Rijksuniversiteit Groningen - Faculty of Spatial Sciences
Bachelor Thesis

Life-course Perspectives on Migrant Health:

Exploring Vulnerabilities and Health Disparities Among Older Populations in France, Germany and The Netherlands

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Abstract

Migration, a global phenomenon involving 184 million individuals living outside their country of origin, stands as a significant 21st-century policy challenge. Policies directly impacting immigrant health have proliferated, influencing national economies and the well-being of immigrants, particularly in later life. Understanding the health trajectories of immigrants compared to non-migrants is crucial for informed policymaking. This knowledge facilitates the development of frameworks promoting well-being for all, tailoring interventions to immigrant needs, and addressing public health challenges. The intersection of migration, ageing, and health has garnered political attention in ageing European countries, marked by an 18% increase in migration over the past two years. Despite this, the health of older voluntary migrants in Europe remains relatively understudied. The purpose of this study was to examine potential disparities in health outcomes between older immigrant and non-immigrant populations in France, Germany and The Netherlands. This study utilised data from the Survey of Health, Ageing and Retirement in Europe (Wave 5; 2013; n = 12,945) it analysed self-perceived health and predictors of poor health (Education levels, Income and contextual factor) while controlling for demographic factors. Binary Logistic Regression modelling for the sample was calculated. Interaction terms (Gender * background) were used to analyse gender and migrant background differences. Findings revealed that Older migrants of Western backgrounds exhibited significantly poorer self-rated health compared to their non-migrant counterparts. Furthermore, female non-Western migrants reported poorer self-rated health compared to their male counterparts. Respondents in France and Germany displayed a significantly higher likelihood of reporting poor self-rated health compared to the Dutch context. The results suggest that older migrants in Europe exhibit a higher likelihood of experiencing poor health compared to their non-migrant counterparts. These findings raise concerns about the capacity of migrants in Europe to age in good health. It is recommended that policies not only focus on promoting overall healthy ageing but also specifically address the diverse health needs of migrant populations.

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1. Introduction

Migration is a complex and multifaceted phenomenon that has profound implications for individuals and societies, reshaping cultural landscapes, social mobility, and influencing global economic dynamics. With an estimated 184 million people residing outside of their country of nationality globally, the undeniable reality is that migration stands as one of the leading policy challenges of the 21st century (World Bank, 2023). The proliferation of policies with direct consequences for immigrant health has become increasingly pronounced over the past decades. These policies reverberate across national economies, the development of sending and receiving communities and the overall well-being of immigrants, especially in the later stages of life (Zimmerman et al., 2011). A deeper understanding of the health trajectories and discrepancies among immigrants in contrast to both non-migrant populations and other immigrants holds significant value for societies and policymakers. This knowledge enables the design of policy frameworks aimed at enhancing and protecting the well-being of all while also tailoring interventions to meet the specific needs of immigrants and effectively addressing public health challenges.

Migration, ageing, and health are subjects that have increasingly gained prominence on political agendas across ageing European countries due to the rising number of migrants. Over the past two years, there has been an 18% increase in the share of migrants. In 2022, the count of non-EU citizens stood at 23.8 million (5.3%), contrasting with the 21.5 million recorded in 2020 and this number is projected to increase. While the aforementioned agendas have gained political importance, a critical dimension remains relatively understudied: the health of older voluntary migrants in Europe.

The connection between migration and health has frequently been examined through two prominent empirical findings. On one side there is an emphasis on showcasing the positive health outcomes of migrants, especially after arrival and on the other side, health problems are highlighted in older populations. The positive view on migrant health refers to the term "healthy immigrant effect" and is defined by The Centers for Disease Control and Prevention (CDC) as “a phenomenon where immigrants tend to have better health outcomes than the non-migrant population”. Moreover, as summarised by Göttler (2023), Furthermore, as Göttler (2023) summarises, it makes reference to a number of European (Brzoska et al. 2015; Anson 2004; Ronellenfitsch et al. 2006; Uitenbroek and Verhoeff 2002) studies that found lower rates of all-cause mortality among migrants compared to the native population. However, the ability to live longer doesn't imply living in good health hence why the “healthy immigrant effect” has also been coined the “healthy immigrant paradox” (HIP) by Markides and Coreil (1986) as migrant groups tend to face higher socioeconomic risk factors in the receiving country. Increased socioeconomic risks tend to be associated with increased health risks at any point in time.

Spallek et al. (2011) highlight the positive and negative views of HIP, stating firstly, that younger migrants tend to experience a transitory 'healthy migrant effect'. Upon arrival, migrant groups exhibit better health compared to non-migrants despite facing increased socioeconomic risk factors. However, this effect is lost with time not only due to changes in health behaviours but also due to prolonged exposures to various socioeconomic, behavioural and environmental risk factors. In line with this phenomenon, Evandrou et al., (2016) reported that ageing migrants and ethnic communities are more likely to report poorer self-rated health compared to the non-migrant population. Moreover, there is a consistent trend of elevated rates of suboptimal mental health within migrant populations, with depression emerging as a particularly prevalent concern among older migrants across various European countries (Aichberger et al., 2010).

As alluded to in the abstract, this study will categorise migrants based on their background into two types: Western and non-Western. The methodology section will delve into the specific criteria used for this classification. As in previous migrant health research, migrants of a Western background often report higher socio-economic status and may experience a different level of social and economic integration in host countries compared to migrants of non-Western background. However, it's worth mentioning that several less economically developed eastern-European countries are disproportionately less affluent compared to the majority of the Western European nations. These European countries, while technically classified as 'Western', may exhibit economic conditions that are relatively less economically developed compared to other Western European counterparts and in some instances might even lag behind some non-Western countries in terms of economic development. This study acknowledges this and seeks to explore this aspect.

The comparative disadvantage of health doesn't end with migrants and non-migrants, it extends deeper into gender disparities within migrant populations. Previous research has acknowledged gender differences in health and well-being (Carmel, 2019). While women tend to have longer average life expectancy compared to men, they often spend a greater portion of their lives grappling with chronic illnesses and societal limitations (WHO, 2015). Furthermore, additional investigations reveal that female migrants generally indicate lower self-perceived health status. Paradoxically, they tend to adopt healthier lifestyles and possess higher awareness of health-conscious living when compared to their male counterparts (Alidu 2017; Malmusi 2010). These findings highlight the importance of exploring gender-specific health disparities among migrants given the intricate interplay of factors shaping health outcomes within migrant communities may manifest uniquely for both sides.

This study will seek to answer the question of whether the healthy migrant effect still holds at older ages or if this phenomenon is nothing more than just a statistic. It will focus on the health of

immigrants within voluntary migrant populations and draw upon research conducted in neighbouring European countries to gain deeper insights into this matter.

Therefore, the goal of this research project is to investigate, from a life-course perspective, the potential health disparities between the populations of migrants and non-migrants in France, Germany, and the Netherlands.

The primary research question is: *To what extent do health outcomes differ between individuals with a migrant background and those without one in France, Germany and The Netherlands?*

The secondary research questions are:

Are there differences in self-reported health among the migrant subgroups?

Are there differences in self-reported health between the genders of migrants?

Are there differences in self-reported health between economically developed Western countries and less economically developed Western countries?

This research paper starts with a comprehensive review of the relevant literature, laying the foundation with a theoretical framework, introducing a conceptual model, and delineating the researcher's hypothesised outcomes. Following this, chapter 3 details the methodology employed in this study, encompassing both the data-gathering process and the statistical techniques utilised. Chapter 4 then unveils the findings from the statistical modelling, shedding light on the connection between migration background and health. Conclusively, chapter 5 synthesises the findings, situating them within the broader scope of the established theoretical framework, offering reflections on the study's implications, and suggesting recommendations for future research.

2. Theoretical Framework

2.1 Theories

Research on migrant health over the past decade has witnessed a steady increase with the dynamic field being coined a “speciality” topic focusing on a discrete and decontextualised population (Acevedo-Garcia et al., 2012). The prevailing approach to research on migrant health has frequently leaned on frameworks that utilise the concept of acculturation. These frameworks tend to underscore cultural explanations as the primary driver of migrant health. While culture undoubtedly plays a pivotal role in shaping health outcomes, it is only one strand in the intricate web of immigrant health.

As Kristiansen et al. (2016) points out, migrants in Europe generally experience similar morbidity and mortality patterns as the non-migrant populations but differ in terms of the intensity and age of onset

of illness. However, some studies have shown mortality advantages as findings by Reus-Pons et al. (2016) revealed that older migrants in Belgium, experienced such advantages regardless of a lower SES. Additional research on the topic has also revealed similar findings for migrants in Europe (Brzoska et al. 2015; Anson 2004; Ronellenfitsch et al. 2006; Uitenbroek and Verhoeff 2002). It's necessary to take into account other migration-related elements and processes that affect mortality statistics, even though it's possible that younger migrants will experience the healthy migrant impact.

One perspective centres on the selection effects of migration, which can shape health differences within the host country. According to this viewpoint, it is assumed that individuals in good health are more likely to embark on migration journeys, while those dealing with illness or disability may face constraints on their mobility which may deter the process of migration. This phenomenon is essentially a form of self-selection, where individuals in good health find it more feasible to engage in international migration. This phenomenon is described as: 'The migration of the fittest'. Resilience is necessary for migration in addition to physical health in order to manage the stress caused by unforeseen challenges and uncertainty.

Thus, it may be more likely for those who are psychologically and physically more resilient to make the journey (Göttler, 2023). Unfortunately, there isn't appropriate data about the characteristics of the host countries to compare the migrants against their counterparts who chose to reside in the home country.

Migrant mortality statistics can be further influenced by selective immigration policies, particularly those implemented in the Western European countries following the Second World War. These policies consist of universal standards for selection such as age, education, knowledge of official languages and labour market skills with varying degrees of emphasis on different criteria. Furthermore, the health selection standards that host countries impose reinforce the already favourable self-selection of prospective immigrants' health. For instance, numerous visa applications mandate health examinations of specific viruses and diseases which may pose risks to public health.

The self-reported health of immigrants upon arrival should also be taken with caution as Constant (2017) points out, "migrants may under-report their health status for three main reasons: (i) Language barriers may prevent them from understanding the health options/diseases to report; (ii) cultural beliefs may result in the reporting of illnesses they personally deem serious. If they believe other illnesses may not be important they may be apprehensive about revealing their health issues for fear of deportation or penalties. (iii) They may be unaware that they suffer from an ailment as they've never been to the doctors and were never diagnosed or that they overestimate their health."

Altogether, immigrants are expected to be chosen with a positive health bias and the average migrant will exhibit better health outcomes upon arrival compared to the non-migrant population. This

can explain the positive view of the healthy immigrant paradox whereby younger migrants experience this healthy migrant effect. The healthy immigrant paradox posits that migrants lose their health advantages over natives the longer they reside in the receiving nation. The factors contributing to the decline of immigrant health are complex, and over time some explanations have been offered by researchers. Some posit that the decline stems from the stressors associated with acclimating to a new country. Others argue that it results from biassed acculturation, wherein immigrants adopt only the unhealthy lifestyles of the native population (Constant, 2017). As time elapses in the host countries, the erosion of social networks may lead to feelings of loneliness and diminished social solidarity. Exclusion and social instability, in turn, can trigger depressive symptoms and impact health outcomes. Immigrants, particularly those in unskilled positions, may work and live in inadequate and stressful environments, exposing them to challenging work conditions (Belin et al., 2011). The social determinants of health (SDOH) provide compelling explanations for the impact of socio-economic factors on health outcomes, particularly in individuals during the later stages of life.

It is important to note the definition of 'voluntary migration' is not universal and there is discourse about the complexity of migration decisions. Numerous definitions of migration exist, encompassing both transient and permanent modes of human movement that might serve various objectives across large and short distances (Lee, 1966). This study will use the definition by Erdal & Oeppen (2017) which states that voluntary migration is "migration acted by choice, with free will and without compulsion".

2.2 Literature Review

In the past, research on immigrant health has largely focused on frameworks that centre around cultural factors. Researchers in the past years have emphasised the need for increased focus on the social determinants of health (Acevedo-Garcia et al., 2012). The SDOH are the nonmedical factors that influence health outcomes. They are the conditions in which people grow, work and live in; living and working conditions; general socioeconomic status, cultural and environmental conditions. These determinants can change over time and are largely responsible for health inequalities within and between countries. The conditions of daily living are also shaped by a larger range of factors and systems, including political and economic institutions and policies (WHO, 2015).

Numerous studies highlighted the connections between personal resources such as education, income, other contextual factors and health outcomes in later life. According to WHO (2022) "refugees and migrants are not inherently less healthy than host populations; rather, it is the impact of various suboptimal health determinants such as education, income, and housing. Poor health outcomes are further exacerbated by linguistic, cultural, legal, and other barriers, as well as by their interactions over the course

of a person's life." The medical sociology literature frequently underscores the causal link between low income and poor health (Benzeval & Judge, 2001). Among elderly Americans, education level has been proven to be a robust predictor of both active life expectancy and life expectancy (Guralnik et al., 1993). As Ross and Wu (1995) noted, high educational attainment not only directly enhances health but also indirectly through its impact on work and economic conditions, social-psychological resources and the adoption of a healthy lifestyle. The human capital theory (HCT) drawn from econometrics views education as an investment that generates benefits through increased productivity. Education enhances individuals' knowledge, skills, critical thinking, effectiveness and a diverse set of other abilities that can be applied to promote health (Mirowsky & Ross, 2012).

Financial resources are a central component of the SDOH due to their pervasive and far-reaching influence on an individual's health and well-being. The correlation between socioeconomic status is well-documented as emphasised by the Fundamental Cause Theory (FCT) proposed by Link and Phelan (1995) which states that "an ongoing association exists between SES and mortality because SES embodies an array of resources, such as money, knowledge, prestige, power and beneficial social connections that protect health no matter what mechanisms are relevant at any given time". Put another way, even with all of the advancements in medicine, the fundamental issue remains that people from lower socioeconomic backgrounds do not have access to resources that can safeguard their health.

Income can be treated as a key social determinant influencing health through access to some of the most crucial intermediary factors such as healthcare, adequate living conditions and education opportunities. Lower-income has also been found to increase exposure to financial stress, poor mental health, limited participation and social exclusion. In line with Link and Phelan's findings and conclusion, several European studies have found lower income to generally accompany worse health outcomes in older age (Beland and Zunzunegui 1999; Dahl and Birkelund 1997; Martelin 1994; Rautio et al. 2001).

The contextual factors in which migrants reside can further influence their health outcomes. It is evident that inadequate living and working conditions can pose significant challenges, especially for migrants of lower socioeconomic status. This stress factor has been described as the "exhausted migrant effect" by Bollini and Siem (1995). Due to psychological and physical stress throughout life, migrants who arrived in good health have already lost that advantage due to working under demanding conditions and living in substandard conditions. Uncertainties about residency and work permits that may arise after arrival could be the first of these stresses. The uncertainties may continue with short-term or part-time contracts, further compounded by discriminatory conditions which may lead to additional psychological burdens. Over time, these stressors may result in worse health outcomes later on in the life course.

The SDOH expressed in terms of education, income and contextual factors are some of the most important determinants of outcomes in health and well-being. Nevertheless, the scope of health disparities

permeates deeper beyond the dichotomy of migrants and non-migrants, it extends into gender disparities within migrant populations. Throughout many centuries, women globally have consistently experienced lower educational attainment than men. While there are signs of a gradual reduction in this gap over time, it persists in various countries. As summarised by Carmel (2019), literacy rates for women aged 15 and above worldwide improved from 76.4% in 2000 to 82.6% in 2016, however, the corresponding figures for men increased from 86.6% in 2000 to 89.8% in 2016. Gender gaps in education level vary by country, however currently in most OECD countries, older men have higher levels of formal education than women (Carmel, 2019). Despite notable advances in women's education and workforce participation, a "glass ceiling" remains - a metaphor denoting unseen societal hindrances impeding women's progress toward employment equity. This phenomenon occurs in most modern societies and most levels of employment (Cubillo & Brown, 2003). When comparing the economic condition of men and women, all of these characteristics point to lower rates of female labour market participation and greater rates of female part-time and low-status employment. (Carmel, 2019). As a result, the comparative health disadvantages extend deeper into gender disparities. This effect is visible when examining gender disparities in old age as women's self-rated health is negatively impacted in nearly every nation and location (Boerma et al., 2016). Some Western nations, like the US and the UK, are exceptions, though, as those who lead active lives and have the greatest educational levels do not exhibit these disparities. (Adjei et al., 2017).

2.3 Countries selected and its Immigrant context

The Netherlands is home to 17.5 million inhabitants and akin to many other Western European countries, it has experienced large immigration waves following the acute labour shortages after the Second World War. The large heterogeneous group consisted of migrants from the former colonies as well as those from Turkey and Morocco. As of 2022, migrants make up 14.5% (2.6 million) of the Dutch population (CBS, 2023). In addition to the Netherlands, France and Germany have also been included in this study to provide a more comprehensive understanding of migrant health outcomes in this Western-European grouping. These countries share similarities with the Netherlands in terms of historical immigration patterns and the presence of diverse migrant populations. France, with a population of approximately 67 million and a migrant population of almost 7 million, makes up 10.3% of the population (Insee, 2021). Respectively, Germany with a population of over 83 million and a migrant population of approximately 20.2 million, making up 24.3% of the population in 2022 (Destatis, 2022). Similarly to the Netherlands, both countries experienced substantial immigration patterns following the labour shortages post-World War 2, these migration waves resulted in the heterogeneous mix of migrants consisting of guest workers and their corresponding familial ties, post-colonial migrants and skilled migrants.

The mentioned countries feature comparable universal healthcare systems, with the additional option of private healthcare in the Dutch context. Additionally, these nations exhibit parallels in their immigration policies, which are selectively structured based on specific criterias. Regarding migrant integration, the Migrant Integration Policy Index (2020) gives some insight into the performance of the Western European countries. It categorises all three countries quite similarly, yet considerably lower when compared to the United States. This interplay of factors results in a unique environment in each country.

2.4 Conceptual Model

Figure 1 illustrates the theories and factors that form the foundation of the examination of the impact of migration background on health outcomes among older individuals. The central focus of the model is the primary independent variable, 'Migration background.' The investigation aims to unravel how other variables related to the SDOH contribute to the relationship between migration background and health. It is anticipated that migration background will exert an influence on health outcomes, with individuals of migrant background more likely to report poor health, potentially increasing with age, aligning with the theories of HIP, HCT, and FCT. The investigation anticipates the female sample to exhibit poorer health outcomes than their male counterparts. Moreover, it is hypothesised that migrants originating from less economically developed nations will be more likely to report poor health.

As previously outlined in the theoretical framework, numerous variables could potentially play a role in shaping the health outcomes of older migrants. However, due to the scope limitations of this research paper, these variables were not directly included. Nevertheless, their explanatory significance is duly acknowledged.

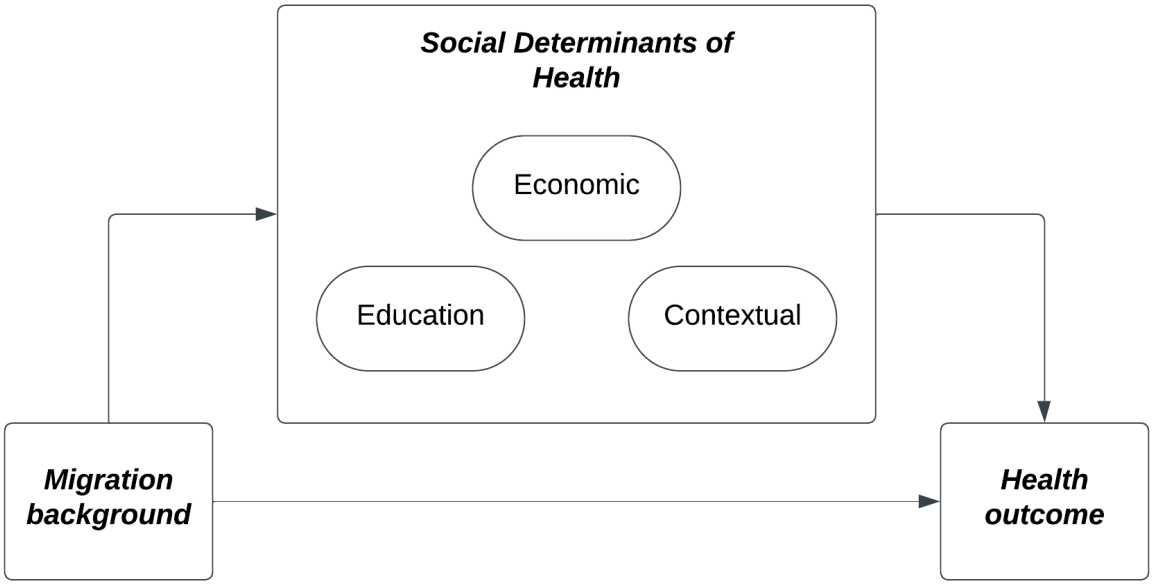

Figure 1: Conceptual Model (Made by Author, 2023)

3. Methodology

3.1 Data

3.1.1 SHARE

Survey of Health, Ageing and Retirement in Europe (SHARE), version 8.0.0 easySHARE

Due to the nature of this study, it was decided that the use of secondary data would be the most appropriate due to several reasons. Firstly, The existence of several databases covering the longitudinal study of ageing. These databases offer access to large and diverse datasets which can provide a more comprehensive understanding of migrant health. These databases address several conditions that make this method more feasible for the study, notably: cost-efficiency, ethical considerations, reduced data collection bias and verified designed surveys. Conducting primary data collection can be costly and time-consuming especially for a study of this nature. Accessing existing secondary data can address the

relevant ethical considerations which can be challenging when tasked with studying sensitive information. Furthermore, the existing secondary data sources consist of institutionally conducted surveys which ensure the reliability and validity of the data.

According to information retrieved from the SHARE-ERIC website: https://share-eric.eu/. It describes the data as a comprehensive and internationally recognized survey program initiated in 2004. SHARE was specifically designed to investigate various aspects of the lives of individuals aged 50 and older across Europe. As stated by Börsch-Supan et al., (2013): "It is a cross-national panel collection that contains microdata on the socioeconomic condition, health, and social and family networks of people from 19 different European countries." It is a unique panel database due to its international scope enabling cross-national comparison which is especially pertinent for migrant health research. The EasySHARE 2020 is the most updated version, the data were collected between 2004 and 2020 with 8 corresponding waves. It is a simplified HRS-adapted dataset which stores information on all respondents and on all currently released data collection waves in one single dataset. Moreover, complexity was significantly reduced. For instance, time-constant information collected only in the first interview was transferred to all later interviews; the coding of missing values was enriched, etc (Börsch-Supan et al., 2020). The panel primarily targets older populations (age 50 and older) and its multidisciplinary background provides a comprehensive picture of the ageing experience in Europe. While there were some alternative databases, notably 'European Social Survey' (ESS), & 'Longitudinal Ageing Study Amsterdam' (LASA), the decision was ultimately made to continue with easySHARE due to its accessibility and the simplified nature of its dataset.

Data from SHARE wave 5 (2013) was utilised, primarily chosen due to its comprehensive coverage for all three countries. Subsequent waves did not incorporate The Netherlands into the SHARE panel, and the years coinciding with the COVID-19 pandemic were deliberately excluded to mitigate potential disruptions or anomalies in data collection. All missing cases had been filtered from the dataset and the corresponding variables were recoded to fit the criteria of a Binary Logistic Regression.

3.1.2 Ethical considerations

Data management:

As pointed out by Börsch-Supan et al., (2020), SHARE Research Data Centre, registered users can access the SHARE data, which are supplied by SHARE-ERIC (Survey of Health, Ageing, Retirement in Europe - European Research Infrastructure Consortium). Regarding the provision of microdata, the SHARE Research Data Centre (FDZ-SHARE) conforms with the requirements set forth by the German Council for Social and Economic Data (Rat für Sozial- und Wirtschaftsdaten, RatSWD). The accessibility that SHARE-ERIC offers satisfies the criteria of

the European Charter for Access to Research Infrastructures and is informed by global research ethics standards, including the Declaration of Helsinki and the Respect Code of Practice for Socio-Economic Research.

Researchers who wish to use the data are subjected to signing a data access agreement and comply with SHARE's data security and protection policies and information such as the researcher's personal details and scientific project information is required as part of the application process before being granted access to the dataset (Börsch-Supan et al., 2020).

The aforementioned risk of data leaks is dealt with through SHARE's strict adherence to data protection policies which ensure the confidentiality and anonymity of participants, however preventative steps in regards to data storage will still be taken by the researcher. The corresponding data used will be kept securely in an encrypted folder which is only accessible to the researcher and the thesis supervisor. The data will be kept securely during the research and will be permanently deleted when it is no longer needed after the research has been completed and graded.

Research Ethics:

SHARE adheres to a rigorous ethical framework designed to safeguard the privacy and confidentiality of participants. This framework is firmly rooted in the guidelines set forth by the European Union's General Data Protection Regulation (GDPR) and upholds the fundamental principles of informed consent, voluntary participation, the unconditional right of participants to withdraw from the study at their discretion, data management and anonymity of participants.

3.2 Cases/Sample

In order to bring this investigation into fruition, it was decided to utilise data consisting of individuals aged 50 and older in France, Germany and The Netherlands due to its history of large migration waves and large proportions of older people with diverse ethnic backgrounds (Gubernskaya, 2015). Those with comprehensive information on age, gender, self-perceived health, migrant background, education, income, and environment were included in this sample. This number included in the analysis was 12,945 individuals who identified as either migrants with Western background, non-Western background and non-migrants as shown in Table 1.

3.2.1 Inspiration

The analytical approach used to carry out the investigation of health outcomes drew inspiration from the methodology outlined by Reus Pons et al. (2018). Subsequently, the coding of variables for both the outcome and independent variables as delineated in the subsequent section was used to test for relationships between migrant background and health. The main dependent and independent variables were structured based on configurations detailed from Reus Pons et al. (2018). However, this research extends beyond by exploring disparities in health outcomes between the economically developed Western countries and their less economically developed counterparts in this sample.

3.2.2 Variables

Dependent Variable (Outcome); Self-Perceived health: Participants were asked “Would you say your health is…?” The purpose of this question was to gauge the participants' overall subjective health. Extensive research into health disparities has found this simple query to be remarkably insightful. It not only holds predictive power for both mortality and morbidity but also encapsulates an individual's comprehensive assessment, encompassing their evaluation of health conditions, symptoms, functional capabilities, and overall well-being. The variable serves a significant role in this research as it reflects how migrants and non-migrants in various age and gender groups perceive their health which can lead to identifying potential disparities and vulnerabilities. (Evandrou et al,. 2016). Responses were originally recorded in five categories (Excellent, Very good, Good, Fair, and Poor). It has been dichotomised with ‘1’ representing “Fair/Excellent” as indicating positive self-rated health and ‘2’ representing “Poor" as indicating negative self-rated health. The decision to classify the ‘fair’ category to signify favourable health outcomes is imperative as self-perceived health is commonly dichotomised into good or less-than-good, this approach might obscure specific transition patterns associated with fair health (Reus-Pons et al., 2018). According to recent research, survey language has a stronger correlation with differences in self-rated health response patterns than migrant origin. In order to reduce the possibility of response pattern differences between migrants and non-migrants within each country, SHARE questions only employ native languages. However, the likelihood of interpreting one's health in a specific manner may differ across countries, particularly due to the distinct connotations associated with the term 'fair' in different languages (Seo et al., 2014).

Independent Variables (Predictors): The independent variables in this investigation include 3 variables about the Social Determinants of Health; one measuring respondents’ economic status, one measuring level of education and one measuring contextual factor. The primary independent variable in this study, migrants, was defined as respondents who were born outside of the nation they currently reside. The variable categorises individuals into two groups: those with a Western background and those

with a non-Western background. Western migrants are defined as those born in Europe, North America (United States & Canada), Oceania or Japan which is consistent with previous literature on health at older ages (Reus-Pons et al., 2018). This distinction between Western & non-Western origin will allow for the possibility to factor in the role of the context of origin on migrant health at later stages of life. Education level: Covariates: Education level: "What is the highest school leaving certificate or school degree that you have obtained?" was the question posed to participants. Six educational levels based on the International Standard Classification of Education (ISCED 97) were included in the responses. The variable was recoded into 3 levels: “low” - primary education, “mid” - lower/upper secondary education, and “high” - tertiary education. It was previously recoded into 4 levels; with the additional level: “Others” signifying Post-secondary/non tertiary education. However, seeing as though it consisted of an insignificant number of cases the decision was made to remove it altogether. Household net income is a continuous variable that has been log-transformed using the natural logarithm. The transformation was applied to enhance interpretability and stabilise variance. Contextual: Participants were asked, “Would you say that your household is able to make ends meet?”. Responses included 4 categories, it was dichotomised with ‘0’ representing “Fairly easily/easily” , and ‘1’ representing “Some/great difficulty”.

Covariates: Age, a continuous variable was included representing the chronological age of respondents. Gender is a dichotomous variable coded ‘0’ for males and ‘1’ for females indicating males as the reference category. Countries is a categorical variable comparing health outcomes between France & Germany with the Netherlands as a reference category. Interaction terms were created for gender and migrant backgrounds in an attempt to answer secondary question 2. The variables were centred by subtracting their means, reducing multicollinearity and separate interaction terms were created for Western and Non-Western backgrounds. The variable "Countries (GNI)" is dichotomous, comparing health outcomes between Western migrants originating from Western countries classified as less economically developed and more affluent, with the latter serving as the reference category. Western countries representing the lowest and highest economic performance from the sample were selected and grouped accordingly. These groups were identified and ranked based on data compiled by the World Bank, which categorises countries into four main economic groups: low-income, lower-middle-income, upper-middle-income, and high-income based on GNI per capita (World Bank, 2023). The Western countries included in this study fall into either upper-middle-income or high-income economies, forming the basis of the dichotomy. Due to the cross-sectional nature of this study, all variables used were effectively treated as time-constant.

3.3 Analytical Strategy

This study began by calculating descriptive statistics (frequencies and percentages) for all independent and outcome variables. Self-perceived health; the dependent variable within this research was recoded as a dichotomous variable as previously mentioned. Thus, the appropriate statistical method to test for relationships between the variables is the Binary Logistic Regression. To fulfil the required assumption of the binary logistic regression which requires no perfect multicollinearity and linearity, multicollinearity tests were conducted between the independent variables. The results are shown in Appendix B. The results were derived from a model estimation with the linear regression model. Altogether, the VIF and tolerance values were well under the tolerance threshold indicating low multicollinearity and no violations of the assumption of independence. Thus, it was assumed that the data was appropriate for modelling. The study then investigated how the variables associated with the SDOH influenced the relationship between migration background and health. Binary logistic regression models were employed with seven modelling attempts to test the effect of migration background and the respective variables on the likelihood of reporting poor self-perceived health. The regression began by testing the direct effects of migration background (compared to non-migrants) on poorly reported self-perceived health. The study then added a set of covariates in each modelling attempt. These included the following variables: Age, Gender, Education level, Income, Contextual (Is household able to make ends meet), Countries, interaction variables (Gender x migration backgrounds) and Countries (GNI). In the last modelling attempt, the researcher employed economically ranked country of birth variables to investigate the differences in self-perceived health between migrants of different country origins.

As mentioned in the former section, extensive research into health outcomes has found the simple query of self-perceived health to be remarkably insightful and holds significant explanatory power. However, results from a different modelling attempt that included the ‘fair’ category as signifying negative health outcomes can be found in Appendix D (Configuration 2); running the model in this regard may also provide some additional nuance to a conclusion.

The null hypothesis for the regression is: “*The regression coefficients are equal to zero*”. Put differently, “*There is no relationship between migrant background and poor health outcomes"*. Tests were two-tailed and the significance level for these was 0.05. The researcher conducted analyses using SPSS 29.0.

4. Results

4.1 Descriptive statistics

Participants included 12,945 individuals who identified themselves as either non-migrants (n = 11,962) or foreign-born with a western background (n = 548) or non-Western background (n = 435). As depicted in Table 1, foreign-born and non-migrant individuals differed in variables of age, gender split, education, income, contextual and health indicators. Among these, Western backgrounds constituted the largest demographic group that reported poor self-perceived health (13%). Notably, the distribution of poor self-perceived health between non-migrant and non-Western backgrounds was more equal with the latter reporting a higher percentage. Among the three countries, The Netherlands had the highest proportion of non-migrants and the lowest proportion of migrants with Western backgrounds. Interestingly, Germany reported the highest proportion of migrants with a Western background, while France had the highest number of non-Western migrants. Each country exhibits a distinct majority with different demographic backgrounds.

Table 1: Descriptive statistics of easySHARE data; Wave 5 (n = 12945; Across all background status)

Table 1

Variables	*Non-Migrant (n = 11962) (92.4%)*	*Western-Background (n = 548) (4.2%)*	*Non-Western Background (n = 435) (3.4%)*
Mean Age (years)	65.6	65.5	62.4
Female Gender, %	54.6	54.0	54.3
		Education	
Primary Education, % (n)	11.3 (1347)	10.6 (58)	18.6 (81)
Lower/upper secondary Education, % (n)	61.2 (7317)	54.7 (300)	52 (226)
Tertiary Education, % (n)	27.6 (3298)	28.2 (190)	29.4 (128)
Mean Education (years)	11	10.71	10.62
		Income	
Mean Household net income (€/year)	33,755	28,327	27,499
		Contextual	
Make ends meet, %Difficulty	21.1	31	46.7
		Health indicator	
Self-percieved Health, %Poor	7.9	13	9.4
		Countries	
France, % (n)	91.3 (3525)	3.5 (136)	5.1 (198)
Germany % (n)	90.8 (4742)	7.2 (377)	2 (106)
The Netherlands % (n)	95.7 (3695)	.9 (35)	3.4 (131)

Table 1: Descriptive statistics

Figure 2 illustrates the birthplaces of respondents, categorising them based on their respective backgrounds. Notably, within the study's sample, a significant proportion of respondents with Western backgrounds hailed from Algeria, Poland, and Russia. In contrast, a larger share of respondents with

non-Western backgrounds had birthplaces in Indonesia and Tunisia. Figure 3 depicts the percentage of poor-rated health within the respective countries included in the analysis with France reporting the highest percentage.

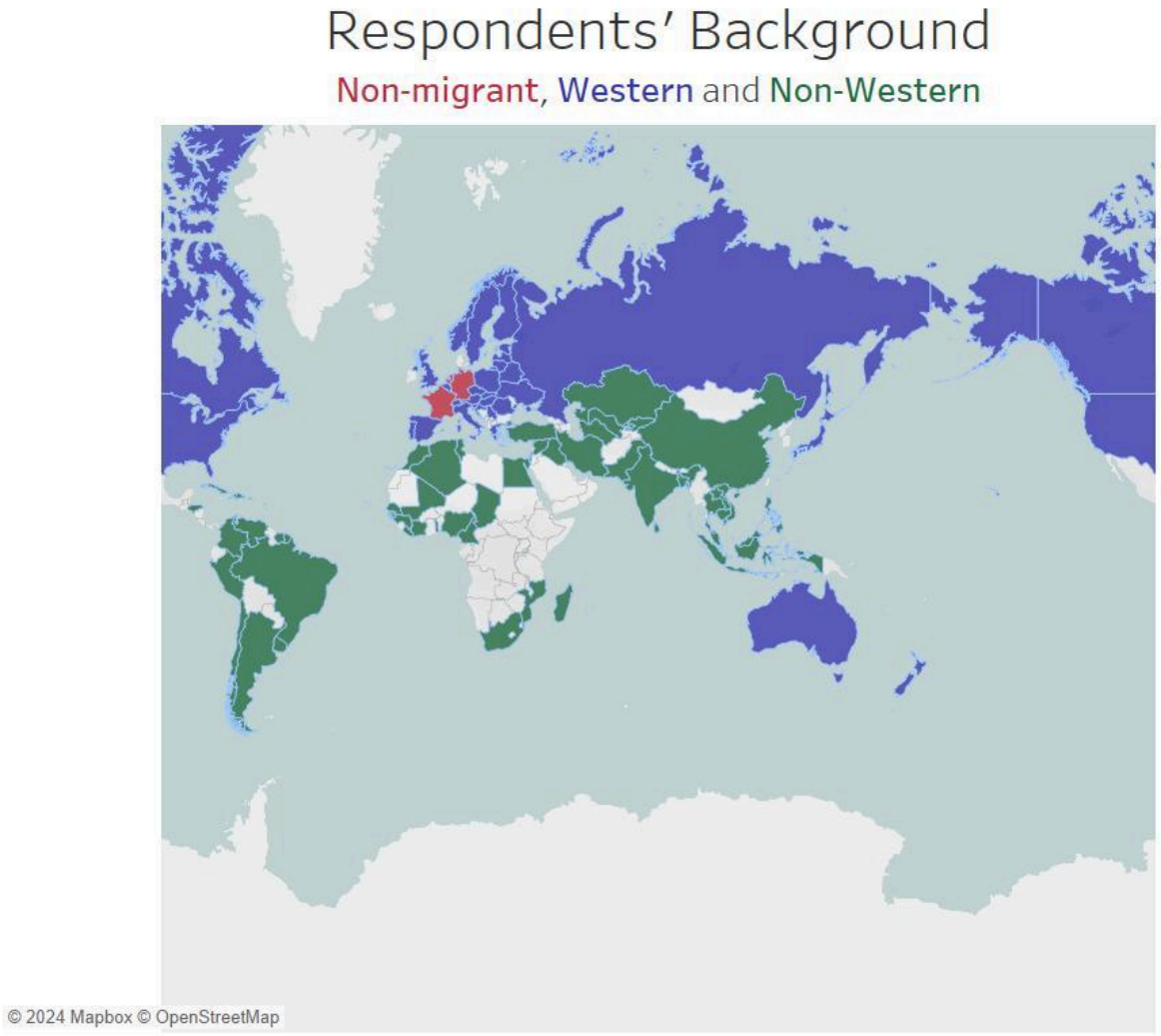

Figure 2: Map of Respondents' Background (Made by Author, 2023)

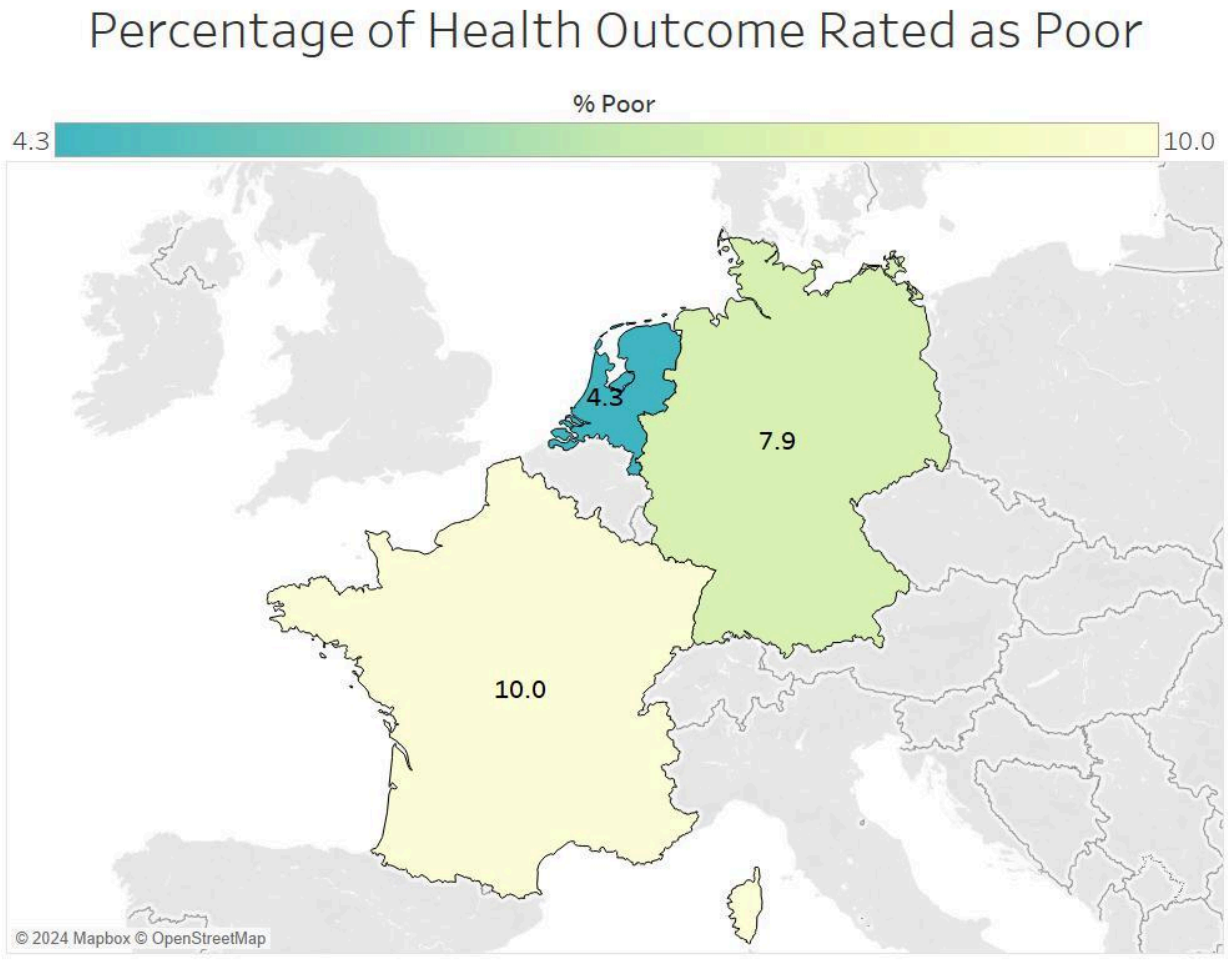

Figure 3: Map of self-perceived health in 3 countries (Made by Author, 2023)

4.2 Binary Logistic Regression

Table 2 depicts the results from the Binary logistic regression. These tables present the seven modelling attempts; Null model - Model 7. This is done to analyse how the covariates affect the association between migration background and health. It has been done so in a stepwise approach to reflect the different SDOH variables in the conceptual model and control variables for other confounding factors that may influence outcomes. Each model represents a new additional set of covariates being added to the model. The results are reported as odds ratios with their respective significance level demarcated with an asterisk followed by standard error values in parentheses.

The null model shows the regression results when solely using the main independent variable, the migrant background (compared to non-migrants). The model showcases the unaffected association between migrant background and health. Model 1 presents the introduction of basic demographic

independent variables: ‘age’ and ‘gender’. The results indicate the substantial significance of age, revealing a positive correlation—suggesting that as age increases, the likelihood of reporting poor health also increases.

In Model 2 (M2), the integration of the educational variable – 'education levels' – appears to enhance the model's explanatory capacity. Among these, the 'Secondary’ and ‘tertiary education levels' emerge as statistically significant, with 'primary education' serving as the reference category. Education levels display a negative coefficient which indicates that as the education level variable increases by one unit, the log odds of the outcome, in this case, poor self-rated health decreases. This can be interpreted by the odds ratio as respondents with secondary and tertiary education are 22% (secondary) and 64.3% (tertiary) less likely to report poor health outcomes compared to respondents with primary education, assuming all other variables in the model are held constant. A discernible trend is observed: both education levels display negative regression coefficients, suggesting that higher educational attainment is associated with a reduced likelihood of reporting poor health. Given the incremental increase in explanatory power with the addition of new independent variables, Model 5 warrants our attention. This model incorporates all independent variables, relevant to answering our main research questions and secondary research question 1, “*Are there differences in self-reported health among the migrant subgroups?”*.

Model 5 demonstrated a significant majority of its variables reporting statistical significance, allowing us to reject the null hypothesis. that the regression coefficients are equal to zero and conclude that there are relationships between said independent variables and negative health outcomes. Seven variables emerged as significant predictors of poor health, maintaining the statistical significance and direction observed in previous models. Tertiary education maintains its significance. Economic factors such as ‘Income’ and the contextual variable measured by the query: ‘Is household able to make ends meet’ also displayed significance. The negative coefficient for Income, with an odds ratio of 0.848, suggests a 15.2% decrease in the likelihood of reporting poor health with increasing income. Conversely, households struggling to make ends meet are 130% more likely to report poor health. Focusing on migrant backgrounds, ‘Western Background’ and ‘Non-Western background’ variables addressed our first secondary research question. Interpreting the odds ratio for respondents with a Western as well as non-Western background provides insightful results despite the latter lacking statistical significance. The study noted that migrants with Western backgrounds were more likely to report poor health. Finally, the country-specific variables ‘France and ‘Germany’ provided further insights with some of the highest reported odds ratios. The country-specific variables attempt to bring further insight into the differences in health outcomes between France and Germany, comparing them with The Netherlands. Compared to

respondents from The Netherlands, those in France and Germany reported significantly higher rates of poor health.

Moving on modelling attempt 6, this model attempts to answer secondary research question 2: *Are there differences in self-reported health between the genders of migrants?* In this part of the analysis, the model focused on the interaction effects between gender and migrant background in relation to self-perceived health. Females with a non-Western background have more than double the likelihood of reporting poor self-perceived health in comparison to their male counterparts.

In the last modelling attempt, Model 7, the last secondary research question:

Are there differences in self-reported health between economically developed Western countries and less economically developed Western countries? This concluding part of the analysis focused on the difference between the two groups.

Table 2: Summary of Binary Logistic Regression

Table 2

VARIABLES	Null model	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6	Model 7
Background category: (ref: Non-Migrant)								
Western Background	1.737***	1.758***	1.866***	1.790***	1.663***	1.390*	1.395*	1.398*
	(0.132)	(0.133)	(0.134)	(0.134)	(0.136)	(0.137)	(0.137)	(0.137)
Non-western Background	1.215	1.379	1.347	1.232	1.031	1.088	1.051	1.043
	(0.168)	(0.169)	(0.170)	(0.172)	(0.174)	(0.175)	(0.180)	(0.180)
Age		1.039***	1.033***	1.030***	1.036***	1.037***	1.037***	1.038***
		(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)	(0.003)
Gender: Female (1)		0.945	0.864*	0.839**	0.835**	0.842**	0.833**	0.811**
		(0.065)	(0.066)	(0.066)	(0.066)	(0.067)	(0.067)	(0.076)
Education Level: (ref: low)								
Secondary education			0.780**	0.813*	0.879	0.826	0.828	0.870
			(0.089)	(0.090)	(0.091)	(0.101)	(0.101)	(0.109)
Tertiary education			0.357***	0.413***	0.489***	0.454***	0.455***	0.466***
			(0.116)	(0.118)	(0.120)	(0.128)	(0.128)	(0.138)
Income: (Natural log)				0.752***	0.843***	0.848***	(0.849)***	(0.843)***
				(0.477)	(0.039)	(0.038)	(0.038)	(0.041)
Contextual: (Difficulty)					2.435***	2.305***	2.306***	2.268***
					(0.072)	(0.072)	(0.072)	(0.077)
Countries: (ref: NL)								
France						2.009***	2.005***	2.034***
						(0.100)	(0.100)	(0.105)
Germany						2.406***	2.401***	2.462***
						(0.096)	(0.096)	(0.099)
Interactions:								
Gender x Western							1.289	1.156
							(0.273)	(0.888)
Gender x Non-western							2.195*	2.194*
							(0.366)	(0.433)
Countries (GNI):								3.672
								(1.151)
Constant	0.086***	0.007***	0.015***	0.328*	0.020***	0.011***	0.011***	0.011***
	(0.034)	(0.220)	(0.260)	(0.477)	(0.528)	(0.531)	(0.531)	(0.563)

Robust standard errors in parentheses; significance levels: *** p<0.001, ** p<0.01, * p<0.05

Table 2: Summary of Binary Logistic regression

5. Discussion

5.1 Summary of results

This paper aimed to investigate the health outcomes from a life-course perspective and investigate if there is a difference in health outcomes between migrants and non-migrants.

The research questions were investigated through binary logistic regression modelling using secondary data collected and provided by easySHARE (Wave 5). The first hypothesis was that migrants would be more likely to exhibit negative self-perceived health outcomes as compared to non-migrants, increasing with age. The second hypothesis was that females would be more likely to report poorer health outcomes than their male counterparts. However, this was only observed among female migrants of non-Western background. According to the study, migrants with a Western background were more likely than non-migrants to report poor health. Age demonstrated a positive correlation, indicating that as age increases, the probability of reporting poor health also rises. Overall, female respondents were less prone to reporting poor health compared to males, yet an opposite trend was observed among female migrants of non-Western backgrounds. Tertiary education and higher income exhibited a protective effect, signifying a reduced likelihood of reporting poor health outcomes. The contextual factor reflecting difficulty in making ends meet significantly elevated the probability of reporting poor health. Respondents in both France and Germany were more inclined to report poor health outcomes when contrasted with respondents in The Netherlands. The final hypothesis was that migrants of less economically developed countries would be more likely to report poorer health outcomes than their better developed counterparts. This direction was observed, however this variable was not statistically significant.

5.2 Discussion of findings

When looking at the results in Figure 2, it becomes clear that SDOH plays a key role in health outcomes as nearly all the independent variables emerged as statistically significant predictors of poor self-perceived health. Overall, there was a decreased likelihood of having poor self-perceived health when there were increased levels of education, income, and contextual factors. Of all the variables included, one of the education levels (Secondary education) and background status (non-Western) variables were statistically insignificant. Although previously significant, secondary education lost its significance in later modelling attempts with the inclusion of the added variables. This could be explained by the addition of covariates which might influence the relationship between tertiary education and health outcomes. For instance, higher education might lead to better income which in turn could lead to more positive health outcomes. With the addition of these variables, the direct effect of secondary education may appear less

significant than in the previous model. The decrease in significance may also be caused by the added variables having a stronger relationship to health outcomes. Consistent with the healthy immigrant paradox, the study discovered that older Western migrants self-rated their health as being worse than those who were not migrants. Moreover, female non-Western migrants exhibited a higher likelihood of perceiving their health as poor compared to men of the same background. This pattern may be partially elucidated by the global disadvantages women commonly face, spanning areas such as educational attainment, workforce participation, and overall disparities in self-rated health during old age.

Respondents in France and Germany have more than double the likelihood of reporting poor self-perceived health in comparison to respondents in the Dutch context. The 'Countries (GNI)' variable may be of some interest as despite not achieving statistical significance, it yielded a high odds ratio indicating the direction that older migrants originating from less economically developed Western nations will be more likely to report poor health. The protective effect of education, income and contextual factors on health, as observed in this study aligns with and is explained by the SDOH, HCT, and FCT. However, it should also be worth noting that the health transitions of migrants are likely also influenced by their place of origin. The physical, economical, and political environments of migrants' home countries or regions have a significant influence on their early health after arriving (Reus-Pons et al., 2018). Additionally, the context of origin; specifically the health distributions and stage of various epidemics in sending countries can also affect migrant health transition patterns at older ages (Menzies et al., 2010).

5.3 Limitations

Due to the nature of this study, it was decided that the use of secondary data would be the most appropriate due to several reasons. Firstly, The existence of several databases covering the longitudinal study of ageing. These databases offer access to large and diverse datasets which can provide a more comprehensive understanding of migrant health. These databases address several conditions that make this method more feasible for the study, notably: cost-efficiency, ethical considerations, reduced data collection bias and verified designed surveys. Conducting primary data collection can be costly and time-consuming, especially for a study of this nature. Accessing existing secondary data can address the relevant ethical considerations which can be challenging when tasked with studying sensitive information. Furthermore, the existing secondary data sources consist of institutionally conducted surveys which ensure the reliability and validity of the data.

This study has a number of shortcomings. Longitudinal studies are preferable to cross-sectional studies when examining this topic because they can offer a more complete picture of how health and health disparities change over the course of an individual's life which can yield important insights into the

factors that contribute to these issues. The cross-sectional design makes it impossible to draw conclusions about causality; the results shown are merely markers of association (Reus-Pons et al., 2018).

When interpreting the results, several methodological constraints should be considered. Firstly, SHARE doesn't include institutionalised individuals. It represents only those community-dwelling individuals aged 50 and above. It's possible that the studies showed more positive health trends as a result of the exclusion of institutionalised people, who frequently have worse health. Furthermore, panel attrition of elderly people may influence sample selection which in turn reduces the findings' representativeness and generalisability (Vonneilich et al., 2021).

Furthermore, SHARE only encompasses participants fluent in the respective country's official language. This criterion leads to the underrepresentation of migrants with limited language proficiency, potentially explaining the observed higher educational status among the migrant population in the study. This limitation is particularly relevant for certain migrant groups such as undocumented migrants, asylum seekers and those in precarious living conditions where an underestimation of health disparities is more likely. The language of the survey is also relevant to the distinct connotations associated with the term 'fair' in different languages and cultures.

Another limitation is that SHARE lacks comprehensive information on migrants' backgrounds, including the duration of their residency, migration history or nationality of migrants' parents. The migrant background variable just acts as a proxy and does not adequately represent the range of migrant experiences (Vonneilich et al., 2021). Further migrant population distinctions based on country of origin or length of stay would result in small sub-samples and might not be practical for statistical analysis given the small number of migrants in the sample (Vonneilich et al., 2021).

Finally, because the analysis relied on combined data from three European nations, there is a chance that trends unique to each nation - such as those brought on by disparate social programmes, migration patterns, and health systems may have been overlooked (Vonneilich et al., 2021).

5.4 Conclusions

This study investigated health outcomes of migrants and non-migrants from a life-course perspective. It examined the disparities in health outcomes between immigrants and native-born people in the populations of France, Germany, and the Netherlands. Additionally, differences in self-reported health between migrant subgroups, gender of migrants and countries of different economic levels were investigated. The findings indicate that migrants had a higher likelihood of having poor self-rated health than non-migrants. Overall female respondents were less prone to reporting poor health, however, female migrants of a non-Western background were more likely to experience poor health. Income exhibited a protective effect leading to a reduced likelihood of reporting poor health outcomes. The other SDOH

variables showed a similar pattern, which appears to be consistent with the long-term social and economic disadvantage that migrants face (Reus-Pons et al., 2018). Respondents in both France and Germany were more inclined to report poor rated health when contrasted with respondents in The Netherlands. Therefore, It is recommended that policies should not only focus on promoting overall healthy ageing but should also address the specific health needs of diverse migrant populations. Given the multitude of socioeconomic and cultural nuances, a nuanced approach that distinguishes between various backgrounds becomes imperative.

Migration is a complex phenomenon that should not be overlooked and distilled down to merely a set of numbers and figures. Conversely, it's essential to integrate qualitative research. Such explorations can offer richer and more nuanced insights into the impact of migration, providing a more comprehensive view of its effects on health outcomes for older individuals.

Additional file

Acknowledgements

This paper uses data from the generated easySHARE data set (DOI: 10.6103/SHARE.easy.800), see Gruber et al. (2014) for methodological details. The easySHARE release 8.0.0 is based on SHARE Waves 1, 2, 3 (SHARELIFE), 4, 5, 6, 7 and 8 (DOIs: 10.6103/SHARE.w1.800, 10.6103/SHARE.w2.800, 10.6103/SHARE.w3.800, 10.6103/SHARE.w4.800,10.6103/SHARE.w5.800, 10.6103/SHARE.w6.800, 10.6103/SHARE.w7.800, 10.6103/SHARE.w8.800)

6. Bibliography:

Alidu, L., & Grunfeld, E. A. (2017). "Gender differences in beliefs about health: a comparative qualitative study with Ghanaian and Indian migrants living in the United Kingdom." *BMC Psychology*, 5(1), 8.

Aichberger, M.C. *et al.* (2010) 'Depression in middle-aged and older first generation migrants in Europe: Results from the Survey of Health, Ageing and retirement in Europe (share)', *European Psychiatry*, 25(8), pp. 468–475. doi:10.1016/j.eurpsy.2009.11.009.

Acevedo-Garcia, D. *et al.* (2012) 'Integrating Social Epidemiology into Immigrant Health Research: A cross-national framework', *Social Science & Medicine*, 75(12), pp. 2060–2068. doi:10.1016/j.socscimed.2012.04.040.

Beland, F. and Zunzunegui, M.V. (1999) *Predictors of functional status in older people living at home.*, *OUP Academic*. Available at: https://doi.org/10.1093/ageing/28.2.153 (Accessed: 26 October 2023).

Benzeval, M. and Judge, K. (2001) 'Income and health: The time dimension', *Social Science & Medicine*, 52(9), pp. 1371–1390. doi:10.1016/s0277-9536(00)00244-6.

Boerma, T. *et al.* (2016) *A global assessment of the gender gap in self-reported health with survey data from 59 countries - BMC public health*, *BioMed Central*. Available at: https://bmcpublichealth.biomedcentral.com/articles/10.1186/s12889-016-3352-y (Accessed: 21 January 2024).

Bogic, M., Njoku, A. and Priebe, S. (2015) 'Long-term mental health of war-refugees: A systematic literature review', *BMC International Health and Human Rights*, 15(1). doi:10.1186/s12914-015-0064-9.

Bollini, P. and Siem, H. (1995) 'No real progress towards equity: Health of Migrants and ethnic minorities on the eve of the year 2000', *Social Science & Medicine*, 41(6), pp. 819–828. doi:10.1016/0277-9536(94)00386-8.

Börsch-Supan, A. *et al.* (2013) 'Data Resource Profile: The Survey of Health, Ageing and Retirement in Europe (share)', *International Journal of Epidemiology*, 42(4), pp. 992–1001. doi:10.1093/ije/dyt088.

Börsch-Supan, A. & S. Gruber (2020), 'easySHARE,' Release version: 8.0.0, SHARE-ERIC, Dataset, doi: 10.6103/SHARE.easy.800.

Carmel, S. (2019). "Health and well-being in late life: Gender differences worldwide." *Frontiers in Medicine*, 6, 218. [Online] Available at: https://doi.org/10.3389/fmed.2019.00218.

Constant, A.F. (2017) *The healthy immigrant paradox and health convergence - IFO*, *ifo Institut*. Available at: https://www.ifo.de/DocDL/dice-report-2017-3-constant-october.pdf (Accessed: 21 January 2024).

Dahl, E. *et al.* (1998) *Health Inequalities in later life in a Social Democratic Welfare State*, *Social Science & Medicine*. Available at: https://www.sciencedirect.com/science/article/pii/S027795369600189X (Accessed: 26 October 2023).

Dewey, M. E., & Prince, M. J. (2005). Mental health. In A. Börsch-Supan, A. Brugiavini, H. Jürges, J. Mackenbach, J. Siegrist, & G. Weber (Eds.), Health, ageing and retirement in Europe - first results from the Survey of Health, Ageing and Retirement in Europe. Mannheim: Mannheim Research Institute for the Economics of Ageing (MEA), 108–17.

Eurostat. 2016. "Population Structure and Ageing." [Online] Available at: http://ec.europa.eu/eurostat/statistics-explained/index.php/Population_structure_and_ageing. (Accessed: 19 October 2023).

Evandrou, M. *et al.* (2016) 'Ethnic inequalities in limiting health and self-reported health in later life revisited', *Journal of Epidemiology and Community Health*, 70(7), pp. 653–662. doi:10.1136/jech-2015-206074.

Göttler, A. (2023) *Healthy ageing for older migrants in Germany – a discourse analysis on ...*, *https://mediatum.ub.tum.de/*. Available at: https://mediatum.ub.tum.de/doc/1713045/1713045.pdf (Accessed: 13 February 2024).

Gubernskaya, Z. (2015) 'Age at migration and self-rated health trajectories after age 50: Understanding the older immigrant health paradox', *The Journals of Gerontology Series B: Psychological Sciences and Social Sciences*, 70(2), pp. 279–290. doi:10.1093/geronb/gbu049.

Guralnik, J.M. *et al.* (1993) ‘Educational status and active life expectancy among older blacks and whites’, *New England Journal of Medicine*, 329(2), pp. 110–116. doi:10.1056/nejm199307083290208.

Ingleby, D. *et al.* (1970) *Health inequalities and risk factors among migrants and ethnic minorities*, *DIAL.pr - BOREAL*. Available at: http://hdl.handle.net/2078.1/132170 (Accessed: 24 September 2023).

Ingleby, D., Krasnik, A., Lorant, V., & Razum, O. (2012). Health Inequalities and Risk Factors Among Migrants and Ethnic Minorities. Antwerp and Apeldoorn: Garant Publishers.

Kristiansen, M. *et al.* (2016) *Aging and health among migrants in a European perspective - public health reviews*, *BioMed Central*. Available at: https://doi.org/10.1186/s40985-016-0036-1 (Accessed: 24 September 2023).

KS, M. and J, C. (1986) *The health of Hispanics in the Southwestern United States: An epidemiologic paradox*, *Public health reports (Washington, D.C. : 1974)*. Available at: https://pubmed.ncbi.nlm.nih.gov/3086917/ (Accessed: 11 January 2024).

Lee, E.S. (1966) ‘A theory of migration’, *Demography*, 3(1), pp. 47–57. doi:10.2307/2060063.

Link, B.G. and Phelan, J. (1995) ‘Social conditions as fundamental causes of disease’, *Journal of Health and Social Behavior*, 35, p. 80. doi:10.2307/2626958.

Lue Kessing, L. *et al.* (2013) ‘Contextualising migrants’ Health Behaviour - A qualitative study of transnational ties and their implications for participation in mammography screening’, *BMC Public Health*, 13(1). doi:10.1186/1471-2458-13-431.

Lue Kessing, L. *et al.* (2013) ‘Contextualising migrants’ Health Behaviour - A qualitative study of transnational ties and their implications for participation in mammography screening’, *BMC Public Health*, 13(1). doi:10.1186/1471-2458-13-431.

Mackenbach, J.P. *et al.* (2008) ‘Socioeconomic inequalities in health in 22 European countries’, *New England Journal of Medicine*, 358(23), pp. 2468–2481. doi:10.1056/nejmsa0707519.

Malmusi, D., Borrell, C. and Benach, J. (2010) ‘Migration-related health inequalities: Showing the complex interactions between gender, social class and place of origin’, *Social Science & Medicine*, 71(9), pp. 1610–1619. doi:10.1016/j.socscimed.2010.07.043.

Manor, O. *et al.* (2000) ‘Mortality differentials among women: The Israel Longitudinal Mortality Study’, *Social Science & Medicine*, 51(8), pp. 1175–1188. doi:10.1016/s0277-9536(00)00024-1.

Martelin, T. (1994) *Mortality by indicators of socioeconomic status among the Finnish elderly*, *Social science & medicine (1982)*. Available at: https://pubmed.ncbi.nlm.nih.gov/8016690/ (Accessed: 26 October 2023).

Menzies, H.J. *et al.* (2010) *Epidemiology of tuberculosis among US- and foreign-born children and adolescents in the United States, 1994-2007*, *American journal of public health*. Available at: https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2920976/ (Accessed: 15 December 2023).

Migrant Integration Policy Index (2020) *Migrant integration policy index: MIPEX 2020*, *www.mipex.eu*. Available at: https://www.mipex.eu/ (Accessed: 22 January 2024).

Mirowsky, J. and Ross, C.E. (2012) *Education, social status, and health*. New Brunswick: AldineTransaction, a division of Transaction Publishers.

N, R., E, H. and L, H.R. (2001) *The Association of Socio-economic factors with physical and mental capacity in elderly men and women*, *Archives of gerontology and geriatrics*. Available at: https://pubmed.ncbi.nlm.nih.gov/15374032/ (Accessed: 26 October 2023).

Oeppen, C. (2017) *Full article: Forced to leave? the discursive and analytical ...*, *Journal of Ethnic and Migration Studies*. Available at: https://www.tandfonline.com/doi/full/10.1080/1369183X.2017.1384149 (Accessed: 19 October 2023).

Our World in Data (2023) *Data Catalog*, *World Development Indicators*. Available at: https://datacatalog.worldbank.org/search/dataset/0037712/World-Development-Indicators (Accessed: 15 February 2024).

Poulton, R., Caspi, A., Milne, B., Thomson, W., Taylor, A., Sears, M., et al. (2002). Association between children's experience of socioeconomic disadvantage and adult health: a life-course study. *Lancet, 360,* 1640-1645.

Razum, O. and Twardella, D. (2002) *Time travel with Oliver Twist – - razum - 2002 - wiley online library*, *National Library of Medicine*. Available at: https://onlinelibrary.wiley.com/doi/abs/10.1046/j.1365-3156.2002.00833.x (Accessed: 15 December 2023).

Reus-Pons, M. *et al.* (2018) 'Differences in the health transition patterns of migrants and non-migrants aged 50 and older in southern and Western Europe (2004–2015)', *BMC Medicine*, 16(1). doi:10.1186/s12916-018-1044-4.

Ross, C.E. and Wu, C. (1995) 'The links between education and health', *American Sociological Review*, 60(5), p. 719. doi:10.2307/2096319.

Saydah, S.H., Imperatore, G. and Beckles, G.L. (2012) 'Socioeconomic status and mortality', *Diabetes Care*, 36(1), pp. 49–55. doi:10.2337/dc11-1864.

SHARE-ERIC. (2023). Data Access. SHARE-ERIC. Retrieved from https://share-eric.eu/data/data-access.

Shah, A., Lindesay, J. and Dennis, M. (2009) 'Comparison of elderly suicide rates among migrants in England and Wales with their country of origin', *International Journal of Geriatric Psychiatry*, 24(3), pp. 292–299. doi:10.1002/gps.2105.

Spallek, J., Zeeb, H. and Razum, O. (2011) 'What do we have to know from migrants' past exposures to understand their health status? A life course approach', *Emerging Themes in Epidemiology*, 8(1). doi:10.1186/1742-7622-8-6.

Stolz, E. *et al.* (2019) *Individual and country-level determinants of nursing home admission in the last year of life in Europe*, *PLOS ONE*. Available at: https://doi.org/10.1371%2Fjournal.pone.0213787 (Accessed: 13 February 2024).

Vonneilich, N. *et al.* (2021) *Health patterns among migrant and non-migrant middle- and older-aged individuals in Europe-analyses based on share 2004–2017*, *MDPI*. Available at: https://doi.org/10.3390/ijerph182212047 (Accessed: 15 December 2023).

World Bank (2023) *Data Catalog*, *World Development Indicators*. Available at: https://datacatalog.worldbank.org/search/dataset/0037712/World-Development-Indicators (Accessed: 15 February 2024).

World Health Organization (WHO). (2015). World Report on Aging and Health. WHO Press. [Online] Available at: https://www.who.int/ageing/events/world-report-2015-launch/en/

WHO (2022) *WHO report shows poorer health outcomes for many vulnerable refugees and migrants*, *World Health Organization*. Available at: https://www.who.int/news/item/20-07-2022-who-report-shows-poorer-health-outcomes-for-many-vulnerable-refugees-and-migrants (Accessed: 21 January 2024).

Zajacova, A. and Lawrence, E.M. (2018) *The relationship between education and health: Reducing disparities through a contextual approach*, *Annual review of public health*. Available at: https://pubmed.ncbi.nlm.nih.gov/29328865/ (Accessed: 25 October 2023).

7. Appendix

Appendix A - Descriptive statistics

Table 1: Descriptive statistics of easySHARE data; Wave 5 (n = 12945; Across all background status)

Table 1

Variables	*Non-Migrant (n = 11962) (92.4%)*	*Western-Background (n = 548) (4.2%)*	*Non-Western Background (n = 435) (3.4%)*
Mean Age (years)	65.6	65.5	62.4
Female Gender, %	54.6	54.0	54.3
		Education	
Primary Education, % (n)	11.3 (1347)	10.6 (58)	18.6 (81)
Lower/upper secondary Education, % (n)	61.2 (7317)	54.7 (300)	52 (226)
Tertiary Education, % (n)	27.6 (3298)	28.2 (190)	29.4 (128)
Mean Education (years)	11	10.71	10.62
		Income	
Mean Household net income (€/year)	33,755	28,327	27,499
		Contextual	
Make ends meet, %Difficulty	21.1	31	46.7
		Health indicator	
Self-percieved Health, %Poor	7.9	13	9.4
		Countries	
France, % (n)	91.3 (3525)	3.5 (136)	5.1 (198)
Germany % (n)	90.8 (4742)	7.2 (377)	2 (106)
The Netherlands % (n)	95.7 (3695)	.9 (35)	3.4 (131)

Appendix B - Tests of Multicollinearity

Coefficients[a]

Model		Unstandardized Coefficients		Standardized Coefficients			Collinearity Statistics	
		B	Std. Error	Beta	t	Sig.	Tolerance	VIF
1	(Constant)	1.708	.066		25.879	<.001		
	Age at interview (in years)	-.008	.000	-.179	-20.420	<.001	.911	1.098
	Gender: female=1, male=0	.013	.008	.014	1.643	.100	.980	1.020
	Education level	.075	.007	.095	10.152	<.001	.796	1.256
	Years of education	-1.417E-6	.001	.000	-.002	.998	.865	1.156
	Natural Log of income	.034	.004	.075	8.481	<.001	.905	1.105
	Is household able to make ends meet (2 - difficulty)	-.165	.010	-.145	-16.453	<.001	.908	1.101
	Background category - Western Eur	.055	.009	.051	5.986	<.001	.986	1.014
	Fr, Ger, Nl	.011	.005	.018	2.126	.033	.957	1.045
	Gender x western (interaction)	-.061	.040	-.013	-1.530	.126	.998	1.002
	Gender x nonwestern (interaction)	-.079	.044	-.015	-1.774	.076	.998	1.002

a. Dependent Variable: SPH Binary (config 1)

Collinearity Diagnostics[a]

Model	Dimension	Eigenvalue	Condition Index	Variance Proportions									
				(Constant)	Age at interview (in years)	Gender: female=1, male=0	Education level	Natural Log of income	Is household able to make ends meet (2 - difficulty)	Background category - Western Eur	Fr, Ger, Nl	Gender x western (interaction)	Gender x nonwestern (interaction)
1	1	7.253	1.000	.00	.00	.01	.00	.00	.00	.00	.00	.00	.00
	2	1.039	2.642	.00	.00	.00	.00	.00	.00	.00	.00	.48	.48
	3	.961	2.747	.00	.00	.00	.00	.00	.00	.00	.00	.52	.52
	4	.427	4.120	.00	.00	.95	.00	.00	.00	.00	.01	.00	.00
	5	.132	7.406	.00	.00	.01	.01	.00	.32	.00	.48	.00	.00
	6	.090	8.963	.00	.00	.00	.18	.00	.32	.01	.48	.00	.00
	7	.059	11.112	.00	.08	.01	.56	.00	.18	.04	.00	.00	.00
	8	.022	18.359	.00	.45	.00	.04	.00	.00	.54	.00	.00	.00
	9	.014	22.972	.01	.19	.00	.17	.39	.01	.31	.00	.00	.00
	10	.003	50.672	.98	.28	.02	.04	.59	.17	.11	.03	.00	.00

a. Dependent Variable: SPH Binary (config 1)

Appendix C - Model Test outputs (Configuration 1)

Binary Logistic Regression

Dependent Variable Encoding

Original Value	Internal Value
Fair/Excellent (Positive)	0
Poor (Negative)	1

Categorical Variables Codings

			Parameter coding	
		Frequency	(1)	(2)
Fr, Ger, Nl	France	3859	1.000	.000
	Germany	5225	.000	1.000
	The Netherlands	3861	.000	.000
Education level	Low (Primary)	1486	.000	.000
	Mid (Secondary)	7843	1.000	.000
	High (Tertiary)	3616	.000	1.000
Background category - Western Eur	Western-background	548	1.000	.000
	Non-western background	435	.000	1.000
	Native born	11962	.000	.000
Is household able to make ends meet (2 - difficulty)	Fairly easily/easily	10053	.000	
	Some difficulty/great difficulty	2892	1.000	

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	6733.607[a]	.044	.102

a. Estimation terminated at iteration number 6 because parameter estimates changed by less than .001.

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	5.534	2	.063
	Block	5.534	2	.063
	Model	582.945	13	<.001

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Background category - Western Eur			5.915	2	.052	
	Background category - Western Eur(1)	.333	.137	5.890	1	.015	1.395
	Background category - Western Eur(2)	.050	.180	.076	1	.782	1.051
	Age at interview (in years)	.037	.003	122.716	1	<.001	1.037
	Gender: female=1, male=0	-.182	.067	7.393	1	.007	.833
	Education level			47.887	2	<.001	
	Education level(1)	-.189	.101	3.459	1	.063	.828
	Education level(2)	-.787	.128	37.631	1	<.001	.455
	Natural Log of income	-.164	.038	18.193	1	<.001	.849
	Is household able to make ends meet (2 - difficulty)	.835	.072	134.200	1	<.001	2.306
	Fr, Ger, Nl			85.739	2	<.001	
	Fr, Ger, Nl(1)	.696	.100	47.993	1	<.001	2.005
	Fr, Ger, Nl(2)	.876	.096	83.960	1	<.001	2.401
	Gender x western (interaction)	.254	.273	.866	1	.352	1.289
	Gender x nonwestern (interaction)	.786	.366	4.610	1	.032	2.195
	Constant	-4.531	.531	72.880	1	<.001	.011

a. Variable(s) entered on step 1: Background category - Western Eur, Age at interview (in years), Gender: female=1, male=0, Education level, Natural Log of income, Is household able to make ends meet (2 - difficulty), Fr, Ger, Nl, Gender x western (interaction), Gender x nonwestern (interaction).

Appendix D - Model Test outputs (Configuration 2)

Binary Logistic Regression

Dependent Variable Encoding

Original Value	Internal Value
Good/Excellent (Positive)	0
Fair/Poor (Negative)	1

Categorical Variables Codings

			Parameter coding	
		Frequency	(1)	(2)
Fr, Ger, Nl	France	3859	1.000	.000
	Germany	5225	.000	1.000
	The Netherlands	3861	.000	.000
Background category - Western Eur	Western-background	548	1.000	.000
	Non-western background	435	.000	1.000
	Native born	11962	.000	.000
Education level	Low (Primary)	1486	.000	.000
	Mid (Secondary)	7843	1.000	.000
	High (Tertiary)	3616	.000	1.000

Omnibus Tests of Model Coefficients

		Chi-square	df	Sig.
Step 1	Step	1418.820	12	<.001
	Block	1418.820	12	<.001
	Model	1418.820	12	<.001

Model Summary

Step	-2 Log likelihood	Cox & Snell R Square	Nagelkerke R Square
1	15265.825[a]	.104	.143

a. Estimation terminated at iteration number 4 because parameter estimates changed by less than .001.

Variables in the Equation

		B	S.E.	Wald	df	Sig.	Exp(B)
Step 1[a]	Age at interview (in years)	-.042	.002	407.529	1	<.001	.959
	Gender: female=1, male=0	.074	.040	3.431	1	.064	1.076
	Education level			162.205	2	<.001	
	Education level(1)	.363	.066	30.474	1	<.001	1.437
	Education level(2)	.870	.075	134.250	1	<.001	2.386
	Natural Log of income	.172	.024	52.725	1	<.001	1.188
	Is household able to make ends meet (2 - difficulty)	-.728	.048	233.359	1	<.001	.483
	Background category - Western Eur			23.246	2	<.001	
	Background category - Western Eur(1)	-.411	.094	19.131	1	<.001	.663
	Background category - Western Eur(2)	-.238	.108	4.894	1	.027	.788
	Fr, Ger, Nl			177.167	2	<.001	
	Fr, Ger, Nl(1)	-.106	.054	3.878	1	.049	.899
	Fr, Ger, Nl(2)	-.603	.049	151.719	1	<.001	.547
	Gender x western (interaction)	-.309	.186	2.746	1	.098	.734
	Gender x nonwestern (interaction)	-.361	.214	2.849	1	.091	.697
	Constant	2.328	.329	50.076	1	<.001	10.258

a. Variable(s) entered on step 1: Age at interview (in years), Gender: female=1, male=0, Education level, Natural Log of income, Is household able to make ends meet (2 - difficulty), Background category - Western Eur, Fr, Ger, Nl, Gender x western (interaction), Gender x nonwestern (interaction).