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IS UNIVERSAL HEALTHCARE TRULY UNIVERSAL? SOCIOECONOMIC AND MIGRANT INEQUALITIES IN HEALTHCARE

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Dedication

To my parents Lidija Kliśanik Spirovska and Mile Spirovski, who unfortunately left this world too early. Growing under their wings showed me the value of education, hard work, and determination. Their love, support and encouragement shaped and continues to shape my trajectory. For this I am forever grateful.

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LIST OF ABBREVIATIONS

AIC - Akaike's Information Criteria
BIC - Bayesian Information Criteria
CNS - Caisse Nationale de Santé
DSP - Dossier de Soins Partagé
EU - European Union
GP - General Partitioner
GR – Greater Region
INTERREG-APPS - Interregional - Approche Patient Partenaire de Soins
NW Europe & NA – North-West Europe and North America
PHR - Personal Health Records
SES - Socio- Economic Status
SHARE - Survey of Health, Aging, and Retirement in Europe
UHC - Universal Healthcare Coverage
US/USA - United States of America
UK - United Kingdome
UTAUT - User Acceptance of Information Technology
WHO – World Health Organisation

AUTHORS’ CONTRIBUTIONS

Study 1 (reported in Chapter 2)

I developed the conceptualisation of the study with guidance from Prof. Anja K. Leist and Prof. James Nazroo. Under the supervision of Prof. Anja K. Leist, I carried out the statistical analyses. I drafted all versions of the manuscript, with critical feedback from both Prof. Anja K. Leist and Prof. James Nazroo. Prof. Anja K. Leist and Prof. James Nazroo read and approved the final version of the manuscript.

Study 2 (reported in Chapter 3)

I led the conceptualisation and the design of the study in collaboration with Prof. Anja K. Leist and Prof. James Nazroo. I designed the survey questions, collected and analysed the data, as well as wrote all versions of the manuscript with advice and guidance from Prof. Anja K. Leist and Prof. James Nazroo. Prof. Anja K. Leist and Prof. James Nazroo read and approved the final version of the manuscript.

Study 3 (reported in Chapter 4)

I led and conceptualized and designed the study with Prof. Anja K Leist. I conducted and interpreted the statistical analyses and wrote all the versions of the manuscript. Prof. Michele Bauman and Dr. Benoît Pétré acquired funding for this project. Prof. Michele Bauman, Dr. Benoît Pétré and Prof. Louis Chauvel coordinated the research project APPS from which the data for this article is drawn. Dr. Etienne Le Bihan, Dr. Mareike Breinbauer, Dr. Benoît Pétré, Prof. Michele Bauman and I contributed to data collection. All authors revised the article for intellectual content. All authors read and approved the final manuscript.

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Abstract

Through the principle of Universal Healthcare Coverage, many governments across Europe and beyond seek to ensure that all people have equal access to good quality healthcare services, without facing a financial burden. Despite this, studies have highlighted persistent migrant and socio-economic inequalities in the use of healthcare services, and personal health records. Therefore, understanding the complex mechanisms that produce and maintain social inequalities in the effective use of healthcare services is thus an important step towards advancing equity in healthcare.

This thesis draws on Bourdieu's forms of capital (cultural, social, economic, and symbolic) to conceptualise and empirically test social inequalities related to healthcare. In doing so, it investigates the factors contributing to socioeconomic and migrant inequalities in the use, navigation and optimisation of healthcare services as well as personal health records. The three studies that make up this thesis empirically test these ideas through statistical modelling on population-based datasets as well as through the analysis of two cross-sectional surveys in Luxembourg and the Greater region.

The first study draws on the fifth wave of the Survey of Health, Aging, and Retirement in Europe (SHARE). It used cluster analysis and regression models to explain how the unequal distribution of material and non-material capitals acquired in childhood shape health practices, leading to different levels of healthcare utilisation in later life. The results suggest that although related, both material and non-material capitals independently contribute to health practices associated with the use of healthcare services.

The second study used data from a cross-sectional survey to investigate inequalities in the navigation and optimisation of healthcare services, taking into consideration the interplay between perceived racial discrimination and socioeconomic position. It revealed disparities between individuals born in Eastern Europe and the Global South and those born in Luxembourg which were explained by the

experience of racial discrimination. It also found that the impact of discrimination on both health service navigation and optimisation was reduced after accounting for social capital.

The last study used data from a cross-sectional survey developed as a part of a collaborative project (INTERREG-APPS) to examine the socioeconomic and behavioural determinants in the intention to use personal health record in the Greater region of Luxembourg (Baumann et al., 2020). This study found that people's desire and actual access to personal health electronic records is determined by different socioeconomic factors, while educational inequalities in the intention to regularly use personal health records were explained by the role of behavioural factors.

Taking together, the findings presented in this thesis thus show the value of mobilising Bourdieu's theoretical framework to understand the mechanisms through which social inequalities in healthcare develop. In addition, it showed the importance of considering racial discrimination when examining migrant, and racial/ethnic differences in health.

Chapter 1: Introduction and Background

The aim of this thesis is to advance theoretical understanding of and to empirically test the mechanisms underlying socioeconomic and migrant inequalities in healthcare by using the concept of capital developed by the French sociologist Pierre Bourdieu. In doing so, it examines determinants in the use, navigation and optimisation of healthcare services, as well as factors related to the adoption of electronic Personal Health Records (PHR). Although access to healthcare services has been widely studied, the topic continues to attract attention among researchers and policymakers for whom equity should be at the foundation of healthcare service provision. Achieving equal access to timely and appropriate services of good quality is a central objective of many national governments across Europe, and beyond. Indeed, timely and appropriate use of healthcare can facilitate the early diagnosis of health problems, making treatment easier and less costly (WHO, 2019).

Therefore, many countries in Europe are committed to the principle of Universal Healthcare Coverage (UHC) which guarantees equal access to quality healthcare services for everyone without having to face a financial burden. Although UHC is essential, it has been acknowledged that provision in itself is not a guarantee towards achieving equal access to healthcare services (Asaria et al., 2016; Szczepura, 2005). Indeed, studies have highlighted persistent inequalities in the use of healthcare services related to socioeconomic status, migration, and race/ethnicity, even in countries committed to the principle of UHC (Filc et al., 2014; Greve, 2016; Szczepura, 2005; Veugelers, 2003). Healthcare services, and especially those offering dental and specialised care, are more often used by those with higher incomes and higher education levels, independent of patient need (Klein and von dem Knesebeck, 2018a; Moran et al., 2021; van Doorslaer et al., 2000). Apart from persistent socioeconomic inequalities in healthcare, inequalities in the use of healthcare services have been documented among different migrant, ethnic and racial groups (Graetz et al., 2017; Klein and von dem Knesebeck, 2018b; Norredam et al., 2010; Szczepura, 2005). Yet the mechanisms underlying such inequalities have largely focused on the investigation of unmet healthcare needs among different social groups, with little attention paid to the ways in which individuals are navigating and optimising the benefits of the healthcare system. The growing proportion of people born abroad has made the use of health care services for different migrant and ethnic groups increasingly important from a public health perspective (Sundquist, 2001).

The socioeconomic patterning of healthcare access is also reflected in the access and use of digital health tools. Electronic PHRs have been described as a means to improve patient access, experiences, and the quality of healthcare services by providing individuals with the right information at the right time (OECD, 2020). However, an increasing number of studies highlight the growing digital divide between those from lower socioeconomic backgrounds and those who are more affluent, with PHR bringing advantages to the most privileged members of society (Ancker et al., 2017; Goel et al., 2011; Po-An Hsieh et al., 2011).

While most of the research on socioeconomic and migrant inequalities in the use of healthcare services and PHR rely on describing differences across socioeconomic and ethnic lines, there is a need for more theoretically grounded approaches to explain the mechanisms through which such inequalities occur. Indeed, it has been noted that socioeconomic variables are included in studies in a mechanical and atheoretical manner (Nazroo et al., 2020; Williams, 1994), which prevents detailed studies of the complex mechanisms through which social inequalities are produced and maintained within society. The advantage of Bourdieu’s concepts of economic, cultural, social and symbolic capital is that they take into account multiple aspects of socioeconomic position and their interrelation, while considering the lifelong accumulation of socioeconomic resources. Individuals are placed in a social space based on the volume and composition of these capitals they own, which drives their practices. Thus, effective engagement with healthcare services could be understood as health behaviours shaped by individuals’ socioeconomic and racial/ethnic position within the social structure.

This chapter provides an overview of some of the concepts and measurements of socioeconomic and ethnic inequalities in healthcare access, including PHR, illustrating the need for a more theoretically grounded approach in studying peoples’ use, experience, and outcomes of healthcare services. It also considers the importance of studying the complex interplay between migration, race/ethnicity and socioeconomic position in shaping healthcare inequalities. Finally, it outlines the specific aims of thesis and the methodological approaches used to reach them.

1.1 Concepts and measurement of equity in access to healthcare services

1.1.1 Conceptualisations of access to healthcare services

Ensuring equity in access to healthcare services is a central goal in many advanced economies. The principle of equity in the use of healthcare services reflects the idea that there should be equal access for equal need, irrespective of someone's socioeconomic position – that is, horizontal equity (Mooney, 1983). On the other hand, vertical equity considers different treatments for different needs (Aday and Andersen, 1974). In contrast to equality in 'outcomes' and treatment provided by health professionals, the concept of horizontal equity mainly takes into account the attributes of the healthcare system, in other words creating equal opportunities for access (Mooney, 1983). However, achieving equity has proven to be difficult, and despite its widespread use in healthcare studies, there are still ongoing debates as to what access is, and which factors should be considered when studying access (Levesque et al., 2013; Ricketts and Goldsmith, 2005). Goddard and Smith (2001), for instance, highlight that the concept of access is conditional on a given country's context and political landscape. When defining access in the United States context, health insurance coverage is considered to sufficiently capture the concept of equity in access. In Europe however, where a large part of the population is covered by health insurance, access to healthcare services refers to a broader set of dimensions, ranging the from ability to secure healthcare services, to time and geographical convenience, financial cost, and the quality of the services received (Goddard and Smith, 2001).

The conceptualisation and measurement of access is critical as the way in which the concept of access is defined and measured will determine the policy response. The most influential framework to study access has been the 'Behavioural Model of Health Services Use' developed by Lu Ann Aday, and Ronald Andersen in 1974, which has since been updated to address some of its shortfalls and include other important measures (Andersen, 1995). The updated framework captures three main factors determining access to healthcare services:

- predisposing factors (individual characteristics such as demographics, education and health beliefs);

- enabling factors (such as income, health insurance coverage);
- need (reflecting individual's health status).

As stated by Andersen, the framework attempts to measure both the outcomes and processes linked to healthcare access. The most common outcome studied in the healthcare literature representing access is healthcare utilisation, that is, realised access. However, he further incudes the additional dimension of effective access, measured by improved health status and improved satisfaction with healthcare services (Andersen, 1995). On the other hand, the most used indicators capturing these processes are financial burden, waiting times and travel time. These factors have since been generalised through the notions of accessibility, availability, and affordability of healthcare services (Thiede et al., 2007). In population health studies, inequalities in access to healthcare services have been commonly assessed through the extent to which different social groups are experiencing self-perceived barriers or unmet needs related to the above factors. Scholars typically examine inequalities in the type, setting, probability or the frequency of visits to general practitioners (GPs), specialised services or hospital use (Braveman, 2003; van Doorslaer, 2006; Veugelers, 2003).

Healthcare utilisation has been widely used as a measure of access and has proven to be valuable in identifying and monitoring inequalities in healthcare use across various social dimensions such as income, wealth, education, migration, or race/ethnicity. Critics have however highlighted that utilisation might be too narrow a measure, in that it cannot capture the quality of the healthcare services received (Szczepura, 2005). Goddard and Smith (2001), for example, argue that in some circumstances a visit to a physician might be purely for administrative reasons, such as obtaining a medical prescription or a certificate for an employer. In other circumstances, under-utilisation might reflect the use of alternative routes to healthcare. Access to healthcare services, measured through the lens of use or system characteristics also fail to capture the more complex interactions between the individual and the healthcare system in which individuals actively seek, navigate, and optimise healthcare services. In the real-world, individuals act and react in accordance to how they perceive the healthcare system and healthcare itself (Brown et al., 2009). Moreover, equity in healthcare should ideally distribute healthcare in a way that results in equal distribution to health (Culyer and Wagstaff, 1993). It is thus necessary to go beyond the simple, fixed category of received care to account for the broader experiences and outcomes through which inequalities in access to healthcare services develop.

1.1.2 Focus on the navigation and optimisation of healthcare services

Despite an important scholarly interest in the use of and access to healthcare services, there is a limited understanding of the complex processes involved in the successful navigation and the optimal use of healthcare services. Sofaer (2009) defines navigation as a dynamic process in which individuals move through the healthcare system in order to find and use appropriate services, and ultimately maximise health outcomes. It considers seeking and choosing the appropriate health provider, making appointments and managing administrative requests, interacting effectively to obtain information, understanding medical instructions such as further testing, treatment, possible referrals or next appointments (Sofaer, 2009). Thus, we can assume that the degree to which individuals will maximise access to and receive quality services will depend on their ability to effectively navigate the often complex and fragmented process of healthcare delivery.

Although the ineffective navigation of healthcare services has been recognised as a barrier to accessing healthcare services, this has not been a major focus of the academic literature so far. The issue of healthcare service navigation has come to the fore in discussions of patient navigator programs in the United States. Patient navigators are professionals who assist patients in overcoming barriers related to accessing healthcare services, and their use originated in attempts to clarify the complex pathways in breast cancer care for people with low socioeconomic backgrounds. Specific tasks might include: assisting with finding the right healthcare provider, solving administrative complexities and facilitating effective patient-provider communication (Dohan *et al.* 2004). The role of patient navigators has evolved and they have been used in an effort to address the inequalities in healthcare access faced by individuals with a lower socioeconomic status, migrants, or racial and ethnic minorities (Natale-Pereira et al., 2011). Although, this type of intervention has been shown to increase screening rates in cancer care, the broader effect of this program in eliminating social inequalities in the use of healthcare services is limited (Ali-Faisal et al., 2017).

Since the role of the health services is to improve population health (Franken and Koolman, 2013), it is important to consider whether the use of healthcare services contributed to improve patients' health. For the moment, this question has mainly been one of patient satisfaction (Andersen, 1995), and patient satisfaction has been widely used as an indicator of service quality (Johansson et al., 2002; Leiter et al., 1998; Prabhu et al., 2018). However, satisfaction has to be seen as related to the expectations about healthcare services – which differ in type and quality across countries (Busse et al., 2011) – and being satisfied does not necessarily mean that one's health has been improved by the healthcare service. Thus, equality in terms of healthcare optimisation means that people use services effectively and are able to use them to improve their health, regardless of their socioeconomic status, migration or ethnic background.

To conclude, the effective navigation and the optimisation of healthcare services are critical components in maximising health outcomes. However, these processes should be understood not only in the context of the healthcare system but also in the broader social and economic environment in which individuals live. This is because of the various difficulties that may arise, in a given local context, when individuals from different socioeconomic, migrant or ethnic backgrounds attempt to find and negotiate the best possible healthcare. Thus, Chapter 2 sets out to operationalise the concepts of healthcare navigation and optimisation and explore them in relation to migration and socioeconomic background.

1.2. Socioeconomic and migrant inequalities in the use of healthcare services

In a healthcare context, socioeconomic position reflects the ownership of desirable resources that enable individuals to maximise the benefits of the healthcare system in order to maintain good health. Some of these resources are reflected in material goods, money, power, knowledge, and beneficial social relationships. However, political, economic, and social factors shape the allocation of material and non-material resources in society, resulting in socioeconomic patterning in health and healthcare outcomes (Lynch and Kaplan, 2000; Marmot, 2017). The existence of patterns of inequalities in healthcare and health outcomes is also evident across different migrant groups, by race or ethnicity. While some of these inequalities are explained by socioeconomic disadvantage, other mechanisms such as racism may also play an important role (Nazroo, 2017; Smaje and Le Grand, 1997) . Despite the fact that socioeconomic and migrant inequalities are interrelated, the literatures on inequalities in healthcare linked to socioeconomic position and migration status have been developed in parallel, with few attempts to integrate both dimensions. Chapter 3 attempts to address some of these issues by looking into the combined effect of socioeconomic position and migration status.

1.2.1 Socioeconomic inequalities in the use of healthcare services

Using measures such as income, education, occupation (or a combination of them), scholars mostly from economic, medical sociology and public health disciplines have documented inequalities in the type and frequency of healthcare service use (Terraneo, 2015; van Doorslaer, 2006; Veugelers, 2003; Yip et al., 2002). Evidence in these studies suggests that people from more advantaged socioeconomic backgrounds visit specialised and dental services more often, whereas those from more disadvantaged background are more likely to use general practitioners and are more likely to be hospitalised. In addition, people from more affluent backgrounds have higher probabilities of using preventive services (Veugelers, 2003). However, these findings vary depending on the outcome (type of service, frequency of use, healthcare settings) used to assess inequalities and the demographic characteristics of the individuals the study focuses on. For example, Lueckmann et al. (2021) found that while the likelihood of vising a GP does not vary by socioeconomic position, those who are more disadvantaged visited their GPs more frequently. On the other hand, the probability that socioeconomically advantaged people use specialised services was higher, but no associations were found between the frequency of specialised care use and socioeconomic status. When investigating inequalities related to socioeconomic circumstances in terms of visits to physicians among the aging population, after adjusting for self-reported health status, the evidence suggests greater use of healthcare services among the better off (Almeida et al., 2017).

Some studies have attempted to draw out some of the mechanisms behind the differential use of healthcare services. For example, one of the reasons behind the lower utilisation of specialist services could be that people from lower SES are provided with fewer referrals to specialised services in healthcare systems in which GPs are a first point of access to other healthcare services. Indeed, a meta-analysis by Willems et al. (2005) on patient-provider communication, suggests that patients with lower socioeconomic backgrounds are given less information or directions for further pathways. However, due to the existence of co-payments for specialised services, the pattern still persists even in countries where access to specialised services is delivered without a prior referral from the GP, such as Germany (Hoebel et al., 2016). Furthermore, results from a review concluded that patients' choices and preferences also contribute to inequalities in the use of healthcare services (Lueckmann et al., 2021). Therefore, while focusing on healthcare utilisation can provide a good starting point by making it possible to assess which population groups are less likely to use healthcare services than others, it does not provide us with the underlying mechanisms that explain the structure of health inequalities. A more theoretically grounded approach to the analysis of socioeconomic variations in healthcare use is thus needed to understand the mechanisms underlying such inequalities, such as how choices and preferences are being constructed differentially according to the socioeconomic circumstances.

1.2.2 Migrant and ethnic inequalities in the use of healthcare services

As with socioeconomic position, migrant inequalities in healthcare use and health outcomes have been extensively documented, with some migrant and ethnic groups experiencing worse health outcomes across the lifespan (Rechel et al., 2013). However, migrants are a diverse population in terms of age, sex, socioeconomic status and the historical and social context of their migration. As a consequence, results from studies on migrant health cannot be universalised.

While there are some exceptions (Nielsen et al., 2012; Stronks, 2001), the majority of studies investigating migrant access to healthcare services tends to treat migrants as a uniform group and research has mainly focused on exploring migrant vs non-migrant differences in access to healthcare (Asaria et al., 2016; Carrasco-Garrido et al., 2009; Garcia-Subirats et al., 2014; Muñoz et al., 2012).

While, this may sometimes be due to pragmatic reasons, such as overcoming the limitation of small sample sizes in some migrant communities, treating migrants as a homogeneous group can limit our understanding of why some groups experience inequalities in healthcare.

Evidence shows that inequalities in migrant healthcare utilisation vary by the type of health service used, the migration subgroup, and the country context. Systematic reviews by Norredam *et al.* (2010) and Graetz *et al.* (2017) arrived to similar conclusions that while migrants are less likely to use preventive and specialised services, they are more inclined to draw on GPs, Accident and Emergency services, and are also more likely to be hospitalised. However, this does vary across groups and contexts, so, in Germany for example, migrants born in Turkey were found to have a higher participation in a cancer screening program (Graetz *et al.*, 2017).

The unequal use of healthcare services among some migrants is linked to various healthcare system barriers such as insurance coverage (mostly pronounced for asylum seekers, and undocumented migrants), and the lack of appropriate services or administrative complexities (Rechel, 2011). Other barriers include the lack of translation and interpretation services, the low cultural competence of healthcare providers and the lack of information on the navigation of healthcare services (Norredam *et al.* 2010). However, studies have also highlighted differential treatment in healthcare settings between ethnic and racial groups. In the United States for example, a study found that African Americans have a lower probability of receiving a kidney transplant and are more likely to receive a poorer quality of specialised care (Epstein et al., 2000).

Moreover, the complex interplay between multiple dimensions of socioeconomic, ethnic and migration status are still not well understood (Williams et al., 2010a). In some instances, variations in migrant or ethnic minorities health outcomes diminish once socioeconomic status is accounted for, often leading to conclusions that differences in health status are merely due to differences in socioeconomic position. When observed migrant or ethnic differences remain after controlling for socioeconomic status, this is often explained by cultural or even genetic differences (Karlsen and Nazroo, 2002; Williams et al., 2010a). Current scientific discussions point to the fact that socioeconomic position needs to be a focus of study when investigating inequalities in health, and not adjusted for. This raises further discussion about the way in which socioeconomic position is theorised and measured and whether the full extent of the disadvantage that minorities face is accurately captured (Karlsen and Nazroo, 2002). Indeed, the socioeconomic disadvantage that migrant, racial and ethnic minorities face are rooted in racism and this should be further explored (Silva, 1997). In this respect, calls for including racism as a fundamental cause of racial inequalities in health, along with the SES have been made (Williams et al., 1997). Thus, the following section provides a short overview of studies that investigate the role of racism and discrimination in health inequalities.

1.2.3 The role of racism and racial discrimination in healthcare services inequalities

There is growing academic interest in examining the relationship between racism and health, with the majority of studies investigating the impact of racism in the US and UK contexts (Hausmann et al., 2011; Krieger, 2014; Nazroo, 2003; Smaje and Le Grand, 1997; Stepanikova and Oates, 2017; Wallace et al., 2016). Evidence across studies is uniform in documenting the harmful effects of racism on mental and physical health, with research on healthcare following suit (Ben et al., 2017a; Nancy Krieger and Sidney, 1996; Stepanikova, 2012; David R. Williams et al., 1997b). Racism is defined as an organised social system in which the dominant group disempowers, devalues and distributes desirable resources to social groups defined as inferior (Williams et al., 2019). Racism can be based on someone's race, nationality, ethnicity or other markers of social difference (Williams et al., 2019). Therefore, reducing race to the solely cultural or biological factors can lead to misinterpretation (blaming one's culture/genes) and minimisation of the structural drivers of racism. In this context, the term racism needs to be taken in its broadest sense, that is, as any type of attitude that casts certain populations as outsiders in relation to the characteristics of the majority of the native population – the dominant group.

Racism is usually reflected in the differential treatment of social groups, and works through the process of discrimination by individuals or institutions which perpetuate negative beliefs (in the form of prejudice), attitudes (in the form of stereotypes), and outcomes (Bonilla-Silva, 1997). Racism can affect health through three interdependent dimensions:

- the structural (reflecting disadvantaged access to economic, physical and social resources);
- the interpersonal (accounting for everyday expressions and experiences of racism, forms of violence that emphasise the devalued and fundamentally insecure status of those with racialised identities), and;
- the institutional dimension (settings where embedded norms, policies and practices foster racial discrimination in processes and outcomes) (Nazroo et al., 2020).

In the healthcare context, racialisation in immigration policies that limits entitlements and hinders access to healthcare services can been seen as a form of structural racism. On the other hand, any differential treatment by health providers based on race, ethnicity or migration status can be understood as interpersonal racism, while the failure of the healthcare system to provide culturally competent care or information and translation services can be seen as a form of institutional racism. Racism shapes peoples' life and health opportunities, through the devaluation of their knowledge and abilities (Nohl et al., 2006). When confronted with racism in healthcare institutions, people may feel insecure, stressed and less confident in their communication, which can hinder access, interaction with health professionals and the effective use of healthcare services.

In health research, discrimination is most commonly used indicator that measure experience of racism. Racial discrimination is assessed using a self-reported assessment of discrimination (Alcalá and Cook, 2018; Krieger and Sidney, 1996; Nazroo, 2003; Williams et al., 1997b), but other methods such as vignettes have also been used (Krieger, 2014a). To measure self-reported discrimination (variable used in chapter 2), a number of studies employ either multi-item scales or single-item questions (Brown, 2001) that seek to capture the occurrence of unfair treatment based on race, ethnicity, or nationality. When studying discrimination in healthcare, both measures produce similar results (Hausmann et al., 2010). A commonly used measure of discrimination in health studies through a scale is the 9-item Everyday Discrimination (ED) measure developed by Williams *et al* (1997), and the Experience of Discrimination (EOD) scale (Krieger et al., 2005). The effect of discrimination can then be assessed either at one or at multiple points in times, and captured in different domains of life (Wallace et al., 2016). Although a valid measure, it has been highlighted that self-reported discrimination suffers from underreporting due to recall bias, or because people do not recognise that they are victims or racism or think that they might deserve it, what has been termed as internalised racism (Krieger, 2012). Moreover, while there are some discussions of the importance of capturing other forms of discrimination such as gender or age, there appears to be little difference in their impact on health, which suggest a similar underlying mechanism, regardless of the cause of discrimination (Williams and Mohammed, 2009).

Studies across the health literature have demonstrated the negative impact of racism in healthcare services. A systematic review and meta-analysis of over 50 studies found that racism negatively impacts the timely use of healthcare service and the adherence to treatment (Ben et al., 2017a). Other studies have shown that people who have experienced racism expressed greater mistrust in healthcare services, lower satisfaction and ineffective interactions with health professionals (Dovidio et al., 2008; Van Ryn et al., 2011). Casagrande and colleges (2007) highlight that the experience of discrimination among African Americans was strongly related to delays in seeking medical care and poor adherence to medical care recommendations. An increasing body of literature shows that racism is not experienced only by individuals with a darker skin colour, but also among some White communities such as Jewish, Irish, Roma and Travellers and more recently Eastern Europeans (Bhopal, 2011; Fox et al., 2015; Sacks, 1994; Tereshchenko et al., 2019). Despite the fact that a large number of studies has documented migrant disparities and discrimination in the use of healthcare services, there is a lack of studies that explicitly investigate the role of discrimination in accounting for those inequalities (Williams et al., 2010b).

An enhanced understanding of how discrimination combines with socioeconomic position to generate and maintain health inequalities is also needed. Studies highlight that the negative impact of discrimination can be lessened by social networks, as those with wider support networks have better coping strategies (Scott Jr and House, 2005; Williams et al., 2019). In this way, some types of material and non-material resources may not only help in accessing healthcare services and in using them effectively but might also help better cope or limit the exposure to discrimination and thus limit its negative effect. This is explored in greater detail in chapter 3.

1.4.5 Socioeconomic and migrant inequalities in the use of Personal Health Records

Personal Health Records (PHR) are increasingly adopted and rolled out across European countries as they are expected to empower patients and facilitate access and engagement in their care. They have been defined as a: "*An electronic application through which individuals can access, manage and share their health information, and that of others for whom they are authorised, in a private, secure and confidential environment* "(Tang et al. 2006).

However, as with the healthcare services, although increasingly available, a slow uptake of this technology has been noted among migrant populations and those with lower socioeconomic status (Chiesa *et al.* 2019; Denton 2001). This creates a risk that personal health records will mostly advantage those who are already optimizing their use of the healthcare system, thus potentially worsening health inequalities (Ancker et al., 2017; Anthony and Campos-Castillo, 2015).

Two sets of literature are important to consider in addressing this issue: the work on the digital divide that focuses on the extent of social patterning in the use digital technology (Goel *et al.* 2011; Mossberger *et al.* 2003; Øversveen 2020; Sarkar *et al.* 2011) and the work on technology acceptance build on Venkatesh et al (2003) Unified Theory of Acceptance and Use of Technology (UTAUT) model. While studies on the digital divide have found disparities both in the ability to access digital technology and in the set of skills needed to use them (Stern 2010; Weiss *et al.* 2018; Yamin *et al.* 2011), little is known about how socioeconomic variable shape different behavioural practices that influence acceptance of digital technology. Thus, this will be further explored in chapter 4.

1.3. A Bourdieusian approach to understanding inequalities in healthcare utilisation

Interest in Bourdieu's capital-based approach comes from its comprehensive coverage of resources that provide status and advantage: alongside the material dimension of economic capital, it also considers the cultural and social dimensions of class position, by drawing on educational prestige and one’s beneficial social relationships. Economic capital takes into account both an individual’s income stream and the wealth accumulated over the life-course and intergenerationally through inheritance. Cultural capital combines educational attainment (institutional), acquired behaviours (embodied) and the cultural wealth of an individual’s possessions (objectified). Finally, social capital represents the nature, reach and potential of an individuals’ social network: who an individual knows and what demands they can make on those they know. In a position where people have an equal amount of economic and cultural capital, social capital can multiply their effect in order to increase their profitability – what Bourdieu terms the multiplier effect of social capital (Bourdieu, 2002). Thus, the role of the capitals and their interrelation provide ways to advance our understanding of the mechanisms underlying the production and the maintenance of social inequalities in health. For Bourdieu, individuals are positioned in social space according to the volume and the composition of capitals owned, what can be called the structure of capitals, empirically explored in chapter 2. Then, Bourdieu goes further to explain that particular structures of capital ownership are linked to particular practices and dispositions, what he terms ‘habitus’. As an embodiment of the particular social and material conditions in which individuals live, habitus translates into lifestyles and practices that are socially stratified. Those with low volumes of capital are restricted to ‘choices of necessity’ in their lives while those who have higher levels of capital are able to accumulate advantage and overcome disadvantage (Bourdieu 1998). While traditional measures of socioeconomic position such as income, education and occupational class have been criticised for measuring only certain aspects of socioeconomic position and predominantly at one time point, Bourdieu’s approach captures inter-related dimensions of class, dimensions that reflect the life course, and places emphasise on the importance of intergenerational transmission of capitals.

Bourdieu’s theory of capitals is particularly applicable in the domain of health inequalities, given the complexity of the pathways connecting socioeconomic position to healthcare and health outcomes. While Bourdieu’s concepts have been extensively used to study inequalities in the field of education, the interest in his work in the health domain is more recent. His approach to studying inequalities has been mobilised to investigate inequalities in healthcare outcomes, including mortality as well as physical and mental health (McGovern and Nazroo 2015, Nazroo 2017, Pinxten and Lievens 2014, Veenstra 2007, Veenstra and Patterson 2012). However, the importance of the capitals in understanding the effective use of healthcare services has not yet been empirically studied.

For example, his notion of economic capital makes it possible to take into account both the material resources that facilitate access to health services as well as the fact that accumulated wealth enables individuals to draw more strategically on health infrastructure. Cultural capital brings in the interpersonal dimension, as those with higher levels of this capital are better able to achieve more meaningful interactions with health professionals, an important dimension in the production of unequal health outcomes (Abel 2007, Shim 2010). Numerous studies have highlighted that patients with higher social status are perceived more favourably by healthcare providers (Dubbin et al., 2013; Magnus and Mick, 2000). On the other hand, social capital has been shown to have strong effects on the social reproduction of health (Song 2011), and there is significant interest in the idea of network-based resources that can be drawn on to improve health (Carpiano 2006, Legh-Jones and Moore 2012, Stephens 2008). In contrast to Putnam’s conceptualisation of social capital – that focusses on the cohesion of networks (trust, engagement in community networks, and norms of reciprocity) – Bourdieu’s concept of social capital stresses the importance of the resources one can draw from that network, and therefore allows us to better understand social inequalities in health (Carpiano, 2006). For example, in the healthcare context, individual social networks can provide important information and knowledge exchange, as well as facilitate the speed and quality of health services received. Although the evidence linking social capital positively to access to healthcare services is mounting (Bremer et al., 2018; Derose, 2008; Hendryx et al., 2002; Quintal et al., 2019), more work is needed on the conceptualisation and the understanding of the mechanisms through which social capital as a form of beneficial relationship is related to health inequalities. These mechanisms are thus explored in chapters 3.

Another characteristic of Bourdieu's conceptualisation of capitals concerns the notion of symbolic capital. Symbolic capital is defined by Bourdieu as "the form that the various species of capital assume when they are perceived and recognized as legitimate" (Bourdieu 1987:4). According to Bourdieu, agents are classified in society based on two properties (1) the distribution of capitals which can be numbered and measured, and (2) the symbolic properties that those capitals represent as a form of authority, prestige and status in society (Bourdieu and Wacquant, 2013). Therefore, symbolic capital is not an additional form of capital, but it is the recognised and legitimised form of cultural, social, and economic capital by the dominant group.

While Bourdieu did not explicitly lay out a framework to study the interrelation of social class, migration and discrimination in his work, the notions of cultural, social and symbolic capital have been adapted and widely used in migration and ethnicity studies (Cederberg 2012; Go 2013; Gu and Lee 2020, Nowicka, 2015). For example, symbolic capital can be extended to shed light on the interconnection between migration, capitals and discrimination. By exploiting symbolic domination, through the processes of racism and discrimination the dominant group misrecognises the capitals of those being dominated as illegitimate and devalues their lifestyles, practices, physical features, knowledge, and abilities. The most evident example of capital devaluation is the recognition of foreign educational credentials or work experience (Salmonsson and Mella, 2013), as well as immigration policies towards some migrant groups (Fox et al., 2012). These processes then create symbolic values reflected in racialised hierarchies which enforce the symbolic domination of the majority. While whiteness becomes highly valued against which other races are assessed, Fox et al (2012) reveals the existence of different shades of whiteness. For example, he argues that Eastern Europeans migration in the United Kingdome has been racialised by the European Union (EU) immigration policies of enlargement and the popular media, and as a result their whiteness is not recognised as capital. Lacking the symbolic standing of the white capital position, Eastern Europeans are in a racial hierarchy despite their whiteness. This example illustrates that, the processes of racialisation of different groups is bound to specific social, historical, and geographical contexts

(Desmond and Emirbayer, 2009). As Eastern European made up a large population of the migrant population in Luxembourg, their racialisation will be investigated in more details in chapter 3.

1.4. The Luxembourgish Context

1.4.1 Healthcare in Luxembourg

The Luxembourgish healthcare system guarantees universal access to healthcare services through a compulsory social care insurance paid by individuals who are economically active, retired, or receive an alternative payment or social benefits due to unemployment (OECD, 2021). This results in 92.4% of the population being covered by the National Health Fund (CNS - Caisse Nationale de Santé), excluding people who work for international or European institutions and who are covered by their employers' insurance schemes (CNS, 2020). In addition, Luxembourg offers healthcare coverage to the cross-border workers who make up 43.7 % of the Luxembourg workforce (EURES, 2020). However, some of the most vulnerable groups, such as those who are homeless and undocumented migrants, remain without healthcare coverage (OECD, 2021).

Patients are free to choose between different health providers across the country and can directly access most specialised services without referral from a GP. Due to the limited availability of specialised services, patients are offered care abroad for certain types of treatments if the needed treatment is not available in Luxembourg or if there is a long waiting list. However, those visits need to be approved by the Social Security Medical Control (CMSS) (Berthet et al. 2018). The range of healthcare services covered by the CNS is comprehensive, including prevention, inpatient and outpatient services, and some dental services. Patients in Luxembourg are required to pay the full inpatient and outpatient consultation costs at the point of use and claim a reimbursement upon sending the receipted invoice to the health insurance fund (CNS). Depending on the health service provided, this can range between 60% to 100% of full costs (OECD, 2019). On the other hand, fees for hospital care are directly covered by the CNS. Due to concerns that upfront payment might pose financial difficulties for those in economically difficult situations, in 2013 Luxembourg introduced a "benefit-in-kind model" ensuring that individuals with low incomes are protected from upfront payments.

Patients can be granted a certificate with a three-month validity period, to be presented at the health provider in order to be exempt from the payment. Despite this financial relief, it has been acknowledged that this might still discourage patients from seeking care due to the stigma attached to these certificates (Leist 2021). In addition, the Luxembourg healthcare system does not provide free-of-charge interpretation services for those with limited or no language proficiency (Red Cross, 2022), which might pose a barrier in accessing healthcare services for non-native speakers.

Despite the fact that Luxembourg ranks among the lowest in terms of unmet needs for care in Europe, with out of pocket spending at 9.6% of health care costs compared to an EU average of 15.4% (OECD et al., 2021), Moran (2021) found that those in the lowest income quintile face barriers in access to healthcare services related to distance and cost. On the other hand, Luxembourg ranked among the last in terms of a well-integrated, comprehensive and coordinated primary healthcare system (WHO, 2015), which might pose some difficulties in healthcare service navigation.

1.4.2 The introduction of electronic personal health records

Within the framework of a broader health reform in 2010, Luxembourg passed a law adopting the use of new health information and communication technologies. Through article 60 of the social security code (CSS), electronic Personal Health Records (PHR) or ‘Dossier de Soins Partagé’ (DSP) were introduced with the aim to improve access, facilitate the coordination of care while enabling patients to play a more active role in their healthcare (MoH, 2020).

In agreement with the National Commission for Data Protection (CNPD) in June 2015, a pilot project was launched to provide small groups of patients living with chronic conditions with access to their electronic PHR. Since 2015, PHR have been gradually rolled out to all citizens affiliated to the Luxembourg social security system. PHR contain a patient’s health related medical information, which is managed either by the patient directly or by the patient’s trusted health professional. PHR are not mandatory, and the patient can decide to close them at any time. As of today, 77% of the insured population in Luxembourg and the cross-border region has opened a PHR. However, multiple studies have highlighted a limited use of PHR among lower socioeconomic and ethnic minority groups (Goel et al., 2011; Lin et al., 2019b; Walker et al., 2019).

1.4.3 Migrants in Luxembourg

Migration is not a new phenomenon, and a large part of it can be understood as a reflection of global inequalities in terms of environmental or socioeconomic conditions, with individuals moving to improve their life (IOM, 2021). Migration patterns in Europe are largely shaped by its colonial past, wars and the EU-free market. International migration has risen steadily over the years, with Europe being home to 30% of the total migrant population (UN, 2022). The share of migrants in Luxembourg is currently approaching those of natives, with 48% of its population being foreign born, and with Portuguese, Italian and French migrants accounting for most of the migrant population (STATEC, 2021). Migrants in Luxembourg come from a variety of regions (both the global north and the global south) and through a variety of routes (refugees, unskilled and skilled labour migrants). On average, migrants have a higher level of education than the Luxembourg population, however this varies across different country of birth groups (EU-SILC, 2020). In terms of economic circumstances, Lelkes (2007) found that almost half of non-EU migrants still face poverty.

The first big wave of migration in Luxembourg in the 19th century followed the development of the steel industry and was dominated by mainly unskilled labour workers from Germany and Italy, followed by those from Portugal and its colony Cape Verde in the 1960s. The development of the banking sector around the same time and the establishment of the European Union institutions attracted highly skilled and qualified labour mainly from EU countries. The outbreak of the wars in Yugoslavia and Kosovo war in the 1990s resulted in a wave of refugees mainly from Bosnia, Montenegro, and Kosovo settling and working in the Grand Duchy of Luxembourg. Most recently, Luxembourg has seen a wave of refugees caused by the destabilisation of the Middle East and more recently Ukraine which has led to millions of people fleeing to escape conflict and violence. This highlights Luxembourg's highly diverse migration context, where the usual binary categories of migrant vs non-migrant, legal vs non-legal or forced vs voluntary become somewhat arbitrary.

However, the diverse migration context in Luxembourg presents significant challenges. Due to the country's healthy economic situation, migration is not an intensely debated political issue. However, following the first waves of refugees from former Yugoslavia, a policy which forbids asylum seekers from working contributed to negative stereotyping and the portrayal of foreigners as 'lazy' (Kollwelter, 2007). Moreover, immigration policies have long favoured European workers compared to non-Europeans, even though after the second (2007) and the third EU enlargement (2013) working restrictions were applied to immigrants from Bulgaria, Romania and Croatia despite their membership in the EU (European Commission, 2013). Indeed, restrictive immigration policy has been associated with racism since they can trigger hostility against the immigrant populations which could then lead to anxieties, threat and disadvantage (Williams et al., 2019). Moreover, restrictive immigration policies can also negatively affect health and access to healthcare services (Martinez et al., 2015).

Because of negative rhetoric and racial prejudice towards some migrant groups, Luxembourg ranked first in the overall prevalence of discrimination based on skin colour or ethnic origin among EU member states (FRA, 2017). In fact, the European Commission recently decided to open an infringement proceeding against Luxembourg due to its failure to adopt EU laws that combat racism and xenophobia (EC, 2021).

1.4.4 The health of the migrant population in Luxembourg

Evidence suggests that although at first migrant populations are healthier than non-migrants (a phenomenon term coined the 'healthy migrant effect'), their health outcomes deteriorate more rapidly compared to the natives (Newbold, 2005). Some of the proposed explanations behind this phenomenon are that migrants face barriers in accessing healthcare services, or the fact that they experience socioeconomic disadvantage (McDonald and Kennedy, 2004). Others, have however noted that the poorer health of migrants is attributed to their unhealthy behaviour (Cairney and Ostbye, 1999).

Although research on migrant health in Luxembourg is still in its infancy, studies found that Luxembourg migrants experience worse health outcomes than natives in terms of obesity and depression (Ruiz-Castell, M., et al, 2017; Tchicaya & Lorentz, 2014). Most recently, a study into the socioeconomic inequalities in Covid-19 found that people born in former Yugoslavia face higher rates of Sars-CoV2 infections and COVID-19 hospitalisation compared to the natives and other migrant groups (Van Kerm et al., 2022). While there is no study that explicitly analyses inequalities in the use of healthcare services across different migrant groups, a recent study found that migrants were less likely to be able to afford prescribed medicines (Moran et al., 2021). While this issue is not the focus of this thesis, it is important to note that the lack of access to formal healthcare services for undocumented migrants is a pressing concern.

1.5. Aims of the Thesis

The overall aim of this thesis is to contribute to the advancement of the theoretical knowledge related to the mechanisms that underline socioeconomic and migrant inequalities in the use, navigation and optimisation of healthcare services, including PHR, by drawing on the theory of capitals developed by the French sociologist Pierre Bourdieu. This is addressed through a number of research questions related to three distinctive studies:

1. What is the relative importance of each form of capital and the structure of capitals at the individual level in explaining different healthcare utilisation patterns in later life? (Study I);
2. What roles do socioeconomic position and racial discrimination play in inequalities related to the navigation and optimisation of healthcare services? (Study II);
3. Which demographic, socioeconomic, and behavioural factors determine the desire, the use, and the intention to regularly use electronic PHR? (Study III).

1.5.1 Methodological approach

To fulfil these aims, this thesis applies a number of methods and designs, which will be discussed in more details in this section.

Chapter 2, assessed the relative contribution of different forms of capitals and of capital structure at the individual level through three main outcomes: (i) consultations with health professionals, (ii) visits to dentist (iii) overnight hospital stays (including the length of the hospital stay). This was done using the fifth wave of the Survey of Health, Aging, and Retirement in Europe (SHARE). SHARE is a panel survey on health, socioeconomic status, as well as social and family networks. The analysis was based on a sample of 64,840 individuals, aged 50 and older, and covered 15 European Countries. To operationalise Bourdieu's forms of capital, composite variables representing economic, cultural, and social capital were created, taking into consideration the lifelong accumulation of socioeconomic resources such as wealth, parents' education, and the number of books owned in childhood, in addition to traditional socioeconomic variables. The details of the composite variables are outlined in Chapter 2. Next, informed by Bourdieu's framework people were grouped according to the type and the volume of capitals they possessed by using K-means cluster analysis. Four distinct groups were created: those with higher levels of all capitals, those with low levels of all capitals, those with relatively higher levels of material (economic) capital than non-material (social and cultural) capital, and those with higher levels of non-material capital than material capital. Finally, the relative contributions of forms of capital, and their structure were assessed in separate models. Depending on the healthcare utilisation outcome, we ran multivariate logistic and negative binominal regression analyses including relevant covariates.

Chapter 3 attempts to measure inequalities related to the navigation and the optimisation of healthcare services among the migrant population in Luxembourg. The study drew on a cross-sectional survey developed for a wider study of migrants' access to and optimisation of healthcare services in Luxembourg (see Appendix 1.1 for the full version of the questionnaire). The survey was offered in both paper and web-based format. Four main channels were used to recruit survey participants. Firstly, the questionnaire was distributed in the four main hospitals in Luxembourg located in different parts in the country (Centre Hospitalier de Luxembourg, Hôpitaux Robert Schuman Hospitals, Centre Hospitalier du Nord and Centre Hospitalier Emile Mayrisch). Secondly, respondents were recruited through various community events, some organised by ethnic communities living in Luxembourg. Thirdly, in addition to patient association networks, the survey was promoted through various groups on Facebook (e.g. expats in Luxembourg, Portuguese in Luxembourg, Former Yugoslavians in Luxembourg, and various public sites used by the Luxembourg population: 'kleng arbechten an servicer proposeieren'). Lastly, a link to the survey was sent to community organisations working with minorities, refugees, and socioeconomically disadvantaged groups (Red Cross, Caritas, Lëtz Rise Up, Mieterschutz). Participants were selected if they were over the age 18 and had resided in Luxembourg for more than a year. The survey was offered in four languages: Luxembourgish, French, Portuguese, and English. The questionnaire development was informed by interactions with patient representatives, whose characteristics reflect the make-up of the Luxembourg population. The survey was anonymous and a written or an online consent form was obtained from each participant. Ethical approval was obtained from the University of Luxembourg Ethics Review Panel. Based on country of birth, participants were classified into broader migrant categories that take into account Luxembourg's migration context and history. Descriptive analysis was used to reveal the prevalence of perceived racial discrimination among different migrant subgroups. We used regressions (linear and logistic) to examine the roles socioeconomic position and racial discrimination to explain inequalities related to the navigation and the optimisation of healthcare services.

Finally, Chapter 4 investigated the socioeconomic and behavioural determinants in the desire to use, access and in the intention to use PHR regularly, through a questionnaire-based survey. A self-administrated questionnaire was developed and distributed in Luxembourg and in the cross-border region: Lorraine (France), Rhineland-Palatinate and Saarland (Germany), and Wallonia (Belgium). The survey included questions on demographics, socioeconomic and health status, desire and current access and use of PHR. To measure the main construct 'intention to use PHR', questions were adapted from the User Acceptance of Information Technology (UTAUT) model, which has been validated and empirically tested in a number of studies (Venketesh et.al, Hoogenbosch et al.2018, Hoque and Sorwar, 2017)

The questionnaire was accessible in four different languages: French, German, Luxembourgish, and English. The participants (over 18 years of age and living in the Greater Region) were recruited online and in person via various patients' associations, hospitals, and health clinics.

Participation in the survey was on a voluntary basis and completely anonymous. Individuals were provided with an information sheet and were informed about the nature of the study; its research aims and its confidentiality policy. Depending on the mode of data collection, a written or an online consent form was obtained from each participant. The study was granted ethical approval by the University of Luxembourg's Ethics Review Panel. To examine what factors are associated with having access to and the desire to access their PHR, a number of logistic regression models were fitted. Linear regression was used to assess the degree to which individual intend to use their PHR. In addition, to facilitate interpretation of the UTAUT six-item components, factor analysis was used to group similar items into a broader concept. Three models were run, one with the UTAUT variables on technology adoption, the second including demographic and socio-economic covariates, and the last one adding an interaction term between socioeconomic variables and the UTAUT constructs.

1.5.2 Thesis Structure

The next three chapters consist of three academic publications prepared in the framework of this thesis. The first of these (chapter 2) is titled 'A Bourdieusian approach to class-related inequalities: the role of capitals and capital structure in the utilisation of healthcare services in later life' and was published in the journal *Sociology of Health and Illness* in 2019. It draws on Bourdieu's capitals to study inequalities in the use of healthcare services in later life. The second (chapter 3) consists of an article that is ready for submission to a public health journal. The article, titled 'Region of birth differences in healthcare navigation and optimisation in Luxembourg: the interplay of racism and socioeconomic position', focuses on the Luxembourg context to unravel the inequalities in the way in which different migrant communities and natives navigate the healthcare system and draw from it to optimise their health. Chapter 4 was published in *BMC Medical Informatics and Decision Making* in 2021, and is entitled 'Socioeconomic and behavioural factors associated with access to and use of Personal Health Records'. It studies the socioeconomic and technological inequalities in the access to as well as the desire and the intention to regularly use electronic health records. Chapter 5 returns to the main conclusions of these three articles, as well as the broader questions outlined in this chapter, to describe this thesis' contribution to the literature and to scope out avenues for further research on these issues.

Chapter 2: A Bourdieusian approach to class-related inequalities: the role of capitals and capital structure in the utilisation of health care services in later life

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Abstract

This paper draws on Bourdieu's theory of economic, social and cultural capital to understand the relative effect of the volume and the composition of these capitals on health care service use in later life. Based on data from the fifth wave of the Survey of Health, Aging, and Retirement in Europe (n=64,840), we first look at the contribution of each capital in the use of three health care services (general practitioner, dentist and hospital). Using cluster analysis, we then mobilise Bourdieu's concept of habitus to explain how the unequal distribution of material and non-material capitals acquired in childhood lead to different levels of health and hospital care utilisation in later life. After controlling for demographic and health insurance variables, our results show that economic capital has the strongest individual association among the three capitals. However, the results of a cluster analysis used to distinguish between capital structures shows that those with high non-material capital and low material capital have higher levels of primary healthcare utilisation, and in turn lower levels of hospital use. Bourdieu's approach sheds light on the importance of capitals in all forms and structures to understand the class-related mechanisms that contribute to different levels of healthcare.

2.1. Introduction

Persistent socio-economic inequalities in health that continue into later life alongside the aging of the population have important implications for population health in contemporary Europe, as elsewhere. This is especially so in the light of consequently rising demands for health services and the possibility of existing inequalities in the ability to access appropriate healthcare. Seeing a doctor or a health professional on a regular basis is considered to be a vital investment in health. Indeed, appropriate use of healthcare can facilitate the early diagnosis of health problems, making treatment easier and less costly (WHO 2018). Appropriate healthcare becomes especially important later in life, when there may be increasingly complex health needs.

Much of the literature on socio-economic inequalities in the use of health care services situates income as a main predictor of health care utilisation and distinguishes between pro-poor and pro-rich health care services (Allin 2008, Morris et al. 2005). However, measures of socio-economic status provide descriptive classifications of socio-economic inequalities but offer limited insights into how and why such inequalities exist (Connell 1977). Moreover, this may particularly be the case for older people, as traditional ways of measuring socio-economic status via income, education and occupation are even more problematic once people retire from paid employment (Allin 2008, Nazroo 2017).

Previous research on health care access draws on the dominant behavioural model of health service use (Andersen 1995). This model points to the importance of three factors: those that are predisposing (individual characteristics such as age, gender, education and person beliefs), enabling (structural and system-level characteristics such as income and health care insurance) and needs related such as self-perceived health or the degree of illness (Bremer et al. 2018, Lo et al. 2016, Dey and Jorm 2017). Numerous studies have also looked at the access dimension of the use of health care services through the notions of availability, accessibility and affordability of health care services (Ensor 2004, Harris et al. 2011, Kyriopoulos et al. 2014, Yamada et al. 2015). Others claim that only health status predicts the use of health care services, and that this should be the most important factor in health care use (Goodwin and Andersen 2002, Parslow et al. 2004). However, these approaches neglect accumulated class-related individual resources that translate into health literacy and health prevention practices, which help individuals to optimise their use of health care services.

In this article, we argue that Bourdieu’s capital-based approach can serve as an important complement to the current understanding of the determinants underlying health inequalities in the use of health care services. What is interesting about his approach is that it is broad enough to consider not only the monetary dimension of capital but also other forms of capital (social and cultural), represented in lifestyle indicators, educational prestige and the symbolic dimensions of class relations, such as social relationships. This approach enables us to derive specific predictions based on the possession of different forms of capital. By looking into the relative contribution of each of the capitals and the effects of different compositions of capitals, we aim to contribute to a broader understanding of the class-related mechanisms of healthcare access in later life. This is especially important as studies have shown that aging populations have been rather neglected in research on class and health (Nazroo 2017). We begin by providing a more detailed summary of Bourdieusian approaches to understanding capital.

2.2. Bourdieu’s forms of capital

According to Bourdieu, social class is a social group defined relationally in social space by its possession and utilisation of various capitals such as economic, cultural and social capital (Bourdieu 1986):

Economic capital accounts for money, property and other financial assets such as bonds, shares and stocks. In the health domain, economic capital refers to the material resources required to reach, pay in advance for standard health services, and purchase better services (complementary health insurance, treatments abroad, etc.).

Cultural capital exists in three forms: in the embodied state (through behaviours and dispositions learned over the life course), in the objectified state (through cultural goods the individual possesses such as books or musical instruments) and in the institutionalized state (such as an educational qualification). Bringing this into the health field, the concept of cultural health capital reflects individual skills, verbal and non-verbal competences, interaction styles, and attitudes and behaviours, that relate to health practices, including the use of health services (Shim 2010). It also plays a crucial role in the unequal production and distribution of health (Abel 2007).

Social capital is defined by Bourdieu as the “aggregate of the actual or potential resources which are linked to possession of a durable network of more or less institutionalized relationships of mutual acquaintance and recognition” (Bourdieu 1986: 248). In relation to the use of health care services, an individual’s social network can be drawn on to access health information and support, speed up access to health care, or get recommendations on good quality health care providers. Song

(2011), for example, shows that social capital has direct, indirect and intervening effects on the social reproduction of health, such as through providing a valuable information network, emotional support and encouraging engagement in healthy behaviour, amongst other things.

Bourdieu's approach is particularly useful to study inequalities as it relies on three essential ideas capturing the mechanisms that lead to the unequal use of health care services. Firstly, there is the idea that the volume of capitals possessed is linked to particular dispositions or practices, secondly the fact that the capitals can be transmitted across generations, and thirdly, that it is not only the amount of a particular capital individuals possess that matters but also how this relates to the "structure of their capital, that is, [...] the relative weight of the different types of capital in the total volume of their capital" (Bourdieu 1998: 7). We will elaborate on each of these ideas in turn.

For Bourdieu, people are distributed in the social space based on two dimensions: the volume of each capital and the relative amounts of the different types of capital they possess – the structure of their capital. Those with a similar volume of the capitals and a similar capital structure thus occupy a similar social position in the social space: "all agents are located in this space in such a way that the closer they are to one another in those two dimensions the more they have in common; and the more remote they are from one another, the less they have in common" (Bourdieu 1998: 6). Each of these social positions then correspond to a 'habitus', a fundamental concept in Bourdieu's theoretical framework. Habitus is an embodiment of the social and material conditions in which people live which generate distinctive tastes, preferences and lifestyles that are then translated into social practices. The notion of habitus is then related to an individual's 'choice of necessity' in everyday life (Bourdieu 1998). Hence, the practices of individuals with a low volume of capitals are constrained to what is necessary, which leads to adaptation and acceptance of this necessity (Bourdieu 1984). Inspired by this line of reasoning, it has been pointed out that 'capitals are resources for engaging in strategic actions that are intended to position their holders advantageously relative to the other members of social systems' (Veenstra and Abel 2019: 1). For instance, those with the high levels of all capitals have the freedom of choice that allows them to make more informed, long-term and strategic decisions about their health, and in turn create distinctive practices that can translate into a health advantage. This is further highlighted in a study by Smith and Dumas (2019) which shows that

Bourdieu's concept of 'practical sense' helps us understand how individuals internalise priorities at the expenses of others. Furthermore, in their study of the disposition of underprivileged young women towards weight control strategies, Dumas et al. (2014) found that despite the participants' health and weight knowledge, their practices were influenced by their immediate needs and responsibilities. Applying Bourdieu's concept of necessity in our study, it could be assumed that people with lower stocks of the capitals will only use health care services out of medical necessity – when ill for example – while those with higher capital levels will utilise them more strategically – as a form of health prevention for example.

Another important element of Bourdieu's framework is the intergenerational transmission of capital. While this is widely acknowledged for economic capital (in the form of wealth), distinctive forms of knowledge, skills and abilities are also transmitted from one generation to the next (Bourdieu 1986). It is within the family and school contexts that individuals develop their verbal skills and acquire their first health habits, such as having a healthy diet or visiting the dentist and doctor regularly. For example, Missinne et al. (2014), found that those who used prevention services as children had higher cultural capital and a higher probability of using prevention services in later life. At the moment of the appointment with a health professional, cultural capital may further facilitate interactions by providing credibility and helping individuals to comprehend and express complex medical terms and follow instructions on self-care (Dubbin et al. 2013, Shim 2010). Bourdieu's conceptualisation of social capital also has an intergenerational component through the extension of social connections fostered by parents to their children. This is evident in Moore's research highlighting that the higher someone's initial social position, the higher the quality and quantity of resources reached through one's social connections (Moore et al. 2014). An increasing number of scholars are adopting the Bourdieu's conceptualisation of social capital which emphasises the importance of network-based resources that a person can draw on and benefit from (Carpiano 2006, Moore et al. 2014, Song 2011, Stephens 2008).

Finally, for Bourdieu, people are distributed in social space on the basis of a similar composition of the capitals they possess, even within the dominant classes (Bourdieu 1986). For example, Bourdieu distinguishes between those with high economic capital but low amounts of the other capitals (the industrial and commercial elite), those with high cultural capital but lower economic capital (professors, public-sector executives, artists) and those with high economic and non-economic capital (private sector executives, doctors and lawyers) (Bourdieu 1986). It is self-evident that economic capital has a direct impact on health through the environment you live in and through consuming and purchasing premium or supplementary health insurance plans. Those with high wealth can secure comfortable housing in an affluent area free of toxins and pollution, with good transport links and easy access to good quality health services. However, this might not be enough to guarantee the regular use of health care services. Instead, an important factor for the regular use of health care may be non-material capitals (cultural and social capital), that can provide individuals with established healthy habits, access to valuable health information, knowledge of the importance of timely and regular health visits, and strong motivations in staying healthy. Indeed, in his book 'Distinction', Bourdieu states that health-oriented practices are adopted by culturally rich fractions in the middle and the dominant classes (Bourdieu 1984).

In the study of health inequalities, Bourdieu's capitals have been used to empirically unveil the class-related mechanisms producing inequality in health outcomes, such as mortality, physical health and mental health (McGovern and Nazroo 2015, Nazroo 2017, Pinxten and Lievens 2014, Veenstra 2007, Veenstra and Patterson 2012). For instance, Bourdieu's lens has proven helpful in explaining the use of mammography screening, where cultural health capital accumulated early in life was an independent predictor of attending a mammography screening in later life, even after controlling for socio-economic position (Missinne et al. 2014). The research presented here advances the use of Bourdieu's capitals in the health domain in two ways. First, it investigates the relative importance of the three types of capitals in the use of health care services. Second, it goes one step further in exploring the different capital compositions an individual possesses, and how differences in composition are related to the utilisation of health and hospital services. The idea tested here is that certain combinations of these capitals – called capital structures – are associated with higher health care utilisation.

Research questions

Using Bourdieu's approach to capital, we will examine:

(1) The relative importance of each form of capital on the use of different health and hospital services, and;
(2) Whether different capital structures at individual level explain different utilisation patterns of health and hospital services in later life.

In this article, we use the following definition of health services utilisation: "the process of seeking professional health care and submitting oneself to the application of regular health services, with the purpose to prevent or treat health problems" (Scheppers 2006: 326). In addition, in order to understand the links between socioeconomic inequalities and health care utilisation rates, a useful concept is horizontal equity in the use of health care services. This reflects the idea that persons, given equal medical needs, will use health care services equally, irrespective of their socio-economic status (SES), so the 'equal access for equal need' principle. The alternative, vertical equity, which is the extent to which people with greater health needs are better treated has been shown to be difficult to measure (Sutton 2002, Wagstaff and van Doorslaer 2000), so will not be covered here.

2.3 Methods

2.3.1 Dataset and variables

We used the fifth wave of the Survey of Health, Aging, and Retirement in Europe (SHARE). SHARE is a panel data on health, socio-economic status and social and family networks. The data resource profile can be found in Börsch-Supan *et al.* (2013). It has a cross-national and multidisciplinary approach that conveys a comprehensive picture of individual and societal aging. The survey is based on probability samples with full population coverage, giving a representative sample of 64,840 individuals, aged over 50, and covering 15 European Countries (Austria, Belgium, Czech Republic, Denmark, Estonia, France, Germany, Italy, Netherland, Slovenia, Spain, Sweden, Switzerland, Luxembourg, including Israel). The sampled population are individuals born 1962 or earlier, and their partners/spouses regardless of their age. Except for the variables on income, assets and consumption expenditure, the missing data for the other variables are relatively low (less than 5%). However, this varies across countries. Denmark and Sweden have the lowest percentage of missing data (less than 10 percent), and countries such as Spain, Slovenia, Luxembourg and Israel have considerably higher missing values on wealth variables, reaching over 60 percent on some wealth components.

2.3.2 Measurement of the use of health care services and overnight hospital stays

Access to health care services included consultations with a health professional, visits to dental services, and overnight stays in hospital. For consultations we used answers to the following questions: ‘In the last 12 months, about how many times in total have you seen or talked to a medical doctor or qualified nurse about your health? Please exclude dentist visits and hospital stays but include emergency room or outpatient clinic visits. To simplify the interpretation, we created a binary variable indicating if a person had seen a health professional or not in the last 12 months. Dentist visits were measured through the answer to the following question: ‘During the last 12 months, have you seen a dentist or dental hygienist?’ (yes/no). In terms of hospital stays, the exact question is: ‘During the last 12 months have you been in the hospital overnight? Please consider stays in medical, surgical, psychiatric or in any other specialized wards’ (yes/no), and ‘How many times have you been a patient in a hospital overnight during the last twelve months?’ (count variable). We used the binary and the count variable to investigate the likelihood of having had an overnight hospital stay and the number of stays.

2.3.3 Covariates

As we were interested in testing horizontal equality, we controlled for an individual’s need for health services. This was captured by self-perceived health status, rated on a five-point scale (excellent, very good, good, fair and poor). We chose this measure as studies have considered it to be in accordance with the health records of health providers, as well as a valid health status indicator for population health monitoring and a reliable predictor for GP and hospital use among older adults (Bremer *et al.* 2018, Miilunpalo *et al.* 1997, Ritter *et al.* 2001, Vaillant and Wolff 2012). It also has an advantage in terms of capturing the biological, psychological and social dimensions of health, as opposed to only the medical diagnosis (Miilunpalo *et al.* 1997). Other covariates included: age, gender, marital status and migration status (born in the country of interview/not born in the country of interview). We also controlled for health care factors such as having a national or supplementary health insurance (yes/no). To account for differences in health care systems between countries, we adjusted for country of residence.

2.3.4 Measurement of economic, cultural and social capital

Economic capital index

In order to operationalise Bourdieu's notion of economic capital, we used total household wealth. It has been shown that in later life, income and occupational status lose their significance, and wealth (i.e., accumulated economic assets) becomes a more important measure of economic capital (Alessie *et al.* 1997, Miilunpalo *et al.* 1997). Household wealth was calculated as a summary of all assets (the value of home and other real estate assets, minus any mortgage, owned share of own business, owned cars, and the values of financial assets – bank accounts, government and corporate bonds, stocks, mutual funds, individual retirement accounts, and contractual savings for housing and life insurance policies owned by the household) minus liabilities (Allin *et al.* 2009, Maskileyson 2014). Non-Euro values were converted. Wealth values of the year preceding the interview were adjusted for purchasing power parity in the same year. To eliminate cross-national differences in levels of wealth, we use the wealth percentile ranks for each country. This transformation ranks individuals according to their wealth at the national level. Given that for Bourdieu cultural, economic and social capital translate into one's social status, this indicator treats economic capital as a positional good. As 46.6% of the values on the wealth variable were missing, the missing-at-random assumption was likely violated. Therefore, we used the study derived imputed wealth values as the most appropriate method to adjust for selective non-reporting. The imputation model in SHARE is based on the Fully Conditional Specification method 'which uses a multivariate sequential approach in an attempt to preserve the correlation structure of the imputed values' (Van Buuren *et al.* 2006). More details on this imputation technique can be found in the SHARE release guides (SHARE Release guide 6.1.1).

Cultural capital index

Bourdieu's notion of cultural capital brings together three aspects: the institutionalized state, the objectified state and the embodied state. These three dimensions of cultural capital were operationalised in the following way:

To measure institutionalised cultural capital, we utilised respondents' highest level of education, in line with previous studies (Pinxten and Lievens 2014, Veenstra 2007). We used the 1997 International Standard Classification of Education (ISCED-97) provided by SHARE. The respondents were asked: 'what is your highest educational degree obtained?' and 'which degree of higher education do you have?' To ensure cross-national comparison, each country leader asked a local expert to map the variable into the ISCED-97. As with the economic capital, we used a relative measure of education that represents it as a positional good. The term 'positional good' treats the value of educational qualifications as related to their relative scarcity in the population (Shavit and Park 2016). This was operationalised by subtracting the country-level average educational qualification from the respondent's educational qualification score.

To measure the embodied state of the cultural capital we composed a parent education variable. First, the variable measuring 'mother's education' and 'father's education' were standardised with the z-score and then averaged to create a variable 'Parent education'. Parental education was not made relative to the country as we used it as a proxy for the social environment in which the respondent was raised.

Finally, the objectified state of cultural capital was measured through the number of books in childhood which was assessed with the question, 'Approximately how many books were there in the place you lived in when you were 10? Do not count magazines, newspapers, or your school books'.

The number of books in childhood, has been shown to capture the objectivised cultural health capital well (Missinne *et al.* 2014). At the end, standardised z-scores were derived for each variable (country specific respondent's education, parent's highest education, and number of books in the childhood) and averaged to provide cultural capital index.

Social capital index:

SHARE participants were asked whether they participated in the following social activities in the last 12 months: (1) participation in voluntary or charitable programmes, (2) participation in political or community related organisations, (3) going to a sport, social or other kind of groups and (4) no participation in any activities. The final score thus ranged from 0 (no participation in any activity) to 3 (participation in all three types of activities). As stated earlier, and as McGovern and Nazroo (2015) notes, networking activities are used widely in the health research literature as a proxy measure of peoples' social connectedness as it has been found to be linked to individual health (Carpiano 2006, McGovern and Nazroo 2015, Song 2011).

Capital structure:

In order to assess capital structures, we used a cluster analysis to classify individuals into groups according to both the type of capital they possessed and the level of capital they possess. To do this, we ran a K-means cluster analysis with squared Euclidean distance and Ward's algorithm to group people into individual clusters based on different volumes of capitals and their overall composition at the individual level. Again, to ensure comparability between scales, the variables were z-standardised. Drawing on Bourdieu's idea that people's practices are not solely determined by material factors, we decided to compare non-material (combined social and cultural, what we call socio-cultural) capital against material (economic) capital and averaged the z-standardized social and cultural capitals.

2.3.5 Statistical methods

Depending on the outcome, we used generalised linear models with two different regression analyses to examine the association between our independent variables and health outcomes. In the analysis that investigated the association between different types of capitals and capital structure on seeing or talking to a health professional, dentist visits, and overnight hospital stays, we used a binary logistic regression. For the number of nights spent in a hospital, we used binominal negative regression as it is used to model over-dispersed discrete count variables. Odds ratios (OR) with 95% confidence intervals (CI) were calculated for all respondents.

In order to assess the relative contribution of each of the capitals on the outcome variables we added the three capitals simultaneously into the regression models. This strategy was preferred as it captures the way in which capitals build on one another (Pinxten and Lievens 2014, Veenstra 2007). We then ran identical models using our measure of capital structures. Both sets of models controlled for the demographic factors gender, age, marital status, migration status, country of residence, as well as self-perceived health, additionally adjusting for owning basic health or supplementary insurance coverage. Results stratified by gender were practically similar so we report the pooled analyses.

2.4. Results

2.4.1 Capital Structure

The cluster analysis of types and levels of capital yielded four types of capital structures (table 2.1) described by the relative, i.e., low (below-average) and high (above-average), volumes of capitals: (1) individuals with low economic and high cultural and social capitals (*n = 8,309*), (2) those with high on both economic and non-economic capitals (*n* = 8,293), (3) those with high economic capital but low combined cultural and social capitals (*n = 17,556*), (4) those scoring low on both types of capitals (*n=17,185*).

Table 2.1: Means and standard deviations of z-standardised capitals for the four capital structures

	Cluster							
	High economic, low cultural and social capital		Low economic, high cultural and social capital		High economic, cultural and social capital		Low economic, cultural and social capital	
	M	SD	M	SD	M	SD	M	SD
Economic capital	0,78	0,4	-0,60	0,41	1,06	0,33	-0,97	0,37

Soc-Cul capital	-0,30	0,39	0,60	0,42	0,96	0,42	-0,43	0,35

2.4.2 Descriptive statistics

The average age of respondents at the baseline was 66 (*M*=65.68, *SD*=8.853), of whom 45.3% percent were male (*n*=25,585) and 54.7% were female (*n*=33,255). More detailed descriptive statistics of the sample size are presented in the table below (Table 2.2).

Table 2.2 : Description of the sample (n, %)

	%	N
Self-perceived health status		
Less than very good	26.3	15975
Excellent/Very good	73.7	44735
Used health care services in the last 12 months		
No	10.8	6453
Yes	89.2	53514
Dentist visits in the last 12 months		
Yes	56.2	26567
No	43.8	34033
Hospital stays in the last 12 months		
Yes	15.1	51460
No	84.6	9179
Total nights in a hospital		
Median, SD	11	16.5
Owns supplementary health insurance		
Yes	39.8	36325
No	60.2	24020
Child books when 10		
less than enough to fill one book shelf (<25 books)	58.7	34902
more than enough to fill one or more bookcases (>25)	41.3	24559
Respondents’ education		
No education	22.1	13354
Primary education	56.1	33867
Secondary education	17.2	10406
University education	4.5	2713
Number of social activities in a week		
No activities	45.8	27410
One activity	42.1	25212
Two activities	10	6009
Three or more activities	2.1	1244
Migration status		
Not born in the country of interview	12.0	7228

Born in the country of interview	88.0	52880

2.4.3 Single and combined contribution of capitals and the likelihood of having seen/talked to a doctor

Findings from the model that adjusted for demographics, country of residence, self-perceived health and insurance status shows evidence that all three capitals have a significant association with the probability of having seen or talked to a health professional. Those with higher economic capital had 26% higher odds of having seen a health professional (*OR=1.26, 95%CI=1.12-1.42*), followed by those with higher social and higher cultural capital. As expected, self-perceived health status had the largest significant association with the use of health care services *(OR=2.97, 95%CI=2.77-3.18),* followed by gender, age and health insurance. Being female, older, in poor health, and having a supplementary health care insurance were all associated with having higher odds of having been seen by or having talked to a health professional. Older adults living in Germany, Belgium and France had significantly higher scores in the use of health care services compared to the reference country (Estonia).

As for capital structure, we found that compared to those with a low volume of all capitals, those with low economic but high cultural and social capital had 29% higher odds of having seen a health professional (OR=1.29, 95% CI=1.17-1.43). Similarly, a high volume of all capitals increased odds of having seen a health professional by 41%, (OR=1.41, 95% CI=1.28-1.56). Those with a high volume of economic capital, but low a volume socio-cultural capital still had 16 % higher odds of having seen a health professional, compared to those with low volumes of all capitals. More detailed findings are presented in Table 2.3.

2.4.4 Single and combined contribution of capitals and the likelihood of dentist visits

After controlling for demographics, perceived health and insurance, we observed that economic capital had the largest contribution to explain dentist visits *(OR=2.95, 95% CI=2.716-3.19).* Cultural capital increased the odds of having visited the dentist by 28% (*OR=1.28, 95%, CI=1.24-1.31)*. For social capital, this value is 23% *(OR=1.23, 95%. CI=1.20-1.27)*. Those who were older, not married and rated their health as poor were significantly less likely to use dentist service in the past year. Those with supplementary health insurance and those living in Germany, Sweden and Denmark had significantly higher odds of having used dentist services.

Investigating the combined contribution of capitals, we found that compared to those with a low volume of all capitals, those with a high volume of all capitals were three times more likely to have had a dentist visit (OR=3.26, 95% CI=3.03-3.51), having low economic and high socio-cultural capital still almost doubled the odds of accessing a dentist (OR=1.91, 95% CI=1.78-2.04), and having a high volume of economic capital, but low socio-cultural capital, increased the odds of having visited a dentist by 76% (OR=1.76, 95% CI=1.67-1.1.86).

2.4.5 Single and combined contribution of capital and hospital admissions

Self-perceived health, age, gender and insurance status were significantly associated with the outcome variables. Men, those at higher ages and in poor health had higher probabilities of both hospital admission and staying more days in the hospital. Looking at the single contributions of capitals on overnight hospital stays showed a significant effect of economic capital. Here, a higher volume of economic capital was associated with a decrease in overnight hospital admissions, and in the number of days spent in hospital by 22% *(OR=0.79, 95% CI=0.71-0.87)*. On the other hand, social capital had a small but significant effect on having been admitted to a hospital *(OR=0.96 95% CI=0.92-0.99)*, and 9% lower odds of staying more days in the hospital *(OR=0.91, 95%CI=0.88-0.94)*. Cultural capital on the other hand, was not associated with overnight hospital stays, nor with the number of days spent in hospital.

Considering capital structure, we found that compared to those with low volumes of economic and non-economic capitals, those with higher volumes of both types of capitals had 12% lower odds of being hospitalised overnight (OR=0.88 95% CI=0.81-0.96), and 24% lower odds of staying more days in the hospital. Those within the category of low economic, but high socio-cultural capital had 19% lower odds of being hospitalised overnight (OR=0.81 95% CI=0.74-0.90), and 14% lower odds of staying more days in the hospital. Compared to the reference group, higher volume of economic, but lower volume of socio-cultural capital was associated with 9% lower odds of overnight hospital stays (OR=0.91, 95%CI=0.850-0.971), as well as 12% lower odds of staying more days in the hospital.

Table 2.3: Associations of economic, cultural and social capital and of capital structure on the use of different health care services

USE OF HEALTH CARE SERVICES	**TYPES OF CAPITALS**					
	Economic capital		**Cultural capital**		**Social capital**	
	OR	95% CI	OR	95% CI	OR	95% CI
Seen/talked to a doctor	1.26	(1.12, 1.42)	1.06	(1.06, 1.14)	1.10	(1.06, 1.14)
Dentist visits	2.95	(2.71, 3.19)	1.28	(1.24, 1.31)	1.23	(1.20, 1.27)
Overnight hospital admissions	0.79	(0.71, 0.87)	0.99	(0.96, 1.03)	0.96	(0.93, 0.99)
Length of hospital stay	0.74	(0.67, 0.81)	0.99	(0.97, 1.04)	0.91	(0.88, 0.94)

USE OF HEALTH CARE SERVICES	**CAPITAL STRUCTURE** (ref.cat. = low volume of all capitals)					
	High volume of all capitals		**Low economic, high combined cultural and social capital**		**High economic, low combined cultural and social capital**	
	OR	95% CI	OR	95% CI	OR	95 % CI
Seen/talked to a doctor	1.41	(1.28 1.56)	1.29	(1.17, 1.43)	1.16	(1.07, 1.25)
Dentist visits	3.26	(3.03 3.51)	1.91	(1.78, 2.04)	1.76	(1.67, 1.86)
Overnight hospital admissions	0.81	(0.74 0.90)	0.88	(0.81, 0.96)	0.91	(0.85, 0.97)
Length of hospital stay	0.76	(0.69 0.83)	0.86	(0.79, 0.93)	0.88	(0.83, 0.94)

Adjusted odds ratios and 95% confidence intervals from multilevel logistic regression
Adjusted for: age, gender, marital status, country of birth, country of residence, self-perceived health, basic insurance and supplementary insurance

2.5. Discussion

The analysis was conducted in two steps, starting with an investigation of the link between a particular type of capital with health care and hospital utilisation in relation to the other two capitals. In a second step, the focus shifted to an investigation of the importance of the structure of capital ownership. Through Bourdieu’s notion of ‘habitus’, these two analytical moves clearly show that inequalities in healthcare access are rooted in the different volume and structure of capitals that in turn relate to different levels of health care utilisation.

After controlling for demographics (age, gender, marital status, country of birth), country of residence, perceived health and insurance, findings from the first analysis show the association of individual capitals with the use of health and hospital services. Economic capital was found to be the largest contributor of having a contact with a health professional or visiting a dentist. On the other hand, economic and social capital had a protective effect in terms of hospital admissions and the number of days stayed in the hospital. Cultural capital was strongly associated with visiting a dentist and had a small but significant contribution in seeing or talking to a health professional. However, the broader finding is that all three forms of capital play a role in the use of health, dentist and hospital services. It is possible to explain this by linking each type of capital with a particular set of practices that increase the likelihood of using health services. This article's results thus lend credence to the link between the capitals and particular health promoting practices. As noted above, those with high levels of economic capital are 'free from necessity' and may develop more strategic and long-term practices in managing their health, while those with low economic capital can afford only to satisfy their immediate needs and use health care services only when necessary.

It is expected then that those who do not use primary health care services regularly will be at an increased risk of hospital admissions, and stay longer in the hospital due to poorer health. Cultural capital is linked to particular behaviours and health habits developed since early childhood. This is in line with the Missinne et al. (2014) study that found that wealth and cultural capital measured through education and presence of books in childhood had a significant effect on screening practices in older age women. Those with high social capital can regularly draw on health-related information and are embedded in support networks that can encourage healthy practices. For example, our findings revealed that in addition to facilitating access to health care services, social capital protects against hospital admissions and longer hospital stays. According to Longman et al. (2013), older populations who are socially isolated have reduced capacities to manage chronic illnesses, stress, reduced energy and motivation which can lead to more frequent hospital admissions and lengthy hospital stays.

The second analytical move at the heart of this article is the focus on capital structure in addition to the volume of each capital possessed. The cluster analysis performed on the simple binary 'economic vs socio-cultural capital' yielded four types of capital structures that were associated with clear differences in patterns of healthcare and hospital utilisation. This points to the empirical existence of different capital structures within the population that are associated with distinctive practices linked to the use of health and hospital services. What is particularly striking is the extent to which the hierarchy between groups is consistently the same for the different variables tested. In every case, outcomes are best for those with both high economic and high socio-cultural capital, followed by those with low economic but high socio-cultural capital, then those with high economic capital but low socio-cultural capital and finally those with low volumes of all capitals. This shows that inequalities in the use of health care services are sensitive to immaterial, socio-cultural factors, and reinforces the need to go beyond economic factors when examining class inequalities in health.

Bourdieu also argues that the family plays a decisive role in the maintenance of the social order, through social as well as biological reproduction (Bourdieu 1998). For him, the family is a key site of capital accumulation and the vector through which the capitals are transmitted across generations. This is reflected in our analysis that shows that among the three capitals, economic capital measured through individual wealth was the best individual predictor of the use of health care services (health professional and dentist). Intergenerational transmission seems to not only play a role in the case of economic capital, but also for cultural capital: the cultural environment in which an individual was raised (Bourdieu’s idea of embodied cultural capital) affects the likelihood of engaging with healthcare services. Each of these capitals, and their composition, can then be used as a resource to achieve a more optimal use of general health services and in turn lessen the likelihood of hospital admission and time spent in hospital. Thus, our findings show that it is crucial to consider capital in all its forms and structures to understand some of the class-related practices of health and hospital services utilisation originated by the embodiment of individual’s socio-economic conditions.

Although our research showed the importance of the Bourdieusian approach to health care utilisation it is important to acknowledge that there were several limitations to this study. Firstly, we are aware of the limited range of variables standing for Bourdieu’s concept of social capital. In this respect, it would be useful to have measures of the context of the social relationship, that is, whether the individual’s social network can be drawn on to speed up health procedures or to choose the right health care provider and the most respected doctors. Furthermore, limited by the variables in SHARE wave five, we could not fully measure embodied cultural capital as there was no fine-grained variable giving insight into the different cultural activities that one attends. In addition to cultural activities, variables on health behaviour have been used to measure the cultural capital reflected in group distinctive tastes such as smoking and alcohol consumption in the UK. Despite the applicability of this measure in a country-specific context, however, these variables are quite problematic in cross-country research as cultural tastes vary across countries (Bourdieu 1986). For example, a cross-country analysis on the relation between education and health behaviour found that in Southern European countries higher educational levels are associated with a higher smoking prevalence (Avendano et al. 2009). Another limitation of the study arises from the rather high non-response rate concerning information about household wealth. The currently most accepted analytic strategy is to use the averaged multiply imputed values provided by the SHARE team. Since we do not have sufficient knowledge about the non-response mechanism that generated the missing values for wealth (Rubin 1996), and it can be suspected that missing values are not missing at random (NMAR), the analyses may still suffer from some bias. Finally, our results might hold only across a range of European countries where the vast majority of respondents enjoys universal health coverage. Caution needs to be taken with the generalisability of our results beyond the European context, especially in countries that lack universal health care coverage – such as in the United States for example.

In conclusion, this article highlights the importance of applying Bourdieu’s theory of capitals to uncover some of the possible class-related mechanisms that contribute to the production of health practices related to the use of health and hospital services in later life. Further longitudinal research is needed to untangle the relative importance of socio-cultural assets which the individual receives from its broader family and social environment. It would also be important for qualitative studies to explore in more depth the links between the capitals as well as the mechanisms through which they influence the use of health care services. Given the different health care systems and welfare regimes, it is also important to explore the importance of each of the capitals and of capital structure across different health systems and welfare states.

The article has shown some of the routes through which the ownership of economic, social and cultural capital influences the use of health care services. Two possible conclusions for policy can be drawn from this. The first is that public authorities should encourage individuals to develop their ownership of the individual capitals. While it may be more difficult to build economic capital, developing social networks and gaining knowledge and educational qualifications could be encouraged. However, it is likely that this will be insufficient to equip individuals with the necessary resources to navigate complex health systems. This is because the social field in which the capitals grant particular advantages when it comes to health access is rigidly structured, and that what matters are relative differences in the amounts of capitals owned by individuals. In this interpretation, even if those who are ‘close to necessity’ manage to acquire social and cultural capital, these levels of capital will not grant them the advantages enjoyed by those who are already possess high levels of these capitals. It seems to us that this interpretation is in line with Bourdieu’s concern with the structuration of the social field and fits with our findings on the importance, not only of the volume of capitals, but also of their composition at the individual level. In policy terms, the implication is that interventions would have to target the conditions through which the possession of the right types of capitals facilitates the use of health services.

Chapter 3: Region of birth differences in healthcare navigation and optimisation: the interplay of racism and socioeconomic position

Under review in the International Journal of Health Equity, with Nazroo J.& Leist A.

3.1 Introduction

In the most economically developed countries in Europe, healthcare systems rely on the principal of equity, which some believe to be achieved through the notion of Universal Health Coverage (UHC). However, it is now widely acknowledged that even within this framework there is persistent inequality in the use of healthcare services across different racial/ethnic and socioeconomic groups (Allin 2008; Terraneo 2015). Despite these findings, little is known about how racial/ethnic discrimination and socioeconomic position may jointly contribute to unequal use of healthcare services. In fact, appropriate access to healthcare for a diverse population requires more than simply providing the service: individuals must also be able to effectively navigate the service in order to optimise its benefits. To date, theoretical and empirical research on inequalities in access to healthcare services has generally focused on issues of healthcare service utilisation and unmet healthcare needs, with little attention paid to the issue of navigation and the optimal use of healthcare services (Allin, 2008; Goddard and Smith, 2001; van Doorslaer et al., 2000).

Navigation of healthcare services is a dynamic process during which individuals move through the healthcare system to find and use services (Sofaer, 2009). Healthcare service optimisation is an outcome of a successful navigation process, ensuring access to quality services and the effective use of healthcare systems. Both are central processes in maximising health outcomes. These processes offer a way to understand the difficulties that may arise when individuals from different socioeconomic and racial/ethnic backgrounds face in finding and negotiating the best possible healthcare.

Given that socioeconomic inequalities are strongly associated with race/ethnicity, some scholars have argued that racial/ethnic differences in health outcomes are mainly a reflection of socioeconomic circumstances (Nuru-Jeter et al., 2018). Investigators typically adjust for socioeconomic status, thereby ignoring the causal pathways through which these inequalities are shaped, oftentimes using measurements of SES which are not theoretically grounded (Nazroo et al., 2020; Nuru-Jeter et al., 2018; David R. Williams et al., 1997a). Bourdieu's notions of economic, cultural and social capital can provide useful insights into the different mechanisms that reproduce health inequalities. His approach emphasises the lifelong accumulation and interplay of material and non-material resources that individuals possess, and which shape their lifestyle choices and practices.

Furthermore, there is a growing literature suggesting that in addition to the socioeconomic determinants contributing to health inequalities, exposure to racism may adversely affect access to healthcare services and health outcomes in general (Borrell et al., 2010; Harris et al., 2006; Lee et al., 2009; Nazroo, 2003). Racism has been defined as an organised social system in which the dominant group disempowers and devalues social groups defined as inferior (Williams et al., 2019). It shapes peoples' life and health opportunities in three interdependent dimensions: the structural (reflecting disadvantaged access to economic, physical and social resources, including the forms of capital identified by Bourdieu), the interpersonal (accounting for everyday expression and experience of racisms, forms of violence that emphasise the devalued and fundamentally insecure status of those with racialised identities), and the institutional dimension (settings where embedded norms, policies and practices foster racial discrimination in processes and outcomes) (Nazroo et al., 2020). When confronted with racism in healthcare institutions, people may feel disempowered, insecure and stressed, which in turn can hinder their effective use of healthcare services.

This paper investigates how the combination of perceived racial/ethnic discrimination and socioeconomic status affects healthcare service navigation and optimisation. A possible mechanism through which different capitals relate to effective use of healthcare services involves having the necessary skills or dispositions to communicate and understand healthcare information. Indeed, individuals with a higher socioeconomic status are often taken more seriously by health professionals (Magnus and Mick, 2000). Likewise, effective social networks can help individuals navigate complex healthcare systems (Report and Swift, 2002). Capitals, in their different volumes and forms, may not only facilitate effective use of healthcare services but may also act as safeguards in that they provide the necessary resources to manage and cope with discriminatory practices, thereby lessening the impact of racism. Indeed, individuals with wider social support networks have better coping strategies and can mitigate some of the negative effects of discrimination (Scott Jr and House, 2005). Although there is a large body of evidence documenting the experience of discrimination among different migrant, and racial/ethnic groups, the extent to which discrimination accounts for differences in the effective use of healthcare services is limited.

Therefore, the present study: (i) investigates differences in healthcare service navigation and optimisation by migrant status; (ii) tests whether perceived racial discrimination can account for these differences; (iii) assesses the relationship between the individual and combined roles of economic, cultural, and social capital on these differences, and (iv) assesses whether the possession of capitals reduces the effect of discrimination. We expect to find inequalities in the navigation and optimisation of healthcare services, explained by self-perceived discrimination and differences at the level of the volume of capitals possessed. We also expect to find that some forms of capitals are more effective at moderating the effect of discrimination. The setting of the study is Luxembourg, a country that guarantees universal access to quality healthcare for all, however with some barriers to healthcare access for low-income individuals (Leist, 2021). Luxembourg provides an appropriate context to study inequalities in healthcare service navigation linked to migration. Indeed, 48% of the population is foreign born (STATEC, 22), with migrants originating from a variety of regions (both from the Global North and the Global South) and through a variety of routes (refugees, unskilled and highly skilled migrants). However, among other European countries, Luxembourg ranked first in the overall prevalence of discrimination based on ethnic or migrant background (FPA, 2017). In fact, recently the European Commission decided to open an infringement proceeding against Luxembourg due to its lack of transposition of EU laws that combat racism and xenophobia (EC, 2021).

3.2 Methods

This study draws on a cross-sectional survey developed for a wider study of migrants' access to healthcare services in Luxembourg. Participants were recruited via health providers and community events in areas with ethnically diverse populations. Questionnaires were distributed to migrant and patients' associations who serve disadvantaged migrant communities. To reach the expat communities, we distributed the questionnaire through social media. Participants were selected if they were over the age 18 and had resided in Luxembourg for more than a year. The survey was offered in both paper and web-based formats and in four languages: Luxembourgish, French, Portuguese, and English. The questionnaire development was informed by interactions with patient representatives. The University of Luxembourg's Ethics Review Panel approved the study (ERP 18-037).

3.2 Study Variables

We used two outcome measures: the success with which individuals navigate healthcare services and the extent to which the use of healthcare services is optimised. The higher the score, the better individuals navigate or optimise healthcare services. Navigation combines four items (Cronbach's alpha = 0·78): (i) confidence in the ability to find health providers when needed; (ii) confidence in dealing with administrative procedures (iii) confidence in communicating with health professionals (with all three measured on a scale from 'Not at all confident' (=0) to 'Very confident' (=5), and (iv) how often healthcare providers gave easy to understand medical information (measured on a 4-point scale from 'Always' to 'Never'). The scores were transformed into z-scores and averaged. Optimisation of healthcare services was measured using the sum of two items (Cronbach's alpha = 0·72). The first is a patient's level of satisfaction with the quality of healthcare services received in Luxembourg. Patient satisfaction has been widely used as an indicator of service quality (Leiter et al., 1998; Prabhu et al., 2018). This was measured on a 5-point scale from 'not at all satisfied' (=1) to 'very satisfied' (=5). The second is the patient's perception of the extent of health improvement after a health appointment. This aims to capture the outcome of a patient's appointment, measured on a 5-point scale from 'No improvement at all' (=1) to 'Improved to a very great extent' (=5).

Based on country of birth, participants were classified into broader migrant categories that consider Luxembourg's migration context and history:

(i) Those born in Northern and Western Europe or North America (NEW&NA): a group largely consisting of migrant ‘expats’ working in the financial sector and in European Union institutions.

(ii) Those born in Southern Europe: a group consisting largely of migrants linked to work in the country’s historically dominant coal and steel industry.

(iii) Those born in Eastern Europe (including the Balkans): this group includes former Yugoslavians who originally arrived in Luxembourg as refugees in the 1990s, and other professions, including employees in European Union institutions.

(iv) Those born in the Global South, mainly Africa, Asia and Latin America: this includes recently arrived refugees (Syria, Afghanistan, and Eritrea) as well as individuals attracted by Luxembourg’s increasingly globalised economy.

We use individuals born in Luxembourg as a reference group.

The direct impact of racism was measured through perceived discrimination. Respondents were asked to indicate whether they felt that the quality of healthcare received was negatively affected by their race/ethnicity, nationality, or religion, coded as a binary variable (yes=1, no=0).

We follow Bourdieu’s conception of capitals to categorise individuals’ socioeconomic position:

Economic capital was operationalised using two indicators: household income (ranked in five ordinal levels) and homeownership status, which according to Bourdieu represents the institutionalised form of economic capital, classified in three categories (not an owner, partial homeownership, and full homeownership). Both variables were standardised with a z-score and then averaged to create an index of economic capital.

Cultural capital was measured through three indicators to reflect its institutionalised, embodied, and objectified dimensions: parents’ and respondents’ educational backgrounds and the number of books present at home during childhood. These were z-standardised and averaged.

For *social capital*, we used an index that captures the specific nature of social contacts who might facilitate easier healthcare system navigation and optimisation. This is, because for Bourdieu, social capital represents both an individual’s network and the resources that can be used through that network over the short and long term (Bourdieu, 2002). Therefore, we developed more purposeful questions on whether respondents had someone in their personal network able to recommend a good quality doctor, someone they could ask where and how to access healthcare services and someone able to speed up healthcare appointments, all assessed on a binary scale. The scores on these items were summed, resulting in a range of 0 to 3 points (Cronbach's alpha = 0·77).

Models also included age, gender, partnership status, place of residence, and ability to speak one of Luxembourg's three official languages.

3.4 Statistical analysis

We fitted sequential multiple regression models to examine the predictors of healthcare service navigation and optimisation, namely, perceived racial discrimination, the different capitals, and whether the ownership of capitals moderates the discrimination burden. In the first step, we compared healthcare service navigation and optimisation for individuals with different regions of birth to individuals born in Luxembourg. In the second step, we tested possible associations between individual experiences of perceived racial discrimination with both outcomes. In the next steps, we assessed the contribution of different forms of capital, both individually and jointly, on navigation and optimisation. In the final step, we modelled interaction terms between the capitals and perceived discrimination, to test whether the devaluation of a migrant's capital stock could be a possible pathway through which racial discrimination impacts on these outcomes.

3.5 Findings

Our cross-sectional dataset consists of 386 individuals, with 67% born outside of Luxembourg, and a median age of 42 (IQR: 31;54). Table 3.1 shows the unadjusted prevalence of racial discrimination among different migrant categories. While all migrant groups had a higher prevalence of discrimination than those born in Luxembourg, it was highest for those born in Eastern Europe and in the Global South. Regarding the main capital components, those born in Luxembourg tended to have lower levels of cultural capital but were overrepresented amongst those with higher incomes and amongst homeowners. They also had higher social capital scores. Amongst migrants, Eastern Europeans reported higher cultural capital but lower levels of economic and social capital. Individuals born in the Global South reported similar cultural capital levels to those born in Luxembourg but had lower levels of economic and social capital. Finally, those born in NWE&NA and Southern Europe had higher levels of economic and social capital than those born in Eastern Europe and the Global South but differed in terms of cultural capital.

Table 3.1: Prevalence of (self-reported) perceived racial discrimination in the healthcare setting, and distribution of Bourdieu's forms of capital across different region of birth categories (N=386)

	Born in Luxembourg	**South Europe**	**NW Europe & NA**	**Eastern Europe**	**Global South**
	(n=125)	**(n=60)**	**(n=92)**	**(n=28)**	**(n=76)**
Self-reported discrimination (%)	1·5	11·7	13·1	17·9	18·4
CULTURAL CAPITAL					
Respondent's education (%)					
Up to lower secondary	13·7	14·3	3·3	3·6	10·3
Upper secondary and college	40·5	33·9	21·1	10·7	38·2
University	45·8	51·8	75·6	85·7	51·5
Mother’s education (%)					
Up to lower secondary	58·6	62·9	30·8	11·5	31·3
Upper secondary and college	33·6	24·1	39·7	46·2	41·7
University	7·8	13.0	29·5	42·3	27·0
Father’s Education (%)					
Up to lower secondary	50	58·5	28·0	3·9	20·0
Upper secondary and college	41·3	26·4	30·7	46·1	40·0
University	8·7	15·1	41·3	50·0	40·0
Number of books in childhood (%)					
Fewer than 25 books	38·2	51·7	10·9	8·0	58·7
More than 25 books	61·8	48·3	89·1	92·0	41·3
ECONOMIC CAPITAL					
Respondent income (Euros) (%)					
Below 2,000	9·7	10·2	12·8	8·3	35·2
2,000 - 5,000	32·5	42·9	37·2	41·7	40·7
5,000 - 8,000	25·4	22·5	28·2	20·8	18·5
8,000 - 13,000	21·9	20·4	15·3	25·0	1·9
More than 13,000	10·5	4.0	6·5	4·2	3·7
Homeownership status (%)					
None	29·5	29·3	41·3	51·9	67·7
Partial	41·1	46·6	33·7	40·7	29·0
Full	29·4	24·1	25·0	7·4	3·3
SOCIAL CAPITAL, mean (SD)	1·62(1·74)	1·38 (1·19)	1·38(1·18)	·96 (1·14)	·93(1·05)

NW = North West; NA = North America

Table 2 shows the findings from the models examining the association of discrimination and the different forms of capitals with the ability to navigate healthcare services. There were no differences in healthcare service navigation between those born in Luxembourg and those born in NEW&NA, and those born in Southern Europe. However, there was a significant difference for those born in Eastern Europe and the Global South, who both had lower scores (-1·11 (95% CI=-2·15, -0·07) and - 0·87 (95% CI= -1·71, -0·03) respectively). After including respondents' perceived discrimination in model 2, these inequalities were reduced and became insignificant. The subsequent models (models 3-5), assessing the role of the capitals in successful navigation showed that individuals with higher economic and social capital are better able to navigate healthcare services. In addition, after including social capital in model 5, the negative association of perceived discrimination with the ability to navigate healthcare services was reduced (from -2·04 (95% CI=-2·87, -1·21) to -1·62 (95%CI -2·45, -0·80)). In the final, fully adjusted, model for navigation, both social capital and perceived discrimination had a strong association with the ability to successfully navigate healthcare services and that after including these measures in the model the inequalities faced by those born in Eastern Europe and the Global South were strongly reduced, rendering the coefficients statistically insignificant.

Table 3.2 Regression coefficients for the association of perceived racial discrimination and cultural, economic and social capital on healthcare service navigation

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Region of birth						
Ref: Luxembourg						
NW Europe and NA	-0·53	-0·33	-0·34	-0·34	-0·17	-0·13
	[-1·19,0·14]	[-0·97,0·31]	[-1·06,0·38]	[-1·04,0·37]	[-0·80,0·46]	[-0·87,0·61]
South Europe	-0·09	0·01	-0·18	-0·22	-0·03	-0·33
	[-0·84,0·67]	[-0·71,0·72]	[-0·94,0·57]	[-1·00,0·57]	[-0·73,0·67]	[-1·11,0·45]
Eastern Europe & Balkans	**-1·11**	-0·86	-0·88	-0·63	-0·39	-0·15
	[-2·15,-0·07]	[-1·83,0·10]	[-1·86,0·11]	[-1·70,0·44]	[-1·32,0·55]	[-1·31,1·01]
Global South	**-0·87**	-0·61	-0·59	-0·82	-0·35	-0·60
	[-1·71,-0·03]	[-1·45,0·22]	[-1·51,0·34]	[-1·89,0·25]	[-1·18,0·48]	[-1·56,0·36]
Ref: no discrimination						
Discrimination		**-2·04**	**-2·40**	**-2·17**	**-1·62**	**-1·56**
		[-2·87,-1·21]	[-3·21,-1·56]	[-3·08,-1·26]	[-2·45,-0·80]	[-2·40,-0·71]

Cultural Capital			-0·01			0·01
			[-0·14,0·13]			[-0·12,0·13]
Economic Capital				**0·21**		0·06
				[0·03,0·39]		[-0·12,0·24]
Social Capital					**0·58**	**0·51**
					[0·37,0·79]	[0·27,0·74]
Constant	0·59	0·64	0·49	-0·31	-0·33	-0·66
	[-0·43,1·47]	[-0·30,1·57]	[-0·49,1·47]	[-1·89,1·28]	[-1·28,0·62]	[-2·07,0·76]
R^2	0·11	0·18	0·23	0·21	0·26	0·30

95% confidence intervals in brackets
Adjusted for: age, gender, partnership status, area of residence, and language
NW = North West; NA = North America

Table 3.3 presents the findings of the model concerned with the degree of optimisation of healthcare services. Although none of the coefficients for migrant groups were statistically significant, model 2 shows a strong negative relationship between perceived discrimination and healthcare optimisation -1.53, (95% C = -2.15, -0.90), a relationship that persisted after including the socioeconomic variables. Assessing the role of each individual form of capital (models 3-5), we found that adjusting for social capital reduced the negative effect of discrimination, and also had a positive effect on healthcare service optimisation in the fully adjusted model, with a coefficient of 0·55 (95% CI = 0·33-0·76).

Table 3.3· Regression coefficients for the association of perceived racial discrimination and cultural, economic and social capital on healthcare service optimisation

	Model 1	Model 2	Model 3	Model 4	Model 5	Model 6
Region of birth						
ref: Luxembourg						
NW Europe and NA	-0·03	0·08	0·31	0·11	0·24	0·56
	[-0·59,0·53]	[-0·45,0·62]	[-0·29,0·92]	[-0·50,0·73]	[-0·28,0·75]	[-0·10,1·23]
South Europe	-0·06	0·05	0·03	0·05	0·14	0·16
	[-0·75,0·63]	[-0·60,0·70]	[-0·67,0·74]	[-0·67,0·76]	[-0·45,0·73]	[-0·50,0·83]
Eastern Europe & Balkans	-0·36	-0·19	0·06	0·05	0·15	0·80
	[-1·15,0·44]	[-0·97,0·59]	[-0·86,0·98]	[-0·78,0·88]	[-0·60,0·90]	[-0·14,1·74]
Global South	0·06	0·32	0·53	0·36	0·50	0·57
	[-0·70,0·82]	[-0·46,1·10]	[-0·50,1·55]	[-0·61,1·34]	[-0·23,1·23]	[-0·45,1·58]
Self-perceived discrimination						

ref: no discrimination						
Discrimination		**-1·53** [-2·15,-0·90]	**-1·79** [-2·44,-1·14]	**-1·74** [-2·49,-0·99]	**-1·28** [-1·86,-0·70]	**-1·40** [-2·05,-0·75]
Cultural Capital			-0·07 [-0·18,0·04]			-0·06 [-0·18,0·05]
Economic Capital				0·08 [-0·05,0·22]		0·03 [-0·12,0·17]
Social Capital					**0·48** [0·30,0·65]	**0·55** [0·33,0·76]
Constant	7·51	7·60	7·58	7·59	6·84	6·92
R^2	0·08	0·15	0·16	0·17	0·23	0·28

95% confidence intervals in brackets
Adjusted for: age, gender, partnership status area of residence, and language
NW = North West; NA = North America

A logistic regression model, adjusting for age and gender, was used to examine the association between the three forms of capital (mutually adjusted) and risk of discrimination for migrants (table not shown). This showed a significant reduction in risk associated with both economic capital OR=0.76 (CI=0.59,0.98) and social capital OR=0.39 (CI=0.23,0.65), but not with cultural capital OR=1.06 (CI=0.90,1.25). Finally, the interaction between the capitals and perceived discrimination, did not yield significant results, nor improved the model according to the AIC/BIC criteria. We thus only report the main effects models.

3.6 Discussion

In this study, we investigated the contribution of socioeconomic position and perceived racial discrimination to healthcare service navigation and optimisation for migrants living in Luxembourg. We found that levels of perceived discrimination varied across migrant groups, with individuals born in the Global South and in Eastern Europe having a higher prevalence of perceived racial discrimination in healthcare services compared to those born in South Europe, and Northern/Western

Europe or North America. In addition, perceived racial discrimination was negatively associated with the ability to navigate and optimise healthcare services across all models. Our findings further illustrate that differences among migrant groups in terms of healthcare service navigation are explained by differences in perceived racial discrimination.

When investigating the contribution of socioeconomic position, guided by Bourdieu's capitals, our results showed that social capital plays an important role in the effective navigation and optimisation of healthcare services. In addition, it showed that the impact of racial discrimination was reduced after accounting for social capital. Similarly, economic capital was associated with more effective navigation. The fact that the positive contribution of economic capital diminished once we adjusted for social capital indicates an important interplay between the capitals in accumulating advantage (Bourdieu, 2002; Veenstra and Abel, 2019). While cultural capital did not make any contribution to either healthcare service navigation or optimisation in our sample, its inclusion in the models substantially increased their explanatory power. Finally, our results show that in addition to improving navigation and optimisation, Bourdieu's economic and social capitals also limit the exposure to discrimination. Indeed, those with financial assets and effective networks might have easier access to healthcare practitioners from their own ethnic background or who show cultural competence in dealing with diverse populations. However, our hypothesis that discrimination is on the pathway leading to the devaluation of capitals, tested by including interaction terms in the models, was not confirmed in this analysis. This might be due to the lack of statistical power necessary to undertake interaction analyses or to the fact that those with higher levels of capital directly reduce their exposure to discrimination, but when exposed discrimination retains its negative impact.

The results of this study are consistent with the growing body of research suggesting that racial discrimination and socioeconomic position are both equally important determinants of health outcomes (Wallace et al., 2016; Williams et al., 1997a). It also supports prior findings that different forms of material and immaterial capitals are important determinants in the use of healthcare services (Paccoud et al., 2020). However, it is important to recognise that the socioeconomic inequalities faced by some migrant groups reflect broader processes of racism and should not be considered to be conceptually distinct from them. Although the experiences of racism among individuals from the

Global South have been widely studied across United Kingdom and North America, this study adds evidence on the negative experience of individuals from the Global South and Eastern Europe in the Luxembourg healthcare context. Indeed, racial discrimination can operate on multiple levels, and capturing possible unequal treatments based on nationality, ethnic origin and skin colour should be central to future analyses. The case of Luxembourg thus shows how racial discrimination and capital positions intersect to selectively undermine the potential benefits that should be available to everyone under a universal healthcare system. In a country in which migrants represent close to half of its residents, lines of distinction have emerged between particular migrant sub-groups that need to be considered to ensure that everyone can equally maximise the benefits from the healthcare system.

This study is the first to address migrant inequalities using a focus on navigation through and optimisation of healthcare services. It attempts to capture the experiences of diverse and hard-to-reach migrant populations who are generally underrepresented in population-based surveys (Fête et al., 2019). The study also develops a conceptualisation of socioeconomic position, tailored to studying inequalities in healthcare settings. These findings, however, come with methodological limitations. First, while we recognise the possible endogeneity of the social capital measure, a model with a more generic social capital variable (number of close personal contacts) yielded similar results. We use self-reported measures of discrimination and of the extent to which health improved after an encounter with health professionals, which might underestimate exposure to racism and its impacts (Bailey et al., 2017). Nevertheless, there is evidence that the self-reported experience of discrimination is a valid measure of racism (Chae et al., 2008; Krieger, 2012). Second, the fact that our sample is not population-based means that our findings are not generalisable, however the approach is. This study should be seen as empirically exploring theoretical concepts able to capture the underlying mechanisms that produce inequalities in healthcare outcomes. It also seeks to encourage further discussion on the interplay between racial discrimination and the different aspects of socioeconomic position, in shaping experiences related to healthcare.

3.7 Conclusion and policy implications

This study contributes to the growing evidence of the harmful impacts of racial discrimination, drawing on the case of a relatively egalitarian society with near universal healthcare coverage. We provide evidence that a patient's social and racial/ethnic status may consciously or unconsciously influence the attitude of healthcare providers towards them, and thereby limit their ability to maximise the benefits of the healthcare system. For cultural, historical, and ethical reasons, data on ethnic minorities in Luxembourg, and in other mainland European countries, is scarce, limiting the comprehensive assessment of migrant health inequalities. Alongside the development of research to confirm the associations identified here, it is thus equally important for Luxembourg, and other comparable European countries, to prioritise the responsible collection of information on ethnicity and on the experience of discrimination in order to systematically track and tackle inequalities that derive from it.

Commitment to advance health equity based on socioeconomic, migration, and racial/ethnic background should be made a public health priority. Drawing on the example of the United States, it might be useful to put in place patient navigators, as well as to provide healthcare providers with cultural competence and safety training. However, structural inequalities arising from racism and socioeconomic position cannot be solved solely through individual-level interventions. Bourdieu, for example, points to the extent to which the environment in which individuals have been raised have life-long effects (Bourdieu, 2002).

The impacts of racism and discrimination we have identified here signal the need for broader structural measures aimed at ensuring that all individuals are equally able, in practice as well as in policy, to appropriately access the services that maintain their health over the long-term. The interrelated mechanisms of socioeconomic position and racism need to be addressed via multilevel policies and interventions that simultaneously tackle structural, interpersonal, and institutional dimensions of racism. To achieve this, we need interventions that tackle the legal and social structures that produce socioeconomic and racial/ethnic inequalities.

Chapter 4: Socioeconomic and behavioural factors associated with access to and use of personal health records

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4.1. Background

Personal Health Records (PHR) have been championed as a way to improve the access, delivery and the quality of health care services. They are defined as "real-time, patient-centred records that provide immediate and secure information to authorized users" (Peterson et al., 2016). PHRs are expected to play an increasingly important role in empowering patients by facilitating better health information exchange between patients and health professionals, and in turn enabling patients to be proactive and engage more effectively as partners in their care (European Commission, 2013). It has been noted that the provision of PHRs will further help with self-care, facilitate the better coordination of healthcare services and improve health outcomes (Doocy et al., 2017; Kaelber et al., 2008). In this context, the European Commission supports the adoption of PHR within and between its member states, with a strong emphasis on the safety and the security of patients' health data. To date, most countries within the European Union, with the exception of Germany, have developed and to some extent implemented PHRs (Peterson et al., 2016).

However, even though individuals have physical access to their PHRs, the uptake among certain socioeconomic and migrant populations has been rather slow and socially patterned (Chiesa et al., 2019; Denton, 2001; Lin et al., 2019a; Walker et al., 2019). Health inequities might thus be worsened by the fact that technologies that facilitate self-management and patient engagement are used more frequently by those who are already healthier and more socioeconomically advantaged (Ancker et al., 2017; Anthony and Campos-Castillo, 2015). To date, PHRs have been studied through two different approaches. On one side, scholars are concerned with the digital divide, examining disparities in the use of digital technology across different groups (Goel et al., 2011; Mossberger et al., 2003; Øversveen, 2020; Sarkar et al., 2011). On the other side, research concerned with the use of digital technologies is rooted in the Unified Theory of Acceptance and Use of Technology (UTAUT) approach, predominantly used in the field of social psychology and which explores the individual intentions for the use of ICT (Information Communication Technologies) (Venkatesh et al., 2003). The integration of these two approaches can provide a fresh perspective on the ways in which digital technologies may contribute to deepening health inequities.

The notion of the digital divide has been described as a paradigm with two levels. The first level refers to disparities in actual access to digital technology, and the second level goes beyond access and explores the skills and abilities that are required to utilize these technologies (Mossberger et al., 2003; Stern, 2010; van Dijk, 2006). Previous studies have shown that individuals with a higher socioeconomic status are more likely to perform better on both levels of the digital divide. Those with a more advantaged socioeconomic position have a better access to digital technology and also more frequently have the skills required to used them, as compared to individuals from lower socioeconomic strata (Goel et al., 2011; Lin et al., 2019a; Weiss et al., 2018; Yamin et al., 2011). Evidence, mainly from the United States, also suggests that racial and ethnic minority patients and those with lower incomes are less likely to have access to and to adopt PHRs (Ancker et al., 2017; Yamin et al., 2011). Indeed, it is most likely that those with higher incomes will have earlier access to material goods such as computers, portable health devices or various health monitoring software. Additionally, those with a higher education level are more inclined to use some form of information technology, mostly through their job positions as compared to those from the lower occupational categories whose jobs do not necessarily required contact with ICT.

Van Dijk (2006) further distinguishes four broad categories in research on the digital divide: motivational access; physical access; skills and the actual use of digital technologies. He argues that prior to physical access to a digital tool, people need to wish to have access – "*a much neglected phenomenon*" in the digital divide literature (van Dijk, 2006). The disengagement with new technologies is explained as involuntary and related to possibilities and lack of opportunities – some people simply do not have access to an ICT or a certain digital technology (Livingstone and Helsper, 2007), however, even in places where everyone has access, some people are still not utilizing ICT (Dutton et al., 2009). This points to the need to look beyond physical access and examine more challenging notions of 'choice' and 'cultural legitimacy' linked to peoples' social positions and lifestyles (Mancinelli, 2008). Indeed, the notion of choice goes back to the sociologist Pierre Bourdieu (1984) who argues that people from more affluent socioeconomic backgrounds make strategic choices that oftentimes lead to a long-term benefit (Bourdieu, 1984). In the context of the choice as to whether to access their PHRs or not, we can assume that individuals who are more motivated to use this digital tool could exploit its potential and turn it to their health advantage. Conversely, individuals from lower socioeconomic background express a feeling of cultural illegitimacy about using digital devices and generally feel that "the use of ICT oversteps their social position" (24:p.9). Although some of Bourdieu's concepts such as "choice of necessity" and "cultural illegitimacy" has been evidenced in the utilisation of healthcare services and digital self-tracking apps (24, 25) they have not been studied in the field of use and access to PHR. Thus, while the digital divide approach is useful to understand which groups are disadvantaged in the use of new digital technologies and why, it is important to identify specific behavioural processes that lead to individuals' acceptance and intention to adopt the PHR. This type of approach its best represented by the UTAUT model.

The Unified Theory of Acceptance and Use of Technology (UTAUT) model by Venketesh *et. al.,* 2003, integrates behavioural elements of eight different models and which aims to explain the intention to use digital technologies through six constructs, known as:

(1) Performance acceptancy: the degree to which individuals believe that the digital technology will improve their performance;
(2) Effort expectancy: the ease of use of the digital technology;
(3) Social influence: whether an individual knows someone who uses that technology;
(4) Facilitating conditions: the degree of perceived support, such as available help from friends and family in the use of new technology;
(5) Personal attitudes towards using digital health technologies;
(6) Anxiety: fear of using digital technologies.

Proponents of this theory argue that digital technologies, even if available, are not always accepted by individuals for various reasons, such as: devices that are hard to use, lack of training and computer skills, not seeing the added value in the technology and low social support (C. K. Or and Karsh, 2009). However, results show multiple discrepancies in explaining the factors that contribute to the use of digital devices. Hoogenbosch B. *et al.,* found that effort and performance expectancy were the only constructs that significantly influence patients' use of a health PHR (Hoogenbosch et al., 2018). Drawing on the UTAUT model, Hoque R and Sorwar G (2017) revealed that, with the exception of facilitating conditions, none of the constructs were associated with the use of a health technology (Hoque and Sorwar, 2017). In addition, researchers that used this model have also argued that the use and the adoption of digital technologies is moderated by demographic variables, especially age and gender (Kim et al., 2016; Venkatesh et al., 2003). However, literature on the digital divide has shown that there is also a socioeconomic dimension to these disparities that has to be considered.

In this context, the focus of this paper is therefore to integrate the digital divide literature with the UTAUT concepts to provide a better understanding of the socioeconomic and behavioural determinants that contribute to the three stages of PHR use, mainly:

- Expressing a desire to use their PHR;
- Having an actual access to their PHR which is achieved through the availability of PHR, as well as a computer and access to the internet, and lastly;
- Intention to regularly use their PHR.

Indeed, as van Dijk (2006) highlights that there is a lack of interdisciplinary research, as well as a need to incorporate social psychology into the digital divide research. We believe that UTAUT can shed light on important mechanisms that determine the higher acceptance and use rates among those from more affluent backgrounds. Hence, this study goes beyond the socioeconomic circumstances of individuals by incorporating the UTAUT model.

In particular, we are interested to know:

- Which demographic and socioeconomic factors determine different stages of PHR use: desire to access, physical access and intention to regularly use PHR?
- What behavioural factors linked to the use and acceptance of technology are associated with the intention to regularly use PHR, and are these determined by the socioeconomic characteristics of the individual?

4.2 Methods

4.2.1 Study design

The study was undertaken as part of a cross-country, collaborative project (INTERREG-APPS) in the Greater Region (Pétré et al., 2018) , a cross-border region consisting of the areas of Lorraine (France), the whole of Luxembourg, Rhineland-Palatinate and Saarland (Germany), and Wallonia (Belgium) (Appendix 1: figure of the map of the Great-Region). It served also as a tool to raise awareness on the existence of the PHR in the Greater Region (with the exception of Germany where as mentioned above PHRs are not yet available).

A self-administrated questionnaire was developed with a small group of patients' representatives of each country. The survey was piloted among 24 people across the regions to check completion time and participant comprehension. Following the pilot study, a minor adjustment was made to reflect participant comments. The final version of the survey included questions on demographics, socioeconomic and health status, desire and current access and use of PHR. To measure the main construct 'intention to use PHR', we adopted questions from the UTAUT model, which has been validated and empirically tested in a number of studies (15,27,28). After translate and back-translate by native experts, the questionnaire was offered in four different languages: French, German, Luxembourgish and English.

4.2.2 Participants

The participants (over 18 years of age) were recruited online and in person via various patients' associations, hospitals and health clinics. In addition to age, participants had to live in one of the Greater Region areas and had to be able to provide consent. Participation in the survey was on a voluntary basis and completely anonymous. Individuals were provided with an information sheet and were informed about the nature of the study; its research aims and its confidentiality policy. Depending on the mode of data collection, a written or an online consent form was obtained from each participant. The study was granted ethical approval by the University of Luxembourg's Ethics Review Panel.

4.2.3 Outcome Measures

The main three outcome variables in this study were:

(1) Having physical access to PHR ("*Do you currently have access to your Electronic Health Record?*") measured as a binary indicator (yes, no). Those who answered by the negative on this question were directed to the next outcome: whether they had the desire to access their PHR, and those who answered positively were asked to provide further information on their user experience, purpose of access and satisfaction levels.

(2) The desire to access PHR ("*Would you like to have access to your Electronic Health Record?"*). If respondents indicated that they do not wish to access their PHR, they were automatically re-directed to the demographic and socioeconomic questions and did not respond to the third outcome of interest - intention to regularly use their PHR. This was done in order to limit missing data.

(3) The intention to regularly use their PHR ("*I intend to use my PHR on a regular basis*") was assessed using a five-point Likert scale from "strongly disagree" to "strongly agree". This is

one of the most used dependent variables in the UTAUT model and a very strong predictor for actual use of digital technologies (Agarwal et al., 2013; Niehaves and Plattfaut, 2014).

4.2.4 Independent variables

As previous studies show disparities in the use and access to digital health technologies based on ethnicity, migration and socioeconomic determinants, we used country of origin as well as perceived income and education as the main socioeconomic status indicators. We also looked at the contribution of individuals' social networks measured through the number of close relationships with family and friends. When possible, the demographic and socioeconomic questions were drawn from established surveys. Migrants were defined as those individuals who were born outside the Greater Region (GR). As educational systems vary across countries, we used the ISCED-2011 educational levels classification to harmonise the educational levels across countries. Household income was measured by self-assessed comfort with participant household income. The question asked respondents to rate their income from: being comfortable on present income; coping on present income; finding it difficult; and finding it very difficult on present income. Despite the wide use of household income as an objective measure of one's financial situation, it has been argued that subjective income measured through the 'self-assessed comfort with income' may better capture the financial reality and a wholistic estimate of all components of disposable income that might influence individual attitudes and choices (Savage, 2015). For example, some individuals with low incomes could still draw on resources from family and friends, which could serve as a buffer to any financial shocks. Next, to assess the intentions of once regular use of PHR we also looked at the association of the technology adoption constructs measured through the six items mentioned above: performance and effort expectancy; social influence; facilitating conditions; anxieties; and personal attitudes towards digital technologies using the UTAUT model by Venkatesh et al. (2003). The survey questions used to measure the UTAUT construct are presented in Appendix 3.

4.2.5 Covariates

A number of confounders were thought to be associated with both access to and intention to use PHR, such as age, gender, employment and partnership status. Previous studies have shown that poor health status and the presence of disease is also associated with the increased probability of using digital health technology (Houston and Allison, 2002; Roblin et al., 2009). Hence, we also controlled for self-reported chronic disease (yes/no). To account for country-level heterogeneity and differences in the health care systems we accounted for countries-fixed effects (Möhring, 2012).

4.2.6 Data analysis

We used descriptive statistics to present the characteristics of the sample. To answer what factors are associated with having access to and the desire to access their PHR, we fitted three logistic regression models. The baseline model included the main effects of the independent variables, the second model included also the covariates (Table 3). In the final model we wanted to understand the interplay between migration status and perception of income. We therefore introduced two-way interaction terms between these two variables of interest. As confidence intervals of this third model were too large, we report descriptive statistics instead.

For the third dependent variable that measures the degree to which individuals intend to use their PHR, we used linear regressions. Here we also ran three models, one with demographic and socio-economic factors, a second one which includes the UTAUT variables of technology adoption, with the last one adding an interaction term between education and the UTAUT constructs. However, to facilitate interpretation of the UTAUT six-item components, we utilised explanatory factor analysis with orthogonal rotation to group similar items into broader concepts. Explanatory factor analysis groups together interrelated items in order to reduce the dimensions of variables by clustering items that are highly correlated into a factor which can then be included in the regression analysis (Field, 2013). To ensure that the all the variables in the UTAUT construct are correlated in the same direction i.e., positively correlated, before performing the factor analysis we reversed the scale that measured the anxiety levels, and named it lack anxiety. Internal consistency among the different factors across the UTAUT was tested using Cronbach’s alpha.

4.3 Results

4.3.1 Sample characteristics

A total of 829 individuals completed the questionnaire. The majority of the sample was female (60%). Its mean age was 44.4 years. While a total of 615 respondents (83%) expressed that they want access to their PHR, 62 respondents (7,5%) said they already have access, and of those only 22 (35%) have already used their PHR. The majority of the respondents were born in one of the countries represented in the Greater region (87%), with 13% were born outside these four countries. Further participant characteristics are presented in Table 1.

Table 4.1: Description of the sample (N=829)	*%*	*N*
Gender		
Male	40.07	331
Female	59.93	495
Age		
(mean, SD)	44.4	16.84
Country of residence		
Luxembourg	27.26	226
Belgium	50.78	421
France	14.60	121
Germany	7.36	61
Migration status		
Born in a county of the GR	86.83	646
Not born in a country of the GR	13.17	98
Partnership status		
Not living in a partnership	17.88	145
Living in a partnership	82.12	666
Education		
Primary or less	2.47	20
Secondary	54.81	444
University	42.72	346
Income perception		
Comfortable with their income	39.70	318
Coping on their income	36.70	294
Finding it difficult on their income	17.85	143
Finding it very difficult on their income	5.74	46
Employment status		
Yes	54.23	449
No	14.73	122

Other	31.04	257
Presence of chronic disease		
Yes	36.75	301
No	63.25	518
Want access to their PHR		
Yes	82.55	615
No	17.45	130
Have access to their PHR		
Yes	7.48	62
No	92.52	767
Intend to use PHR regularly		
(Mean, SD)	3.52	1.03

4.3.2 Results from the exploratory factor analysis

The factor analysis pointed to the existence of three key dimensions among the eight questions asked to represent the six dimensions of the UTAUT. The first factor grouped the perceived usefulness and ease of use in one common factor, the second factor captured individuals' social influence and the support of family and friends in the use of PHR, and the last one grouped the two items that measure an individual's anxiousness in the use of digital technology. The table with the detailed results of the factor analysis can be found in Appendix 2. Cronbach's alpha coefficient confirmed the reliability of the factors ($\alpha = 0.79$), with the set of items being closely related with a relatively high internal consistency. The three factors were used instead of the eight answers to UTAUT-related questions in the regression analysis.

4.3.3 Results from the multivariate regression

Table 4.2 shows the results from the fully adjusted models, associations of the demographic and socioeconomic factors with whether individuals want to access their PHR at all, and the likelihood of respondents reporting physical access to their PHR. The results of the model which included interaction term between migration status and perceived income are not shown due to the large confidence intervals, therefore we considered the model without interaction terms to be more parsimonious. However, below we present the relevant descriptive statistics to explore this question.

Desire to access PHR

After controlling for country fixed effects and demographic variables, the results indicate that a higher educational level (OR=2.35, 95% CI = 1.36-4.05) and living comfortably on income (OR=1.87, 95% CI = 1.11-3.13) are positively associated with the desire to have access to their PHR in the expected direction. However, being over the age of 65, and being a migrant, i.e., born outside of the Greater Region, was negatively associated to the desire to access their PHR. Women were more likely to report the desire to access their PHR (OR=2.14, 95% CI = 1.36- 3.37). In this sample, the presence of a chronic disease, partnership status and number of individuals in one's social network were not associated with having a desire to access PHR.

Our descriptive analysis of the migrants with different financial constrains revealed that compared to 16 percent of non-migrants, 24 percent of migrants reported that they do not wish to access their PHR. Of migrants who do not wish to access their PHR, the majority (71 %) stated that it is difficult or very difficult to live on their present income. On the other hand, 76 percent of those migrants who wish to have access to their PHR stated that they are comfortable or coping on their present income.

Having an actual access to PHR

Exploring the association between those who have physical access to their PHR and the different demographic and socioeconomic variables, we found that those born outside of the Greater Region and those who reported that they are living comfortably or coping on present income were more likely to have physical access to their PHR (OR=2.59, 95% CI = 1.087-6.158), (OR=2.56, 95% CI = 1.060-6.188), respectively.

Table 4.2: Logistic regression, desire to access and physical access to PHR in the Great region

Outcomes:	**Desire to access their PHR**		**Have physical access to PHR**	
	OR	95%CI	OR	95%CI
Country				

(Ref. group: Belgium)				
Germany	0.915	(0.319, 2.623)		
France	1.746	(0.676, 4.51)	4.444	(0.157, 12.57)
Luxembourg	**3.014*****	**(1.557, 5.834)**	1.263	(0.554, 2.878)
Gender				
(Ref. group: Male)				
Female	**2.139*****	**(1.357, 3.372)**	0.705	(0.342, 1.451)
Age				
(Ref. group: 18-15)				
36-65	0.911	(0.525, 1.581)	1.784	(0.717, 4.443)
over 65	**0.487***	**(0.240, 0.987)**	3.000	(0.873, 10.31)
Partnership status				
(Ref. group: not living in a couple)				
Living in a couple	1.214	(0.578, 2.547)	1.178	(0.453, 3.066)
Migration status				
(Ref. group: born in the Greater Region)				
Not born in the Greater Region	**0.430*****	**(0.230, 0.806)**	**2.587***	**(1.087, 6.158)**
Employment status				
(Ref. group: employed)				
Not employed	0.825	(0.406, 1.68)	0.561	(0.153, 2.058)
Chronic disease				
(Ref. group: Living with a chronic disease)				
No	0.984	(0.606, 1.597)	1.330	(0.604, 2.928)
Perception of income				
(Ref. group: difficult/very difficult)				
coping/comfortable	**1.866****	**(1.112, 3.129)**	**2.561***	**(1.060, 6.188)**
Education				
(Ref. group: secondary and less)				
University and above	**2.351*****	**(1.364, 4.052)**	1.267	(0.592, 2.712)
Social network	1,025	(0.918, 1.146)	0.959	(0.570, 1.074)

P < 0.10; *P < 0.05' **P < 0.01; ***P < 0.001

Intention to regularly use PHR

In the first step, we explored the contribution of demographic and socioeconomic variables to the intention to use PHR. The first model, adjusted for country-fixed effects, shows a clear gradient when considering regular use of PHR: higher educational level was positively associated with the intention to regularly use PHR. After additionally including the UTAUT-derived factors in Model 2, education was rendered insignificant. However, we found a strong association between the UTAUT constructs and the intention to regularly use PHR. Individuals who perceive the PHR to be useful and those who have the necessary digital skills were more inclined to use the PHR regularly. The results further demonstrated that social influence and support and lack of anxiety in using technology were strong predictors of the regular use of medical records. As we were particularly interested in the interplay of the UTAUT behavioural variables with socioeconomic factors we also modelled an interaction between the education level and the UTAUT factors (not presented), however the pairwise interaction was not significant, and therefore not included in the model.

Table 4.3: OLS regression, association between intention to regularly use PHR and demographic, socioeconomic and UTAUT factors

	Model 1		**Model 2**	
	Coef.	95% CI	Coef.	95% CI
Country				
(Ref. group: Belgium)				
Germany	0.130	(-0.241, 0.502)	0.174	(-0.268, 0.615)
France	0.172	(-0.086, 0.43)	0.151	(-0.086, 0.388)
Luxembourg	0.429	(0.196, 0.662)	0.394	(0.202, 0.586)
Gender				
(Reference group: Male)				
Female	0.140	(-0.041, 0.321)	0.098	(-0.066, 0.261)
Age	0.005	(-0.001, 0.011)	0.004	(-0.001, 0.009)
Partnership status				
(Ref. group: not living in a couple)				
Living in a couple	0.036	(-0.208, 0.281)	0.002	(-0.214, 0.216)
Migration status				
(Ref. group: born in the Greater Region)				
Not born in the Greater Region	-0.189	(-0.494, 0.115)	0.023	(-0.260, 0.305)
Employment status				

(Ref. group: employed)				
Not employed	-0.026	(-0.271, 0.219)	-0.023	(-0.224, 0.178)
Chronic disease				
(Ref. group: Living with a chronic disease)				
No	-0.174	(-0.369, 0.021)	**-0.225*****	**(-0.387, -0.063)**
Perception of income				
(Ref. group: difficult/very difficult)				
coping/comfortable	0.211	(-0.002, 0.423)	-0.011	(-0.213, 0.191)
Education				
(Ref. group: secondary and less)				
University and above	**0.181***	**(0.007, 0.356)**	0.092	(-0.06, 0.245)
Use of Technology				
PHR useful & easy			**0.550*****	**(0.456, 0.645)**
Social influence & support			**0.123*****	**(0.032, 0.213)**
Lack of anxiety			**0.204*****	**(0.116, 0.292)**

P < 0.10; *P < 0.05' **P < 0.01; ***P < 0.001

4.4 Discussion

This study contributes to the literature on PHR access and adoption in two ways. The study explores three different stages in the adoption of PHR, mainly desire to access, physical access and intention to regularly use PHRs, and integrates both socioeconomic and technology related factors. The findings suggest that although closely related, each of the three stages of PHR use is determined by different factors. While education plays a larger role in the desire to have access to PHR, the effect of subjective income operates through the possession of the material factors needed to have physical access to PHR. On the other hand, for respondents' intentions to regularly use their PHR, socioeconomic factors were supplemented by the perceived usefulness and ease of navigation of the PHR, as well by an individual's level of social influence and support from family and friends. Some of the main findings is that there is a clear gradient in the desire to access PHRs and in actual access, with those more educated and living comfortably on present income showing a stronger desire to obtain access to their PHR. This is in line with previous research indicating that those from lower socioeconomic backgrounds show lack of interest in digital devices (24,37). Migrants and those living more comfortably on present income are more likely to have an actual access to their PHR compared to those living less comfortably. As some studies highlight this might be linked to the ability to own technologies or broadband internet, or a higher awareness of their existence (Ancker et al., 2017; Hsu et al., 2005; van Dijk, 2006). Migrants may be also more likely to possess digital devices and internet as a mean of communication with their families and friends in the country of origin. However, when it comes to the desire to access PHR, the results demonstrate that being a migrant, male and of older age is negatively associated with the desire to access PHRs. Some scholars point out, that the desire to access to PHR might be linked to the issue of trust in health professionals, anxieties and technophobia (Anthony and Campos-Castillo, 2015; Schnittker, 2004; van Dijk, 2006). Stronger anxiety, feelings of cultural illegitimacy, reluctance or even rejection of ICT has been also shown to act as a barrier of use and adoption of health digital technologies among the lower socioeconomic cohorts (Régnier and Chauvel, 2018).

The study further highlights the importance of perceived income among migrants when looking at issues of desire to access PHR. Income comfort among migrants was an important determinant of whether they want to access their PHRs, with those feeling in a difficult financial situation not wishing to have access to PHRs at all. On the contrary, migrants who are feeling more comfortable with their income were more likely to want to have access and to have an actual access to their PHR, which shows the disadvantages faced by migrants with a lower perceived income. Drawing on Bourdieu’s theory of practice, and his concept of ‘choice of necessities’ this could be explained through the fact that peoples’ lifestyle choices and attitudes are based on their socioeconomic circumstances (Bourdieu, 1984). Those who are free of economic necessities are able to make long-term choices that are independent of their day-to-day circumstances. In this context, it could be argued that those who feel more financially comfortable can make more long-term strategic choices such as having access to their PHR in order to better manage their health. Therefore, health professionals play a vital role in showing the benefits of the PHR and in offering encouragement to individual to obtain access to their records. An alternative possibility would be to provide universal PHR access on an optout basis, with a possibility to close or permanently delete the PHR at any time. At the moment, individuals who are aware of the existence of PHRs can voluntarily access or they are invited to access their records by their clinicians. However, as evidenced by Ancker et al., 2017, an opt-in policy of access to patient PHRs was associated with socioeconomic disparities (Ancker et al., 2017). Of course, for this policy to be fruitful more structural factors have to be addressed such as access to a computer and the internet.

On the other hand, our results demonstrate that UTAUT provides a useful framework to uncover potential mechanisms through which individuals intend to use their PHR on a regular basis. In this sample, perceived usefulness and ease of use were the strongest predictors of PHR acceptance and use, followed by individual's social influence and support and anxieties related to the use of new technology or data security. Although in the first model we found that education was associated with the regular use of PHR, in the model where we included the UTAUT-derived factors, education lost its significance. This results are somewhat surprising as in the digital divide literature it has been noted that technical competence and digital literacy is a strong factor that influences the use of technology (Mossberger et al., 2003; van Dijk, 2006). However, we assume that with the current regression model it is difficult to disentangle the effect of education and the UTAUT derived factors. More complex mediation analysis is required to uncover the exact mechanisms and pathways through which socioeconomic factors play role in the specific UTAUT constructs. Finally, our findings confirmed results of other studies and showed the presence of chronic disease is closely associate with the individuals use of PHR.

Although this study is based on a unique harmonised cross-country design, given the limitation of the sample and the nature of the convenience sampling technique, there could be selection bias due to selective enrolment into the project. Although in-person survey promotion was undertaken in some countries, the answers might be biased towards those who already have access to a computer or the internet. However, prevalence of PHR use in Luxembourg in this study was in line with the prevalence of use in the general population. A comparison of PHR users in this study with PHR users in the general population of the four involved countries is unfortunately not possible due to a lack of registries. According to Eurostat in 2019, in all four countries of the region 90% of the adult population reported having used the internet on a daily basis, and more than 80% have used some form of ICT (Eurostat, 2020). Lastly, we were not able to undertake regional-level comparisons, given that the sample sizes for Germany (n=61) and France (n=121) were insufficient to make statistical inferences. In addition, we also had a small number of patients who actually used their PHR (n=22). It was thus not possible to undertake multivariate statistical analysis on the characteristics of these participants, and on whether there are any socioeconomic differences in the purposes for which individuals used their PHR, and to fully understand the digital divide phenomenon. With increasing prevalence of use in the general population, it is important that further studies provide insights into this particular facet of PHR use.

4.5 Conclusion

Our study highlights the importance of considering all stages in the use of PHR. If PHR are to be implemented successfully and among all socioeconomic groups, policy-makers need to take into consideration each stage of PHR use: desire to use PHR, make sure everyone is aware and has a physical access to PHR, and encourage adoption and regular use of PHR, though designing and promoting user-friendly records which are easy to navigate. Availability of PHR is not sufficient as such and must come along with appropriate training of individuals from lower socioeconomic background. At the same time health professionals need to explain the added value of the PHR to their patients. Special attention needs to be paid to those who are not motivated or who do not wish to have access to their PHR. As our results demonstrated, these are the most disadvantaged groups who may not be able to grasp the benefits they could derive from the regular use of their PHR. Given this, it is paramount to understand and address more structural factors such as individuals’ feelings of financial constraints that may shape peoples’ choices and practices. Failing to do so could exacerbate already existing health inequities.

Chapter 5: Conclusion

The purpose of this thesis was to advance the knowledge of the mechanisms that underlie socioeconomic and migrant inequalities in various dimensions of healthcare, including the adoption of personal health records, which might help combat health inequalities. This was done by addressing three specific aims related to the use, the navigation, and the optimisation of healthcare services as well as the adoption of personal health records. First, this thesis extended the theoretical understanding of the mechanisms through which socioeconomic position operates to produce and maintain inequalities in healthcare. Bourdieu's approach helped disentangle how the possessions of certain forms of capitals in their various volumes and structure shape healthcare practices and can ultimately lead to inequalities in the use, experience of navigation, and the optimisation of healthcare services. Second, this thesis provided important evidence of the interplay between socioeconomic position and racial discrimination as experienced by migrant communities in Luxembourg. It showed that perceived racial discrimination is an important contributor to migrant inequalities in healthcare service navigation, while social capital attenuates the negative effect of perceived discrimination on the navigation and optimisation of healthcare services. Lastly, by considering both socioeconomic factors and behavioural factors through the lens of the Unified Theory of Acceptance and Use of Technology (UTAUT) model, the thesis showed that while personal health records are increasingly available, their advantages for patients seem to be selective of those with higher socioeconomic status. The next sections of this chapter will summarise the findings in more detail, discuss how they contribute to the literature, reflect on the strengths and the limitations of the approach chosen, explore new avenues of research and discuss the broader implications of the findings.

5.1 Summary of findings

This dissertation investigated the health inequalities related to migration and socioeconomic status that develop beyond the mere use of healthcare services. The first chapter provided a detailed overview of the state of the academic literature on socioeconomic and migration-related inequalities in access to healthcare and surveyed the different ways in which such inequalities are measured. It also provided an overview of Bourdieu’s notions of economic, social, cultural and symbolic capital, which are considered to be a relevant framework to investigate the complexity of socioeconomic positioning and its interrelation with migration, racism and discrimination. The chapter also presented the Luxembourg context, which is the focus of two of the three substantive chapters. The chapter outlined its healthcare context, as well as the history of migration in Luxembourg and the present situation of its migrant population. It also highlighted some of the gaps in the literature related to the understanding of the production and the maintenance of inequalities in healthcare and electronic personal health records. Finally, it presented the aims of the thesis and the methods used to answer its research questions.

The second chapter operationalized Bourdieu’s capitals to understand the mechanisms involved in the use of healthcare services in later life in different healthcare settings. It focused not only on the relative roles of economic, social and cultural capital on healthcare use, but also on the way in which particular combinations of these capitals, divided in material and non-material forms, are linked to inequalities in the use of different healthcare services. Drawing on a large population-based sample from the fifth wave of the Survey of Health, Aging, and Retirement in Europe (SHARE) which covered 15 European Countries, the chapter examined the use of three types of health services: consultations with health professionals, visits to a dentist and hospitalisation. Based on the volume and the structure of capitals that an individual possesses, the chapter identifies class-related patterns of healthcare use. While economic capital was the strongest contributor to having a contact with a health professional and dentist, the study also highlighted the importance of non-material capital (cultural and social capital). Having higher cultural capital was associated with a higher likelihood of visits to the dentist, and to some degree of contacts with a health professional. On the other hand, social capital was strongly related to a lower risk of being admitted in the hospital and linked to shorter hospital stays. In addition, when investigating the different combinations of the capitals that individuals possess (material and non-material), the results show that compared to individuals with low stock of all capitals, individuals that have a higher stock of all capitals have a higher probability of having a contact with a medical professional and dentist, and a lower likelihood of hospitalisation, followed by those with higher non-material and lower material capital, and those with higher material and lower immaterial capital. This supports the current literature that highlights the important contribution of non-material forms of capital in the production of health advantage (Abel, 2007; Derose and Varda, 2009; Dierckens et al., 2022; Shim, 2010).

The third chapter empirically studied the notions of healthcare system navigation and its optimisation to investigate the mechanisms through which socioeconomic status and racism are implicated in inequalities in healthcare. The chapter drew on a cross-sectional survey conducted in Luxembourg for a broader study of access to health services. The analysis revealed the central importance of perceived racial discrimination in the extent to which individuals are able to navigate health services and optimise their health, which supports previous studies on the negative impact of perceived discrimination on access to healthcare services (Agyemang et al., 2007; Ben et al., 2017b; Lee et al., 2009). Perceived discrimination, which was reported more frequently by those born in the Global South and Eastern Europe, was found to explain the differences in healthcare service navigation between migrant groups, and to have a persistent negative impact on ability to navigate and make optimal use of the healthcare services. The chapter also showed that socioeconomic position, mainly social capital (measured through ones' health beneficial contacts) and to some degree economic capital, impacts on the ability to navigate and optimise healthcare services. Indeed, although studies on the impact of social capital on the navigation of healthcare services are lacking, evidence has repeatedly shown the positive contribution of social capital on the access to and the utilisation of healthcare services (Hendryx et al., 2002; Kim and Konrath., 2016; Perry et al., 2008; Quintal et al., 2019). The fact that cultural capital was not associated with a better ability to navigate and optimise healthcare services is somewhat surprising, and this should be further explored. Finally, our results show that in addition to improving navigation and optimisation, Bourdieu's economic and social capitals also limit the exposure to discrimination. However, the hypothesis that discriminatory practices in healthcare settings devalue the capitals an individual possesses was not supported in this sample. This might be due to an insufficient sample size to estimate interactions or could be explained by the fact that those with higher levels of capital directly reduce their exposure to discrimination, but when exposed discrimination retains its negative impact.

Finally, using a cross-sectional survey in Luxembourg and its three border regions, the fourth chapter highlighted the importance of considering the different stages in the adoption of electronic personal health records: desire to access, physical access to and intention to regularly use Personal Health Records (PHR). The evidence suggested that each of the three distinctive stages of electronic personal health record adoption is determined by different factors. Education was strongly related to the desire to use personal health records, while perceived income was an important determinant of having access to personal health records. This evidence contributes to other studies of the social patterning of access to personal health records by education and income (Abd-alrazaq et al., 2019; C. K. L. Or and Karsh, 2009). In addition, our analysis of the relationship between the socioeconomic and the UTAUT related factors (PHR’s perceived as useful & easy to use, anxiety of using digital technologies, and having a social support and influence) showed that education was an important contributor to the regular use of electronic personal health record. However, after considering the UTAUT factors in the second model, education became non-significant which suggests the mediating role of the UTAUT variables on the effect of education, likely through the perceived usefulness and ease of use. Among the UTAUT factors, perceived usefulness and ease of use was the largest contributor to the intention to regularly use electronic health records, followed by the lack of anxiety in using digital technologies and social influence and support. This is in line with Venkatesh et al. (2003), which found that among all UTAUT constructs, perceived usefulness was the largest predictor of technology adoption. The evidence of chapter 4 further highlighted the intertwined role of migration and income in the desire and in the actual access to personal health records. Although with wide confidence interval levels, our results showed that income comfort was an important contributor of whether migrants want to access their electronic health records or have an actual access, with those reporting a difficult financial situation not wanting to have access to electronic personal health records, highlighting the disadvantaged position of migrants in financial hardship.

5.2. Contribution to knowledge

This thesis aimed to contribute to theoretical understandings of the mechanisms underlying inequalities in the use, navigation and optimisation of healthcare services, and electronic PHR, in number of ways. First, by drawing from Bourdieu's theory of economic, cultural and social capital and his related concepts of 'habitus" and "economic necessity", it is among the first studies to extend current conceptualisations of inequalities in the use of healthcare services based on socioeconomic position. The thesis showed the value of operationalising Bourdieu's concepts for research on inequalities in healthcare, both by looking at the relative contribution of the different volumes and the structure of capitals in generating social inequalities in healthcare. Indeed, the thesis presents evidence of the importance of accounting for broader aspects of socioeconomic position when measuring inequalities in healthcare such as upbringing (measured in chapters 2 & 3 through parental education and books in childhood), wealth, and social capital measured through the volume of networks and the number of beneficial social contacts. This contrasts with other studies, which rely on data with more traditional measures of socioeconomic status, typically capturing one point in life such as income and education (Terraneo, 2015; van Doorslaer, 2006). In addition, by using cluster analysis, the study presented in chapter 2 is the first to empirically investigate the relative contribution of the different volumes of the capitals and the composition of the capitals that an individual possesses to inequalities in healthcare services in later life. By doing so, the study made it possible to disentangle the impact of stratification on healthcare utilisation patterns in different settings based on the different social positions that individuals occupy. By looking into the contribution of non-material and material capital, the study thus brings new evidence on important socioeconomic mechanisms that shape health practices and contribute to unequal patterns in healthcare use. Furthermore, this thesis is the first to empirically study inequalities in healthcare that account for patients' experiences of seeking healthcare, their interactions within the healthcare system, and the outcomes of those interactions, captured in chapter 3 through the concepts of healthcare navigation and optimisation. This is important in order to understand how processes related to experiences within the walls of the healthcare institutions give rise to health inequalities. In addition, this thesis contributes to the much-needed evidence of migrant inequalities in healthcare services in Luxembourg and the impact of discrimination. Indeed, the study presented in chapter 3 is first to unveil inequalities and mechanisms that lead to inequalities in the effective use of healthcare services among different migrant communities in Luxembourg, which is an important step towards addressing them.

Lastly, the thesis proposed a new perspective to understand the use of electronic personal health records by considering different stages in the use of personal health recors (desire, intentions and physical access to personal health record) and by integrating socioeconomic and behavioural factors related to the adoption of personal health record.

In addition, by developing a cross-sectional survey that investigated the broader aspects of access to healthcare services (such as navigation through and optimisation of healthcare services) the thesis was able to overcome some of the limitations of health-related population-based surveys that use limited variables on socioeconomic position, self-perceived discrimination, and healthcare access, as well as having a lack of representation of the minority communities. This survey design thus made it possible to show how discrimination and socioeconomic position intersect to create inequalities in healthcare among different migrant communities, even in contexts with universal healthcare systems.

5.3. Limitations

While detailed limitations are discussed in each chapter, there are three important areas of limitation to consider in this thesis. First, the different surveys used in the three chapters have their own strengths and limitations. While the SHARE survey has the advantage of its large sample size and relatively rich spectrum of socioeconomic variables and health outcomes, it is restricted to the older population, and it is limited in the range of variables representing different aspects of healthcare use, migration, and discrimination. For example, in the latest (8th) wave of SHARE, only 7.5% of Luxembourg respondents answered the country of birth question, which makes it difficult to undertake meaningful statistical analysis and contextualise inequalities. In addition, questions on experience of discrimination in different domains are not available. The two other surveys address this shortfall by purposively designing a broader range of socioeconomic characteristics and healthcare outcomes but are based on non-random sampling and contain a more limited number of respondents, which limits the ability to generalise the findings. However, although the results might not be generalisable across different populations, the approach to studying inequalities in healthcare proposed here is.

A second, related, limitation linked to the measurements used in this thesis comes from the fact that a number of important variables in the cross-sectional surveys are self-reported. This is the case both in SHARE and in the two cross-sectional surveys developed for chapters 3 and 4. In the case of SHARE, this is for example the case for the visits to health services, self-reported health, and wealth. This limitation is difficult to overcome in research on health inequalities, as access to administrative data is either incomplete or complicated by data protection legislation. Moreover, some phenomena cannot be captured through administrative data, and self-reported information is the only available source. This is for example the case with the experience of discrimination, one of the key variables in the analyses developed in chapter 4. Other more experimental methods, such as vignettes, have also been used to uncover healthcare decision making in relation to implicit bias (Krieger, 2014b). For example, a study by Schulman et al., (1999) found that ethnicity independently influences physician treatment recommendation.

Third, the different contexts in which the three chapters were written made it at times difficult to develop a consistent operationalisation of Bourdieu's concepts across all studies. In chapter 2, drawing on SHARE limited the operationalisation of social capital. Chapter 3 features the most comprehensive operationalisation of the capitals as the survey questions were developed with these capitals in mind. Chapter 4 was developed in the framework of a project funded by INTERREG and involved partners from three other countries, each with their own disciplinary and practical concerns. The survey that was developed thus needed to balance the needs of the multiple partners and it was not possible to include many socioeconomic variables required to fully mobilise Bourdieu's capital theory. This limited the possibilities for an operationalisation of the capitals in this chapter. However, even though different operationalisations of Bourdieu’s concepts were used, the results remain consistent across the chapters and are largely in line with existing studies.

5.4. Further research

This thesis provided a first empirical exploration of a number of concepts and phenomena linked to broader social structures: the operationalisation of Bourdieu’s forms of capital in the use of healthcare services, the identification of different capital structures which pattern the use of healthcare services, the importance of accounting for racism and socioeconomic factors in the effective use of healthcare service, and the social patterning in the adoption of personal health record. Further research is needed to confirm these initial results through the use of data drawn either from surveys based on representative samples or from administrative sources. This however means investing in the development of more detailed datasets, especially as concerns the categorisation of ethnicity, migration and socioeconomic status, as well as racism. For example, to enable richer and robust statistical analysis, population-based surveys must ensure sufficient sample sizes on both diversity and density of migrant communities. This will mean collecting data on different migrant communities within each level of socioeconomic status.

Moreover, the possibility of linking survey data with data obtained from personal health records needs to be considered. This could provide researchers with objective information on the use of healthcare services in different health settings, as well as symptoms, diagnoses, and prescribed treatment for patients, which might provide useful information on the quality of the healthcare visits. For example, this would be useful in capturing objective health status, whether individuals or groups are correctly diagnosed or provided with effective treatment, ultimately leading to improved health outcomes. However, this needs to be approached with caution, as chapter 4 suggested that the use of personal health records is socially patterned, which may lead to missing information from the most disadvantaged communities and subsequently produce biased estimates of the extent of inequality.

More work is also needed to disentangle the causal effects of socioeconomic position and discrimination/racism in the development of inequalities in healthcare settings and health in general. As evidence of the negative impact of racism on health and healthcare outcomes is mounting, it is paramount to understand the pathways through which perceived discrimination shapes healthcare experiences and outcomes and produces inequalities among different population groups, including some members of white communities. In this respect, the impact of restrictive immigration policies and how they shape socioeconomic circumstances and produce racist narratives should be further explored. In addition, further research should ensure the adequate measurement of different aspects of the experience of discrimination, its intensity and duration, and its impact on health inequalities. Moreover, there is also a need for research that explores the impact of intersectional discrimination, such as being discriminated in more than one domain (i.e. race, sex and age). In some cases, due to the one-dimensional nature of anti-discrimination research, the negative impact of racism might be overlooked in some groups such as Muslim women wearing the hijab, or Lesbian, Gay, Bisexual and Transgender communities. This multidimensionality of people's identities should be accounted for and further explored in a more qualitative way, or by using quantitative intersectional analysis.

While Bourdieu's approach helped understand that health practices related to the use and experiences of healthcare are deeply embedded in existing social structures shaped by the ownership of economic, cultural, and social capital, further research should attempt to refine some of the measures used to operationalise the different forms of capitals. For example, more research is needed to better understand the importance of symbolic capital in relation to healthcare outcomes. This will mean understanding how the characteristics of individuals affect the extent to which the capitals they possess are perceived as legitimate by others. For example, through interaction terms, chapter 3 tried to investigate the possible devaluation of capitals through the processes of discrimination, and its impact on healthcare outcomes. Although, there was no clear evidence to support this assumption, the importance of symbolic capital in generating and maintaining social inequalities in healthcare seems an important area of research and it should be better conceptualised and empirically verified.

Lastly, this thesis attempted to empirically measure the concepts of the navigation and the optimisation of healthcare services, which proved to be important in capturing socioeconomic and migrant inequalities in healthcare. Thus, further theoretical and empirical work is needed to identify different individual and organisational components of the healthcare navigation process, as well as patient outcomes and refine measurements for them. An interesting area of research will be to explore more qualitatively how patients make decisions about their healthcare.

5.5. Implications for policy and practice

The findings of this thesis point to the fact that although healthcare systems in many European countries, including Luxembourg, are based on the principle of universal health coverage social inequalities in healthcare persist. To date, policy responses to address the issue of access has mainly focused on removing the financial or system-related barriers to healthcare access (Allin, 2008; Bago d'Uva and Jones, 2009; Moran et al., 2021). Although important, the results in this thesis show that inequalities in healthcare are also sensitive to non-material factors, such as social and cultural capital. Thus, removing financial barriers alone may not be enough to address social inequalities in healthcare. On the other side, approaches dealing with individual-level policies and interventions aimed at encouraging individuals to develop skills, and improve health and digital literacy, neglect the fact that health practices are deeply embedded in socioeconomic position and are unlikely to be sufficient in affecting levels of social inequalities. As Bourdieu has noted, it is the distance from 'economic necessity' that provides people with the opportunity to develop more middle-class lifestyles, which could then translate into adopting health enhancing behaviours. Therefore, along with addressing system-related barriers, policy makers should focus on altering the socioeconomic conditions for the most disadvantaged members of society.

Further, chapter 3 provided evidence of inequalities in the experience of navigating the healthcare system arising from the racial discrimination faced by certain migrant groups, as well as the negative impact of racism in the optimal use of healthcare services in the Luxembourg context. It is therefore vital that this evidence translates into actions that address interpersonal, institutional, and structural racism simultaneously. Indeed, given the structural roots of racism, efforts to combat racism need to touch all spheres of social activity, and not solely the health sector. This should be done through a national commitment and action plan that involves multiple sectors of society, and in particular: health, education, employment, and housing which are well known determinants of health and sectors in society where racism is supported and reinforsed. National efforts are required to legally protect people from experiencing racial discrimination in healthcare services. In the context of healthcare services, there is a need for easy-to-understand mechanisms through which patients can report discriminatory practices by health providers. More importantly, as in other European countries, the systematic collection of good-quality ethnicity and migration data, alongside information on discrimination and socioeconomic status, is crucial to identify, monitor and develop policies and targeted interventions against discriminatory practices. Finally, public health interventions such as providing health professionals with cultural competency training, making available culturally competent patient navigators and providing free language interpretation services could also be implemented. However, such interventions will need to be assessed to understand whether they contribute to improved experiences and outcomes in healthcare, and whether they indeed reduce health inequities. Overall, policies and practices will need to focus on ensuring that all individuals, regardless of socioeconomic position, work status as well as racial/ethnic and migrant background, can derive the same benefits from the healthcare system and advance or maintain good health. With the current refugees fleeing wars and conflicts this is more important than ever.

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APPENDICES

Chapter 3 Appendix

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Thank you for participating in our survey. Your feedback is very important.

- This survey is looking at the experiences related to access to and optimisation of healthcare services in Luxembourg across different socio-economic and demographic groups.
- The results of the study will contribute to improving knowledge on the barriers and facilitators to accessing and optimising health care services.
- In order to participate in the survey, you will have to be 18 years old or over, and resident in Luxembourg for more than 1 year.
- Taking part in this survey is VOLUNTARY. Declining to take part will not influence any health services you receive.
- The survey will take approximately 15 minutes to complete.
- The findings of the survey will help us inform planning of health care services that are accessible for all of the population.
- The survey is completely ANONYMOUS. Please DO NOT write down your name or full address on it. No one will be able to link your answers to you.

This study has received ethics approval by the Ethic Review Panel of the University of Luxembourg. Reference Number: **ERP 18-037**

AGREEMENT STATEMENT:

☐ By ticking the box, you are agreeing that you have read and understand the information presented here, and that you freely give your consent to participate in this study.

Please tick the appropriate box

Nº	Question	Response
101	In general, how would you rate your health?	☐ Excellent ☐ Very good ☐ Good ☐ Fair ☐ Poor
102	How would you rate your **physical health**? *(physical health refers to the proper functioning of our external and internal body parts)*	☐ Excellent ☐ Very good ☐ Good ☐ Fair ☐ Poor
103	How would you rate your **mental health**? *(mental health includes our emotional, psychological and social well-being)*	☐ Excellent ☐ Very good ☐ Good ☐ Fair ☐ Poor
104	How satisfied are you with your overall health and wellbeing?	☐ Very satisfied ☐ Satisfied ☐ Neither satisfied nor dissatisfied ☐ Not satisfied ☐ Dissatisfied
105	Are you covered by the Luxembourgish national health insurance (CNS - Caisse Nationale de Santé), or covered by other work-related insurance?	☐ Yes ☐ No

106	Do you have a complementary private health insurance?	☐ Yes ☐ No
107	In the past 12 months, how many times did you see a GP (general practitioner) or family doctor in Luxembourg?	☐ I saw a GP in Luxembourg ____times in the past 12 months ☐ I didn't see a GP in Luxembourg in the past 12 months
108	Thinking of the last time you saw your General Practitioner (GP) or family doctor in Luxembourg; did it take longer than acceptable to receive the appointment?	☐ Yes ☐ No
109	In the past 12 months, was there any time when you felt you needed to see a General Practitioner/ Family doctor but did not go?	☐ Yes ☐ No…………………………Go to Question 111
110	For what reason(s) did you not go to the GP/ Family Doctor over the last 12 months even though you felt you needed to? *(circle all that apply)*:	☐ I didn't have health insurance ☐ I was not able to pay the initial consultation fee ☐ I was not able to pay the transport to the doctor ☐ Complexity of administration ☐ There was no doctor nearby ☐ There was no transport available to the doctor ☐ I could not get an appointment when I needed one ☐ I could not take time off because of work, care of children or for other reasons ☐ I didn't know where to go ☐ Fear of doctors / hospitals / examinations / treatments ☐ I treated my health condition by myself ☐ It was not necessary ☐ I wanted to wait and see if the problem gets better on its own ☐ I cannot speak the language ☐ Other reasons, please specify_________________________

111	In the past 12 months, how many times did you see a specialist doctor in Luxembourg? (*specialists are doctors who have clinical training in a specific area of medicine, i.e. cardiologist, gynaecologist, psychotherapist*)	☐ I saw a specialist in Luxembourg ____times in the past 12 months ☐ I didn't see a specialist in Luxembourg in the past 12 months
112	Thinking of the last time you saw a specialist doctor in Luxembourg, did it take longer than acceptable to receive the appointment?	☐ Yes ☐ No
113	In the past 12 months, was there any time when you felt you needed to see a specialist doctor but did not go?	☐ Yes ☐ No………………………… go to question 115
114	For what reason(s) did you not go to see a specialist doctor the last 12 months even though you felt you needed to? (circle all that apply): ☐ I didn't have health insurance ☐ I was not able to pay the initial consultation fee ☐ I was not able to pay the transport to the doctor ☐ There was no specialist doctor nearby ☐ I found the process too administratively complex ☐ I cannot speak the language ☐ Fear of doctor / hospitals / examination / treatment ☐ There was no transport available to the doctor ☐ I could not get an appointment when I needed one ☐ I didn't have a referral letter ☐ I could not take time off because of work, care of children or for other reasons ☐ I didn't know any good specialist doctor ☐ The specialised service was not available in Luxembourg ☐ I treated my health condition by myself ☐ I wanted to wait and see if the problem gets better on its own ☐ Other reasons, please specify_____________________	

115	In the past 12 months, how many times did you visit an emergency department (ED) in Luxembourg for your own health?	☐ I visited ED in Luxembourg _____ times in the past 12 months ☐ I didn't visit an ED in Luxembourg in the past 12 months------------go to Question 117
116	What was the reason for your last visit to an emergency department in Luxembourg?	☐ My condition was serious or life threatening ☐ I was told to go by a doctor or nurse ☐ The waiting time to see doctor or other heath professional was too long ☐ My doctor was not available ☐ I didn't know where to go ☐ It was too costly to go to the doctor or to another health professional ☐ Other, ____________________
117	In the past 12 months, how many times did you visit dental services in Luxembourg?	☐ I visited dental services in Luxembourg ________ times in the past 12 months ☐ I didn't visit dental services in Luxembourg in the past 12 months
118	In the last 12 months, was there a time where: ---------------------------------------> (please circle all that apply)	☐ You didn't buy prescribed medicine because you wanted to save money ☐ You used less medicine to save money ☐ You used alternative medicine to save money ☐ You delayed taking medication to save money ☐ Not applicable
119	In the last 12 months, was there a time where you have visited health care services outside Luxembourg? *(please circle all that apply)*	☐ I visited dental services abroad in the last 12 months ☐ I saw a specialist abroad in the last 12 months ☐ I saw a GP abroad in the last 12 months ☐ None of these

	2. Acceptability of Services

Nº	**Question**	**Response**
201	Have you ever felt that the following negatively impacted on the quality of health services you received? *(please circle all that apply)*	☐ Your age ☐ Your gender ☐ Your sexual orientation ☐ Your lack of money ☐ Your social class ☐ Your religion ☐ Your nationality ☐ Your ethnic group or colour ☐ Your disability ☐ Your pregnancy or maternity ☐ None of the above
202	How often were you treated with respect by your health care providers?	☐ Always ☐ Most of the time ☐ Some of the time ☐ None of the time ☐ Don't know
203	How often did your health care providers give you information about your health and treatment that was easy to understand?	☐ Always ☐ Most of the time ☐ Some of the time ☐ None of the time ☐ Don't Know
204	How confident are you in your ability to communicate complex medical issues to your doctor?	☐ Very confident ☐ Confident ☐ Somewhat confident ☐ Not confident ☐ Not at all confident

205	How confident are you in your ability to find the right health care services or the doctor that you need?	☐ Very confident ☐ Confident ☐ Somewhat confident ☐ Not confident ☐ Not at all confident
206	How confident are you in your ability to handle administrative processes related to your health care?	☐ Very confident ☐ Confident ☐ Somewhat confident ☐ Not confident ☐ Not at all confident
207	In general, how satisfied are you with the quality of health care received in Luxembourg?	☐ Very satisfied ☐ Satisfied ☐ Neither satisfied nor dissatisfied ☐ Not satisfied ☐ Dissatisfied
208	To what extent do you think your medical appointments over the past 12 months have led to an improvement in your health?	☐ To a very great extent ☐ To a great extent ☐ To a moderate extent ☐ To a small extent ☐ I have not felt any improvement in my health in the last 12 months despite medical appointments ☐ Not applicable
	3. Access to health promotion and prevention services	

Nº	Questions	Answers
301	Do you know anyone which you can turn to: For health advice	☐ Yes ☐ No ☐ Not Sure
	To speed up the procedure for receiving health appointments	☐ Yes ☐ No ☐ Not Sure
	To get information on how and where to access a good quality doctor	☐ Yes ☐ No ☐ Not Sure
	To get information on how and where to access health care services in Luxembourg	☐ Yes ☐ No ☐ Not Sure
302	If you are **female,** when was the last time you had a cervical smear test (pap test)? **If you are **male**, please go to Question 304*	☐ Within the past 12 months ☐ More than 1 year, but not more than 2 years ☐ More than 2 years, but not more than 3 years ☐ Not within the past 3 years ☐ Don't know
303	What was the reason for this last cervical smear test (pap test)?	☐ It was recommended by my doctor ☐ To reassure myself that there is no problem ☐ History of cancer in my family ☐ Because of symptoms ☐ Invitation from the hospital/national screening programme ☐ Other reasons____________________

304	If you are **male**, when was the last time you had a prostate cancer screening or check? *If you are **female**, please go to Question 306*	☐ Within the past 12 months ☐ More than 1 year, but not more than 2 years ☐ More than 2 years, but not more than 3 years ☐ Not within the past 3 years ☐ Don't know
305	What was the reason for this last prostate cancer screening or check?	☐ It was recommended by my doctor ☐ To reassure myself that there is no problem ☐ History of cancer in my family ☐ Because of symptoms ☐ Invitation from the hospital/national screening programme ☐ Other reasons________________________
306	Where do you usually get information about improving your health? (circle all that apply)	☐ I seek advice from the doctor ☐ I read health magazines or other news media ☐ I get information on the internet using google or other searching engine ☐ I go on internet forums/social network groups ☐ I get information on the official website of the Ministry of Health ☐ I ask my family or friends ☐ I find it difficult to get any information on ways to improve my health

307	Where do you get information about navigating health care services in Luxembourg? (circle all that apply)	☐ I seek advice from my doctor ☐ I get information on the internet using google or other searching engine ☐ I get information on the website of the Ministry of Health ☐ I ask my family and friends ☐ I search on internet forums/social network groups ☐ I find it difficult to get any information on how to navigate health care services in Luxembourg
308	In the past 12 months, have you seen or heard about the tobacco-control campaign in Luxembourg?	☐ Yes ☐ No ☐ Yes, but in a language that is not understandable for me ☐ I don't remember

4. Social Networks and Cultural capital

Nº	**Question**	**Response**
401	Are you a member of any of these organisations, clubs or societies? *(Please circle all that apply)*	☐ Political party, trade union or environmental group ☐ Tenant or local residents' group ☐ Church or other religious group ☐ Charitable association ☐ Private club member ☐ Support groups/community groups ☐ Education, arts, music group ☐ Sports club, gym, exercise classes ☐ Any other organisation, club or society_________________________ ☐ No, I am not a member of any organisation, club or society

402 In the past 12 months, have you done any of these activities and how often?

☐ Visited a museum, a historical site or an art gallery
a. Almost daily
b. Almost every week
c. Almost every month
d. Rarely

☐ Attended the live theatre, opera or ballet
a. Almost daily
b. Almost every week
c. Almost every month
d. Rarely

☐ Took part in voluntary or charitable work
a. Almost daily
b. Almost every week
c. Almost every month
d. Rarely

☐ Took part in political or community-related events
a. Almost daily
b. Almost every week
c. Almost every month
d. Rarely

☐ Attended the cinema or a sports event
a. Almost daily
b. Almost every week
c. Almost every month
d. Rarely

☐ Attended another activity, please describe_______________
a. Almost daily
b. Almost every week
c. Almost every month
d. Rarely

☐ I didn't participate in any social activities

403	How many people, if any, are there with whom you can discuss intimate and personal matters?	☐ None ☐ 1 ☐ 2 ☐ 3 ☐ 4-6 ☐ 7-9 ☐ 10 or more ☐ Don’t know
404	Would you say that most of your friends are from your ethnic/cultural background?	☐ Yes ☐ No ☐ Not Sure
405	Do you know someone well (on a first name basis) who works in one of the following professions in Luxembourg? Circle all that apply	☐ High school teacher ☐ Farmer ☐ Musician/artist ☐ Doctor ☐ Nurse ☐ Lawyer ☐ Accountant ☐ Waiter ☐ Sale assistant ☐ Government official ☐ Receptionist ☐ Electrician ☐ Secretary

	5. Questions about yourself	
Nº	**Question**	**Response**
501	What is your gender?	☐ Female ☐ Male ☐ X - gender neutral
502	As of today, how old are you?	__ __, years old
503	In which Luxembourg municipality/commune do you live?	______________________________
504	Which of the following best describes the area you live in?	☐ Densely-populated or urban area ☐ Intermediate area or Suburban ☐ Thinly-populated area or rural
505	What is your country of birth?	______________________________

506 Choose one option that best describes your ethnic group or background

(*i.e. peoples' ethnicity describes their feeling of belonging and attachment to a distinct group of a larger population that shares their ancestry, colour, language or religion*):

White European

☐ West European
☐ North European (Nordic)
☐ South European
☐ South-East European
☐ East European
☐ Any other European, please describe______

Asian
☐ Chinese
☐ Indian
☐ Bangladeshi
☐ Pakistani
☐ Any other Asian, please describe___________

Black African, Caribbean, Black European

☐ Black African
☐ Black Caribbean
☐ Black European
☐ Any other Black, please describe_________

Mixed or multiple ethnicities

☐ White and Black Caribbean
☐ White and Black African
☐ White and Asian
☐ Any other mixed/multiple ethnic background, please describe____________

Other ethnic groups

☐ Arab
☐ Latin American
☐ North American and Australasian
☐ Any other ethnic group, please describe__________

507	How well do you speak the following languages?	
	Luxembourgish	Very well Well Not Well Not at all
	French	Very well Well Not Well Not at all
	German	Very well Well Not Well Not at all
	English	Very well Well Not Well Not at all
508	Do you consider yourself as belonging to any particular religion or denomination?	☐ Protestant ☐ Roman Catholic ☐ Eastern Orthodox ☐ Other Christian denomination ☐ Jewish ☐ Islam ☐ Eastern religions (Buddhism, Hinduism) ☐ Other (Please specify):__________________ ☐ I do not belong or feel attached to any religion
509	If you were born outside Luxembourg, in what year did you move to Luxembourg?	________, year
510	If you were born outside Luxembourg, what is your migration status?	☐ Foreign worker ☐ Family reunion ☐ Refugee ☐ Asylum seeker ☐ Student visa ☐ Other type of visa, please specify_____________
511	What is your Nationality? *(please insert both in case you have dual nationality)*	Nationality at birth: ______________________ Second nationality: ______________________

512	Approximately how many books were there in the place you lived in when you were 10? Do not count magazines, newspapers, or your school books.	☐ None or very few (0-10 books) ☐ Enough to fill one shelf (11-25 books) ☐ Enough to fill one bookcase (26-100 books) ☐ Enough to fill two bookcases (101-200 books) ☐ Enough to fill two or more bookcases (more than 200 books)
513	What is your highest level of educational attainment? ☐ No formal education ☐ Primary education Lower secondary education ☐ General ☐ Vocational Upper secondary education ☐ General ☐ Vocational Post-secondary but not tertiary education ☐ General ☐ Vocational Short cycle tertiary education (college) ☐ General ☐ Vocational ☐ Bachelor’s degree or equivalent ☐ Master’s degree or equivalent ☐ Doctorate degree or equivalent ☐ Other, please describe____________	
514	What was the highest level of educational attainment of your parents?	

	MOTHER EDUCATION	**FATHER EDUCATION**
	What is your highest level of educational attainment?	What is your highest level of educational attainment?
	☐ No formal education	☐ No formal education
	☐ Primary education	☐ Primary education
	Lower secondary education ☐ General ☐ Vocational	Lower secondary education ☐ General ☐ Vocational
	Upper secondary education ☐ General ☐ Vocational	Upper secondary education ☐ General ☐ Vocational
	Post-secondary but not tertiary education ☐ General ☐ Vocational	Post-secondary but not tertiary education ☐ General ☐ Vocational
	Short cycle tertiary education (college) ☐ General ☐ Vocational	Short cycle tertiary education (college) ☐ General ☐ Vocational
	☐ Bachelor’s degree or equivalent	☐ Bachelor’s degree or equivalent
	☐ Master’s degree or equivalent	☐ Master’s degree or equivalent
	☐ Doctorate degree or equivalent	☐ Doctorate degree or equivalent
	☐ Other, please describe____________	☐ Other, please describe____________

<table>
<tr><td>515</td><td colspan="2">If you ever worked, what is/was the occupation in your last/current job?

☐ **Professional and technical occupations**
such as: doctor – teacher – engineer – artist – accountant

☐ **Higher administrator occupations**
such as: banker – executive in big business – high government official – union official

☐ **Clerical occupations**
such as: secretary – clerk – office manager – book keeper

☐ **Sales occupations**
such as: sales manager – shop owner – shop assistant – insurance agent

☐ **Service occupations**
such as: restaurant owner – police officer – waiter – caretaker – barber

☐ **Skilled worker**
such as: foreman – motor mechanic – printer – tool and die maker – electrician

☐ **Semi-skilled worker**
such as: bricklayer – bus driver – cannery worker – carpenter – sheet metal worker – baker

☐ **Unskilled worker**
such as: labourer – porter – unskilled factory worker

☐ **Farm worker**
such as: farmer – farm labourer– tractor driver– fisherman

☐ **Other,** please describe_______________</td></tr>
<tr><td>516</td><td>What is your employment status?</td><td>☐ Employed or working for pay or profit (including paid work for a family, an apprenticeship or paid traineeship, as well as currently not at work due to maternity, parental, sick leave or holidays)
☐ Unemployed
☐ Pupil, student, further training, unpaid work experience
☐ In retirement or early retirement or has given up business
☐ Permanently disabled
☐ In compulsory military or community service
☐ Fulfilling domestic tasks
☐ Other_____________</td></tr>
</table>

517	What is your approximate range of monthly household income? *(Could you please indicate which bracket below represents your household's total* ***net monthly income*** *from all sources after deductions for income tax, National Insurance, etc.)* ☐ Bellow 2 000€ ☐ Between 2 000€ and 5 000€ ☐ Between 5 000 and 8 000€ ☐ Between 8 000€ and 13 000€ ☐ Over 13 000 ☐ Prefer not to say	
518	Which of the following descriptions comes closest to how you feel about your household's income nowadays?	☐ Living comfortably on present income ☐ Coping on present income ☐ Finding it difficult on present income ☐ Finding it very difficult on present income ☐ Don't know
519	What is your housing status? Please indicate the way in which you occupy your current home.	☐ Own it outright (no mortgage) ☐ Buying it with the help of a mortgage or loan ☐ Pay part rent and part mortgage (shared ownership) ☐ Rent it from the private rented sector ☐ Rent it from the social rented sector ☐ Live here rent free (including rent free in relative's / friend's property; excluding squatting) ☐ Squatting
520	What is your legal marital status?	☐ Single – never married ☐ Married (including registered partnership) ☐ Widowed and not remarried ☐ - Divorced and not remarried (including legally separated and dissolved registered partnership) ☐ Other,________________________

Thank you for your participation!

If you have questions about the academic aspects of this research project, you can contact Ivana S. Paccoud, PhD student, at: ivana.paccoud@uni.lu

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Chapter 4 Appendices

Appendix 4.1: Map of the Greater Region of Luxembourg

Legend. Source: Luxembourg for ICT (2009), Accessed on Wikimedia Commons (CC BY 3.0)

Appendix 4.2 Factor loadings from 3 factor loadings on Intention to use PHR items

Factor analysis of Intention to use PHR items

ITEM **Factor name**	Factor 1 PHR useful & easy	Factor 2 Social support	Factor 3 Lack of anxiety
1. I think using my PHR would be a useful tool in managing my own-health	**0.8637**	-0.0148	-0.0313
2. I think it will be easy to use my PHR	**0.8623**	-0.1023	-0.0029
3. I have the digital knowledge necessary to use my PHR	**0.7687**	-0.0623	0.1938
4. I think that using my PHR is a good idea	**0.6054**	-0.1859	0.1953
5. My family and friends are using PHR	-0.0876	**0.8573**	-0.0238
6. I have someone to explain to me how to use my PHR	0.1361	**0.8481**	0.0714
7. I am hesitant to use my PHR for fear of exposing my health information	0.0031	-0.0874	**0.8306**
8. I feel nervous about using my PHR	0.1995	0.1452	**0.7253**

Appendix 4.3. UTAUT survey questions

Please indicate whether you agree or disagree with the following statements					
	Strongly disagree	Disagree	Neither agree nor disagree	Agree	Strongly agree
1. I think using my EHR would be a useful tool in managing my own health	☐	☐	☐	☐	☐
2. I think it will be easy to use my EHR	☐	☐	☐	☐	☐
3. I have the digital knowledge necessary to use my EHR	☐	☐	☐	☐	☐
4. I think that using my EHR is a good idea	☐	☐	☐	☐	☐
5. My family and friends are using EHR	☐	☐	☐	☐	☐
6. I have someone to explain to me how to use my EHR	☐	☐	☐	☐	☐
7. I am hesitant to use my EHR for fear of exposing my health information	☐	☐	☐	☐	☐
8. I feel nervous about using my EHR	☐	☐	☐	☐	☐
9. I intent to use my EHR on a regular basis	☐	☐	☐	☐	☐