different independent variables, and b_0 through b_p stand for the regression coefficient. In the equation, odds ratio is represented by exp(b). Odds ratio is the ratio of the probability of an event occurring to the probability of not occurring. The exp(b) value of an independent variable indicates that to what degree it affects the probability of the dependent variable occurring.

Basically, logistic regression model explains the relationship between factor variables and the dependent variable which is a categorical binomial variable. In the logistic regression analysis, the dependent variable is categorical. Independent variables can be both categorical and continuous.

In the diabetes model, regression predicts whether the person is diabetic (1) or non-diabetic (0), in the depression model, it predicts whether the person is depressed (1) or non-depressed (0), in subjective health model it predicts whether the person has poor subjective health (1) or good subjective health (0).

Similarly, in the income model, regression predicts whether the person is poor (1) or non-poor (0), in the wealth model whether the person is poor (1) or non-poor (0), and in the subjective poverty model it predicts whether the person is poor (1) or non-poor (0).

3.3.2. Construction of Variables and Models

The aim of this study is to investigate well-being in older migrants and non-migrants in Germany, and whether there is a relevance between migration and well-being. In this thesis, well-being is approached from two dimensions; health and poverty. Two well-being dimensions, namely health and income are analyzed separately, using logistic regression models. Therefore, the analysis comprises two parts; health, and poverty.

Independent variables age, sex, migration status, length of residence, marital status, level of education, employment status, household size, number of children, and region of living are basic set of variables that are common to both health and poverty models. The categorization of these variables are as follows:

Age: The sample included persons aged 50-96 years. The variable “age” was recoded, and ages are grouped as 50-59, 60-69, 70-79, 80+. The reference category is 50-59 years.

Sex: The variable "dn042_" had male and female categories. The reference category is male.

Migrant status: Migration status variable is constructed based on the country of birth criterion. The variable "migrant" was generated from the variable "dn005c" which identifies the country of birth of the respondents. Variable "migrant status" was divided into three groups as native, Western migrant, and non-Western migrant. Those who were born in Germany grouped as native, those who were born in OECD countries were grouped as Western migrant, and those who were born in non-OECD country were identified as non-Western migrant. The reference category is native. The differentiation between Western and non-Western migrant were made to find out whether the context of origin plays a role in differences of the outcomes examined (Reus-Pons et al., 2018) as the social and economic conditions in origin countries have impact on forming the basis of people's health and poverty.

Length of residence: The length of residence is calculated for those of migrant origin by subtracting the year when the respondent came in to live in Germany from the interview year. This difference is the period of residence. This variable was recoded as "0/29 years" and "30+ years", and natives were kept as a separate category: "natives". The reference category is 30+ years. Length of residence variable is used to explore whether the results will differentiate by the years spent in Germany. It is included in the analyses based on the hypotheses of acculturation and integration, which claims that the longer the duration of stay, the more similar the results for migrants and non-migrants.

Marital status: The variable "dn014_" in the raw data was recoded as we were required to merge some categories. "Married and living with spouse", and "registered partnership" were merged under "married"; "married and living separated from spouse", and "divorced" were merged under "separated", "never married" were recoded as "single"; and "widowed" stayed the same. Final categories are married, separated, single, and widowed. The reference category is married.

Level of education: The variable "isced" was used to assess level of education. In the raw data, ISCED-1997 coding was used. "Pre-primary education", "primary education (first stage of basic education)", "lower secondary education (second stage of basic education)" were recoded as "primary or lower"; "(upper) secondary education" was recoded as "secondary", "post-secondary non-tertiary education" was recoded as "other"; "first stage of tertiary education (not leading directly to an advanced research qualification)" and "second stage of tertiary education (leading to an advanced research qualification)" were recoded as "higher". For our analysis, we recoded categories as primary, secondary, other, and higher. The reference category is "higher".

Employment status: Employment was estimated through the variable "cjs (current job status)" in the raw data. We needed to recode the variable. "Retired" stayed the same; "employed" or "self-employed" were recoded as active; "unemployed", "permanently sick or disabled", and "homemaker" were recoded as "unemployed or inactive", and "other" stayed the same. Final categories are "retired", "active", "unemployed or inactive", and "other". The reference category is retired.

Number of children: Number of children of the respondent was assessed by the variable "numchild" in the "imputations" module. The categories are grouped as 0, 1, 2, and 3+. The reference category is 1.

Household size: The variable "hhsize" was recoded as we grouped categories as 1, 2, and 3+. No reference group was identified, in the analysis it is employed as a continuous variable.

Region of living: Region of living was assessed by the variable "areabldgi". The question asks "How would you describe the area where you live?". "A big city", "the suburbs of a big city", "a large town" and "a small town" were recoded as urban, and "a rural area or village" was recoded as rural. In number of studies, region of living was used as an indicator of socio-economic status, therefore we used it as it can be related to health and poverty. The reference category is urban.

Health was analysed based on three models named diabetes, depression, and subjective health, and measured through the existence of three conditions; diabetes, depression, and evaluation of subjective heath. The dependent variables for these separate models were set as binary variables as follows:

Diabetes: The diabetes variable "ph006d5" has two categories, "1" for diabetic, and "0" for non-diabetic. Diabetes condition were acquired through a question in the SHARE questionnaire. The question asks the respondent which conditions the respondent currently has. With each response corresponding to a variable, the variable is ph006d5 for diabetes and its label is "Diabetes or high blood sugar: ever diagnosed/currently having". Ph006d5 variable is a variable that labels the respondents who chose diabetes as "selected" and respondents who did not choose diabetes among the listed conditions in the answer categories as "not selected". "Selected" responses were labelled as diabetic (1), "not selected" responses were labelled as non-diabetic (0). Diabetic (1) is the reference category.

Depression: The depression variable "eurod" has two categories, "1" for depressed, "0" for non-depressed. SHARE questionnaire uses EURO-D scale to measure depression. EURO-D is a 12-item depression scale used to measure depression in older ages. The scale ranges from 1 to 12 and the presence of 4 or more symptoms is considered "depressed". Therefore, cases showing 4 and more symptoms are recoded as depressed (1), and below 4 is considered as non-depressed (0). Depressed (1) is the reference category. The "eurod" variable in Wave 7 had high amount of missing cases. To resolve this problem, these missing cases were imputed by bringing values for the same individuals from Wave 6 (year 2015). Hence depression status refers to the last 3 years between 2015 and 2017.

Subjective health: The subjective health variable "ph003_" had two categories, "1" for poor health, "0" for good health. To acquire the self-evaluation of health, the SHARE questionnaire asks respondents their sense about their health and rate from poor to excellent. The question asks "Would you say your health is…?" and the answer categories are "excellent", "very good", "good", "fair", "poor". These five categories

had been reduced to two; the first three merged as good health, and the last two merged as poor health. Poor health (1) is the reference category.

In addition to basic set of variables, some subsidiary variables which are body mass index (BMI), smoking habit, frequency of vigorous activities, income poverty are added in the analysis as they can be related to health.

Body mass index: BMI was assessed by the variable "bmi2". It has four categories as follows; underweight, normal, overweight, and obese. Normal is the reference category.

Smoking habit: Smoking habit was assessed by the variable "br001_" The question asks "Have you ever smoked?" to the respondent and records whether the respondent had ever consumed cigarettes and similar tobacco products, and the answer categories are yes and no. "No" is the reference category.

Vigorous activities: Vigorous activities refers to frequency of doing vigorous activities such as exercises, sports, heavy daily works, or job requiring physical labour. The variable "br015_" has answer categories are as follows; "more than once a week", "once a week", "one to three times a month", and "hardly ever, or never". The reference category is "more than once a week".

Poverty dimension was analysed based on three poverty models. These models were constructed according to three dependent variables which take their names from three different poverty definitions as in Adena and Myck (2014), namely, (i) income-based relative poverty (defined as 60% of the median equivalised household net income), (ii) subjective poverty (respondents are identified as poor if they can "make ends meet" "with some" or "with great" difficulty), and (iii) wealth poverty (defined as poor if they are in the bottom third of the country-specific wealth distribution).

Income poverty: The income poverty variable had two categories, "1" for poor, and "0" for non-poor. Income was measured based on household monthly income. The SHARE questionnaire has questions to assess income information of respondents' household. The variable "thinc2" (total household income) is an imputed variable

within the Wave 7 of SHARE data. It was acquired from the variable "hh017" (monthly household income). Monthly household income is assessed by asking the question "How much was the overall income, after taxes and contributions, that your entire household had in an average month in last year?" For the analysis, household income is adjusted according to the median equivalisation scale of the OECD (OECD Modified Scale as described in OECD, 2018). Median equivalised income is calculated as follows:

Poverty line for the year 2016 for Germany is based on the EuroStat data -EU Statistics on Income and Living Conditions Survey which is 12 756 euros (Eurostat, accessed on April 4, 2023). It is for single person. The main elements of the calculation are household size and household monthly income. Equivalisation considers the household composition as suggested by OECD (2018); a household generally consists of adult(s) and child(ren), but the consumption does not increase proportionally. Equivalence scale was formulated to calculate the household members' weights in consumption. Equivalence scale is 1.0 for the first adult, 0.5 for subsequent adults, and 0.3 for children aged under 14. For each household, monthly income was divided by the household size scale, and persons who fall below the poverty line were identified as poor, who were above the poverty line were identified as non-poor. The reference category is "poor".

Wealth poverty: For the wealth poverty variable, wealth data was taken from the *hnetw* -household net worth variable. Household net worth is an imputed variable in SHARE data, and it is calculated based on another two imputed variables. It is the sum of household net financial assets-*hnfass* variable and household real assets-*hrass* variable. Household net financial assets is the household financial assets-*hgfass* variable net of liabilities-*liab* variable. Wealth was sorted first, then the entire sample was divided into three groups of 33.33%. Observations who fall in the bottom third group were labelled as poor (1), and the rest of the observations were labelled as non-poor (0). The reference category is "poor".

Subjective poverty: Subjective poverty was assessed by the variable "fdistress" Subjective poverty was acquired through the question "Thinking of your household's

total monthly income, would you say that your household is able to make ends meet...?", the answers are "with great difficulty", "with some difficulty", "fairly easily" and "easily". Respondents who declared themselves "having great difficulty and some difficulty" were identified as poor, while the rest of the answers were identified as non-poor.

In addition to the fundamental variable set, two subsidiary variables were included in the poverty analyses which are subjective health, and depression. They were included in the analyses as they may help to better understand the respondent's living circumstances and to evaluate their relevance to poverty.

First, the cases whose country of interview is not Germany were dropped from the raw data, and after dropping number of missing data for the migration status variable, and age variable, analytical sample size became 3785 before the construction of models. For each model, number of observations where the dependent variables have missing values were dropped therefore the final sample size differs for each model, and each is specified in Table 4.1.1. and Table 4.1.2. Stata version 14.1 was used for the analyses. All analyses in this paper are weighted. Only the numbers presented are unweighted. The weight variable "cciw_w7" in the "gv_weights" module of the Wave 7 data was used as the weight variable. In SHARE, these are the calibrated weights to resolve the problem of missing data caused by non-response and sample attrition, and the problem of selection bias caused by cross-sectional sampling design.

CHAPTER 4. RESULTS

Demographic characteristics of individuals can give us clues about their health and economic status. Differences in health and economic conditions may trace back to the demographic characteristics. They help to explain and understand why individuals have different health and economic outcomes. Particularly, this thesis locates migration status as the key variable to explain differences in health and economic outcomes. Number of studies claims that migrant origin is key to understand, to explain differences in health and poverty between migrants and natives.

4.1. Descriptive Statistics

This section presents descriptive statistics for health models and income models (prevalence rates for whole sample by respective models) for the sample of SHARE Wave 7 data for Germany. At the beginning, descriptive statistics are good to observe the characteristics of our data and observe our sample in terms of what we seek for.

Main interest of this thesis is to look the divergence between migrants and non-migrants in terms of health and poverty, then to look at the factors affecting health and poverty of older people in Germany.

In Table 4.1.1., diabetes, depression, and poor subjective health prevalence among the population by background variables are presented. First of all, 14.2% of the total sample is diabetic. In addition, Diabetes is most prevalent among the Western migrant group, and least common among the non-migrants. Among migrant groups, diabetes level is higher for Western migrants than non-Western migrants. According to the depression model sample, 24.1% of the whole sample is depressed. Depression is most prevalent among the non-Western migrants (33.3%), and the least common among the Western migrants (21.5%). Overall, 44.5% of the total sample of subjective health model have poor subjective health. Poor subjective health prevalence is lowest among natives (43.6%), while it is highest among the Western migrants (51.3%).

Considering the relationship between the length of residence and health, diabetes is less prevalent among the migrants residing in the country for 0-29 years (11.8%) compared to the migrants residing in the country for 30+ years (24.3%). In the depression model, depression is more prevalent among migrants residing in the country for 0-29 years (30.1%) than those living for 30+ years (22.3%). In the case of poor subjective health, it is seen two groups are almost alike where 30+year residents are 3-percentage point higher level of depression prevalence.

When we look at the diabetes prevalence among the older people, obviously, diabetes prevalence increases gradually with the age, and it is the most prevalent in the 80+ age group. Also, it is more prevalent among males than females. By marital status, diabetes level is highest among the widowed elderly, and the lowest among married. As in the single elderly diabetes is more prevalent than the married, it is hard to say that relationship characteristics can clearly explain the case. On the other hand, by educational level, it is seen that as the level of education increases, the diabetes prevalence decreases. Diabetes level is highest in the primary or lower education group (20.4%) and the lowest in the higher education group (10.6%). Similar explanation is valid in the case of employment status. While diabetes level is lowest for the active elderly, in the retired group the diabetes prevalence is highest. The level is high among the unemployed or inactive group as well. Evidently, being an active worker or being out of the work affect the health status. Also, smoking habit can be a predictor of diabetes status. For the elderly who have ever smoked, diabetes prevalence is higher than that of among elderly who have never smoked. While diabetes prevalence is lowest among the underweighted (4.4%), it is highest among the obese (27.2%). It is evident that while the BMI increases, the level of diabetes increases. When we look at the relationship between the frequency of doing vigorous activities and diabetes prevalence, it is seen that as the frequency decreases, the prevalence increases. Diabetes level is highest among the older people who do vigorous activities hardly ever or never (21.2%), and lowest in the older people who do more than once a week (9.6%). Also, diabetes prevalence decreases with the increasing household size, it is highest among the elderly living alone, and lowest among the elderly living in a household with 3+ people. By the region of living, diabetes level is higher among the

elderly living in the urban than those living in the rural region. Another finding of the descriptive analysis is that diabetes prevalence among the elderly who does not have income poverty (20.5%) is almost twice that of those do not have income poverty (12.5%).

Table 4.1.1. Levels of diabetes, depression, and poor subjective health in respective health model, SHARE Wave 7, Germany

Variables	Diabetes Model		Depression Model		Subjective Health Model	
	Diabetic (%)	Total (N)	Depressed (%)	Total (N)	Poor health (%)	Total (N)
Age						
50-59	10.6	867	24.6	802	36.9	866
60-69	11.3	2700	20.6	1354	38.8	1433
70-79	19.2	1861	22.7	991	50.2	1032
80+	20.2	796	32.3	409	65.2	440
Sex						
Male	16.5	1782	17.3	1673	42.8	1777
Female	12.1	1998	30	1883	45.9	1994
Migrant status						
Native	13.4	3366	24	3168	43.6	3359
Western migrant	21.8	289	21.5	278	51.3	288
Non-Western migrant	15.8	125	33.3	110	50.7	124
Length of residence						
0-29 years	11.8	142	30.1	126	49.3	141
30+ years	24.3	272	22.3	262	52.2	271
Marital status						
Married	13.1	2701	21.1	2552	39.7	2157
Separated	13.9	387	28.8	360	50	386
Single	15.5	207	15.4	195	41.6	206
Widowed	17.4	484	34.4	449	57.2	481
Missing	*	1	*	0	*	1
Level of education						
Primary or lower	20.4	429	41.5	397	63.9	426
Secondary	14.6	1980	25	1859	46.8	1975
Other	15.7	155	22.2	146	35	155
Higher	10.6	1216	15.6	1154	33.8	1215
Employment status						
Retired	17.7	2302	24.2	2190	50.8	2298
Active	7.7	1060	17.3	983	26.9	1058
Unemployed or inactive	16.8	347	40.9	322	65.1	345
Other	14.9	30	41.4	27	55.5	30
Missing	17.17	41	37.26	34	66.36	40
Ever smoked						
Yes	16.2	1804	23.3	1728	46.6	1800
No	12.3	1920	24.8	1822	42.5	1915
Missing	10.7	56	*	6	39.9	56

Table 4.1.1. (continued) Levels of diabetes, depression, and poor subjective health in respective health model, SHARE Wave 7, Germany

BMI						
Underweight	4.4	28	44.5	26	73.7	28
Normal	5.7	1297	22.9	1224	38	1297
Overweight	13.7	1496	22.1	1413	41.3	1496
Obese	27.2	896	28.5	840	58.1	895
Missing	24.42	63	22.88	53	51.14	55
Vigorous activities						
More than once a week	9.6	1524	19.4	1468	33.6	1520
Once a week	10.6	613	21.4	587	34.5	613
One to three times a month	12.7	278	21.1	268	40.3	277
Hardly ever, or never	21.2	1314	31.2	1232	61.9	1310
Missing	11.72	51	*	1	41.12	51
Household size						
1	15.6	828	28.8	779	52.6	824
2	14.1	2465	21.3	2328	41.4	2460
3+	11.1	487	23	449	36.5	487
Number of children						
0	-	-	21	392	42.6	407
1	-	-	25.4	784	46	831
2	-	-	23	1386	43.1	1447
3+	-	-	25.9	994	46.2	1041
Missing	-	-	*	0	40.5	45
Region of living						
Urban	15.2	2211	24.2	2057	45.7	2190
Rural	12.8	1517	23.4	1440	42.1	1515
Missing	12	70	34.91	59	53.05	66
Income poverty						
Poor	12.5	660	37.3	609	65.1	658
Non-poor	20.5	3120	20.7	2947	39.1	3113
Total (N)	14.2	3780	24.1	3556	44.5	3771

**The analytical sample size for all models was 3785. In the diabetes model, 5 cases were omitted since there are missing values in the diabetes variable. In the depression model 229 cases were omitted due to missing values in the depression variable. In the subjective health model, 14 cases were omitted due to missing values in the subjective health variable.*

*** "Number of children" was omitted from the diabetes model as the program found a logical error when analysing.*

When we look at the level of depression in the depression model by age groups, depression prevalence is the highest in the 80+ age group, the lowest among the 60-69 age group. But overall, it does not seem that depression prevalence increases gradually with age, rather there is a J shape relationship between the two. There is a great gap between males (17%) and females (30%) in terms of depression prevalence. By marital status, it is least prevalent among the singles, the highest among the widowed elderly.

Therefore, it seems that partner loss can be a factor increasing the risk of depression. Depression level is more prevalent in the primary or lower education group, and lowest in the higher education group, and the gap between them is 26 percentage points. Level of education may be an explanatory factor related to the depression prevalence, or higher level of education can signalize lower levels of depression. As it was in the diabetes model, employment status is a remarkable indicator of depression prevalence. While diabetes level is lowest for the active elderly (17.3%), the highest among the unemployed or inactive (40.9%) and "other" (41.4%) category. By smoking habit, depression prevalence shows no clear difference among those who have ever smoked and those who have never smoked. Regarding BMI, depression prevalence does not increase or decrease gradually with the weight, it is lowest among the normal-weight, the highest among the underweight, and the second most prevalent group is obese category after underweight. When we look at the depression prevalence by frequency of doing vigorous activities, it is the highest for the elderly who do vigorous activities hardly ever or never (31.2%), and lowest among the elderly in the "more than once a week" group (19.4%). Depression level is highest among the elderly living alone (28.8%). There is no great gap between the number of children, and region of living in terms of depression level. Regarding the income poverty, depression level is higher among the elderly who are in income poverty compared to those without income poverty, the gap is 17 percentage points. Regarding the subjective health model, poor subjective health prevalence gradually increases with the age, it is more than 50% in the oldest old ages; being 50.2% in the 70-79 age group, 65.2% in the 80+ age group. In terms of gender, there is no clear gap between males (42.8%) and females (45.9%). By marital status, it is highest among the widowed (57.2%), then in the separated (50.0%). As the level of education increases, the level of poor subjective health decreases. Employment status can be a good sign of poor subjective health prevalence, while it is lowest among the active group (26.9%), it is highest for the unemployed or inactive group (65.1%), and over half of the retired elderly have poor subjective health (50.8%). For smoking habit, slight difference between the groups is seen, where ever smoked group had higher prevalence (46.6% vs. 42.5%). Interestingly, among the underweight, poor subjective health is the highest (73.7%), secondly it is highest

among the obese (58.1%), and lowest among the normal-weight group (38%). There is no linear course of poor subjective health prevalence according to weight but not being in the normal range can signalise increase in the prevalence. Like in the previous models, prevalence of poor subjective health increases as the frequency of activities decreases.

Table 4.1.2. Levels of income poverty, wealth poverty, and subjective poverty in respective poverty model, SHARE Wave 7, Germany

Variables	Income Model		Wealth Model		Subjective Poverty Model	
	poor (%)	Total (N)	poor (%)	Total (N)	poor (%)	Total (N)
Age						
50-59	20.1	869	41.3	869	21.1	865
60-69	17	1437	34	1437	16.4	1430
70-79	21.3	1035	28.4	1035	15.4	1030
80+	28.4	444	34.8	444	12.6	418
Sex						
Male	18.6	1785	36.6	1785	17.3	1767
Female	22.5	2000	34.2	2000	17.4	1976
Migrant status						
Native	19.1	3371	35.8	3371	16	3334
Western migrant	26.8	289	25.2	289	20.3	284
Non-Western migrant	45.5	125	45	125	42.3	125
Length of residence						
0-29 years	43	142	38.3	142	45.6	141
30+ years	26.6	272	27.5	272	16.3	268
Marital status						
Married	12.5	2703	34.2	2703	12.5	2693
Separated	36.1	387	39.5	387	34.8	380
Single	33.6	208	40.5	208	25.6	203
Widowed	30.1	484	33.7	484	16.1	464
Missing	0	3	0	3	0	3
Level of education						
Primary or lower	40.6	429	35.9	429	31.1	415
Secondary	22.9	1982	34.6	1982	18.4	1965
Other	13.1	155	38.4	155	12.4	154
Higher	9.6	1219	35.9	1219	10.6	1209

Table 4.1.2. (continued) Levels of income poverty, wealth poverty, and subjective in respective poverty model, SHARE Wave 7, Germany

Employment status						
Retired	19.9	2304	30.2	2304	15.8	2304
Active	9.7	1062	41	1062	11.1	1062
Unemployed or inactive	46.4	347	42.4	347	42.1	347
Other	31	30	29.8	30	30.1	30
Missing	100	42	34.2	42		0
Household size						
1	33.8	829	35.8	829	25.9	793
2	11.7	2467	34.3	2467	12.1	2462
3+	23	489	37.9	489	17.1	488
Number of children						
0	22.8	411	36	411	20.1	403
1	19.1	832	34.9	832	17	823
2	19	1450	34.7	1450	16.3	1441
3+	23.7	1044	36.5	1044	17.9	1028
Missing	6.9	48	27.3	48	12	48
Region of living						
Urban	22	2196	34.3	2196	17.8	2161
Rural	18.3	1518	35.2	1518	16.1	1513
Missing	26	71	64.3	71	25.5	69
Subjective health						
Poor health	30.2	1628	34.7	1977	26.2	1602
Good health	13	2143	35.9	1794	10.3	2129
Missing	34.1	14	17.4	14	12.1	12
Depression						
Depressed	31.6	799	32.4	799	29.4	785
Non-depressed	16.8	2757	35.9	2757	13.2	2737
Missing	24.8	229	38.9	229	20.6	221
Total (N)	20.7	3785	35.3	3785	17.3	3743

**The analytical sample size for all models was 3785. In the subjective poverty model, 41 cases were dropped due to missing values in the subjective poverty variable.*

By household size, the elderly who live alone have the highest share of poor subjective health, and it decreases with the increasing household size. The poor subjective health prevalence does not have a clear pattern by the number of children. By the region of living, there is 4-point difference between the categories or urban and rural. In the case of income poverty, obviously poor subjective health is highest for the elderly who have income poverty (65.1%) than the non-poor elderly (39.1%).

Table 4.1.2. presents income poverty, wealth poverty, and subjective poverty prevalence among the population by background variables. 20.7% of the total sample

have income poverty. In general, income poverty is more prevalent among the migrants. In particular, income poverty level is the highest among non-Western migrants (45.5%), it is lowest among the natives (19.1%). It seems migrant origin can be explanatory factor about income poverty prevalence. Secondly, when we look at the income poverty levels for migrants on the basis of length of residence, the share is higher among the migrants living for 0-29 years (43.0%) compared to migrants with longer duration of residence (26.6%). For migrants, length of residence in the country can be explanatory for income poverty level. In the wealth model, 35% of the total sample have income poverty. In the wealth model, wealth poverty level is highest among the non-Western migrants (45.0%), and the lowest among the Western migrants 25.2%). Regarding the length of residence, share of wealth poverty is 38.3% among the migrants residing in the country for 0-29 years, and 27.5% among the migrants residing in the country for 30+ years. In the subjective poverty model, 17.3% of the total sample have subjective poverty. When we look at the migration status, subjective poverty level is higher among the migrants than natives. Particularly it is highest among the non-Western migrants (42.3%), and the lowest among the natives (16.0%). On the basis of length of residence, there is large gap between the two groups. Subjective poverty level is 16.3% among the migrants residing in the country for 30+ years, and 45.6% among the migrants residing in the country for 0-29 years. In this case, length of residence appears to be correlated with subjective poverty level.

Considering all poverty models, both being migrant and length of stay in the country can be explanatory factor for poverty prevalence. Especially being non-Western migrant can be associated with poverty. In the case of length of residence, as the time spent in the country increases, the poverty levels are declining. It is obvious that, through the time, migrants can accumulate money and wealth. Consequently, their perception of poverty also changes, subjective poverty level decreases through time, too.

When we look at the level of income poverty in the income model by age groups, share of income poverty is highest among the 80+ age group (28.4%), in general, it cannot be said that level increases with the age, for other ages the level is

around 20%. Among females, income poverty level is slightly higher than males. Interestingly, on the basis of marital status, income poverty level is clearly lower for married (12.5%), and it is highest for the separated (36.1%). For single (33.6%) and widowed (30.1%) the level is over 30%. Being married is associated with lower share of income poverty. In a marriage, partner may share the expenditures, or may be good at planning family budget compared to other groups. Regarding the level of education, there are clear differences between groups, the level of income poverty gradually decreases as the level of education increases. And the gap between higher level and primary level is more than four-fold. Level of education can be predictor of income poverty. As it can be expected, income poverty level is obviously lowest among the active (9.7%), highest among the unemployed or inactive (46.4%). Income poverty is also higher among the retired (19.9%) compared to active. Employment status appears to be a good predictor of income poverty. The level of income poverty is the highest among the older people living alone (33.8%), and the lowest among the older people living in two-person households (11.7%), the gap is almost two-fold. In three-person households, poverty level increases again when compared to two-person households (23.0%). In one-person households, the person cannot share expenditures with another household member, but in two-person households this kind of sharing can be possible. Household size can be explanatory factor for income poverty. Regarding number of children, there is no clear pattern with the poverty level. The level of income poverty does not visibly change according to number of children. Also, income poverty level differs slightly for older people living urban area or rural areas. Subjective health can be an explanatory factor for the level of income poverty, the poverty level among the people having poor subjective health is 30.2%, while it is 13% among the people having good health. A similar pattern is observed for the depression. Among the depressed people, the poverty level is 32%, whereas among the non-depressed people it is 17%. Subjective health and depression can be predictors of income poverty level.

Interestingly, wealth poverty level was highest among the 50-59 age group, lowest among the 70-79 age group. In general, it cannot be said that wealth poverty level increases or decreases with the age. In addition, there is a slight difference between males and females in terms of wealth poverty levels (3 percentage points) in

favour of males. On the basis of marital status, wealth poverty is lower for the separated and single, lower for the married and widowed. It seems that, intra-family wealth transfers or financial transfers can be provided by marriage. As a result, wealth poverty can be lower among the married and widowed compared to other groups. When we look at the wealth poverty levels on the basis of level of education, there can be seen almost no clear pattern by education groups and poverty. In the case of employment status, wealth poverty level is highest among the active (41%) and unemployed (42.4), while it is lower among retired (30.2%) and "other" (29.8%). But the gap is not too much. Regarding household size, number of children, region of living, subjective health, and depression, wealth-poverty level does not differentiate remarkably among the categories.

In the subjective poverty model, interestingly, poverty level is highest for the 50-59 age group (21.1%), and lower and almost same for the other groups, the least being the 80+ age group (12.6%). Subjective poverty decreases with the increasing age. However, poverty is expected to increase in the further ages. Reasons can be related to institutional possibilities such as old age pensions, or social relations such as intra-family solidarity i.e. help from children. Based on sex, there is no difference between males and females in terms of subjective poverty. Regarding marital status, as in the income and wealth models, subjective poverty is also highest among the separated (34.8%), the lowest among the married (12.5%). Hence, marriage seems like a factor soothing the level of poverty. Again, as in the income model, prevalence of subjective poverty decreases with the increasing level of education. Similar to the income model, in the subjective poverty model, level of poverty is lowest among the active (11.1%), highest among the unemployed (42.1%). As a result, it can be said that to work or having a job means less poverty. As it was in the income model, persons living alone have the highest level of subjective poverty (25.9%), level being lowest for the persons living in a two-people household (12.1%). The poverty level is highest for the people having no children. In fact, there are not large differences among the poverty levels on the basis of number of children. Subjective poverty level does not change between people living in urban area or rural area. Poor subjective health and depression are related to the lower levels of subjective poverty, as they were in the

income model. The level of subjective poverty is higher among the people having poor subjective health (26.2%) than people having good subjective health (10.3%), gap between them nearly is one-fold. Lastly, the prevalence of subjective poverty for people having depression is 29.4%, and that is 13.2% for the people who are not depressed.

4.2. Results of the Logistic Regression Analysis

To explore the determinants of poor health and poverty, six models of binary logistics regression were employed; diabetes, depression, subjective health, income poverty, wealth poverty, and subjective poverty.

To check whether the independent variables in the logistic regression models are correlated to each other, Variance Inflation Factor (VIF) values were controlled for each model and no collinearity were observed between the independent variables.

For each model, odds ratios, standard errors, t values, p values, 95% confidence intervals and significance values are given for each estimated coefficient. When interpreting the logistic regression results, the odds ratios, p values and significance values are used.

4.2.1. Results of the Logistic Regression Analysis for Health Models

Results of the logistic regression analysis for the likelihood of diabetes, depression and poor subjective health are presented in the following tables. Each model examines the association between the socio-demographic variables and the dependent variables.

Table 4.2.1.1. shows how older migrants and non-migrants differentiate from each other on the basis of odds for diabetes. Western migrants are 1.6 times more likely ($exp(b)=1.59$, $p<0.05$) to have diabetes in comparison to the natives, and non-Western migrants are 1.9 times ($exp(b)=1.87$, $p<0.1$) more likely to have diabetes in comparison to the natives. Both migrant groups have higher odds than natives, which means they are less likely to have good health than natives. As the analysis indicates significance,

migrant origin is significantly associated with the odds of having bad health. Regarding the length of residence, the older migrants who have resided in Germany for 0-29 years are 50 percent less likely to have diabetes (exp(b)=0.48, p<0.05) than the older migrants who have resided in Germany for 30+ years. 0-29 years length of residence is found to be significantly associated with having good health. As a result, it can be said that, through the time, the health of migrants is getting worse.

Table 4.2.1.1. Results of Logistic Regression Analysis for Diabetes Model

	Odds Ratio (exp(b))	**St. Err.**	**t-value**	**p-value**	**[95% Conf Interval]**	**Sig**
Age						
50-59 (ref)						
60-69	0.77	0.166	-1.2	0.23	0.506-1.178	
70-79	1.46	0.376	1.48	0.138	0.884-2.423	
80+	1.42	0.412	1.21	0.226	0.805-2.51	
Sex						
Male (ref)						
Female	0.63	0.077	-3.77	0	0.497-0.802	***
Migrant status						
Native (ref)						
Western migrant	1.59	0.316	2.34	0.019	1.078-2.35	**
Non-Western migrant	1.87	0.695	1.67	0.095	0.898-3.874	*
Length of residence						
30+ years (ref)						
0-29 years	0.48	0.176	-2	0.046	0.232-0.986	**
Marital status						
Married (ref)						
Separated	0.97	0.228	-0.14	0.887	0.609-1.536	
Single	1.18	0.316	0.6	0.547	0.694-1.99	
Widowed	1.19	0.241	0.85	0.396	0.798-1.768	
Level of education						
Higher (ref)						
Primary	1.4	0.295	1.58	0.114	0.923-2.112	
Secondary	1.17	0.164	1.14	0.253	0.892-1.543	
Other	1.87	0.589	1.98	0.048	1.007-3.468	**
Employment status						
Retired (ref)						
Active	0.53	0.122	-2.77	0.006	0.334-0.829	***
Unemployed or inactive	0.87	0.207	-0.59	0.556	0.544-1.387	
Other	0.9	0.514	-0.18	0.855	0.294-2.76	
Ever smoked						
No (ref)						
Yes	1.39	0.164	2.81	0.005	1.105-1.754	

Table 4.2.1.1 (continued) Results of Logistic Regression Analysis for Diabetes Model

BMI						
Normal (ref)						
Underweight	0.49	0.509	-0.69	0.491	0.063-3.776	
Overweight	2.47	0.388	5.74	0	1.811-3.356	***
Obese	6.2	1.007	11.24	0	4.513-8.529	***
Vigorous activities						
More than once a week (ref)						
Once a week	1.12	0.193	0.64	0.522	0.796-1.568	
One to three times a week	1.33	0.279	1.34	0.18	0.878-2.001	
Hardly ever, or never	1.76	0.251	3.95	0	1.327-2.323	***
Household size (continuous)	1.06	0.145	0.43	0.665	0.812-1.387	
Region of living						
Urban (ref)						
Rural	0.91	0.109	-0.76	0.447	0.723-1.154	
Income poverty						
Non-poor (ref)						
Poor	1.34	0.2	1.92	0.054	0.994-1.792	*
Constant	0.04	0.016	-7.7	0	0.016-0.087	***
Mean dependent var.		0.146	SD dependent var.		0.353	
Number of obs.		3776	F-test		10.289	
*** p<.01, ** p<.05, * p<.1						

When we look at which factors contribute to bad health or good health, none of the age groups were found statistically associated with the odds of having diabetes. Besides, odds ratios indicates that the probability of having diabetes increases with age. While the odds for the older people in the 60-69 age group is lower than the 50-59 age group, they are less likely (exp(b)=0.77) to have diabetes than 50-59 age group. The older people in the 70-79 age group are 1.5 times (exp(b)=1.46) more likely to have diabetes, and the older people in the age group 80+ are 1.4 times more likely (exp(b)=1.42) to have diabetes compared to the older people aged 50-59. For the oldest old ages, age can be an explanatory factor of likelihood of having diabetes. Regarding sex, being female is significant in terms of lower likelihood (exp(b)=0.63, p<0.01) of having diabetes in comparison to the older males. No significance was found for the marital status categories with regard to the likelihood of having diabetes. The reference category is being married, odds ratios show that the odds of having diabetes of the separated (exp(b)=0.97) is almost the same with the married. The singles are 1.2 times (exp(b)=1.18) and the widowed are 1.2 times more likely (exp(b)=1.19) to have

diabetes when compared to married elderly. Concerning the level of education, odds are not gradually increasing or decreasing with regard to level of education, but rest of the levels have higher odds of having diabetes. The older people having “other” level of education are significantly 1.9 times more likely (exp(b)=1.87, $p<0.05$) to have diabetes compared to the elderly having higher level of education. Also, the older people who obtained primary level of education are 1.4 times more likely (exp(b)=1.4) to have diabetes compared to the older people who have higher level of education, although no significance was shown by the analysis.

Regarding the relationship between employment status and diabetes, the employed have smaller odds than the retired, employed are 0.5 times (exp(b)=0.53, $p<0.01$) less likely to have diabetes compared to retired. It may be summed up that being employed is associated with the lower probability of having diabetes in line with the descriptive findings (see Table 4.1.1.).

Considering smoking, the older people who have ever smoked have higher odds (exp(b)=1.39, $p<0.01$) of having diabetes compared to never-smokers, in parallel with the higher prevalence of diabetes for ever-smoked persons.

For the BMI categories, overweight and obese categories have strong association with higher odds of having diabetes. The overweighted are 2.5 times (exp(b)=2.47, $p<0.01$) more likely to have diabetes, while the obese are 6 times (exp(b)=6.20, $p<0.01$) more likely to have diabetes compared to the normal-weight. The underweighted are 0.5 times (exp(b)=0.49) less likely to have diabetes than normal-weight. The odds of diabetes increase with the weight, just as the level of diabetes increases with weight in descriptive analysis.

In the case of frequency of doing vigorous activities, doing vigorous activities hardly ever or never are highly associated with having diabetes, this group of elderly are 1.8 (exp(b)=1.76, $p<0.01$) times more likely to have diabetes compared to the older people doing vigorous activities more than once a week. In addition, while the frequency of doing vigorous activities is decreasing, the odds are growing, meaning that the probability of having diabetes is increasing at the same time.

The analysis indicates no significance for household and region with the likelihood of diabetes. In the case of income poverty, analysis indicates that the older people who have income poverty are 1.4 times more likely (exp(b)=1.34, p<0.1) to have diabetes than non-poor elderly.

Table 4.2.1.2. Results of Logistic Regression Analysis for Depression Model

	Odds Ratio (exp(b))	St. Err.	t-value	p-value	[95% Conf Interval]	Sig
Age						
50-59 (ref)						
60-69	0.65	0.104	-2.68	0.007	0.477-0.892	***
70-79	0.62	0.119	-2.51	0.012	0.424-0.9	**
80+	0.78	0.175	-1.1	0.272	0.505-1.212	
Sex						
Male (ref)						
Female	1.67	0.182	4.7	0	1.348-2.067	***
Migrant status						
Native (ref)						
Western migrant	0.73	0.144	-1.59	0.113	0.497-1.077	
Non-Western migrant	0.95	0.332	-0.16	0.877	0.477-1.882	
Length of residence						
30+ years (ref)						
0-29 years	1.43	0.479	1.06	0.289	0.739-2.756	
Marital status						
Married (ref)						
Separated	1.22	0.222	1.11	0.265	0.858-1.747	
Single	0.56	0.148	-2.18	0.029	0.336-0.943	**
Widowed	1.44	0.247	2.12	0.034	1.027-2.013	**
Level of education						
Higher (ref)						
Primary	2.16	0.359	4.65	0	1.563-2.996	***
Secondary	1.42	0.171	2.92	0.004	1.123-1.799	***
Other	1.45	0.369	1.46	0.145	0.88-2.386	
Employment status						
Retired (ref)						
Active	0.63	0.108	-2.67	0.008	0.452-0.885	***
Unemployed or inactive	1.40	0.25	1.9	0.057	0.989-1.99	*
Other	1.50	0.669	0.91	0.361	0.627-3.598	
Ever smoked						
No (ref)						
Yes	1.04	0.106	0.42	0.676	0.855-1.274	
BMI						
Normal (ref)						
Underweight	1.45	0.702	0.76	0.447	0.559-3.746	
Overweight	1.02	0.118	0.17	0.865	0.813-1.279	
Obese	1.18	0.151	1.28	0.2	0.916-1.516	

Table 4.2.1.2. (continued) Results of Logistic Regression Analysis for Depression Model

Vigorous activities						
More than once a week (ref)						
Once a week	1.1	0.164	0.65	0.517	0.822-1.476	
One to three times a week	1.05	0.219	0.22	0.824	0.695-1.579	
Hardly ever, or never	1.36	0.16	2.63	0.009	1.081-1.713	***
Number of children						
1 (ref)						
0	0.95	0.186	-0.26	0.793	0.648-1.393	
2	0.87	0.114	-1.05	0.292	0.673-1.127	
3+	0.93	0.128	-0.5	0.616	0.714-1.221	
Household size (continuous)	1.05	0.119	0.43	0.669	0.84-1.311	
Region of living						
Urban (ref)						
Rural	1.02	0.104	0.21	0.832	0.837-1.248	
Income poverty						
Non-poor (ref)						
Poor	1.57	0.203	3.47	0.001	1.216-2.019	***
Constant	0.17	0.057	-5.2	0	0.084-0.326	***
Mean dependent var.		0.225	SD dependent var		0.418	
Number of obs.		3553	F-test		5.798	
*** p<.01, ** p<.05, * p<.1						

Table 4.2.1.2. presents how distinct older migrants and non-migrants are from each other in terms of depression as well as other determinants of depression. The analysis showed significance for neither migration status nor the length of residence, regarding the odds of depression. Nonetheless, Western migrants are 30 percent less likely (exp(b)=0.73) to have depression than the natives, and non-Western migrants have similar odds (exp(b)=0.95) of having depression with the natives. Considering the length of residence, migrants who have resided in Germany for 0-29 years are 1.4 times more likely (exp(b)=1.43) to have depression compared to the migrants who have resided in Germany for 30+ years.

When compared to the reference group, further age groups have lower odds values. Age groups 60-69 and 70-79 were found statistically significant with the likelihood of having depression. Older people in the 60-69 age group are 35 percent less likely (exp(b)=0.65, p<0.01) to have depression, and those in the 70-79 age group

are 38 percent less likely (exp(b)=0.62, p<0.05) to have depression compared to the reference group. Association between the odds of having depression and being female was indicated. Older women are 1.7 times more likely (exp(b)=1.67, p<0.01) to have depression compared to the older males.

For marital status, significance was shown for the single and the widowed. The single elderly are less likely (exp(b)=0.56, p<0.05) to have depression, and the widowed are 1.4 times more likely (exp(b)=1.44, p<0.05) to have depression compared to the married. Also, in the descriptive statistics, these two groups were visible in terms of depression prevalence, where it was lowest among the single and highest among the widowed elderly.

Considering the effect of educational level on the likelihood of having depression, depression risk decreases with the increasing level of education. Those who obtained primary level of education are 2 times more likely (exp(b)=2.16, p<0.01) to be depressed in comparison to the elderly who obtained higher level of education. The older people who obtained secondary level of education are 1.4 times (exp(b)=1.42, p<0.01) more likely to have depression than the elderly who obtained higher level of education. The elderly in the "other" education category are more likely (exp(b)=1.45) to have depression than their counterparts who obtained higher level of education. This finding is in line with descriptive results as well, where depression prevalence was decreasing with the higher level of education.

Again, in parallel with the descriptive statistics, the employed -having smaller odds- are less likely (exp(b)=0.63, p<0.01) to have depression compared to the retired. The unemployed elderly, having higher odds, are 1.4 times more likely (exp(b)=1.4, p<0.1) to have depression compared to their retired counterparts. It is obvious that being unemployed or inactive is highly associated with depression risk, similar to the diabetes model.

Neither smoking nor BMI are found to be significantly associated with having depression. Regarding the frequency of doing vigorous activities, similarly to the

diabetes model, the association between doing vigorous activities hardly ever or never and having depression was found to be strongly significant.

No significant association is shown for the number of children, household size, and region of living. Also, the odds are very close to the references implying that they are not the factors that can explain the depression risk.

When the statistical relationship is examined between income poverty and likelihood of depression, the elderly who suffer from income poverty are 1.6 times more likely (exp(b)=1.57, $p<0.01$) to have depression than non-poor elderly. Material conditions appear to be one of the factors increasing the risk of depression.

Table 4.2.1.3. Results of Logistic Regression Analysis for Subjective Health Model

	Odds Ratio (exp(b))	**St. Err.**	**t-value**	**p-value**	**[95% Conf Interval]**	**Sig**
Age						
50-59 (ref)						
60-69	0.83	0.113	-1.37	0.171	0.634-1.084	
70-79	1.18	0.191	0.99	0.323	0.853-1.617	
80+	1.72	0.339	2.74	0.006	1.165-2.528	***
Sex						
Male (ref)						
Female	0.94	0.085	-0.73	0.464	0.782-1.119	
Migrant status						
Native (ref)						
Western migrant	1.06	0.174	0.38	0.704	0.772-1.467	
Non-Western migrant	0.98	0.283	-0.07	0.948	0.557-1.727	
Length of residence						
30+ years (ref)						
0-29 years	1.24	0.34	0.79	0.428	0.727-2.125	
Marital status						
Married (ref)						
Separated	1.17	0.189	0.96	0.34	0.85-1.604	
Single	0.88	0.18	-0.62	0.533	0.59-1.313	
Widowed	1.19	0.179	1.15	0.251	0.885-1.598	
Level of education						
Higher (ref)						
Primary	1.74	0.26	3.69	0	1.295-2.328	
Secondary	1.35	0.131	3.05	0.002	1.112-1.63	***
Other	1.17	0.257	0.72	0.47	0.762-1.802	***

Table 4.2.1.3. (continued) Results of Logistic Regression Analysis for Subjective Health Model

Employment status						
Retired (ref)						
Active	0.53	0.074	-4.53	0	0.407-0.701	***
Unemployed or inactive	1.56	0.257	2.69	0.007	1.128-2.155	***
Other	1.28	0.553	0.58	0.562	0.552-2.985	
Ever smoked						
No (ref)						
Yes	1.3	0.114	3.02	0.003	1.097-1.547	***
BMI						
Normal (ref)						
Underweight	2.1	1.049	1.48	0.138	0.788-5.59	
Overweight	1.12	0.108	1.16	0.245	0.926-1.354	
Obese	2.1	0.241	6.44	0	1.674-2.627	***
Vigorous activities						
More than once a week (ref)						
Once a week	0.99	0.122	-0.05	0.957	0.78-1.265	
One to three times a week	1.25	0.205	1.37	0.17	0.908-1.727	
Hardly ever, or never	2.01	0.203	6.95	0	1.653-2.455	***
Number of children						
1 (ref)						
0	0.93	0.152	-0.47	0.641	0.671-1.278	
2	0.96	0.109	-0.34	0.733	0.771-1.2	
3+	0.92	0.112	-0.66	0.512	0.728-1.171	
Household size (continuous)	0.97	0.096	-0.28	0.783	0.802-1.181	
Region of living						
Urban (ref)						
Rural	1.04	0.09	0.39	0.696	0.872-1.227	
Income poverty						
Non-poor (ref)						
Poor	1.82	0.222	4.93	0	1.435-2.315	***
Constant	0.35	0.105	-3.5	0	0.19-0.626	***
Mean dependent var.		0.432	SD dependent var.		0.495	
Number of obs.		3767	F-test		10.526	
*** p<.01, ** p<.05, * p<.1						

Before coming to factors affecting the subjective poverty among the older people, the relative position of natives and migrants in terms of subjective health are analyzed. In the case of the relationship between migration status and the odds of

having poor subjective health, no statistical significance was found. Western migrants (exp(b)=1.06) and non-Western migrants (exp(b)=0.98) have similar odds with the natives. Therefore, they are not diverged from the natives in terms of having poor subjective health. Also, for the length of residence, no significance was found. In consistent with the depression model, migrants who have resided in Germany for 0-29 years are 1.2 times more likely (exp(b)=1.24) to have poor subjective health compared to the migrants who have resided in Germany for 30+ years.

Association between age and poor subjective health was found only for 80+ age group. Older people in the age group of 80+ are 1.7 times more likely (exp(b)=1.72, $p<0.01$) to have poor subjective health in comparison to the older people aged 50-59. At the same time no significance was found for other age groups, in fact, they have similar odds with the reference group. Older women almost have the same probability (exp(b)=0.94) of having poor subjective health as the older men. In the case of the association of marital status with the odds of having poor subjective health, no statistical significance was found. But, the rank of the odds among the categories is the same with their poor subjective health level ranks in the descriptive results. The single elderly is less likely (exp(b)=0.88) to have poor subjective health while the separated and the widowed are more likely ((exp(b)=1.17, exp(b)=1.19) to have poor subjective health compared to the married. Regarding the impact of level of education on the poor subjective health, statistical significance was shown for primary and secondary levels of education. It is seen that, as the level of education increases, the likelihood of poor subjective health decreases. Those who obtained primary level of education are 1.7 times (exp(b)=1.74, $p<0.01$) more likely to state poor subjective health, and the elderly who obtained secondary level of education are 1.4 times (exp(b)=1.35, $p<0.01$) more likely to have poor subjective health in comparison to those who obtained higher level of education. In the descriptive results primary and secondary level were the two levels that have the highest poor subjective health levels as well.

When the effect of employment status on the poor subjective health is examined, the employed are 47 percent less likely (exp(b)=0.53, $p<0.01$) to have poor

subjective health than the retired. The unemployed are 1.6 times (exp(b)=1.56, p<0.01) more likely to have poor subjective health in comparison to the retired elderly. It is seen that the size of the coefficient is severe, having a job can clearly explain the relationship between employment status and poor subjective health. The analysis also found an association between smoking and poor subjective health. Older people who have smoked are more likely (exp(b)=1.3, p<0.01) to have poor subjective health than those who have never smoked.

Regarding BMI, statistical association is shown only for the obese category where the obese category are 2 times (exp(b)=2.1, p<0.01) times more likely to have poor subjective health in comparison to the normal-weight elderly. Considering the frequency of doing vigorous activities, those doing vigorous activities hardly ever or never are 2 times (exp(b)=2.01, p<0.01) more likely to state poor subjective health in comparison to those doing vigorous activities more than once a week.

Significance was not found for the number of children, household size, and region of residence in terms of poor subjective health. For each variable, the odds also do not differentiate from the reference categories. Lastly, the findings indicate association between income poverty and having poor subjective health. Those who have income poverty are 1.8 times more likely (exp(b)=1.82, p<0.01) to have poor subjective health than the non-poor elderly. Income poverty appears to be a predictor of poor subjective health.

4.2.2. Results of the Logistic Regression Analysis for Poverty Models

The results of the logistic regression analysis for the likelihood of income poverty, wealth poverty and subjective poverty are presented in the following three tables. Each model examines the association between our variables of interest and other background variables, and the dependent variables which are income poverty, wealth poverty and subjective poverty.

Table 4.2.2.1. Results of Logistic Regression Analysis for Income Model

	Odds Ratio (exp(b))	St. Err.	t-value	p-value	[95% Conf Interval]	Sig
Age						
50-59 (ref)						
60-69	0.77	0.142	-1.44	0.151	0.535-1.102	
70-79	0.87	0.193	-0.61	0.54	0.566-1.347	
80+	0.69	0.177	-1.46	0.144	0.413-1.138	
Sex						
Male (ref)						
Female	0.91	0.109	-0.78	0.434	0.72-1.151	
Migrant status						
Native (ref)						
Western migrant	1.31	0.258	1.38	0.168	0.892-1.93	
Non-Western migrant	2.57	0.876	2.76	0.006	1.314-5.013	***
Length of residence						
30+ years (ref)						
0-29 years	2.67	0.896	2.92	0.004	1.38-5.153	***
Marital status						
Married (ref)						
Separated	5.2	0.957	8.96	0	3.624-7.457	***
Single	6.61	1.626	7.67	0	4.0771-0.703	***
Widowed	2.64	0.499	5.12	0	1.819-3.821	***
Level of education						
Higher (ref)						
Primary	4.11	0.837	6.93	0	2.754-6.123	***
Secondary	2.72	0.414	6.58	0	2.02-3.669	***
Other	1.74	0.547	1.76	0.078	0.94-3.225	*
Employment status						
Retired (ref)						
Active	0.4	0.085	-4.33	0	0.268-0.609	***
Unemployed or inactive	2.32	0.429	4.56	0	1.617-3.336	***
Other	1.53	0.713	0.91	0.36	0.615-3.813	
Household size (continuous)	1.32	0.169	2.19	0.029	1.03-1.699	**
Number of children						
1 (ref)						
0	0.87	0.188	-0.67	0.504	0.565-1.324	
2	1.22	0.181	1.31	0.191	0.907-1.627	
3+	1.43	0.225	2.25	0.025	1.046-1.941	**
Region of living						
Urban (ref)						
Rural	1.12	0.133	0.93	0.354	0.884-1.411	
Subjective health						
Good (ref)						
Poor	1.81	0.22	4.89	0	1.427-2.296	***

Table 4.2.2.1. (continued) Results of Logistic Regression Analysis for Income Model

Depression						
Non-depressed (ref)						
Depressed	1.35	0.179	2.24	0.025	1.037-1.749	**
Constant	0.02	0.009	-9.64	0	0.01-0.048	***
Mean dependent var.		0.166	SD dependent var		0.372	
Number of obs.		3737	F-test		13.076	
*** p<.01, ** p<.05, * p<.1						

At first, the analysis indicated statistical significance for only non-Western migrants (see Table 4.2.2.1.). In general, Western-migrants are more likely (exp(b)=1.31) to have income poverty compared to natives. Non-Western migrants are 2.6 times more likely (exp(b)=2.57, p<0.01) to have income poverty in comparison to the natives. In addition, migrants residing in Germany for 0-29 years are 2.7 times more likely (exp(b)=2.67, p<0.01) to have income poverty in comparison to the migrants residing in the country 30+ years. It can be summed up that, first, being a migrant is significant for the risk of having income poverty, second, migrants at the early years have a greater risk of income poverty, but this risk decreases through the time.

It should be noted that, no statistical significance was found for any of the age groups. Also, by age groups there is no similarity between the order of odds ratios and levels of income poverty in the descriptive results. As a result, age cannot be used as a predictor for the risk of income poverty. The older women have almost the same likelihood (exp(b)=0.91) of having income poverty with the older men.

As the analysis found significance for all categories of marital status, it appears to be an influential variable explaining the risk of income poverty better. When the relationship between marital status and income poverty is examined, the separated appear to be 5.2 times more likely (exp(b)=5.20, p<0.01) to have income poverty compared to the married, and the single are 6.6 times more likely (exp(b)=6.61, p<0.01) to have income poverty compared to the married, and lastly, widowed elderly are 2.6 times more likely (exp(b)=2.64, p<0.01) to have income poverty in comparison to married elderly.

When the relationship between level of education and income poverty is examined, the analysis found significance for all levels. So, education can better explain the risk of income poverty. Those who obtained primary level of education are 4 times more likely (exp(b)=4.11, $p<0.01$) to have income poverty, those who obtained secondary level of education are 2.7 times more likely (exp(b)=2.72, $p<0.01$) to have income poverty, and those who obtained other level of education category are 1.7 times more likely (exp(b)=1.74, $p<0.1$) to have income poverty in comparison to the elderly who obtained higher education. As the level of education increases, the likelihood of income poverty decreases gradually.

Regarding the relationship between the employment status and income poverty, the unemployed are 0.4 times less likely (exp(b)=0.40, $p<0.01$) to have income poverty compared to the retired. The unemployed are more likely (exp(b)=2.32, $p<0.01$) to have income poverty in comparison to the employed. So, logically, being employed have a negative effect on income poverty, and being unemployed have positive relationship with the income poverty.

Concerning the relationship between the number of children and the income poverty, it seems that as the number of children increases, the odds of having income poverty increases too, while significance was shown only for "3+ children". Those who have no child are less likely (exp(b)=0.87) to have income poverty, while those who have two children are more likely (exp(b)=1.22) to have income poverty. Elderly who have three and more children are more likely (exp(b)=1.43, $p<0.05$) to have income poverty in comparison to those who have one child. Household size was significant according to the results ($p<0.05$). As the size of a household increases by one, the odds of having income poverty increases by 1.32. Regarding the relationship between region of living and income poverty, no significance was found.

Lastly, subjective health and depression were found to be significantly associated with income poverty. Those who have poor subjective health are 1.8 times more likely (exp(b)=1.81, $p<0.01$) to have income poverty in comparison to those who have good subjective health. Those who have depression are 1.4 times more likely (exp(b)=1.35, $p<0.05$) to have income poverty compared to the non-depressed.

Table 4.2.2.2. Results of Logistic Regression Analysis for Wealth Model

	Odds Ratio (exp(b))	St. Err.	t-value	p-value	[95% Conf Interval]	Sig
Age						
50-59 (ref)						
60-69	0.9	0.112	-0.86	0.388	0.703-1.146	
70-79	0.83	0.131	-1.18	0.237	0.608-1.131	
80+	1.08	0.196	0.39	0.694	0.751-1.537	
Sex						
Male (ref)						
Female	0.9	0.077	-1.25	0.212	0.76-1.063	
Migrant status						
Native (ref)						
Western migrant	0.63	0.108	-2.7	0.007	0.448-0.88	***
Non-Western migrant	1.35	0.426	0.94	0.347	0.724-2.505	
Length of residence						
30+ years (ref)						
0-29 years	1.06	0.325	0.19	0.852	0.581-1.931	
Marital status						
Married (ref)						
Separated	1.24	0.186	1.44	0.15	0.925-1.663	
Single	1.32	0.27	1.33	0.182	0.879-1.966	
Widowed	1.13	0.164	0.83	0.407	0.848-1.5	
Level of education						
Higher (ref)						
Primary	1.07	0.156	0.49	0.627	0.807-1.428	
Secondary	0.97	0.091	-0.33	0.738	0.805-1.166	
Other	1.03	0.214	0.14	0.886	0.686-1.547	
Employment status						
Retired (ref)						
Active	1.47	0.193	2.96	0.003	1.14-1.907	***
Unemployed or inactive	1.55	0.244	2.81	0.005	1.142-2.113	***
Other	0.96	0.418	-0.1	0.919	0.406-2.253	
Household size (continuous)	1.00	0.095	0.04	0.971	0.834-1.208	
Number of children						
1 (ref)						
0	0.91	0.15	-0.54	0.586	0.663-1.262	
2	1.01	0.109	0.05	0.961	0.813-1.244	
3+	1.1	0.127	0.83	0.406	0.877-1.382	
Region of living						
Urban (ref)						
Rural	1.03	0.088	0.33	0.74	0.87-1.217	
Subjective health						
Good (ref)						
Poor	1.02	0.09	0.19	0.847	0.855-1.21	

Table 4.2.2.2. (continued) Results of Logistic Regression Analysis for Wealth Model

Depression						
Non-depressed (ref)						
Depressed	0.81	0.085	-1.98	0.048	0.663-0.998	**
Constant	0.47	0.133	-2.67	0.008	0.272-0.82	***
Mean dependent var.		0.333	SD dependent var.		0.471	
Number of obs.		3779	F-test		2.929	
*** p<.01, ** p<.05, * p<.1						

As shown in Table 4.2.2.2., wealth model is the one among the models which has the lowest number of statistically significant coefficients. At first, Western migrants have lower odds of having wealth poverty than natives (exp(b)=0.63, p<0.01). In contrast, non-Western migrants are 1.4 times more likely (exp(b) =1.35) to have wealth poverty compared to natives. Secondly, migrants who have resided in Germany for 0-29 years have almost the same (exp(b)=1.06) risk of having wealth poverty with the elderly who have resided in Germany for more years.

In parallel with the wealth poverty prevalence, those in the 70-79 age group have lower odds of having wealth poverty compared to the reference group. Those in the 60-69 and 80+ age groups have similar odds of having wealth poverty with the reference group. Older females have similar (exp(b)=0.9) probability of having wealth poverty with the older males.

Concerning the effect of marital status on wealth poverty, the separated are more likely (exp(b)=1.24) to have wealth poverty compared to the married elderly. Also, the singles are more likely (exp(b)=1.32) to have wealth poverty compared to the married. Lastly, the widowed have higher odds (exp(b)=1.13) of having wealth poverty compared to married elderly. Considering the association between level of education and wealth poverty, we did not find any significant one. It can also be understood from the odds ratios that are around 1.00.

Regarding the relationship between employment status and wealth poverty, the employed are 1.5 times more likely (exp(b)=1.47, p<0.01) to have wealth poverty in comparison to the retired. The unemployed are 1.6 times more likely (exp(b)=1.55, p<0.01) to have wealth poverty in comparison to the retired elderly. The employed and

unemployed were the two groups with the highest prevalence of wealth poverty in descriptive findings as well. For number of children, household size, region of living and subjective health, the significance was not found. Lastly, those who are depressed are less likely (exp(b)=0.81, $p<0.05$) to have wealth poverty than the non-depressed elderly.

Table 4.2.2.3. Results of Logistic Regression Analysis for Subjective Poverty Model

	Odds Ratio (exp(b)	**St. Err.**	**t-value**	**p-value**	**[95% Conf Interval]**	**Sig**
Age						
50-59 (ref)		.	.	.		
60-69	0.60	0.11	-2.78	0.005	0.419-0.86	***
70-79	0.47	0.105	-3.4	0.001	0.3-0.723	***
80+	0.26	0.069	-5.04	0	0.153-0.438	***
Sex						
Male (ref)						
Female	0.80	0.1	-1.8	0.071	0.625-1.02	*
Migrant status						
Native (ref)						
Western migrant	0.99	0.228	-0.07	0.947	0.625-1.551	
Non-Western migrant	1.19	0.399	0.52	0.604	0.617-2.297	
Length of residence						
30+ years (ref)						
0-29 years	5.52	1.823	5.17	0	2.8891-0.548	***
Marital status						
Married (ref)						
Separated	2.94	0.572	5.54	0	2.008-4.305	***
Single	2.17	0.59	2.85	0.004	1.275-3.698	***
Widowed	0.99	0.225	-0.06	0.953	0.631-1.542	
Level of education						
Higher (ref)						
Primary	2.88	0.577	5.26	0	1.94-4.263	***
Secondary	1.60	0.249	3.03	0.002	1.181-2.171	***
Other	1.15	0.388	0.42	0.678	0.593-2.23	
Employment status						
Retired (ref)						
Active	0.44	0.09	-4.04	0	0.293-0.653	***
Unemployed or inactive	1.82	0.351	3.11	0.002	1.248-2.658	***
Other	1.35	0.818	0.49	0.626	0.408-4.432	
Household size (continuous)	0.78	0.11	-1.77	0.077	0.591-1.028	*
Number of children						
1 (ref)						
0	0.89	0.208	-0.49	0.622	0.565-1.408	
2	1.04	0.168	0.25	0.803	0.759-1.429	
3+	1.20	0.206	1.04	0.296	0.854-1.676	
Region of living						
Urban (ref)						
Rural	1.18	0.151	1.28	0.201	0.916-1.514	

Table 4.2.2.3. (continued) Results of Logistic Regression Analysis for Subjective Poverty Model

Subjective health						
Good (ref)						
Poor	2.2	0.279	6.23	0	1.716-2.82	***
Depression						
Non-depressed (ref)						
Depressed	1.78	0.242	4.24	0	1.363-2.323	***
Constant	0.15	0.059	-4.77	0	0.066-0.322	***
Mean dependent var.		0.146	SD dependent var		0.353	
Number of obs.		3737	F-test		11.159	
*** p<.01, ** p<.05, * p<.1						

Table 4.2.2.3. presents results for subjective poverty model. There appears to be no significant association between migration status and subjective poverty. Western migrants have similar odds of having subjective poverty with the natives, while non-Western migrants are 1.2 times more likely (exp(b)=1.19) to have subjective poverty compared to the older natives. Secondly, the relationship between the length of residence and the likelihood of subjective poverty was found with a statistical significance. Migrants who have resided in Germany 0-29 years are 5.5 times more likely (exp(b)=5.52, p<0.01) to have subjective poverty compared to the elderly who have resided in Germany for more years. To sum up, being a migrant cannot explain having subjective poverty but 0-29 years length of residence in the country have positive relationship with subjective poverty.

When the relationship between age and subjective poverty is examined, the analysis presents statistical significance for all age groups. Therefore, age can be explanatory factor of subjective poverty. Older people aged 60-69 are less likely (exp(b)=0.60, p<0.01) to have subjective poverty compared to those aged 50-59. Those aged 70-79 are 53 percent less likely (exp(b)=0.47, p<0.01) to have subjective poverty compared to those aged 50-59. Finally, those aged 80 and over are less (exp(b)=0.26, p<0.01) likely to have subjective poverty when compared to the older people aged 50-59. It is seen that, as the age increases, the odds of subjective poverty decreases. In the descriptive statistics, the prevalence of subjective poverty was also decreasing with the age. In addition, older females are slightly less (exp(b)=0.80, p<0.1) likely to have subjective poverty statement in comparison to the male elderly.

Concerning the association of marital status with subjective poverty, a noteworthy picture is in front of us. While the separated elderly are 2.9 times more likely (exp(b)=2.94, p<0.01) to have subjective poverty, the single elderly are 2.2 times more likely (exp(b)=2.17, p<0.01) to have subjective poverty in comparison to the married elderly. The widowed have similar odds of having subjective poverty with the married. It can be said that, being married can be a preventive factor for subjective poverty, observing that the separated and the single have higher odds of having subjective poverty.

When we look at the relationship between level of education and subjective poverty, it is possible to see that as the level of education increases, the likelihood of subjective poverty decreases gradually. The elderly who obtained primary level of education are more likely (exp(b)=2.88, p<0.01) to state subjective poverty in comparison to the elderly who obtained higher education. The elderly who obtained secondary level of education are more likely (exp(b)=1.60, p<0.01) to have subjective poverty in comparison to the elderly obtained higher level of education. The elderly in the "other educational level" category are also slightly more likely (exp(b)=1.15) to state subjective poverty in comparison to the elderly having higher level of education.

Regarding the effect of employment status on subjective poverty, compared to retired elderly, active elderly people are less likely (exp(b)=0.44, p<0.01) to have subjective poverty. In addition, the elderly who are unemployed or inactive are more likely (exp(b)=1.82, p<0.01) to have subjective poverty, and the other category are slightly more (exp(b)=1.35) likely to have subjective poverty than the retired elderly.

When we want to look at how the relation between the number of children of the elderly and the likelihood of subjective poverty, it seen that, as the number of children increases, the likelihood of having subjective poverty increases gradually. The elderly having no child are slightly less likely (exp(b)=0.89) to have subjective poverty in comparison to the elderly having one child. The elderly having 2 children have almost the same likelihood (exp(b)=1.04) of having income poverty, compared to the elderly having one child. At last, the elderly having three and more children are slightly more likely (exp(b)=1.20) to have subjective poverty than the elderly having one child.

Household size has some statistical significance with the likelihood of having subjective poverty statement. If the size of a household increases by one, the likelihood of having subjective poverty decreases by 0.8 times (exp(b)=0.78 $p<0.1$).

Regarding the effect of the region of living on the likelihood of having subjective poverty, no statistical significance was found. Odds ratio would suggest that, the elderly living in a rural region are slightly more likely (exp(b)=1.18) to have subjective poverty compared to the elderly living in urban region.

In the case of the association between the poor subjective health and subjective poverty, the elderly having poor subjective health are more likely (exp(b)=2.2, $p<0.001$) to have subjective poverty compared to the elderly having good subjective health. Similar to that, the elderly having depression are more likely (exp(b)=1.78, $p<0.01$) to have subjective poverty in comparison to the elderly who are non-depressed.

CHAPTER 5. CONCLUSION AND DISCUSSION

The differences between migrants and natives have been discussed abundantly in the literature, and the older population's disadvantages originated by the ageing process is another popular debate in the field. Germany is the most populated country in the EU, as well as among the ones with the largest migrant population and the elderly. This thesis investigated the differences in wellbeing and their determinants between older migrants and non-migrants, and the characteristics of older people aged 50 years and over in Germany using Wave 7 of the SHARE data. Health and poverty were selected as the two dimensions of well-being. Binary logistic regression analyses were employed to find out the association between socio-demographic and other background factors, and health and poverty outcomes of migrant and non-migrant elderly in Germany. For the analysis, models were constructed under two groups: as health models and poverty models. Health models consisted of the following three models; diabetes, depression, and subjective health models. Poverty models consisted of the following three models; income poverty, wealth poverty, and subjective poverty models.

As the main concern of this thesis is to find out the differences between migrants and non-migrants, a migrant variable and a length of residence variable were constructed. In addition, migrants were divided into two groups to see whether the country of origin had an impact on health and poverty outcomes of the migrants.

The results indicate a migrant vs. non-migrant divergence in health and poverty. When we look at the odds ratios on the basis of migration status in the diabetes model, the odds ratios of both groups of migrants are greater than that of non-migrants. This means that migrants are more likely to have diabetes compared to non-migrants. These results do not support the thesis' hypothesis of H1 and H2 in addition to the healthy immigrant hypotheses, because it was expected that migrant health should have been better off than natives, or similar to that of natives (Constant et al., 2018). These results are in consistence with the previous research which found that non-Western migrants had higher rates of diabetes incidence compared to natives and

Western migrants (Andersen et al., 2016; Oza-Frank et al., 2011) and Jaffe et al. (2016)'s findings which founded higher diabetes risk for older migrants aged 50-59 compared to natives. When we look at the odds ratios on the basis of length of residence, migrants residing in the country for 0-29 years have lower odds than those residing for 30+ years. This means that, at the beginning, migrants have a health advantage, but their health worsen after 30+ year. This result supports our hypothesis H3, in line with the healthy immigrant effect hypothesis, which envisages that as the length of residence in the destination country increases, migrants are expected to lose their health advantage. This result is in consistence with previous studies' findings which suggested that the odds of having diabetes increases with the increasing length of residence (Oza-Frank et al., 2011; Shah et al., 2017; Commodore-Mensah et al., 2016; Lee et al., 2012).

In the depression model, when we evaluate the odds of having depression according to migration status, Western migrants have a health advantage as they have smaller odds. On the other hand, Non-Western migrants do not have a health advantage but they do not have poorer health than non-migrants either as they have similar odds with the non-migrants. Apparently, these results support the hypotheses of H1 and H2, which are in line with the healthy immigrant paradox. In addition, results are in consistence with the previous studies that found migrant advantage in depression (Bermejo et al. 2016; Buchcik et al. 2017; Nesterko et al. 2019) in contrast to other studies that found evidence for migrant disadvantage in depression (Van der Wurff et al., 2004; Aichberger et al. 2010; Foo et al. 2018). In case of length of residence, migrants who are residing in the country for 0-29 years have higher odds than those residing for 30+ years. This result does not support the hypothesis H3, because as the length of residence increases, the migrants are less likely to have depression. According to the HIE, the health of migrants would deteriorate the longer the time spent in the country. This result is in consistence with the previous research that demonstrated a positive relationship between depression probability and length of residence (Nesterko et al., 2019; Chen et al., 2022), in contrast to Foo et al. (2018)'s and Choi et al. (2016)'s findings that found negative relationship between length of residence and depression risk.

In the subjective health model, the results suggest that, the odds of having poor subjective health of migrants are almost the same to that of the natives. These results do not conflict with the healthy immigrant hypothesis, and provide support for H1 and H2. Also, these results are in consistence with Alang et al. (2015)'s and Kwak et al. (2016)'s results, on the other hand they contrast with Cela and Barbiano di Belgiojoso (2021)'s, Setia et al. (2011)'s and Pudaric et al. (2003)'s evidence that found health disadvantage for non-Western migrants. In the case of the length of residence, the odds suggest that the migrants residing in the country for 0-29 years are more likely to have poor subjective health than those residing for 30+ years. This result is neither in accordance with H3 nor the healthy immigrant hypothesis. In fact, it was expected that at the early years of the residence in the country, migrant health should be better than it is to be in the further years of residence. Also, these results are in consistence with Leão et al. (2009)'s results that showed positive association between length of residence and subjective health, in contrast to Alang et al. (2015)'s results that showed negative association between increasing length of residence and worsening health.

For income poverty model, both migrant groups have higher odds of having income poverty compared to the non-migrants. Particularly, non-Western migrants have higher odds than Western migrants providing support for H4 and H5. Remembering that the Western – non-Western division made by the OECD – non-OECD basis, non-Western migrants who came from the non-OECD countries can be expected to have lower economic conditions, and in this case, income poverty. Findings of this thesis that showed migrant disadvantage in income poverty are in consistence with the previous research (Berti et al., 2014; Grand and Szulkin, 2002; Gustafsson et al., 2022; Miething and Juárez, 2023). Migrants can come with the desire for the better but cannot achieve better economic conditions (David et al., 2012). According to a view, individual's decision to migrate is determined by the expected return rather than the actual return (Bauer and Zimmerman, 1999). According to results, even individuals thought that they would have the better when coming another country with the desire of the better, it seems that origin is still significant in defining migrants' economic conditions. In the case of length of residence, migrants residing in the country for 0-29 years have higher odds of income poverty than those residing for

30+ supporting H6. Also, recent studies found lower risk of poverty for migrants whose length of residence was longer (Gustafsson et al., 2022; Chan and Chou (2016). This is usually explained by migrant integration (De Trinidad Young et al., 2018; Keene et al., 2013).

In the wealth poverty model, Western migrants have lower odds of having wealth poverty, which means that they are less likely to have wealth poverty compared to non-migrants. These results are in consistence with Bauer et al. (2011)'s findings which indicated that natives were more likely to be wealthier than migrants and on the contrary to Krivo and Kaufman (2004)'s finding which suggested that being migrant meant having difficulty in the accumulation of wealth. Moreover, it seems that migrants can be better at accumulating money and properties. The reason for that, as Agius Vallejo and Keister (2020) mentioned, can be that the accumulation of assets means integration to financial structures of the host country. On the other hand, non-Western migrants have higher odds of wealth poverty than natives. Hence the hypothesis of H4 is partially and H5 is fully supported. The finding that the migrants residing in the country for 0-29 years have similar odds to those residing for 30 years and over is supporting H6. This finding is on the contrary to Krivo and Kaufman (2004)'s finding that showed higher risk of wealth inequality for migrants whose length of residence was shorter and Bauer et al. (2011)'s finding that showed lower wealth poverty risk for migrants whose length of residence was longer.

For subjective poverty model; non-Western migrants have higher odds of having subjective poverty compared to their native counterparts, whereas no significant difference between Western migrants and natives is found. This finding is in consistence with David et al. (2016)'s findings. Hence, we partially support H4 and fully support H5. The migrants residing in the country for 0-29 years are much more likely to have subjective poverty compared to those residing for 30 years, which supports H6.

Our findings with respect to the study's hypotheses can be summarized as follows:

Table 5.1. Compliance of Findings with the Constructed Hypotheses of the Thesis

		H1	H2	H3	H4	H5	H6
Health Models	Diabetes	No	No	Yes			
	Depression	Yes	Yes	No			
	Subjective Health	Yes	Yes	No			
Poverty Models	Income				Yes	Yes	Yes
	Wealth				Partially Yes	Yes	Yes
	Subjective Poverty				Partially Yes	Yes	Yes

The results assert that, in health models, marital status, employment status, and level of education have significant effect on the elderly health. Especially being unemployed increases health risks. In three of the heath models, being employed clearly decreases the poor health risk and being unemployed increases the risk. In the depression model, while the single elderly are 0.6 times less likely to have depression, the widowed elderly are 1.4 times more likely to have depression. As Cela and Barbiano di Belgiojoso (2021) said partner loss can be an important factor for the depression risk. In the subjective health model, primary and secondary level education are significant in increasing poor subjective health risk.

In the income model, all marital status categories are significant in increasing the risk of income poverty. It is worth to elaborate on it. Interestingly, the divergence between the reference category and odds of the separated, single and widowed are so great. It can be said that being married has an evident negative effect on income poverty, and help to soothe income poverty. Because in a marriage partners can share income and spendings, plan a budget and control spending money, consequently marriage help to accumulate money. Also having poor subjective health and depression decreases the risk of income poverty.

The results of this thesis contributed to the research pointing health and poverty variations between migrants and natives with a focus on the migrant and native elderly in Germany, as well as the factors that contribute to older people's health and poverty positively and negatively. Further research is needed, the factors thought to be associated to the inequality should be enhanced, and the mechanisms underlying this evidence should be investigated further. The results of this thesis urge that poor health

and poverty outcomes of older people do not necessarily stem from being migrant only, but presumably by also individual differences, similar to the conclusion of Buchcik et al. (2017).

In the thesis, the results point out that healthy immigrant effect is not generalizable to the all three health models. The diabetes model demonstrated migrant disadvantage. The depression model demonstrated migrant advantage, albeit with insignificant coefficients. The subjective health model demonstrated indifference between migrants and natives. The poverty models, on the other hand, provided more evidence supporting our expected outcomes as suggested in hypotheses of H4, H5 and H6. The income poverty model demonstrated migrant disadvantage. The wealth model demonstrated migrant disadvantage as well, especially for non-western migrant elderly. The subjective poverty model demonstrated migrant disadvantage, too.

One of the important findings of this research is that to show a theoretical gap which discusses migrant poverty analytically. There is no referred theory or hypothesis to test the validity of the migrant poverty similar to the arguments of the healthy immigrant paradox in the literature. Studies mostly talk about migration theories, and under these theories argues i) whether poverty in the home country pushes one to migrate, and ii) whether economic conditions and labour market convince one to migrate (push and pull factors, neo-classical theory as in Lee, 1966 and, Todaro, 1969). Even the migration theories help to understand the relationship between poverty and migration, they are not enough to understand the poverty among the migrant populations.

Altogether, when the results for health and poverty dimensions are evaluated together, the migrant-native divergence can be observed in both dimensions of well-being. Overall, older migrants are more likely to suffer from poor health and poverty than older natives. Depression and poor subjective health pose threat to well-being of older migrants, and older migrants perform lower level of well-being. Also, income and wealth gaps and higher subjective poverty contribute to well-being gap between older migrants and non-migrants. It is seen that migration causes economic inequality and economic disadvantage as the migrant disadvantage is clear in poverty models.

Also, link between health and poverty can be discussed as well. The matter that how they affect each other is mutual. Poverty contributes to poor health and poor health contributes to poverty. Poverty is a barrier to access health care, good nutrition, and contribute to stress and lower life quality and well-being. On the other hand, poor health limits individuals' activities, and this may prevent individuals from staying in the economic activities.

5.1. Limitations

Independent variables used in this thesis usually control for the conventional socio-demographic characteristics. But in many studies another type of variables such as access to health services, having health insurance, having pension and old age pension were used. These variables represent important conditions that may affect health and poverty of both migrants and older people. With the use of these kind of variables that reflects the institutional or structural conditions in a country, to what degree migrants were integrated, or whether migrants and older people suffer from inequality, undertreatment and/or isolation can be measured better. These possible variables also can be used to assess the position of the older people in the society, as older people are dependent, vulnerable to some risks, health and poverty are two of the critical ones. Moreover, the contribution of other migration-related factors to the inequalities should be figured out better and they should be formed as variables in the analysis (Cela and Barbiano di Belgiojoso, 2021). Due to some data limitations (missing cases in high amounts because of the structure of Wave 7) in SHARE Wave 7 data, these kinds of variables could not have been used in this thesis.

If the migration itself causes deteriorations in health, to prove whether there are similar trajectories of migration on whoever had experienced migration, following generations should be included in the studies (Nesterko et al., 2019).

One of the criticizations can be the use of Western – non-Western dichotomy. In research, this dichotomy is used with scientific reasons and aims in order to describe the patterns in question belong to these groups, it should be admitted that this categorization can be, in some sense, oversimplifying the conditions. However

due to low number of cases in each country of origin, such a classification was inevitable.

Even though subjective health is a widely accepted measure of health and used in majority of the studies, its assessment is made by a shallow and instant question. Rather than subjective health, subjective well-being is studied mostly, which has a wider extent and helps to describe one's well-being, it can portray one's quality of life and the degree of self-fulfilment. In this thesis well-being was placed on more an objective ground, even though subjective measures were also used. The measures used are open to debate as there are various scales developed to measure the well-being. The measures used in the thesis were based on the possibilities of the SHARE data.

In this thesis I approached well-being from an uncomplicated way. I put health and poverty on the front. To reach more sound inferences about subjective well-being, other methods could be used such as Lindenberg's Social Production Function Theory, Ryff scale, Short-Form Surveys, BBC Well-being other than this thesis' framework. Because they are of course better at measuring, they are inclusive, holistic, and multidimensional. The absence of chronic disease or subjective health statement may not be enough to assess one's health or well-being.

Also, migrant integration indicators can be included in studies such as MIPEX (Migration Integration Policy Index – measuring countries' policies to migrant integration in various areas such as education, health, labour market participation, etc.), OECD (living conditions, labour market, and social integration) or EU integration indicators (education, employment, and social inclusion) as they provide a score. Also, they consider many different dimensions, therefore they are good to understand in which areas migrants have difficulties when being integrated in another country's society. In addition, poverty can be studied multidimensionally, as it is not related to only material conditions. UN discourse is on multidimensional poverty for a long time (Oxford Poverty and Human Development Initiative, 2018).

Another limitation of this thesis is that, a selected wave of a longitudinal survey is used, and a trend analysis has not been made. Therefore, the findings and interpretations do not portray a life-long process.

Later life inequality is an important theme in the field for addressing safe and sound policies. Final limitation of this thesis is that it used aggregated data to analyse older people in total, as the aim was to look at migrant-non-migrant divergence. To look closer to factors affecting migrants adversely, disaggregated data for migrants and migrant could be analysed. Because factors effecting these two can be different as the factors that affect migrants stem from their past in the country of origin as well as from the destination country.

Policy Implications

While planning social policies especially in high migrant receiving countries, disadvantages in health and poverty that migrants and as well older migrants could have should be considered when defining priorities.

As mentioned in the Literature Review, in Europe, the USA, Canada, and East-Asian countries, the research comparing migrants and non-migrants is comprehensive and diverse. In addition, these studies are both qualitative and quantitative. These are many publications in Europe, but there is not such a rich content in other countries. For instance, Türkiye, having a remarkable migrant population, also needs further research comparing migrants and natives. Even, there is a rise in migration studies in recent years, comparative studies are still scarce. Fundamental matters are studied generally, but more comprehensive scope is needed to develop policy implications for migrants.

In the same way, immigration should be evaluated in terms of health and poverty, and poverty should be investigated not only materially but also multidimensionally.

As they can be exposed to discrimination and inequality, they are prone to be disadvantaged like the elderly, and therefore their access to the health system and services, and labour market should be investigated.

Apart from the migration studies, there is a gap in research for ageing in Türkiye. Even though there are many studies in the field, they are mainly in medicine and social work. Sociological ones contribute mostly with the narrow and individual cases. Gerontological studies are also advancing in Türkiye. These studies examine mostly the individual cases in small sample sizes. The more is needed. One of the priorities and shortcomings in the research related to old age is the lack of data, mostly being quantitative. To develop efficient social policies, a survey structure is needed to be developed.

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