Between Two Worlds
Studies of migration, work, and health

Andrea Dunlavy

Academic dissertation for the Degree of Doctor of Philosophy in Sociology at Stockholm University to be publicly defended on Friday 19 May 2017 at 10.00 in Aula Svea, Socialhögskolan, Sveavägen 160.

Abstract
This thesis aims to investigate the extent to which work-related factors contribute to the health inequalities often observed between foreign-origin and native-origin persons in Sweden. Four empirical studies using survey data and population-based registers assessed the health impact of different labor market adversities among groups of foreign-origin persons who were both in and outside the labor market relative to native-origin Swedes.

Studies I and II examined associations between different measures of working life quality, including adverse psychosocial and physical working conditions and educational mismatch, and self-reported health among the employed. Adverse psychosocial and physical working conditions minimally contributed to the excess risk of poor health found among workers from low- and middle-income countries. Over-education had a stronger association with increased risk of poor health, most notably among foreign-born workers from countries outside of Western Europe. Under-educated women from these countries also demonstrated an elevated risk of poor health. There was no association between educational mismatch and poor health among native-born workers.

Studies III and IV focused on the health implications of labor market exclusion, and examined relationships between employment status and risk of all-cause mortality and suicide. The majority of foreign-origin groups that experienced unemployment showed an elevated risk of both mortality and suicide. The magnitude of excess risk varied by generational status and region of origin. Variations in patterns of suicide risk were also evident among migrants by age at arrival and duration of residence. Yet within many foreign-origin groups, health advantages were observed among the employed.

The health of migrants is affected by the confluence of several different pre- and post-migration factors. The extent to which health inequalities are found among persons of foreign-origin in Sweden is influenced by the degree to which they experience labor market adversities, as well as differential vulnerability to the negative effects of these adversities across foreign-origin groups.

Keywords: Sweden, foreign-origin, health, working conditions, educational mismatch, unemployment.

Stockholm 2017
http://urn.kb.se/resolve?urn=urn:nbn:se:diva-141188

ISSN 1651-5390

Department of Sociology

Stockholm University, 106 91 Stockholm
Between Two Worlds
Studies of migration, work, and health

Andrea Dunlavy
"Of all the forms of inequality, injustice in health is the most shocking and the most inhuman."

Dr. Martin Luther King, Jr.

March 25, 1966
Abstract

This thesis aims to investigate the extent to which work-related factors contribute to the health inequalities often observed between foreign-origin and native-origin persons in Sweden. Four empirical studies using survey data and population-based registers assessed the health impact of different labor market adversities among groups of foreign-origin persons who were both in and outside the labor market relative to native-origin Swedes.

Studies I and II examined associations between different measures of working life quality, including adverse psychosocial and physical working conditions and educational mismatch, and self-reported health among the employed. Adverse psychosocial and physical working conditions minimally contributed to the excess risk of poor health found among workers from low- and middle-income countries. Over-education had a stronger association with increased risk of poor health, most notably among foreign-born workers from countries outside of Western Europe. Under-educated women from these countries also demonstrated an elevated risk of poor health. There was no association between educational mismatch and poor health among native-born workers.

Studies III and IV focused on the health implications of labor market exclusion, and examined relationships between employment status and risk of all-cause mortality and suicide. The majority of foreign-origin groups that experienced unemployment showed an elevated risk of both mortality and suicide. The magnitude of excess risk varied by generational status and region of origin. Variations in patterns of suicide risk were also evident among migrants by age at arrival and duration of residence. Yet within many foreign-origin groups, health advantages were observed among the employed.

The health of migrants is affected by the confluence of several different pre- and post-migration factors. The extent to which health inequalities are found among persons of foreign-origin in Sweden is influenced by the degree to which they experience labor market adversities, as well as differential vulnerability to the negative effects of these adversities across foreign-origin groups.
Denna avhandling syftar till att utreda huruvida arbetsrelaterade faktorer bidrar till att utrikes födda och deras barn ofta uppvisar sämre hälsa än befolkningen med svenskt ursprung. Avhandlingen utgår från fyra enkät- och registerbaserade studier som undersökte hur ogynnsamma förhållanden på arbetsplatsen samt arbetslöshet påverkar hälsan bland utrikes födda och deras barn jämfört med resten av befolkningen.


Hälsan bland utrikes födda och deras barn påverkas av ett samspel av faktorer som kan kopplas tillsammans, såsom fysiska och psykosociala arbetsförhållanden, sociokulturella faktorer och personliga faktorer. En viktig beroligande faktor är att den utrikes födda befolkningen ofta utnyttjas i arbeten som ofta inte bevarar hälsan i samma grad som de personer med svensk ursprung. Men det är också viktigt att komma till kärnet av varför detta är det fallande, och att ta hänsyn till att självmord alltflere är en kritiskt viktig fråga inom hälsovårdens bransch.
List of Scientific Papers


1 Introduction

Modern society is a global society, characterized by more transnational communications and interconnections than ever before. People are moving across international borders for work, education, and family ties, but also to escape war and civil conflict, persecution, and climate change. The multiple and complex ways in which migration can influence health, quality of life, and well-being among migrants and their children suggests that migration is an important social determinant of health, a supposition which is increasingly being recognized in the scientific literature (1-3).

Sweden is one of many countries that has been influenced by processes of globalization and international migration. Persons of foreign-origin currently comprise approximately 30% of the total Swedish population (4), and estimates suggest that this group will comprise an even larger proportion of the population and work force in the near future (5). However, health inequalities have been observed among several foreign-origin groups relative to native-origin Swedes (6-8), although findings vary, with some foreign-origin groups rather demonstrating health advantages (9-11). Prior research has also shown that persons of foreign-origin in Sweden often have a marginalized labor market position compared to their native-origin counterparts, including poorer working conditions (12-14), more precarious forms of employment (15), and higher rates of unemployment (16, 17). Given that employment and working life quality are established determinants of health (18), exposure to labor market adversities may represent one way in which health disadvantages are manifested among persons of foreign-origin. Yet knowledge on the ways in which work-related factors influence health among persons of foreign-origin in Sweden is limited (10).

This thesis addresses existing knowledge gaps by examining intersections of foreign-origin background characteristics and different indicators of labor market disadvantage, in order to better understand how the confluence of these factors may impact health among persons of foreign-origin in Sweden. In doing so, this thesis also aspires to bridge the disciplinary divide between scholarship on the social determinants of health and that on migrant health.
1.1 Research aims and objectives

The overall aim of this thesis is to contribute to existing knowledge on the work-related social determinants of health among persons of foreign-origin in Sweden. The four empirical studies that comprise this work address this broad aim by examining the health impact of exposure to different dimensions of labor market marginalization, including adverse psychosocial and physical working conditions, educational mismatch, and unemployment. In each study, health outcomes in foreign-origin groups are assessed relative to native-origin groups. More specifically, the objectives of the studies are:

To determine whether health inequalities are present among groups of foreign-origin persons relative to native-origin individuals, both in and outside the labor market (Studies I-IV)

To examine the extent to which adverse working conditions (Study I) and educational mismatch (Study II) are linked to poor health outcomes among foreign-origin workers

To assess whether exposure to unemployment differentially influences risk of mortality (Study III) and suicide (Study IV) in foreign-origin groups

To ascertain the degree to which different foreign-origin background characteristics, including region of origin, generational status, age at arrival, and duration of residence, modify relationships between experiences of labor market adversity and different health outcomes (Studies II, III, IV)

1.2 A note on terminology

There is ongoing discussion within both the research community and civil society as to what constitutes the most appropriate and optimal definitions and terms to describe persons of foreign-origin, a large and heterogeneous population. As such, some clarifications need to be made from the outset regarding the terms used in this thesis to describe and categorize members of this group.

The terms foreign-origin, foreign-origin background, migrant background, and migration background are broadly used in this thesis, and here refer to both foreign-born persons and native-born persons with one or more
foreign-born parent. The term *migrant health* is also used broadly, to refer to the health of persons of foreign-origin. The terms *migrant*, *immigrant*, and *foreign-born* are used to refer to persons who themselves have migrated. The term *second generation* is used to specifically describe native-born persons who have at least one foreign-born parent. In addition, the term *native-origin* is used to refer to native-born persons with two native-born parents.

In this thesis foreign-origin groups are classified by country/region of origin, generational status (i.e., second generation or foreign-born), and migration background characteristics, including age at arrival and duration of residence. A more thorough description of the different foreign-origin categories that were used can be found in the *Materials and Methods* section.

As marginalization and stratification processes related to foreign-origin background also often entail discussions of racism and discrimination, the terms *race*, *ethnicity*, and the compound term *race/ethnicity* are used in this thesis in relation to processes of marginalization and oppression based on racial/ethnic background. The utilization of these terms varies by country context; for example, *race* and *race/ethnicity* are often used in the US, while *ethnicity* is generally used in Europe (19). Some of the theoretical frameworks that inform this thesis, and which were originally developed within the US context, also utilize these terms to describe processes of marginalization and to help explain the formation of health inequalities among some groups. Still, the use of such terminology can be problematic for several reasons, not the least of which includes the history of atrocities and abuses which have occurred based on ill-conceived, false, and invalid notions of these concepts (20). At the time of this writing, there is no international consensus on the most appropriate terminology that should be used to describe foreign-origin or ethnic/racial minority populations. In this thesis, the terms listed above are meant to be understood as social constructs that are related to social stratification processes and social inequality, and which thus may also play a role in the formation of health inequalities.
2 Background

This chapter begins with a brief history of migration in Sweden in order to contextualize the work of this thesis. Thereafter follows definitions of relevant concepts, including the social determinants of health, health inequalities, and social position. The chapter concludes with an overview of previous migrant health research and a brief description of the work-related determinants of health that are examined in this thesis.

2.1 A brief history of migration in Sweden

Over the last 150 years, Sweden has been transformed from a country characterized by mass emigration to one in which immigration significantly contributes to the country's population growth (see Figure 1). In the late 19th and early 20th century, nearly 20% of the Swedish population emigrated, primarily to North America (21). In the 1930s and 1940s this out-migration trend began to reverse, and the proportion of foreign-born residents in Sweden started to increase (9).

Partially due to Sweden's largely neutral stance during World War II, the country experienced a period of rapid postwar industrial and economic growth, which resulted in an increased demand for labor. This postwar prosperity in part led to liberal and more open immigration policies during the 1950s. A 1954 labor agreement between Sweden, Denmark, Finland, and Norway granted the citizens of these countries the right to work in any of these countries without the need for a residence permit (22). During this period workers from several countries in southern and central Europe were also actively recruited to Sweden (23). Sweden’s labor migration policies at this time were unique from other European nations, as Sweden utilized an immigration policy rather than a guest worker policy to recruit foreign-born workers (24), which increased the likelihood that labor migrants would resettle permanently in the country.
Labor-based migration in Sweden continued well into the 1960s but by the 1970s labor demands were severely diminished and unemployment began to rise. In an attempt to prevent unemployment among Swedish citizens, in 1968 new regulations on foreign labor were implemented which required foreign-born persons to secure work permits and housing before entering the country (22). Large scale active recruitment of non-Nordic foreign workers was stopped in 1972 (26). However, the restrictions placed on labor migrants were not applicable to refugees (23). Although refugees had been relocating to Sweden since the early 20th century, it was not until the 1970s and 1980s that the first large influx of refugees and asylum seekers arrived from countries outside of Europe. Since the 1970s migration to Sweden has primarily consisted of individuals and their families who have fled from oppressive or war-like conditions in their home countries (9, 26). During the 1970s and 1980s large numbers of refugees from Latin America, as well as Ethiopia, Eritrea, and Iran were granted asylum in Sweden (27). Due to the steadily increasing number of refugees that were resettling in the country, several migration policy reforms were instituted in the mid-1970s to help ensure equality for migrants and to facilitate cooperation and solicarity between native-born Swedes and migrants (23).
In the 1990s Sweden experienced a deep economic recession, which entailed rising costs for housing and other resettlement services for refugees (28). This economic crisis coincided with a period of high refugee migration, particularly from former Yugoslavia and the Soviet Union, Somalia, and Iraq. Migrants who arrived in Sweden during this period experienced more labor market integration difficulties than migrants who arrived during earlier periods (29); however, the foreign-born who were already resettled in Sweden faced greater unemployment rates and greater deterioration in living conditions compared to the native-born during this recessionary period (30). Driven by the economic downturn and a shrinking labor market, migration policies once again became more restrictive. Different economic incentives were offered to some foreign-born groups during this period to encourage return migration to their home countries (23).

In 1994 Sweden became a member of the European Economic Area (EES), and in 1995 joined the European Union (EU), which permitted residence and the right to work in Sweden for citizens of member states. In 2001 Sweden also became a full member of the Schengen Agreement, which permits free movement between 26 participating European countries, collectively referred to as the Schengen Area. Taken together, these legislative actions have entailed increased movement, particularly labor migration, between Sweden and other EU and Schengen Area countries (31).

Historically, Sweden's migration policies have been generous compared to many other European countries, and have previously been classified as multicultural, meaning that they have promoted integration, placed few restrictions on immigration, and have permitted citizenship based on duration of residence (32). However, Sweden recently introduced more restrictive migration policies (33, 34), largely in response to the recent large upturn in the number of refugees and asylum seekers coming to Sweden. This upward trend peaked in 2015, with nearly 163,000 persons applying for asylum (35).

Table 1 provides Swedish population statistics for 2016, including the proportion of foreign-born and foreign-origin residents, the regions of origin represented among the current foreign-born population, and figures on in- and out-migration. These statistics highlight the heterogeneity of the Swedish foreign-origin population, which comprises individuals from numerous and diverse world regions who have migrated or whose parents have migrated for several different reasons. Trends over time in
Swedish migration policies, variation in demand for labor, and civil conflicts in different world regions have all contributed to the diversity of the foreign-origin population today.

Table 1: 2016 Swedish Population Statistics (4)

<table>
<thead>
<tr>
<th>Swedish population by native- and foreign-origin background</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>9 995 153</td>
<td>100</td>
</tr>
<tr>
<td>Native-origin</td>
<td>6 935 038</td>
<td>69</td>
</tr>
<tr>
<td>Foreign-born</td>
<td>1 784 497</td>
<td>18</td>
</tr>
<tr>
<td>Second generation (1 + foreign-born parent)</td>
<td>1 275 618</td>
<td>13</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Foreign-born population by region of origin</th>
<th>N</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Total</td>
<td>1 784 497</td>
<td>100</td>
</tr>
<tr>
<td>Asia</td>
<td>638 570</td>
<td>36</td>
</tr>
<tr>
<td>EU28 except the Nordic countries</td>
<td>345 571</td>
<td>19</td>
</tr>
<tr>
<td>Europe except EU28 and the Nordic countries</td>
<td>243 844</td>
<td>14</td>
</tr>
<tr>
<td>Nordic countries</td>
<td>242 720</td>
<td>14</td>
</tr>
<tr>
<td>Africa</td>
<td>194 758</td>
<td>11</td>
</tr>
<tr>
<td>South America</td>
<td>69 645</td>
<td>4</td>
</tr>
<tr>
<td>North America</td>
<td>36 858</td>
<td>2</td>
</tr>
<tr>
<td>Former Soviet Union</td>
<td>5 638</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Oceania</td>
<td>5 575</td>
<td>&lt;1</td>
</tr>
<tr>
<td>Unknown country</td>
<td>1 318</td>
<td>&lt;1</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>In- and out-migration</th>
<th>N</th>
</tr>
</thead>
<tbody>
<tr>
<td>Immigration</td>
<td>163 005</td>
</tr>
<tr>
<td>Emigration</td>
<td>45 878</td>
</tr>
<tr>
<td>Net in-migration</td>
<td>117 127</td>
</tr>
</tbody>
</table>

2.2 Migrant background and the social determinants of health

Research on the social determinants of health is a cross-disciplinary endeavor, engaging investigators from several academic fields including, but not limited to, sociology, public health and epidemiology, medicine, psychology, and anthropology. The social determinants of health field is broadly concerned with understanding how social and economic factors, from the societal level to the individual level, influence people’s health.
Inherent within scholarship on the social determinants of health is a core focus on understanding the formation and persistence of health inequalities within a given population. Health inequalities refer to differences in health status that are directly linked to social position, access to resources, and conditions of daily life (36), and are a manifestation of social inequalities. Persons who are socially disadvantaged are generally at an increased risk of poor health, while those who are privileged are more likely to enjoy good health. The publication of the final report of the World Health Organization (WHO) Commission on the Social Determinants of Health, *Closing the Gap in a Generation* (2008), has brought widespread attention to the critical impact that social inequalities have on health globally.

Health inequalities as conceptualized in this thesis do not refer merely to differences in health between individuals, but rather to modifiable differences in health between social groups that “are judged to be unfair, unjust, avoidable, and unnecessary” (Krieger, 2001, p. 698). An important distinction then between differences in health and inequalities in health is that inequalities can be reduced through health equity promotion. This requires actions and policies to reduce social inequalities that are harmful to health, which would decrease the disproportionate burden of poor health in socially disadvantaged groups (38). As health inequalities are also commonly referred to as health disparities, particularly by researchers in the United States (36), both of these terms will be used throughout this thesis to refer to the same concept.

Exploration of the social determinants of health necessarily entails investigation into the role of social structures and institutions as well as processes of social stratification as factors that influence social inequality. Social stratification processes sort people into different social strata or social locations with unequal access to power, rewards, or resources, which in turn entails unequal exposure and vulnerability to health risks. This thesis takes it point of departure from an analysis of the role of social position as a key determinant of health. Social position is an indicator of social inequality that has been implicated in both the distribution of determinants of health as well as the formation of health inequalities. The conceptualization of social position in this work is based on a definition by Hilary Graham, who has defined social position as “an individual’s location in the social hierarchies around which his or her society is built. Social position thus includes such dimensions as socioeconomic position, gender and ethnicity” (2004, p. 107). Such a conception of social position may also be expanded to include dimensions such as nationality and migrant background (40). An individual’s social position is embedded in the social structure of the society in which they reside, and is a reflection of
the ways in which access to social and material resources are distributed (39).

Sweden, like many countries in Europe, is becoming more multicultural, and the number of foreign-origin residents is increasing. As such, ensuring the health and well-being of persons of foreign-origin will become an increasingly important public health priority. Yet persons of foreign-origin are often subject to stratification processes that negatively affect their social position, which may lead to health deteriorations and the formation of health disparities. This thesis is concerned with understanding how social stratification processes which influence labor market position and labor market adversities experienced by persons of foreign-origin are associated with health. In particular, the health impacts of adverse psychosocial and physical working conditions, educational mismatch, and unemployment are assessed. Migrant background is one dimension through which social stratification occurs in the labor market, and has previously been identified as a "key, cross-cutting axis linking employment and working conditions to health inequalities through diverse exposures and mechanisms" (Benach et al., 2010, p. 339). As such, increased knowledge on the work-related determinants of health among persons of foreign-origin may help to guide the development of future public health, employment, and migration and integration policies in Sweden.

A survey of health outcomes among persons of foreign-origin

There is a substantial body of evidence which documents the presence of health disparities between groups of foreign-born and native-born persons across Europe (42-44) and North America (45-48). In Sweden, foreign-born persons have reported poorer self-rated health (49-52), poorer mental health outcomes (6, 52), more long term illness (53), and more muscular pain and decreased mobility (54) than native-born persons. Cardiovascular disease has also been more commonly observed among some migrant groups (8, 55, 56). In terms of health behaviors, prior studies have also shown higher rates of smoking among foreign-born men compared to native-born men (57), and higher post-migration rates of obesity among some groups of foreign-born women (9). Yet there is substantial variation in health within the foreign-origin population, and poor health outcomes have not been consistently observed in all groups. For example, several studies from Sweden (9, 11) and other European countries (58-60) have demonstrated lower mortality rates among some migrant groups.
Health outcomes among the foreign-born population also vary by gender and region of origin. Poorer health outcomes have been observed among foreign-born women in Sweden when compared to both their male compatriots (52, 61, 62) and to native-born women (63-65). However, other research has shown similar self-reported health outcomes between women from Western Europe and Swedish women (66, 67). Men from Nordic countries have demonstrated higher risk of all-cause mortality (10, 68) when compared to native-born Swedish men, while men from other regions, particularly those from outside of Europe, have displayed lower risks for mortality (11). Levels of risk for cause-specific types of mortality have also been shown to vary by country of birth (7, 69, 70).

Additional characteristics related to migration background, including longer duration of residence (71-73) and younger age at arrival (74, 75) have been associated with an elevated risk of poor health among migrants, however patterns of association have been inconsistent across different foreign-born groups (10, 76). Relationships between migrant background and health also vary across health outcomes, as migration-specific factors differ in the degree to which they are related to the various mechanisms behind different poor health and disease outcomes. The health of migrants is also shaped by the broader social context in which they live, with cross-national variations in migrant health outcomes.

Studies have also revealed differences in the risk of poor health by generational status (45, 77-79). Prior Swedish research has demonstrated greater risk of serious mental health problems, including suicide and psychosis, among second generation individuals when compared to the foreign-born (7, 80, 81), as well as higher risk of hospitalizations associated with illicit drug use compared to native-origin Swedes (82). At the same time however, better self-reported health outcomes (9) and a higher standard of living (29) have also been found among the second generation relative to the foreign-born. At first glance such findings may seem contradictory, but to a certain degree may also be expected. For example, second generation individuals do not themselves experience migration, or the economic and social upheavals associated with this process, which may negatively impact social position or health (83). Conversely, the country context in which the second generation grow up may be very different from that of their foreign-born parents, which in some cases may have a negative influence on health, particularly outcomes related to mental health or substance use. Health variations among the second generation have also been found by ethnicity (84), parental region of origin (81), and gender (78).
Despite the variation in relationships between migration background and health, one fairly consistent pattern that has been observed is that migrants often tend to report poorer health than natives (9, 51, 85-87) but also often demonstrate lower risks for mortality (11, 85, 88). Potential reasons for this apparent contradiction which have been put forth in the literature include: 1) that migrants may be more prone to chronic health conditions which can influence their day to day health and quality of life but do not necessarily influence mortality, such as musculoskeletal pain (43); and 2) that migrants may be more likely to die from causes that have a less clear relationship to self-reported health outcomes, such as infectious diseases or, among women, maternity-related conditions (89). The next sections discuss migrant health phenomena and debates as well as various determinants of health among migrants in more detail, in order to further describe the multitude of ways in which migration is related to health and social position.

Migrant health phenomena and debates

At the center of much health disparities research is a focus on the social gradient in health in the general population, whereby persons with lower socioeconomic positions tend to have poorer health outcomes than those with higher positions (90, 91). However, this gradient has been shown to be less pronounced or even flat in studies of migrant populations (92-94). To some extent, this reduced or nullified health gradient might be explained by the healthy migrant paradox. This paradox refers to an empirical regularity demonstrating that migrants often have equal or better health outcomes than natives. The healthy migrant paradox is most consistently observed among persons who migrate from countries with poorer socioeconomic conditions as well as those who have a more disadvantaged post-migration social position (95, 96). Thus, the presence of this paradox challenges the idea that health inequalities arise from social inequalities, i.e., that individuals with lower social positions will also be more likely to have poorer health outcomes. Still, the extent to which the healthy migrant paradox can be interpreted as a contradiction of the social gradient may also be influenced by how social position is measured. For example, some migrants may have a high level of education but a low occupational status or earned income, which suggests an interaction between migrant status and labor market stratification processes that may influence findings. There is also variation in the extent to which the healthy migrant paradox is observed across factors such as ethnicity and region of origin, (45, 97) reason for migration, (9, 98, 99) and duration of residence (45).
The healthy migrant paradox is often explained as a health selection effect, whereby persons who migrate are assumed to be healthier than their non-migrant compatriots in the country of origin, and may thus not be a representative subgroup of the country of origin population. However, there is only limited support for positive health selection effects in origin (100). Other research has highlighted explanations based on return migration, or a salmon bias effect, whereby older migrants and migrants with a poorer health status may be more likely to return to the country of origin to convalesce or spend their final years of retirement (101, 102); however, several studies have provided evidence which refutes this idea (11, 103, 104).

Other explanations for the healthy migrant paradox have highlighted the role of protective cultural factors, whereby migrants are thought to retain lifestyle habits, health behaviors, or other health protective factors from the country of origin that may translate into a health advantage (105, 106). The migrant health advantage has been shown to weaken with time spent in the new country of residence, a phenomenon often referred to as the assimilation or acculturation paradox. Some evidence has suggested that the deterioration of an initial health advantage may be partially attributed to the adoption of unhealthier behaviors in the country of residence (73, 105).

Additional explanations which focus on the post-migration social context suggest that the cumulative effect of exposure to stressful experiences, such as discrimination or racism, economic hardship, and downward social mobility, may also deteriorate initial migrant health advantages (107, 108). A similar phenomenon of premature health deterioration has been observed in the study of racial health disparities among African-Americans, known as the weathering hypothesis (109). The mechanism behind this hypothesis is related to allostatic load, and the "wear and tear" effects on the body that result from repeated adaptations to stress exposures. Although all individuals are subject to potential health problems, those who experience increased levels of stress may have such problems earlier. Applied to migrant health, the weathering hypothesis suggests that the erosion of an initial health advantage over time may similarly be due to the cumulative effect of stressful post-migration exposures and marginalization, which may increase poor health vulnerability.

The migration process and health
For non-migrants, health determinants are generally embedded in the society in which they live; yet for migrants, health is also influenced by fac-
tors from the country of origin (92). Migration often occurs due to a mixture of push factors (economic, political, or social conditions in the country of origin which drive people to migrate) and pull factors (opportunities or other factors related to the destination country which entice someone to leave their country of origin). Migration can lead to changes in key health determinants, such as living and working conditions, as well as societal characteristics and social institutions, which may have positive or detrimental effects on health.

Migration-related determinants of health are often grouped into two broad categories: 1) pre-migration factors, which relate to the country of origin and the migration experience; and 2) post-migration factors, which relate to the country of residence. Pre-migration factors can continue to influence health in the new country of residence. For example, as described in the previous section, health promoting food preferences, health behaviors, and lifestyle habits established in the country of origin may be maintained post-migration. Yet among refugees and asylum seekers, experiences of trauma or persecution in the country of origin or perilous migration journeys may have lasting mental and physical health consequences, which can increase vulnerability to post-migration stressors. Other pre-migration factors are related to regional differences in the prevalence of infectious agents, such as the helicobacter pylori, which is one causal agent related to stomach cancer (9). Post-migration factors are those which influence social position and quality of life in the new country of residence. These may include post-migration stressors such as difficulties learning a new language, loss of social ties, or occupational downgrading. For some individuals, post-migration factors may also include exposure to chronic stressors that were not experienced in the country of origin, such as discrimination by ethnicity or migrant background, which has been linked to lower social position (110) and poorer health status (9, 109, 111). Post-migration factors also include determinants of health that are relevant for the native-born, such as living and working conditions, labor market attachment, or opportunities for education and training.

Compared to research on the foreign-born, fewer studies have investigated how factors related to migrant background may influence social position and health among the second generation. Some studies have proposed that intergenerational conflicts might contribute to worse mental health outcomes among the second generation (81, 112). Other evidence has suggested that the socialization experiences of the second generation differ from those who are third generation and higher, as well as the foreign-born (113), which could have implications for health. While the sec-
Second generation may not face stressors related to resettlement or adaptation challenges, some may nonetheless experience forms of oppression, such as racism or discrimination, as well as difficulties obtaining employment (113, 114). The segmented assimilation model (113, 115), originally developed in the US, outlines several factors that can impact integration and social mobility among the second generation. The theory postulates that family human capital, family composition structures, and the broader social context all influence modes of social mobility and, by extension, social position among the second generation. Lower social position among some second generation subgroups may then reflect downward assimilation processes or a lack of upward social mobility, which could persist into subsequent generations (116, 117). Still, some evidence from the European context is suggestive of upward social mobility patterns among the second generation, with the majority having higher education levels and better employment outcomes than their parents, although there are variations by national contexts (118).

The empirical studies in this thesis are largely concerned with work-related determinants of migrant health, namely labor market position and experiences of labor market adversity in the country of residence. However, it is important to recognize the multitude of pre- and post-migration factors that can influence social position, health, and well-being among migrants and their children, including the ways in which pre-migration factors can influence the severity of post-migration stressors that may be experienced.

Migration as a social determinant of health

The evidence presented above demonstrates that migration is linked to several different social determinants of health. Migration is also a form of social stratification which influences the social position of foreign-origin persons and their access to resources. Due to the multitude of ways in which migration is associated with health and well-being, several researchers have proposed that migration should be identified as a social determinant of health (1-3). The repositioning of migration into the social determinants of health framework can help to combat common misconceptions of migration as an explanatory factor that is secondary to proximal social determinants of health, such as income or education (1), or which reduce its role to that of either a protective cultural factor or acculturative stressor (2).

Taken one step further, migration could even be considered a fundamental cause of health, as it fulfill the criteria outlined for such a cause in Link and Phelan’s seminal theory of fundamental causes (119, 120). Migration
constitutes a fundamental cause since it 1) has an enduring association with several health outcomes, via multiple risk factors; 2) influences the degree to which individuals may access different resources that can be used to avoid health risks; and 3) influences health through multiple intervening mechanisms. Other researchers have suggested that additional social categories related to stratification, including ethnicity, gender, and sexuality, should likewise be considered as fundamental causes, given their broad and enduring associations with health (41). Yet factors such as these may also interact with migration background characteristics, which could lead to more severe experiences of social inequality or poorer health in some foreign-origin groups (121).

The many ways in which diverse health outcomes are influenced by different migration background characteristics, as well as intersections between migration background and other social categories that are related to experiences of inequality, such as gender and ethnicity, contribute to the complexity of migrant health research. This field is also characterized by puzzling and sometimes even contradictory findings (121), as evidenced by the healthy migrant paradox. It is therefore difficult to make overarching generalizations across different foreign-origin groups and in different country contexts, and the influence of migration on population health is still not clearly elucidated or understood (41). The inherent complexity of migrant health research points to the need for strong theoretical frameworks to aid in research study designs and the interpretation of findings. These issues will be discussed further in the Theoretical Considerations section of this thesis.

Work-related determinants of migrant health

Employment and working life conditions are established social determinants of health (37). Secure employment with good working conditions can be a source of several health promoting assets, including financial security and opportunities for personal development. There are also several health-beneficial latent functions of employment, such as self-esteem, provision of daily time structures, beneficial interpersonal contacts, and skills utilization (122, 123). Possession of such resources has the potential to reduce social and health inequalities (37).

Among persons of foreign-origin, secure employment with good working conditions may have additional implications for health, as such factors are not only integral in the facilitation of health and well-being, but are also themselves important indicators of successful resettlement. However, persons of foreign-origin are often among the most disadvantaged
members of a given society (124). This disadvantage is particularly evident in the marginalized labor market position of foreign-origin persons, which includes higher rates of unemployment, poorer working conditions, and more frequent segregation into lower status occupations (13, 29, 125-127). In Sweden, the segregation of migrants into lower occupational status positions may partly reflect the recent history of labor migration. But it is also reflective of the difficulties that later migrants, many of whom are highly educated, have experienced in establishing themselves in the labor market, such as refugees who arrived during the economic recession in the 1990s (128). Other factors such as ethnic and racial discrimination can hinder or delay labor market entry, but may also segregate foreign-origin persons into lower paid, lower status jobs with poorer working conditions (129). Additional factors related to low levels of social capital (125) as well as difficulties with education credentialing processes and learning a new language (130) also play a role in the labor market disadvantages experienced by persons of foreign-origin. Recent changes towards a more polarized and flexible Swedish labor market likely also contribute to the segregation of migrants into low-skilled jobs with poorer working conditions, including temporary jobs (15, 131, 132).

The marginalized labor market position of migrants also entails that many live in socially vulnerable situations for several years after migration. In the Swedish context, it can take refugee migrants and their families ten or more years to acquire standard of living conditions that are equivalent to those observed among native-origin Swedes (29). This disparity is likely largely due to the difficulties that migrants, especially women, face in relation to establishment in the labor market, particularly in the first years following migration (132, 133). Employment rates among migrants generally improve over time, but even after ten years of residence, unemployment rates remain higher among the foreign-born than among natives (132). Some Swedish evidence has also shown the persistence of higher rates of unemployment among some second generation groups compared to the native-origin (134).

These work-related disadvantages thus suggest that the labor market is one key arena in which social inequality is manifested among persons of foreign-origin. Yet despite evidence of a disadvantaged labor market position, public health knowledge on the work-related determinants of health among persons of foreign-origin in Sweden is lacking (10). In order to gain a better understanding of the health impact of these determinants among the foreign-origin population, the studies in this thesis assess different labor market adversities among groups of foreign-origin persons who are both in and outside the labor market relative to those of native-origin.
Studies I and II focus on the employed, and examine associations between different measures of working life quality, including adverse psychosocial and physical working conditions and educational mismatch, and health. Given that people spend a significant part of their adult lives at work, assessment of working life quality and its implications for health among the foreign-origin is highly warranted, particularly as the quality of work may be equally or nearly as important for health as employment (135, 136). However, given the disparities in employment between the foreign-origin and native-origin, as well as the integral role that employment has in influencing health and integration, it is equally necessary to assess how experiences of unemployment are associated with health. Studies III and IV focus on the health implications of labor market exclusion. Relationships between unemployment and risk of all-cause mortality as well as suicide are examined, as unemployment has previously been associated with both poor physical and mental health outcomes (137, 138).

A brief summary of prior research on the specific labor market adversities that are examined in this thesis and their relevance for health among persons of foreign-origin is presented below.

**Adverse psychosocial and physical working conditions**

Much of the literature on work-related determinants of health has focused on the assessment of working conditions, both psychosocial and physical. Psychosocial working conditions are those related to the ways in which work is organized, work-related practices, and the social and psychological aspects of work and organizational culture that have implications for health (139). Physical working conditions refer to the ergonomic or physical demands of work, as well as different characteristics of workplace facilities that may influence health, such as exposure to hazardous agents. In this thesis, the Demand Control Model (140, 141) was used to guide the assessment of psychosocial working conditions, and psychosocial job demands, job control, and workplace social support were examined. The physical working conditions assessed focused on the physical demands and ergonomic strain associated with job duties.

High quality jobs with good working conditions are not distributed equally in the population (41, 142) and unequal exposure to different adverse working conditions may play a role in the formation of health inequalities. Exposure to adverse psychosocial (90, 143, 144) and physical (145, 146) working conditions has been associated with numerous poor health outcomes. Adverse working conditions tend to group in lower-level positions (18, 147, 148), which suggests that persons working in such positions may be exposed to multiple adversities that can negatively affect health. Persons of foreign-origin are over-represented in lower-
level positions, and several studies have shown that foreign-born workers experience greater exposure to poor psychosocial and physical working conditions (12, 13, 41, 149, 150). Studies have also demonstrated associations between exposure to adverse conditions and poor health outcomes among persons of foreign-origin in several country contexts (145, 151), including Sweden (12, 13, 152).

**Educational mismatch**
Beyond adverse working conditions themselves, there are additional characteristics of working life that may also be important for health. Educational mismatch is a type of status incongruence that occurs when there is a discrepancy between an individual’s attained level of education and the level of education required in their occupation. Such mismatch can be considered a key indicator of work life quality (153) and an important work-related determinant of health (154-156). Experiences of mismatch may be associated with financial strain, which can occur because of occupational downgrading, as well as psychosocial stress related to role conflict (157), relative deprivation (158), and job strain (140), all of which may be damaging to health.

Educational mismatch is increasingly being recognized as an indicator of labor market integration among migrants. Prior studies in several national contexts have demonstrated a higher prevalence of over-education (14, 159-161) and, to a slightly lesser degree, under-education (162-164) among foreign-born workers. Migrants in particular may be vulnerable to educational mismatch, particularly over-education, because of the labor market integration challenges they face (126). However, the number of studies that have assessed the health impact of educational mismatch among migrants is limited. The few studies which have been conducted have shown relationships between educational mismatch and poor physical (66, 127) and mental health (155), as well as increased risk of occupational injuries (165).

**Unemployment**
Employment status itself is also a key determinant of health. An extensive body of research has documented associations between unemployment and poor mental (166-169) and physical (167, 170) health outcomes, including an increased risk of mortality (171-173). Migrants in Sweden have higher rates of unemployment than natives, and the gap in employment between these groups is amongst the highest in the OECD (Organization for Economic Cooperation and Development) countries (16), which highlights the labor market establishment difficulties that migrants in Sweden, in particular, face.
The health impact of unemployment may also be more severe among some foreign-origin groups, who may be more vulnerable to the negative effects of unemployment or job loss for several reasons. For example, as persons of foreign-origin are more often segregated into lower paid, lower occupational class positions (13, 29), they may also be more likely to experience financial hardship and psychosocial stress following unemployment (174). Experiences of unemployment have also been associated with a greater likelihood of subsequent unemployment, as well as precarious employment and employment in lower occupational status positions (138); this can perpetuate a cycle of recurrent unemployment and exposure to hazardous employment and working conditions that can negatively impact health over the life course. As foreign-origin persons may have fewer beneficial work-related social networks than the native-born (49, 175), it may be more difficult to transition into the labor market or to gain a new job following a period of unemployment. This could result in a long-term marginalized position with reduced opportunities for upward social mobility and financial security. Prior research has also suggested that migrants may experience unmet expectations of social mobility or labor market opportunities in the destination country (127). Frustrations over unemployment, particularly among highly educated or skilled workers, alone or in combination with unmet expectations, can adversely impact health via psychosocial stress processes (155). Several studies from the Swedish context have provided evidence which suggests that employment status is an important determinant of health among persons of foreign-origin (62, 166, 176).

Due to a disadvantaged labor market position, some migrants may experience multiple labor market adversities over time, including exposure to poor working conditions, a job characterized by educational mismatch, as well as periods of unemployment, among others. The study of work-related determinants of health among migrants may aid in understanding how some foreign-born groups who appear to be healthier than natives upon arrival in the country of residence or shortly thereafter might ultimately, over time and through the accumulation of repeated experiences of work-related stressors, demonstrate poorer health outcomes.

This chapter has provided a brief history of migration in the Swedish context, as well as an overview of the ways in which migration background is linked to processes of social stratification and social inequality, pointing to the need for migration to be further incorporated into the social determinants of health discourse. An overview of health outcomes and health phenomena among persons of foreign-origin was presented, as well as a description of pre- and post-migration factors that influence health among this large and heterogeneous group. The chapter concluded with
a description of the ways in which employment and working life can impact migrant health, including an overview of the work-related health determinants that are examined in this thesis.
3 Theoretical Considerations

This chapter provides a brief description of predominant theories and concepts that are utilized within migrant health research. This is followed by a presentation of additional theoretical frameworks which are used to examine the social determinants of health and are also useful for migrant health studies. The chapter concludes with a description of an applied conceptual framework that outlines specific pathways and mechanisms that link society, position in the labor market and experiences of labor market adversity, and health.

3.1 Predominant theories in migrant health research

As discussed in the previous chapter, health selection and methodological explanations are often invoked to explain patterns of migrant health (121). Research on migrant health has also been dominated by theoretical explanations that emphasize the role of culture and acculturation processes in influencing social norms, values, and health behaviors among persons of foreign-origin. Acculturation-based explanations are particularly dominant in the United States, but are also prevalent in European migrant health research.

Acculturation is a broad and multidimensional concept, but can be defined as the individual level processes through which migrants or persons of foreign-origin incorporate the behaviors, values, and attitudes of the country of residence (121). At the core of acculturation-based explanations is a key assumption that as migrants adapt to life in the country of residence, they lose the cultural characteristics or behaviors of their native country, and replace them with those of the country of residence, which can lead to poorer health outcomes (177). Diverse indicators such as duration of residence, citizenship, language abilities, generational status, and age at arrival have been used as proxy measures for acculturation. Yet these different factors vary in their relevance for specific health outcomes, and can also have multiple meanings for health, which may be hidden if they are interpreted solely in relation to acculturative changes in health behaviors or norms. For example, although earlier age of arrival...
in the country of residence may be associated with an increased likelihood of behaviorally modified outcomes like obesity (75), it has also been associated with better labor market outcomes (178), which could have a health promoting effect via increased financial security or social inclusion.

Although culture and processes of acculturation certainly play a role in influencing numerous health outcomes among foreign-origin persons, acculturation-based theoretical frameworks have several explanatory limitations. First, they do not acknowledge the role of structural determinants of health, such as discrimination and racism, or the overall social position of persons of foreign-origin (92, 121). Second, such explanations can mask the effects of social inequality on health in favor of focusing on the role of the individual, for example, via changes in health behaviors (121). Third, they tend to limit the definition of culture to a set of individual level characteristics which shape attitudes, values, and health behaviors (121), rather than consideration of the ways in which culture is related to social institutions or social norms that may produce or reproduce inequalities (179). Acculturation-based explanations may even inadvertently contribute to the “othering” of migrants, by overlooking the inherent diversity of persons of foreign-origin, and contributing instead to a public discourse that creates an "us" and "them" dichotomy of difference between native-origin and foreign-origin persons (180). Over-reliance on cultural explanations could also contribute to further dichotomization of the social determinants of health and migrant health research fields, by relegating structural or upstream explanations for migrant health to the background.

3.2 The utility of theories on the social determinants of health

As described in Chapter 2, factors related to social stratification and dynamics of power and oppression in society have implications for the formation of health inequalities among persons of foreign-origin relative to the native-origin. Power influences the extent to which an individual or group can exercise agency, as well as the opportunities, resources, and privileges that are available to them (98). Different forms of exploitation and oppression that result from unequal distributions of power may be manifested into different areas of life, including residential or labor market segregation, discrimination and experiences of othering, exposure to poorer working or living conditions, downward social mobility, and economic hardship. Exposure to these conditions can influence health both
directly (e.g., via material deprivation) and indirectly (e.g., via psychosocial stress).

The interplay of stratification processes in the country of residence based on foreign-origin background and other social determinants of health, such as those related to work, have not been explicitly unified under a larger theoretical framework. In the next sections, the theory of fundamental causes, intersectionality, and ecosocial theory are presented as theoretical frameworks that can be applied to studies of health inequalities among persons of foreign-origin. All of these theories may be used to help make sense of the complex ways in which migration background can influence health, and to link social inequalities experienced by persons of foreign-origin to poor health outcomes or the formation of health inequalities.

*The theory of fundamental causes*

The theory of fundamental causes was briefly discussed in the previous chapter when discussing the need for the repositioning of migration into the social determinants of health discourse. However, further elaboration of this theory is necessary to describe its utility for migrant health research.

Originally developed by Link and Phelan (1995), this theory maintains that socioeconomic position (SEP) is a fundamental cause of health inequalities because it fulfills four key criteria, as follows: 1) SEP is related to multiple disease outcomes; 2) SEP is related to these disease outcomes through multiple risk factors; 3) SEP determines access (or lack thereof) to resources that can be used to avoid health risks or to minimize the consequences of disease; and 4) the association between SEP and health outcomes can be reproduced over time via different intervening mechanisms. This theory maintains that health inequalities cannot be eliminated by addressing proximal risk factors for disease, as it is upstream factors that influence the distribution of flexible resources. Phelan and Link (2015) have also adapted their theory to demonstrate how racism may be considered a fundamental cause of health, which shows the flexibility of the framework.

As outlined in Chapter 2, migration also fulfills the criteria for classification as a fundamental cause of health. However, marginalization associated with foreign-origin background cannot be investigated in quite the same way as marginalization by race/ethnicity. For example, when examining racism as a fundamental cause of health inequalities, Phelan and Link contrasted health outcomes, health risks, and health resources among blacks and whites in the US (120). A dichotomous approach such
as this is often not sufficient in migrant health studies, given the diversity of the foreign-origin population. Nonetheless, conceptualizing migration as a fundamental cause helps to establish migration in the social determinants of health field. The theory of fundamental causes can also be useful as a framework for studies on work-related determinants of health among migrants. For example, stratification in the labor market by migrant background entails differential access to flexible resources related to work, such as occupational prestige, beneficial social connections, or income, which can influence the extent to which good health may be maintained or the consequences of poor health might be minimized. A repositioning of migration as a fundamental cause also highlights that migration-based health disparities cannot be eliminated by only addressing the proximal factors that link migrant background with health outcomes, but rather by addressing migration-based marginalization itself.

Intersectionality
Intersectionality is a theoretical concept and framework that analyzes how multiple social categories intersect within individuals to create unique lived experiences that may reflect social inequality, disadvantage, or oppression (181, 182). Intersectionality was not developed as a framework for understanding the social determinants of health, but rather has its roots in black feminist scholarship in the United States, with legal scholar Kimberle Crenshaw credited with the coining of the term (183). However, the theory is widely used within the social sciences, and is an emerging theoretical framework within the public health and health equity disciplines (121, 181, 184, 185).

Similar to the theory of fundamental causes, intersectionality is concerned with understanding how upstream, or macro-level socio-structural processes are manifested at the level of the individual. The theory describes how both oppression and privilege may be present within an individual via the many interrelated social categories that an individual inhabits. A key advantage of the intersectional perspective is its rejection of the idea that social categories are independent and mutually exclusive. Intersectionality also emphasizes that forms of social disadvantage associated with the different social categories that individuals occupy are not simply additive (181). For example, being a black migrant woman constitutes a unique lived experience beyond being black or a migrant or a woman. Intersectionality also highlights the dynamic and fluid nature of social categories themselves. This fluidity pertains both to the definitions of social category groups, which change over time, as well as how the meaning of membership in different categories varies across different societal contexts.
Intersectional perspectives applied to the study of migrant health can help to shift focus away from one-dimensional explanations of poor health, and towards the ways in which foreign-origin background characteristics intersect with other social categories that may influence health (121). Still, intersectional approaches to the study of migrant health do not entail that every study needs to examine multiple and interacting social categories. To varying degrees, the studies included in this thesis have applied an intersectional lens to the analyses, with the aim of 1) highlighting overlooked intersections of social categories among different foreign-origin groups, particularly as they pertain to differences in work-related determinants of health, and 2) making visible differences in the foreign-origin population, which is still sometimes conceptualized as homogenous (186).

Ecosocial theory
Developed by social epidemiologist Nancy Krieger, ecosocial theory is a multi-level theoretical framework which aims to integrate biological and social forces relevant for health under a larger theoretical framework (187-189). A core tenant of ecosocial theory is the process of *embodiment*, which refers to how individuals biologically incorporate the material and social world around them through *multiple pathways* over the lifecourse.

Ecosocial theory outlines five pathways of embodiment through which health inequalities may be formed, which include: 1) economic and social deprivation; 2) exposure to harmful agents, toxins, or hazardous conditions; 3) social trauma; 4) targeted marketing of commodities that are harmful to health; and 5) inadequate medical care (190). These pathways are shaped by larger social factors and arrangements of power but are also influenced at the individual level by biological factors. The pathways also vary in their relevance for health among different social groups; for example, the social trauma pathway may be more relevant for persons who have experienced ethnic or racial discrimination.

Ecosocial theory also importantly calls for the consideration of differential levels of exposure, susceptibility, and resistance that determine which pathways are relevant for the formation of health inequalities. Similar to intersectionality, ecosocial theory posits that vulnerability to negative social exposures is influenced by one's inclusion in different social groups. For example, membership in some social groups can have a protective effect, by affording access to resources that may increase resistance to negative working life or employment exposures; membership in other groups may have a detrimental effect, by compounding stressors or the negative effects of working life exposures. Ecosocial theory also
emphasizes the importance of the historical and societal context in determining which pathways are operative in relation to health. For example, as expressions of discrimination can vary across time and place, so do the embodied health manifestations of such exposure (40).

Ecosocial theory is an appropriate and useful interpretative framework for studies on work-related health inequalities among persons of foreign-origin for several reasons. First, both psychosocial and material explanations for health inequalities are predominant in studies of work-related health. Ecosocial theory integrates and expands upon both of these explanations as they relate to health inequalities. Under the ecosocial framework, psychosocial explanations are recast in relation to specific social exposures that can elicit stress responses but are also mediated by material pathways. As stated above, ecosocial theory also considers the dynamic and cumulative interplay between exposure, susceptibility, and the formation of disease. This is necessary to highlight the heterogeneity of the foreign-origin population in general and also in terms of differences in exposure and vulnerability to adverse work-related health determinants. Ecosocial theory’s core focus on embodiment is also relevant for understanding how exposure to different types of labor market adversities may be physically manifested in different ways; the health impact of work-related adversity thus may vary across different health outcomes.

3.3 Pathways between labor market disadvantage and health

There exist several conceptual models of the social determinants of health which illustrate relationships between social factors and health, and more specifically, how the unequal distribution of social determinants can lead to the formation and reproduction of health inequalities. A common feature of nearly all existing models of the social determinants of health is the centrality of social position, which reflects the social context and structures within a given society but is also a characteristic of the individual. As defined in Chapter 2, social position is a broad concept that refers to an individual’s location within the social hierarchies of their society (39). Due to a consistent association with health over time and across multiple disease outcomes, social position has been deemed a fundamental cause of health inequalities (119, 191).

The conceptual framework developed by Diderichsen & Hallqvist (192, 193) illustrates the key role of social position in the creation, mainte-
nance, and reproduction of health inequalities. This model outlines pathways through which social stratification processes influence social position and, similar to ecosocial theory, emphasizes the role of social position in influencing different health-related exposures and vulnerability to such exposures that may lead to poor health and the formation of health inequalities. According to this framework, four key mechanisms play a role in this process: 1) social stratification; 2) differential exposure; 3) differential vulnerability; and 4) differential consequences of ill health. The framework also importantly identifies entry points for policy interventions, but these will not be elucidated here, as they are beyond the scope of this theoretical discussion.

Figure 2 shows a modified version of this framework that includes the migration background and work-related factors examined in this thesis to illustrate pathways and mechanisms linking the labor market position of foreign-origin persons, experiences of labor market adversity, and work-related ill health outcomes and their consequences. The text below describes the relationships between these factors in more detail.

Processes of social stratification that occur in the larger societal context also entail stratification in the labor market by foreign-origin background (Mechanism I). Oppressive social forces such as exploitation, discrimination, and racism based on foreign-origin status and other types of migration-related stressors (e.g., no recognition of education attained in country of birth) and migration background characteristics (e.g., shorter duration of residence) can lead to a disadvantaged position in the labor market among those of foreign-origin.

Position in the labor market determines the degree to which individuals are exposed to work-related adversities (Mechanism II). Foreign-origin workers with a disadvantaged labor market position may have increased exposure to adverse work environment factors, including poor psychosocial conditions and physically demanding work. They may also be more likely to work in positions characterized by educational mismatch, in which their education or training do not match that which is required in their occupation. A disadvantaged labor market position also entails that some foreign-origin persons will be excluded from employment, which is also a form of work-related adversity.
Figure 2. A framework for elucidating the pathways from the social context to health outcomes. Source: Diderichsen and Hallqvist (1998, 2001), modified by author to include work-related determinants of health among foreign-origin persons.

Of course, not all persons of foreign-origin will experience a disadvantaged labor market position or exposure to work-related adversities. Yet even if exposures to work-related adversities were equally distributed among persons of foreign-origin, whether or not work-related ill health occurs in relation to work-related adversities experienced would nonetheless vary according to individual differences in vulnerability to the negative effects of these exposures (Mechanism III). For example, foreign-born persons who experienced trauma in the country of origin may be more vulnerable to adverse work-related exposures due to ongoing trauma-related health problems. Vulnerability to work-related adversities may also be influenced by access to buffering resources, such as social support, social networks, or financial safety nets, which may alleviate the negative effects of adverse exposures. Some foreign-origin persons may be less likely to possess these resources compared to those of native-origin. Migration background characteristics such as generational status, duration of residence, and age at arrival may modify the degree to which these buffering resources are available, and as such impact vulnerability to the negative effects of work-related adversities.

For those who do experience work-related ill health, the social consequences of these poor health outcomes will also vary (Mechanism IV). The severity of the ill health outcome as well as the resources available to
mitigate work-related ill health effects will influence the degree to which negative social consequences occur. Those who are more disadvantaged are more likely to suffer from negative social consequences. In the most severe cases, work-related ill health may prove fatal, which could have negative consequences for the health and well-being of family members of the deceased (194, 195). As some foreign-origin groups are more likely to have a disadvantaged social position in general, which may entail a lack of social safety nets, they may also be more likely to suffer from the social consequences of work-related ill health, such as unemployment, occupational downgrading, or loss of income. If these social consequences are severe, they may serve to reproduce or maintain social stratification processes and social inequality among persons of foreign-origin.

This chapter has provided an overview of relevant theoretical frameworks for the study of work-related health inequalities among persons of foreign-origin. The theory of fundamental causes and intersectionality were presented as frameworks that can be used to integrate migration into the social determinants of health discourse and to enrich research on the social determinants of migrant health. Ecosocial theory was presented to describe how social and work-related adversities experienced by persons of foreign-origin may become embodied, and translated into poor health or health inequalities. A modified version of the Diderichsen and Hallqvist model was presented to illustrate the pathways through which a disadvantaged labor market position among foreign-origin persons may lead to poor health or health inequalities among those who are exposed to work-related adversities and those who are most vulnerable to them.
4 Materials and Methods

This section describes the study designs, data sources, measures, and statistical methods used in the empirical studies contained in the thesis. An overview of the classification processes used to create categories of foreign-origin background is provided, as well as a description of ethical considerations relevant to this thesis.

4.1 Study overview and design

The empirical studies included in this thesis are concerned with understanding how employment and working life quality influence health and health inequalities among persons of foreign-origin in Sweden. Studies I and II focus on the employed population and examine the health impact of exposure to adverse working conditions and educational mismatch using cross-sectional survey data. Studies III and IV examine the health impact of unemployment using longitudinal population-based register data. Table 2 outlines the data source and study population for each of the four studies, as well as the main outcome and exposure variables, covariates, and the statistical models used.

4.2 Data sources

Two data sources were used for the studies in this thesis: the Swedish Level of Living Surveys and register data from the Swedish Work and Mortality Data.

Swedish Level of Living Surveys

Studies I and II utilize data from the 2010 wave of the Swedish Level of Living Survey (LNU) and the 2010 Swedish Level of Living Survey for Foreign-Born Persons and their Children (LNU-UFB). These surveys are nearly identical in content, and both inquire about diverse living and
<table>
<thead>
<tr>
<th></th>
<th>Study I</th>
<th>Study II</th>
<th>Study III</th>
<th>Study IV</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Data sources</strong></td>
<td>2010 LNU and LNU-UFB</td>
<td>2010 LNU and LNU-UFB</td>
<td>Swedish Work and Mortality Data</td>
<td>Swedish Work and Mortality Data</td>
</tr>
<tr>
<td><strong>Study Populations</strong></td>
<td>native-origin and foreign-origin workers, aged 18-65 years N=4,021</td>
<td>native-born and foreign-born workers, aged 18-75 years N=4,148</td>
<td>native-origin and foreign-origin persons, aged 25-64 N=2,178,321</td>
<td>native-origin and foreign-origin persons, aged 25-64 N=2,178,321</td>
</tr>
<tr>
<td><strong>Outcome variables</strong></td>
<td>self-rated health mental distress</td>
<td>self-rated health</td>
<td>all-cause mortality</td>
<td>suicide mortality</td>
</tr>
<tr>
<td><strong>Exposure variables</strong></td>
<td>psychosocial job demands job control workplace social support ergonomic stress physical working demands</td>
<td>educational mismatch; matched under-educated over-educated</td>
<td>unemployment status; employed short-term unemployed long-term unemployed</td>
<td>unemployment status; employed short-term unemployed long-term unemployed</td>
</tr>
<tr>
<td><strong>Covariates</strong></td>
<td>age gender occupational class civil status weekly working hours reason for migration</td>
<td>age gender (also stratified) occupational class civil status education level disp. income quintile part-time/full-time status</td>
<td>age (attained age as time scale) gender (stratified) civil status education level disp. income quintile time period during follow-up</td>
<td>age (attained age as time scale) gender (stratified) civil status education level disp. income quintile time period during follow-up</td>
</tr>
<tr>
<td><strong>Statistical methods</strong></td>
<td>logistic regression models</td>
<td>logistic regression models</td>
<td>Cox proportional hazards models</td>
<td>Cox proportional hazards models</td>
</tr>
</tbody>
</table>
working conditions, as well as health and well-being. The LNU data comprises a representative sample of the Swedish population aged 18–75 years. The survey has a panel design so that longitudinal comparisons can be made, and the 2010 wave represents the sixth iteration of this survey since its inception in 1968. The 2010 survey also includes a new selection of younger participants (aged 18–28 years) and persons who have immigrated to Sweden since 2000, to ensure that the survey remains cross-sectionally representative of the Swedish population. Face to face and telephone interviews were conducted during 2010–11 and administered by trained interviewers from Statistics Sweden (Statistiska centralbyråns). The response rate for the full-length 2010 LNU survey used in this thesis was 61.5%, although an additional 10.5% of respondents answered a shortened form of the survey.

The LNU-UFB survey is focused solely on foreign-born persons in Sweden and their children. This data contains additional items related to migration experiences, language abilities, employment, and social networks both in the country of origin and in Sweden. Swedish register data was utilized to select a representative sample of the entire foreign-born population aged 18–75. From this initial sample, a stratified sampling technique was then utilized to ensure representativeness of the data by including a statistically sufficient number of foreign-born persons from different regions of origin. The sampling frame included seven region of origin groups, each of which were divided into three age categories (18–30 years, 31–55 years, and 56–74 years). Each age category comprised 350 potential respondents, and each region of origin group comprised 1,050 persons who were approached to participate. Additional inclusion criteria dictated a minimum requirement of five years of residence in Sweden in order to complete the survey. The response rate for the full-length LNU-UFB survey used in this thesis was 50%, although an additional 10.6% of respondents answered a shortened form of the survey.

Swedish Work and Mortality Data
Register information from the Swedish Work and Mortality Data (HSIA) was utilized in Studies III and IV. This data consists of several national registers that are linked via a pseudonymized, unique identification number, including: 1) the Register of the Total Population, 2) the Longitudinal Integration Database for Health Insurance and Labor Market Studies, and 3) the Cause of Death Register. This data covers the total population of Sweden born before 1986 who were alive in 1990 or 1980. The data has been updated with new information on in-migration to Sweden from 1990-2002. As such, the foreign-born population represented in the data
consists of persons who relocated to Sweden prior to 2003. HSIA has been updated annually with information from the registers through 2008.

The HSIA register data used in this thesis includes information on 1) country/region of origin, 2) gender, 3) dates of birth and in-and out migration, 4) socioeconomic variables (education level, income), 5) civil status, 6) employment and unemployment, and 7) financial benefits received. Register based health outcomes, including all-cause mortality and suicide, were also used, and were defined using diagnoses based on the International Classification of Diseases (ICD-9 and ICD-10).

4.3 Measures

The studies use three main categories of measures: region of origin and migration background characteristics, employment and work-related exposures, and health outcomes.

Region of origin and migration background categorizations

There is considerable variation in the way in which persons of foreign-origin are categorized in migrant health research (100), and the process of creating such categorizations is inherently complex. Persons of foreign-origin are often categorized by nativity (foreign-born or native-born), country of birth, or duration of residence in the destination country. The degree of specificity with which groups are categorized varies between studies, and is dependent upon the information available in the data source as well as population sample size. Due to the smaller sample size of the LNU and LNU-UFB survey data, the broadest categorization schemes are found in Studies I and II, while the register data materials used in Studies III and IV allowed for more detailed classifications. Table 3 summarizes the categorizations used across the four studies.

In Study I, the participants were grouped into six region of origin categories. These categories were based on the original categorizations that guided the sampling procedures of the LNU-UFB data; however, due to small sample size, two of these categories were collapsed to create the category ‘Other Non-Western’. The following categories were used in Study I: Native Swedish, which included persons born in Sweden with two native-born parents; Foreign Parentage Swedish, which included persons born in Sweden with at least one foreign-born parent; Western, which included persons from Western Europe and other OECD member states; Eastern European, which comprised Eastern European and former Soviet countries; Latin American, which consisted of countries in Central and
South America and the Caribbean; and Other Non-Western, which included countries in Asia, Northern Africa, the Middle East, and Sub-Saharan Africa.

Table 3. Region of origin and migration background categorizations

<table>
<thead>
<tr>
<th>Study I</th>
<th>Study II</th>
</tr>
</thead>
<tbody>
<tr>
<td>Native Swedish</td>
<td>Native-born</td>
</tr>
<tr>
<td>Foreign Parentage Swedish</td>
<td>Foreign-born</td>
</tr>
<tr>
<td>Western</td>
<td></td>
</tr>
<tr>
<td>Eastern European</td>
<td>Native-born</td>
</tr>
<tr>
<td>Latin American</td>
<td>Western Europe+</td>
</tr>
<tr>
<td>Other Non-Western</td>
<td>Outside Western Europe+</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Study III</th>
<th>Study IV</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sweden (native-origin)</td>
<td>Sweden (native-origin)</td>
</tr>
<tr>
<td>Second generation</td>
<td>Second generation</td>
</tr>
<tr>
<td>Finland</td>
<td>Nordic countries</td>
</tr>
<tr>
<td>Other Nordic countries</td>
<td>European+ countries</td>
</tr>
<tr>
<td>Former Yugoslavia</td>
<td>Non-European countries</td>
</tr>
<tr>
<td>Eastern Europe</td>
<td></td>
</tr>
<tr>
<td>Other European countries</td>
<td>Age at arrival</td>
</tr>
<tr>
<td>Africa</td>
<td>(&lt;20 or 20+ years of age)</td>
</tr>
<tr>
<td>Middle East</td>
<td>Duration of residence</td>
</tr>
<tr>
<td>South/Latin America</td>
<td>(&lt;10 or 10+ years of residence)</td>
</tr>
<tr>
<td>Other Non-European countries</td>
<td></td>
</tr>
</tbody>
</table>

In Study II, respondents were categorized using two different classification schemes: 1) either as foreign-born or native-born or 2) by region of origin. The region of origin groupings roughly correspond to previous categorizations that have used OECD membership as the basis for classification (54). In Study II, different groups were compared based on their foreign-born or region of origin status in combination with their educational mismatch status. This study required a broader categorization of region of origin than that used in Study I, in order to ensure sufficient statistical power, and included the following categories: Sweden, which comprised all persons born in Sweden; Western Europe+, which comprised persons born in EU15 countries, North America, and Australia and New Zealand; and Outside Western Europe+, which comprised persons born in other European countries, the Middle East, Africa, Asia, and Latin America.
The use of large Swedish register data in Studies III and IV allowed for the creation of more specific categorizations by region of origin and migration background characteristics. Region of origin classifications used in Study III were based on country/region of origin categories developed by Statistics Sweden, and included the following: Sweden (native-origin), which included native-born Swedes with two native-born parents; Second generation, which included native-born Swedes with at least one foreign-born parent; Finland; Other Nordic countries; Former Yugoslavia; Eastern Europe; Other European countries; Africa; the Middle East; South/Latin America; and Other Non-European countries.

In Study IV, both region of origin and migration background characteristics were explored. The same classification scheme for native-origin Swedes and second generation individuals was used here as in Study III, as well as the following region of origin categorizations: Nordic countries; European+ countries (Europe (excluding Nordic countries), USA, Canada, Australia, New Zealand); and Non-European countries (all other countries). Broader categorizations by region of origin were necessary in this study due to the lower incidence of suicide deaths compared to all-cause mortality. Foreign-born individuals were also classified by age at arrival, as children or adolescents (<20 yrs.) or as adults (20+ yrs.), and duration of residence (<10 years or 10+ years of residence).

Employment and work-related exposures
To investigate the health effects of employment and working life quality, a number of variables were assessed in the studies.

Physical working conditions represent an important aspect of working life quality, and are key work-related determinants of health. Exposure to adverse physical working conditions can not only influence health directly (196) but also indirectly via stress-mediated pathways (197). In Study I, physical working conditions were assessed using two dichotomous survey items relating to the individual's exposure to ergonomic stress ('Does your job require you to adopt unsuitable/uncomfortable working postures?') and physical working demands ('Is your work physically demanding in any other way?).

Psychosocial working conditions are another important aspect of working life quality. In Study I, the Demand-Control Model (140, 141) was used to guide the measurement and assessment of psychosocial working conditions. This model is comprised of two types of psychosocial conditions that can influence work-related stress and health outcomes: psychosocial demands, which refer to the mental demands and pressures placed on
workers, and *job control*, which refers to the workers’ control over how and when their job duties are completed, as well as the extent to which they are able to utilize skills in their positions. *Workplace social support* was later added as an additional component of the Demand-Control Model, as research has demonstrated that high social support at work can have a protective effect against exposure to high psychosocial demands or low job control (141, 198).

The LNU and LNU-UFB surveys assess the Demand-Control Model components with four dichotomous survey items. Psychosocial demands were assessed using the items ‘Is your work mentally demanding?’ and ‘Is your work hectic or stressful?’. Respondents who answered yes to both of these items were categorized as being exposed to high psychosocial demands. The items ‘Can you decide your own work pace?’ and ‘Is your work monotonous?’ were used to measure job control. Respondents who stated that they could decide their own work pace and who reported non-monotonous work were categorized as having high job control. Workplace social support was assessed on a five-point scale using the item ‘To what extent does your work entail that you can get support and help from workmates if needed?’. Persons who reported having support ‘to a small extent’ and ‘not at all’ were categorized as having low support, while those who reported having support ‘to a very large extent’, ‘to a large extent’, and ‘to a certain extent’ were categorized as having high support. Although the Demand-Control Model outlines four job types based on different combinations of exposure to job demands and job control, in Study I job demands and job control were assessed independently in order to obtain an understanding of the effect of each aspect of work.

**Educational mismatch** occurs when there is a discrepancy between an individual’s highest level of educational attainment and the level of education typical or required for their occupation. In Study II, both objective and self-reported measures of educational mismatch were used. The objective measure was based on a variation of the realized matches (RM) method developed by Clogg and Shockey (1984). The self-reported measure was based on a classification developed by Tåhlin (2014), which used LNU data in the formulation of the measure.

Based on a method used by Garcy (2015), for the objective measure the respondents’ highest attained level of education was compared to the modal population level of education within the respondents’ occupation. The Swedish Standard Classification of Education (SUN) was used to identify the highest attained level of education, and the Swedish Standard Classification of Occupations (SSYK) was used to identify occupation. Education levels equal to the mode were classified as matched, while those
below and above the mode were classified as under-educated and over-educated, respectively.

For the self-reported measure, LNU and LNU-UFB survey items were used to assess 1) respondents’ self-reported years of education (above compulsory school) and 2) respondents’ assessment of the years of education (above compulsory school) required in their jobs. Participants were categorized as: 1) matched, when their reported education did not deviate by more than one year from that perceived to be required for their job; 2) under-educated, when their reported education was two or more years shorter than that perceived to be required for their job; and 3) over-educated, when their reported education was two or more years in excess of that perceived to be required for their job.

**Employment status** refers to a combination measure of employment that used annual information from the HSIA register on recorded employment, earned income, sickness benefits and early retirement benefits, and the number of days in unemployment. Employment status was assessed as a time-varying variable in order to increase measurement precision related to time spent in unemployment.

Persons categorized as employed were:
- Coded as employed in the register
- Had zero days of annual unemployment
- Had a minimum annual earned income (56,000 SEK in 1993, adjusted for inflation)
- Received no more than a maximum amount of financial benefits (27,500 SEK in 1993, adjusted for inflation)

Persons categorized as unemployed were:
- Coded as unemployed in the register
- Had 1 or more recorded days of unemployment
- Did not receive financial benefits unrelated to unemployment compensation in excess of a maximum amount (27,500 SEK in 1993, adjusted for inflation)

These income and benefits thresholds were set based on similar thresholds used in previous Swedish research (171). All remaining individuals not coded as employed or unemployed were categorized as other/unknown. Unemployment status was also further categorized by spell duration. Based on a definition of unemployment used in previous Swedish research (171), a threshold of 90 days in unemployment/year was used to differentiate short-term (less than 90 days/year) and long-term (greater than or equal to 90 days/year) unemployment.
A number of subjective and objective health outcomes were assessed in this thesis. A brief description of each of these outcomes is provided below.

**Self-rated health** is a well-established metric that is commonly used to assess overall health status across diverse population groups and country contexts. Self-rated health has previously been correlated with both morbidity and mortality (201, 202) and there is substantial evidence which demonstrates the validity and reliability of this measure (201, 203, 204). Despite this, there has been some debate concerning the validity of self-rated health as a measure of overall health status among specific population groups; some concerns are that different social groups may have differential interpretations of the concept of health, or that the reference point for assessing one’s health varies by demographic and social context (43). Still, many prior studies have provided support for the validity of this measure across socioeconomic (205), ethnic (206), and migrant (207) groups. It is utilized in this thesis as a measure of subjective health among both native- and foreign-origin population groups, due to its ubiquitous use within the disciplines of social science and public health, as well as across country contexts and population groups. Additionally, self-rated health is able to combine social and biological attributes of health into one single measure (203).

In Studies I and II, self-rated health was assessed with the item ‘How would you rate your overall health?’. Survey responses were ‘good’, ‘bad’ and ‘something in between’. These responses were used to dichotomize self-rated health as good (if the response was ‘good’) and poor (if the response was ‘bad’ or ‘something in between’).

**Mental distress** is an important health outcome that has implications for both physical and mental health, as well as quality of life. In Study I, mental distress was assessed using an additive index-scale checklist of mental health symptoms, which has been applied in previous studies using the LNU data (49, 208, 209). Participants were asked ‘Have you had any of the following illnesses or ailments in the last 12 months?’ and rated the following symptoms: *general tiredness, insomnia, nervous troubles (anxiety, uneasiness, anguish), depression (deep dejection), and overexertion*. Response options for each symptom were assigned a point value; ‘no’ (zero points), ‘yes, mild’ (one point), and ‘yes, severe’ (three points). Participants scoring three or more points on the index were categorized as having mental distress.
**All-cause mortality** was used as an objective health measure. Deaths from all causes classified according to ICD-9 and ICD-10 codes were included in the measure of all-cause mortality.

**Suicide** was used as a second objective health measure. Deaths from suicide were categorized using ICD codes for intentional self-harm (ICD-9: E950-E959; ICD-10: X60-X84, Y870) and events of undetermined intent (ICD-9: E980-E988; ICD-10: Y10-Y34). Codes for mortality due to events of undetermined intent were included to provide a more accurate measure of suicide mortality, as suicide deaths are often under-reported (210).

**Other covariates**
All studies included adjustment for possible confounding by age and civil status (see Table 2). While Studies II, III, and IV were stratified by gender, Study I included gender as a covariate. A number of socioeconomic control variables were also included in the statistical models across studies, including occupational class (Studies I and II), education level (Studies II, III, and IV) and income (Studies II, III, IV). Additional work-related characteristics were also adjusted for in Study I (weekly working hours) and Study II (full-time/part-time employment status), as well as migration-related factors (reason for migration) in Study I. Studies III and IV additionally adjusted for the time period during follow-up.

**4.4 Statistical methods**
Two types of statistical models were used for the studies included in this thesis. Logistic regression analyses were employed in Studies I and II. Logistic regression is an appropriate method to use when assessing binary outcomes in cross-sectional data; this binary outcome variable is assumed to be a non-linear function of the independent variables included in the models. All estimates from logistic regression models were presented as odds ratios with 95% confidence intervals (CI). The odds ratio refers to the odds that an outcome will occur given exposure to a particular condition, compared to the odds that an outcome will occur without exposure to that condition (211).

Survival analyses were conducted in Studies III and IV using Cox proportional hazards models. Cox models assess the effect of independent variables included in the model on the time until an event occurs. Cox models are commonly used in survival analyses because they are semi-parametric, and do not make assumptions about the shape of the baseline hazard over time. However, a key assumption of the Cox model is that the hazard
rate is proportional over time and, regardless of shape, remains constant for all individuals. Hazard ratios with 95% CI were estimated using Cox models.

Logistic regression and Cox regression models utilize different techniques for estimation, yet both the odds ratio and hazard ratio estimates can be interpreted in a similar manner; as a measure of relative risk. Relative to the reference category, estimates in excess of one can be interpreted as an increased risk, while estimates below one can be interpreted as a decreased risk.

In Study I, a series of logistic regression models were used to assess the association between exposure to different working conditions and self-reported health outcomes. The explained fraction (XF) was also calculated, in order to assess the contribution of different working conditions to an excess risk of poor-self rated health and mental distress. Explained fractions were calculated using the odds ratio estimates in each region of origin group before adjustment (ORa) and after adjustment for working conditions (ORb). The equation utilized to calculate the XF was:

\[ XF = (ORa - 1) - (ORb - 1) / (ORa - 1) \]

In Study II, multiplicative interaction terms for educational mismatch and 1) foreign-born status and 2) region of origin were included in the logistic regression models. This allowed for comparisons of native-born matched workers (reference group) with mismatched native-born workers, matched foreign-born workers, and mismatched foreign-born workers. Odds ratios with 95% CI were calculated using linear combinations of the coefficients (using the lincom command in Stata).

In Studies III and IV, Cox regression models were used to estimate hazard ratios and 95% CI in a series of gender-stratified models investigating the association of unemployment with all-cause mortality (Study III) and suicide (Study IV). Using a similar approach as that employed in Study II, multiplicative interaction terms were created, allowing for risk comparisons between employed, native-origin Swedes (reference group) with the native-origin short-term and long-term unemployed, and foreign-origin groups who were employed, short-term unemployed, and long-term unemployed. Hazard ratios with 95% CI were calculated using linear combinations of the coefficients. Employment status, education level, civil status, and income were included as time-varying covariates. An open cohort study design was used in order to allow for the inclusion of foreign-born persons who migrated to Sweden during the follow-up period (up to and including 2002).
4.5 Ethical considerations

Ethical approval to conduct this research was granted by the Stockholm Regional Ethical Review Board (approval number 2012/1260-31). The data materials described in this thesis consist of secondary data already collected, coded, and pseudonymized. The survey data and register data used is de-identified and cannot be linked to individuals. Only those researchers and collaborators who were tied to the ethically approved research project had access to the data materials.
5 Methodological Considerations

Different sources of data were used in this thesis, which enabled an examination of diverse work-related determinants of health among persons of native- and foreign-origin in Sweden. The LNU-UFB survey was the first Swedish survey to focus specifically on an assessment of the health status and living and working conditions of the foreign-born population. The use of this survey, in conjunction with the LNU survey data, enabled a more detailed investigation of these factors within more specific groups of foreign-born persons, relative to those of native-origin, than has typically been possible when using Swedish survey data. The Swedish Work and Mortality Data provided a large sample size, which allowed for the examination of relationships between unemployment, mortality, and suicide across several migration background characteristics. The longitudinal nature of this register data also made it possible to investigate changes in demographic, socioeconomic, and employment characteristics over time. Despite these strengths, the results presented within this thesis have several limitations, which are briefly described in the following sections.

Causality

The cross-sectional “snapshot” nature of Studies I and II did not allow for an assessment of causality of the relationships observed between working conditions, educational mismatch, and health. Persons with poorer health may be segregated into jobs with poorer working conditions, or it may be that poor health leads to occupational downgrading and educational mismatch. In addition, given that information was collected at only one timepoint, the full extent of health disadvantages experienced by foreign-origin groups exposed to work-related adversities may not have been captured.

Longitudinal data and study designs can be more beneficial in identifying casual relationships, however they may not be sufficient to prove causality. Longitudinal analyses were conducted in Studies III and IV, which allowed for an assessment of changes in employment status, providing a more precise estimation of the time spent in unemployment. However, the casual direction of the association between unemployment and health
is still debated. Evidence exists for both a direct causal effect of unemployment on poor health as well as reverse causality and negative health selection into unemployment. While Studies III and IV used restrictive definitions of employment status in order to limit potential health selection effects into unemployment, it is not certain that such effects do not remain in the findings.

Bias

Selection bias
Selection effects may be a source of bias in the data utilized, which could have limited the representativeness of the study populations. The sampling frame of the LNU-UFB survey restricted participation to only those foreign-born persons with a minimum five-year duration of residence in Sweden. Thus it is possible that those who were less integrated into the labor market were excluded from the sample. Descriptive information on the LNU-UFB sample revealed that persons who were younger, married, who migrated to Sweden as young adults (up to age 35) and those who lived in Sweden for longer durations were more represented in the sample. In addition, persons living in the largest urban counties in Sweden were less represented compared to persons living in other counties (149). Such sample characteristics may also limit the generalizability of the results and contribute to selection bias effects.

Similarly, higher external non-response rates have been found among persons who have poorer health and among persons of foreign-origin (212). High external non-response rates can introduce bias that may influence prevalence, as well as the associations found. External non-response rates have increased in recent years, which also increases the risk of selection bias. The non-response rate for the full-length 2010 Swedish Level of Living Survey (38.5%) is similar to the non-response rates of other recent Swedish surveys that have assessed similar conditions (for example, 35.1% for the 2010 Living Conditions Survey (ULF) (213)). The non-response rate for the full-length LNU-UFB survey was 50%, which points to an increased possibility of selection bias. Internal non-response and the exclusion of individuals with missing data may also have contributed to selection bias.

Health selection effects, such as the healthy worker effect (214), or the healthy migrant paradox (96) could also have influenced the study findings. The working population tends to be healthier than the general population, as a minimum level of good health is generally necessary for labor market participation. There may also be a health selection into unemployment, whereby those who become ill while working may be forced out of
the labor market, temporarily or permanently, due to their health status. The health advantage commonly observed among migrant populations suggests that migrants as a whole may comprise a healthy population group. However, it is difficult to speculate on the extent to which this potential health advantage may influence the study findings, given that migrant health advantages 1) may erode with increased time in the country of residence; and 2) can vary by the health outcome in question, the country of origin context, and the reason for migration.

Self-reported health outcomes
The utilization of self-reported health measures in Studies I and II could have also introduced bias into the study findings. Cultural differences in the ways in which people understand, conceptualize, and perceive health (215), as well as their willingness to report poor health (216), may have influenced the extent to which poor health was reported or the comparability of self-reported health outcomes across different groups. Self-reported measures are also often critiqued as less valid than objective measures, and as being more prone to common method variance and misclassification bias (217). Despite this, self-rated health has been shown to be a valid and holistic indicator of overall health status (201, 203). In addition, self-reported measures have also been key in the development of different theoretical frameworks and models (218), including the Demand Control Model, which is utilized in the current thesis.

Misclassification and measurement bias
In addition to the self-reported health outcomes examined, the assessment of working conditions and educational mismatch may have also been subject to misclassification bias. The inconsistencies in results found between the two measures of educational mismatch used in Study II suggest the possibility of misclassification bias. It is possible that since the two measures classified mismatch differently, they assessed different aspects of educational mismatch. In addition, poor health may have led to occupational downgrading or over-education in some individuals, which may point to the presence of differential misclassification bias, where classification errors in the exposure or outcome are related. This type of misclassification can lead to either an over- or under-estimation of the true association (219). Still, with the possible exception of educational mismatch, potential misclassification bias in this thesis is likely to be non-differential; that is, classification errors in the exposure or outcome were unrelated. While non-differential misclassification may bias results towards the null value, it is unlikely to produce false associations (220).

Although self-reported survey data is most commonly implicated in misclassification bias, to a certain degree nearly all types of data are subject
to potential misclassification bias. The measure of employment status used in Studies III and IV was based on objective information from registers, which are generally considered to be reliable sources of high quality information. In conjunction with other relevant variables, information on the number of days spent in unemployment per year was used to create an annual measure of short-term (<90 days) and long-term (90+ days) unemployment. However, as the number of days spent in unemployment is recorded annually, it is possible that some individuals who experienced long-term unemployment may have been misclassified as short-term unemployed, depending on the time at which the unemployment spell occurred.

Denominator bias/unrecorded out-migration
An additional type of misclassification bias that is particular to studies of migrant health is over-coverage or denominator bias, in which out-migration among persons of foreign-origin may not be recorded (11). In studies of mortality, this could lead to an underestimation of deaths among foreign-origin persons who remain registered as being alive in Sweden, despite having emigrated. As unemployment might act as a trigger for out-migration in non-refugee migrants, such misclassification was of particular importance in Studies III and IV. Sensitivity analyses which excluded individuals with missing information on income for two consecutive years (as a proxy for unrecorded out-migration) showed similar results to those presented in the main analyses conducted in these studies.

Confounding
Regardless of the data source used, observational studies such as those included in this thesis are limited by potential confounding bias. This refers to the main association between the exposure and outcome being influenced by one or more variables. These variables may be measured and included in the statistical model in order to estimate the true effect of the exposure on the outcome; alternatively, these variables may be unmeasured or imprecisely measured, resulting in residual confounding.

Survey data can be a source of rich and detailed information, however in Studies I and II we were unable to account for a number of potential confounders related to adverse working conditions, educational mismatch, and health. Such factors may include job satisfaction, labor market expectations, stress perceptions, job insecurity, and effort reward imbalance. Given the limited amount of individual information available in the registers, in Studies III and IV we were unable to measure and model the effect
of possible confounders relevant for the relationship between unemployment and mortality and suicide, such as experiences of racism or discrimination in the labor market.

**Statistical models**

The two main statistical models used in this thesis were logistic regression and Cox regression models, which report odds ratios and hazards ratios, respectively. The use of odds ratios in research has recently been criticized as problematic (221), given the unobserved heterogeneity in odds ratio estimates varying across models as well as between comparison groups. Average marginal effects have been suggested as one possible alternative to estimating the odds ratio. However, given that our preliminary findings from Studies I and II remained robust when using both methods, we chose to present the findings as odds ratios.

Cox regression models make the key assumption of proportional hazards, which maintains that the effects of independent variables on the time to an event occurring remain proportional over time. This assumption was violated in Studies III and IV, which indicates that there was an interaction between the covariates and time. However, the hazard ratio estimates from Studies III and IV nonetheless provide a reliable estimate of the average effect of unemployment over time.

**Region of origin and migration background categorizations**

The categorizations used in this thesis to group foreign-origin persons were based on country/region of origin (Studies I-IV), generational status (Studies I, III, and IV), as well as duration of residence and age at arrival (Study IV). Country of origin is a widely used and accepted method to account for foreign-origin status, and has been identified as one of the most essential indicators for migrant health (222). Despite this, there are limitations inherent in the use of this metric as the basis for categorization of foreign-origin persons. Specific ethnicity may not be captured by country or region of origin. In addition, as foreign-born persons and subsequent generations have children, the meaning or implications of country of origin or generational status as they pertain to health may weaken, while other factors, such as race/ethnicity, may continue to influence health, via exposure to forms of oppression or marginalization.

The categorizations used also varied in their degree of specificity, which was determined by sample size as well as the frequency of the health outcome being assessed. With even the most specific categorizations, however, there is likely to be significant heterogeneity within groups, which
limits the generalizability of findings. Relatedly, categorization by one dimension of migrant background may mask heterogeneity in that group across another dimension; for example, categorization by region of origin may mask heterogeneity by reason for migration. In addition, the composition of the foreign-origin population in a given country can change drastically over time, according to several demographic factors. As such, the results of the four studies included in this thesis are relevant to the Swedish context in recent years, and may not be generalizable to other foreign-origin population groups in different country contexts.

Additional considerations

The studies in this thesis used native-origin persons as the category of reference in statistical analyses. Such an approach allows for an assessment of inequalities in foreign-origin population groups relative to those of native-origin. Yet some theoretical frameworks which are increasingly gaining prominence within the public health and health equity fields, such as intersectionality, have questioned this methodological convention. Some public health researchers advocating for the increased utilization of intersectional approaches have suggested that using historically marginalized or disadvantaged groups as the reference could help to examine the privilege of advantaged groups, while also contributing to a scientific discourse in which disadvantaged persons are not seen as a deviation from the norm of advantage (181).

Unfortunately, this thesis does not provide information on the health of undocumented migrants and workers, given the absence of these individuals in both the survey and register data utilized. These individuals remain an understudied yet vulnerable population group.
6 Overview of the Studies

The studies in this thesis examined the health impact of different labor market adversities among persons of foreign-origin in Sweden. A summary of the main findings from these studies is presented below.

Studies I and II focused on the associations between adverse working conditions, educational mismatch, and poor self-reported health. The primary aims of Study I were to 1) assess whether foreign-origin workers had increased risk of poor self-rated health and mental distress, relative to native-origin workers; and 2) examine the extent to which exposure to psychosocial and physical working conditions contributed to any excess risk found among foreign-origin workers. A series of weighted, multivariate logistic regression models were used to calculate odds ratios for poor health outcomes. The Demand Control Model (140, 141) was used as a framework to guide the assessment of adverse psychosocial working conditions, including high psychosocial demands, low job control, and low social support. Given the health importance of physical working conditions, relationships between health and exposure to ergonomic stress and high physical demands were also investigated. Explained fraction (XF) calculations were utilized to estimate the contribution of exposure to these conditions to any increased risk found.

Compared to native-origin workers, increased risk of both poor self-rated health and mental distress was observed among workers from Eastern Europe, Latin America, and Other Non-Western countries. However, exposure to adverse working conditions only minimally influenced the increased risk of poor health found in these groups. Nonetheless, the excess risk found among some groups is indicative of the presence of health inequalities among foreign-born workers in Sweden. Descriptive statistics suggested that the foreign-born workers in this study sample could be characterized as having high social and language integration; this may have contributed to our modest findings, given that these workers may have been less exposed to adverse conditions. However, the study results also point to the need for further investigation of other aspects of working life that may be relevant for health.
Study II therefore continued to investigate the health-related aspects of working life via an assessment of educational mismatch. This is a type of status inconsistency, which occurs when there is a discrepancy between an individual's educational attainment and the educational requirements of their occupation. Prior research has shown that the prevalence of educational mismatch, especially over-education, is higher among foreign-born workers in Sweden (14, 160), yet the potential health impacts of educational mismatch have been largely overlooked in this population.

Due to ongoing methodological debates regarding the optimal measurement of educational mismatch, both an objective and self-reported measure of mismatch were utilized. Weighted, multivariate logistic regression models were used to assess odds ratios for poor self-rated health in groups of native-born and foreign-born workers across different educational mismatch groupings. Native-born workers with a matched employment status (neither over- nor under-educated) were used as the reference in all analyses.

Increased risk of poor self-rated health was observed among over-educated foreign-born men and women when using the objective measurement of mismatch. After accounting for region of origin, this association persisted among workers from countries outside of Western Europe, North America, and Australia and New Zealand. Elevated risk of poor self-rated health was also found among under-educated women from these regions. In native-born workers, no associations were found between objectively assessed educational mismatch and poor self-rated health.

Elevated risk of poor self-rated health was also observed among matched, over-educated, and under-educated foreign-born workers in analyses using the subjective measure of educational mismatch. In gender-stratified analyses accounting for region of origin, these associations remained among over-educated men and matched, over-educated, and under-educated women from countries outside of Western Europe, North America, and Australia and New Zealand. A decreased risk of poor self-rated health was found among native-born under-educated men.

Overall, the results of Study II suggest that educational mismatch might be particularly health-damaging among some foreign-born workers. However, given the differences in findings based on the mismatch measure used, the results also indicate the need for further studies to investigate the relationship between educational mismatch and health among both native- and foreign-born workers.
Studies III and IV originated from a different point of departure, and examined the health impacts of exposure to unemployment. The association between unemployment and poor health is well established, yet few studies have specifically assessed the ways in which exposure to unemployment may influence health among persons of foreign-origin. Prior research has demonstrated that foreign-origin persons in Sweden have greater rates of labor market exclusion than their native-origin counterparts (16). The negative health effects of unemployment could be more detrimental among some foreign-origin groups who may possess fewer compensatory resources to buffer against such effects.

The overarching aim of these two studies was to examine the extent to which different migration background characteristics modified the relationship between employment status and risk of all-cause mortality (Study III) and suicide (Study IV). In order to provide a more accurate estimation of time spent in unemployment, employment status was assessed as a time-varying exposure in both studies, and was further categorized into long-term and short-term spells of annual unemployment. Cox proportional hazards models were used to calculate hazard ratios for mortality and suicide.

Study III examined the association between exposure to unemployment and the risk of all-cause mortality among foreign-origin groups categorized by generational status and region of origin. Results showed an excess risk of mortality in most foreign-origin groups exposed to unemployment. The excess risk observed among African women and Finnish and second generation men exposed to unemployment was greater in magnitude than the excess risk among native-origin Swedish women and men exposed to unemployment. The increased risk among African women was unexpected, given that a mortality health advantage is often observed among non-European migrants (11, 69). The excess risk found among unemployed Finnish men may partially reflect the higher mortality rate that has been observed in this group (69). However, the excess risk found among second generation men suggests that unemployment may be especially detrimental to health among this group, particularly as employed second generation men had a decreased risk of mortality.

Study III also revealed a health advantage across several groups of employed foreign-origin persons: employed men and women from the Middle East, South/Latin America, and Other European countries showed the lowest risk of mortality. While this is somewhat consistent with lower mortality risks observed among non-European migrants (11, 69), many workers from European countries also showed a health advantage, particularly among women. This finding may therefore point to the health
promoting influence of employment, provided that one’s position is also characterized by good employment conditions, but could also be reflective of positive health selection into employment.

Study IV continued to explore the relationship between unemployment and health, but specifically focused on investigating the association with suicide. Mental health outcomes are some of the most commonly and extensively examined health effects of unemployment, yet relatively few Swedish studies have explicitly considered foreign-origin populations when assessing this relationship. The measurement of foreign-origin background was also expanded in this study. Foreign-origin groups were classified not only by generational status and region of origin, but also by duration of residence and age at arrival, as these factors in particular have been implicated in mental health outcomes among foreign-origin populations (71, 223).

Increased risk of suicide was found among most foreign-origin groups exposed to unemployment. Variation in the patterns of risk by migration background characteristics was observed, and gender differences in the risk of suicide were also evident within migration background categories. Similar to patterns of association between exposure to unemployment and risk of mortality in Study III, the excess suicide risk observed among second generation men was significantly greater than that observed among native-origin men. Younger age at arrival and longer duration of residence were associated with an increased risk of suicide in foreign-born men exposed to unemployment, although the excess risk was no greater than that observed among native-origin unemployed men. Unemployed foreign-born men who arrived as adults and who had a shorter duration of residence did not show excess risk of suicide. Conversely, among foreign-born women, elevated risk of suicide was observed regardless of age at arrival or duration of residence in those who experienced long-term unemployment; yet the magnitude of elevated risk was again no greater than that found among their native-origin counterparts.

The results of Study IV highlight the complexity of ways in which the association between unemployment status and health may vary according to different migration background characteristics. Earlier age at arrival or longer duration of residence may help to facilitate language or social integration, which could be beneficial for labor market attachment. However, the results of Study IV suggest that these migration background characteristics are also associated with an increased risk of suicide, particularly among foreign-born men who experience unemployment. This may indicate an increased vulnerability to the negative effects of labor
market exclusion among foreign-born men who arrive in Sweden as children or adolescents or who have a longer duration of residence. Given the severity of suicide as a health outcome, as well as its preventable nature, research which further elucidates associations between unemployment and suicide among foreign-origin groups is warranted.
7 Concluding Discussion

The overall aim of this thesis was to contribute to existing knowledge on the work-related social determinants of health among persons of foreign-origin in Sweden. This aim was addressed by investigating a variety of work-related factors, including adverse psychosocial and physical working conditions, educational mismatch, and unemployment, which allowed for an assessment of health among foreign-origin persons who were both in and outside the Swedish labor market.

In this work migration has been considered as a form of social stratification, which can be implicated in the formation of poor health or health inequalities among those with a migrant background. Ecosocial theory and the concept of embodiment have been used to understand the processes by which experiences of labor market adversity may be translated into health inequalities among those of foreign-origin. The degree to which labor market adversities are embodied as health disparities depends both on the extent to which individuals are exposed to work-related adversities and are vulnerable to their negative effects.

In this thesis, health inequalities were observed among persons of foreign-origin who were both in and outside of the labor market, relative to their native-origin counterparts. Variation in exposure and vulnerability to pre- and post-migration determinants of health, the heterogeneity of foreign-origin populations, and changes in the composition of the migrant population over time all contribute to the complexity of migrant health research. Still, the results of this thesis demonstrate that among some foreign-origin groups, experiences of work-related adversity are associated with poorer health outcomes. This indicates that both employment and the quality of working life are important determinants of health among persons of foreign-origin in Sweden.

Health among the foreign-origin who are employed

Unequal exposure to adverse working conditions is perhaps one of the most apparent work-related determinants of health. Given that both poorer health outcomes (6, 9) and working conditions have been ob-
served among foreign-origin workers (12, 13), explanations for health inequalities based on unequal exposure to adverse conditions seem plausible. However, only a minimal amount of the excess risk of poor health found among foreign-origin workers was attributed to adverse psychosocial and physical working conditions. These modest findings might be partly due to the survey sampling frame of the data materials used in Studies I and II, which excluded foreign-born persons who had lived in Sweden for less than five years. The foreign-born workers who were included in the study samples had a high mean duration of residence (approximately 20 years) and a high Swedish language proficiency, both of which are indicative of social and language integration. This also suggests that foreign-born persons included in the sample may have been less exposed to adverse working conditions than foreign-born workers who had more recently relocated to Sweden.

In order to more fully understand how health inequalities may emerge from work-related factors in the foreign-origin population, additional aspects of working life quality beyond actual working conditions were considered. One reason why migrants in general tend to have poorer working conditions is that they are more often selected into lower status jobs, regardless of their level of education or training. Such a disconnect between occupational position and level of education or training has previously been associated with poor health (154-156); thus, experiences of educational mismatch among foreign-born workers suggest an additional explanation for how work-related ill health may arise within this group.

An increased risk of poor self-rated health was found among foreign-born workers who experienced educational mismatch. Analyses that accounted for region of origin showed that associations between educational mismatch and poor health were evident only among foreign-born workers from countries outside of Western Europe and other non-European high-income countries. Although not explicitly tested, these results suggest that psychosocial stress processes associated with educational mismatch may be one key mechanism through which work-related health disadvantages occur among the foreign-born. Such stress may be particularly health damaging to foreign-born workers from countries outside of Western Europe and other non-European high-income countries who, compared with natives or migrants from Western Europe, may experience greater labor market integration difficulties, such as discrimination or difficulties with educational accreditation. A disadvantaged labor market position may also decrease the likelihood that workers can transition out of their mismatched position, entailing exposure to chronic stress that might be particularly detrimental to health (154). Migrants also often
have fewer work-related social networks compared to natives (16, 224), which may impede transition from jobs characterized by mismatch.

The current societal discourse on migration in Sweden is centered on the need for migrants to integrate into the labor market and to become productive members of society. As the studies in the thesis have illustrated, employment is an important determinant of migrant health, and ensuring employment among migrants is an important policy objective. In 2010, integration policy reforms were instituted in Sweden which 1) introduced a two-year establishment plan for migrants, with the aim of expediting labor market entry, specifically among refugees and asylum seekers; and 2) transferred governmental responsibility for integration to the Swedish Employment Agency (225). A faster transition into employment could help migrants to acquire beneficial resources, including Swedish language skills and labor market experience, as well as social networks, which are of particular importance for obtaining employment in the Swedish labor market (16). However, the health disparities found in this thesis among some foreign-born workers relative to native-origin workers raises the possibility that policies which promote employment as the core goal of integration may be insufficient to prevent or reduce health inequalities within the foreign-origin working population in Sweden. The findings of this thesis suggest that the quality of employment also matters for health, including employment that is a good match for one's level of education or training.

Like many other countries, the Swedish labor market also is becoming increasingly polarized, in that the number of high wage and low wage jobs is growing to a greater degree than the number of middle wage jobs (118), and increasingly flexible, as evidenced by the recent increase in the number of temporary jobs (15, 226). Structural changes in the labor markets such as these suggest that many migrants, particularly those who are low-educated, could continue to be segregated into less desirable, low wage positions, which may also be characterized by poor working conditions and low levels of job security. This further points to the need to address the quality of jobs that migrants acquire. As a large proportion of highly educated migrants in Sweden obtained their qualifications abroad (16), increased efficiency of accreditation processes may be one way to help alleviate occupational downgrading or occupational stagnation among over-qualified migrants, which might also ultimately improve health.
Health among the foreign-origin who experience unemployment

As stated above, employment itself is also an important work-related determinant of health. Relationships between unemployment and poor health are well-established (169, 227, 228), and persons of foreign-origin in Sweden as a whole are excluded from the labor market to a greater degree than the native-origin (17). Yet few studies have investigated how the relationship between unemployment and health may differ among those of foreign-origin, some of whom may be more vulnerable to the negative effects of unemployment due to a disadvantaged social and labor market position.

Most foreign-origin groups who experienced unemployment demonstrated risks for all-cause mortality and suicide that were of a similar or lower magnitude to the risks observed among native-origin persons who experienced unemployment, with some exceptions. African women, Finnish men, and second generation men exposed to unemployment demonstrated the highest all-cause mortality risks, with second generation men also demonstrating the highest risk of suicide; the elevated risk observed in each of these groups was significantly greater than that found among their native-origin counterparts who experienced unemployment.

Prior studies have suggested that African women have greater difficulties with labor market integration than African men (229). The excess mortality risk observed in African women could speak to the intersections of oppression that these women may experience based on processes of gendering and racialization (181), which could increase not only exposure to unemployment but vulnerability to the adverse effects of unemployment. These processes may also serve to segregate working African women into positions that provide lower wages and less job security. Transition into unemployment from such positions could be more detrimental for health due to a dearth of existing financial or other resources.

While Finnish men might not experience the same labor market integration difficulties as African women, they may nonetheless also be vulnerable to the health-damaging effects of stress or economic strain associated with unemployment. Such stressors could be exacerbated by maladaptive coping behaviors, such as increased use of alcohol, which may be used to manage psychosocial stress related to unemployment. Prior research has shown that Finnish migrants have a higher risk of hospitalization for alcohol related disorders compared to Swedes (230), and such factors may have contributed to the higher risk of mortality found. Other research has demonstrated increased risk of mortality among male Finnish mi-
grants in Sweden in general (68, 69), which suggests that part of the observed elevated mortality risk among Finnish men may reflect country-specific risk factors.

Both increased exposure and vulnerability to unemployment may have played a role in the health disparities found among unemployed second generation men relative to their native-origin counterparts. Prior research has shown higher rates of unemployment among some second generation groups (231), which is suggestive of elevated exposure. Although unmet expectations and frustrations related to unemployment can be stressful for all individuals, second generation men may be more vulnerable to the negative effects of such stressors. As these men grow up and are educated in Sweden, they should expect the same labor market outcomes as their native-origin peers. Experiences of unemployment may be perceived as a form of injustice or discrimination, and as such, stress associated with unemployment may be more severe or damaging to health. The considerable heterogeneity of the second generation population by parental country of origin points to the need for further investigation of relationships between unemployment and health in this group, to better identify those who may be more likely to suffer from the health consequences of unemployment.

The magnitude of observed excess risk of suicide among foreign-born persons categorized by age at arrival and duration of residence did not exceed that of the native-origin unemployed. However, variations in patterns of excess suicide risk were evident by age at arrival and duration of residence, as well as gender. Among unemployed foreign-born men, increased suicide risk was found only in those who arrived as children or adolescents and those who had ten or more years of residence in Sweden. A health advantage was observed in employed foreign-born men who had a shorter duration of residence and who arrived as adults (which may also entail a shorter duration of residence). No excess suicide risk was observed among the unemployed men in these groups. Taken together, these results are suggestive of an assimilation paradox effect as it pertains to the risk of suicide among foreign-born men; those who arrived more recently do not appear to be vulnerable to the negative effects of unemployment, while those with a longer duration of residence do. This can be contrasted with the persistence of excess suicide risk seen among long-term unemployed foreign-born women, regardless of age at arrival or duration of residence. These findings highlight the importance of examining multiple intersections of migrant background characteristics and dimensions of social position, which could ultimately lead to better identification of the causal mechanisms through which migration is related to health.
The inequalities in risk of mortality and suicide found in this thesis highlight that the extent to which work-related health inequalities are found among foreign-origin persons is dependent on the interplay between exposure and vulnerability, which is influenced by a multitude of pre- and post-migration factors. The transition towards a more flexible labor market in Sweden is one post-migration factor that has implications for the degree to which migrants are both exposed and vulnerable to unemployment. Foreign-born persons, in particular those who have arrived more recently, are employed on temporary contracts to a greater degree than natives (15), a pattern which can be seen in migrants with both high and low levels of education (16). As temporary jobs necessarily entail less job security, and because foreign-origin persons are more often employed in such positions, they may also be more likely to experience a transition into unemployment. Vulnerability to the negative effects of this transition may be elevated among foreign-born persons who possess fewer compensatory resources to protect themselves from the negative effects of job loss. For example, persons in temporary employment are usually not entitled to unemployment benefits, and as such the financial repercussions of unemployment may be more severe for those who arrive in the country with fewer financial safety nets, such as refugees.

Recommendations for future studies

The findings of this thesis stress the importance of both employment and working life quality as determinants of health among foreign-origin individuals. The dynamic nature of the labor market, changes in migration policies as they relate to the right to residence and employment, as well as changes in the composition of the migrant population over time all point to the need for further research on the work-related determinants of migrant health. This thesis concludes by briefly outlining a number of recommendations for future studies that were beyond the scope of this work.

Educational mismatch

Educational mismatch is increasingly being recognized as a labor market integration issue among migrants. Further exploration of the potential health impacts of educational mismatch, particularly over-education, are warranted to examine the ways in which associations between educational mismatch and health vary by 1) duration of exposure to mismatch and 2) the age at which mismatch occurs, as the severity of the potential stress and health consequences of mismatch may be influenced by these factors. There is also a need to investigate how experiences of mismatch may influence future occupational mobility; individuals who experience
chronic states of mismatch may experience skills atrophy or loss of work-related social networks that could influence their ability to transition out of a mismatched occupational position. Highly educated migrants may be particularly prone to chronic educational mismatch or skills atrophy, as increased competition for highly skilled jobs in a polarized labor market may place them at the bottom of the ladder, so to speak, when competing with natives, who do not face the labor market integration challenges of migrants.

**Precarious employment**
Recent developments towards a more flexible labor market point to the need for exploration of the health impacts of precarious employment, which has recently been described as ‘an emerging social determinant of health’ (232). Such investigations are particularly warranted among migrants, who are employed in precarious jobs to a greater degree than natives (15, 232), and who may remain in precarious positions for longer durations of time due to fewer beneficial work-related social connections. Precarious employment refers not only to temporary employment contracts, but also to jobs within the emerging "gig economy", a growing business model whereby the worker and the consumer are linked via mobile phone applications, which offer consumers a wide range of services that are provided by the workers, such as taxi, cleaning, and delivery services (131). Further research is needed to investigate the ways in which precarious employment is related to labor market integration, occupational mobility, and health among migrants. Exploration of the ways in which social categories, such as age, migrant or ethnic minority status, and gender, interact with different aspects of precarious employment is also warranted (142, 233-235), to identify groups who may be the most vulnerable to the negative health effects of precarious jobs.

**Migration policies**
Migration policies are important determinants of health in their own right (121), as they regulate which individuals may enter a country as well as the legal rights of migrants, including the rights to residence, work, and healthcare. Historically, Sweden's migration policies have promoted integration, and have been less restrictive compared to those of many other European countries (32). However, in 2016 temporary yet restrictive migration policy changes were implemented in Sweden in response to the recent upward trend in forced migration to Europe (33, 34). These legislative changes imposed restrictions on the right to permanent residence for migrants, predominantly among humanitarian and family reunification migrants. In order to receive the right to permanent residence, migrants must be able to prove that they can financially support
themselves, via the procurement of stable employment in line with the collective bargaining agreements of their employment sector.

To a certain degree, these regulations might help to minimize the segregation of migrants into low-wage or precarious positions, such as those which comprise the gig economy. An alternative possibility however, is that persons who are unable to meet the strict employment requirements or who are denied permanent residence may become undocumented, and forced to live and work under stressful and potentially exploitative conditions. There is also a contradiction between the current employment based integration policy and the temporary nature of subsidiary protection residence permits. Currently, those who have been granted subsidiary protection have the right to residence for 13 months, with an option for renewal of residence if the grounds for protection remain after this time. Yet these same individuals are expected to participate in a two-year employment based introduction program in order to comply with the current integration policy mandate (16). This contradiction may make it harder for migrants to obtain work, as employers participating in labor market establishment programs may be less likely to hire individuals who only have temporary residence permits compared to those with permanent residence. The temporary nature of the permits may also discourage investment in Swedish language or other education or training opportunities that could facilitate resettlement. Given the significant impact that migration policies have on the lives of migrants, further investigation of the ways in which such policies may influence both health and employment among migrants is warranted.

Increased utilization of intersectional approaches

The complexity of migrant health research, in particular that which focuses on the work-related determinants of health, necessitates the use of theoretical approaches that not only recognize the heterogeneity of the foreign-origin population, but also take into account the “multiple interacting influences of social location, identity, and historical oppression” (Kapilashrami, Hill, & Meer, 2015, p. 1). Increased utilization of intersectional approaches would enrich studies of migrant health for several reasons.

First, intersectional approaches can be particularly useful in clarifying causal pathways and mechanisms that influence migrant health by investigating different axes of inequality in combination rather than isolation (184). Foreign-origin background is intertwined with other social categories across which people are stratified, including race/ethnicity, gender, and social class, and the ways in which foreign-origin background is related to health will likely be modified in conjunction with these factors.
Second, the application of an intersectional lens to existing explanations of migrant health would enable researchers to better theorize about the underlying processes that impact health. For example, the framework’s focus on processes of power and oppression may help to incorporate the racialized othering processes and structural racism that some migrants face into research questions and analyses (121). Such factors are particularly important to investigate in relation to work opportunities and labor market attachment among migrants. Third, intersectional perspectives can enrich existing categories of acculturation that are often used in migrant health research, such as duration of residence, age at arrival, or citizenship status (121). An intersectional interpretation of these concepts would entail “further theorizing about the meaning of these markers under specific contexts, and about how these meaning are mutually influenced by race, class, gender and other social hierarchies” (Viruell-Fuentes, Miranda, & Abdulrahim, 2012, p. 2103). In particular, intersectional approaches that are inter-categorical, and use existing social categories to try and understand underlying processes and dynamics of power and oppression (186), may lead to better understandings of the structural, fundamental causes of health inequalities among persons of foreign-origin.

**Final remarks**

The extent to which health inequalities are found between foreign-origin and native-origin persons in Sweden is influenced, in part, by work-related determinants of health. To varying degrees, the studies in this thesis show that adverse psychosocial and physical working conditions, educational mismatch, and unemployment contribute to the formation of health inequalities in foreign-origin groups relative to the native-origin. Different pre- and post-migration factors shape the extent to which persons of foreign-origin experience labor market disadvantages and are vulnerable to the negative health effects of work-related adversities. The fact that persons of foreign-origin tend to experience more labor market difficulties than the native-origin may help to explain some of the health inequalities that were observed in this thesis. However, the findings also suggest that some foreign-origin groups may have a greater vulnerability to work-related adversities; given the same experience of adversity, the health effects were more severe in some groups. Thus, in some foreign-origin groups, labor market inequalities may become embodied as health inequalities.

Migration can be thought of as a process whereby individuals shift their spatial location from one world to another. As such, migration is a process
that connects two worlds. Migrants, their lives encapsulated by a confluence of pre- and post-migration factors that influence health and quality of life, often live in social locations that are between two worlds. This thesis has highlighted some of these social locations: those between the country of origin and the country of residence, those inside and outside the labor market, and those that entail exposure to or protection from work-related adversities and their health consequences. It behooves academic researchers, policy makers, and members of civil society to continually strive toward ensuring that these locations between two worlds are characterized by social, labor market, and health equality.
I am very grateful for the opportunity to have pursued a PhD degree at Stockholm University. I would like to express my sincere thanks and gratitude to so many people who have helped and guided me through this process, without whom this thesis would not have been possible:

To my main supervisor, Mikael Rostila, thank you for giving me the opportunity to work on such an engaging research project, and for providing me with guidance, feedback, support, advice, and encouragement along the way. I look forward to our continued collaboration together.

To my co-supervisor, Magnus Nermo, thank you for valuable feedback on numerous drafts and instrumental support with data related issues.

To my co-supervisor, Susanna Toivanen, thank you for being a source of inspiration and encouragement, for valuable feedback, and for your kind words during those times when I needed to hear them the most.

To my co-authors, Anthony Garcia and Sol Juarez, thank you for your invaluable guidance and advice, and your vital contributions to articles included in this thesis.

To my officemate, Karl Gauffin, who in many ways has been my co-pilot on this PhD journey: I am so grateful for all of the support and inspiration that you have given me over these past several years; but most of all, I’m grateful for the friendship we’ve developed and the laughter we’ve shared.

Thank you to all of my colleagues at CHESS for providing an open, friendly, and supportive working environment. It has been a pleasure to work alongside such kind and talented researchers and staff. Special thanks to my fellow and former PhD student colleagues in particular, who are not only a fun and friendly bunch, but who also possess a keen intellect that has allowed for stimulating academic discussion and debate throughout the past few years.
Special thanks are also due to: Lauren Dean, Karl Gauffin, Natalie Holowko, Sol Juarez, Gabriella Olsson, and Laura Wells for invaluable help with proofreading, editing, feedback, and other support and encouragement during the “final countdown” period of thesis writing; Can Liu, for help and advice on data analysis issues; Bitte Modin, for mentorship and support throughout the PhD process, and for such great management of the CHESS postgraduate program; Agneta Cederström, for instrumental help with data management issues and creating figures; Amy Heshmati, for additional help with figures; Cathrin Wiksell, for assistance with countless logistical issues and support during my time as a PhD student; and Jonathan Zawada, who graciously allowed me to use his amazing artwork for the cover of this thesis.

I am also hugely indebted to my former boss and current mentor and friend, Jennifer Steel. You gave me the opportunity of a lifetime when you offered me a job in Stockholm all those years ago, and I will always be grateful for it, as it changed the course of my life. I hope that someday soon we can find an opportunity to work together again.

To my dear friends in the US and in Sweden, thank you for patiently listening to me talk about this thesis for so many years and, perhaps even more importantly, for distracting me from it when necessary. Special thanks and appreciation to the amazing ladies of the BB squad, for all of the good food, laughter, sharing, and support.

To my parents, Frank Dunlavy and Maureen Schwab, thank you for believing in me and for always supporting me. Even far from home, I know I can always count on you both.

And finally, to my partner Dan, thank you for the countless ways in which you have supported me during our years together. When people ask me how I ended up in Sweden, I often tell them that I came for a job but I stayed for you. Thank you for being such a great reason to stay.

Andrea Dunlavy
Sveaplan, April 2017
References


125. Aldén L, Hammarstedt M. Integration of immigrants on the Swedish labour market: Recent trends and explanations. Växjö: Linnaeus University Centre for Labour Market and Discrimination Studies at Linnaeus University; 2014.


