Unemployment, Unemployment Protection, and Health in the Era of Neoliberal Welfare State Retrenchment

by

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A thesis submitted in conformity with the requirements for the degree of Doctor of Philosophy in Public Health Sciences

> Dalla Lana School of Public Health University of Toronto

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Abstract

Research in the field of public health has generated a broad consensus that the organization of the welfare state has a major influence on the distribution of health within and across populations. By and large, extant contributions to this body of scholarship have adopted a relatively static view of the welfare state. Yet, due to the rise of neoliberalism and its attendant political consequences, contemporary welfare state arrangements differ in important respects from the prevailing regimes of the past. In fact, over the last several decades, governments in a vast majority of advanced capitalist countries have undertaken substantial efforts to reduce the scope and generosity of their social protection systems. From a public health standpoint, these developments raise important questions concerning the extent to which neoliberal-era welfare state policies remain effective levers with which to protect population health and promote health equity. In the present dissertation, I pursue this line of inquiry with specific reference to the neoliberal-era connections between unemployment, unemployment protection, and health in two retrenched welfare states: Canada and Germany. Through a series of empirical studies, I show that: (i) health inequalities between employed and unemployed workers are widening over time; (ii) unemployment benefits play an important role in protecting workers against the adverse health consequences of unemployment; and (iii) the neoliberal retrenchment of unemployment benefits

has negatively impacted the health of unemployed workers. Taken together, my findings implicate the neoliberal restructuring of the welfare state as a significant factor contributing to adverse trends in the health of the unemployed and, by extension, as a driving force behind widening unemployment-related health inequalities. These insights, in turn, add empirical weight to growing political demands for the expansion of the welfare state. Beyond illustrating the value and importance of adopting a dynamic view of the welfare state determinants of health, this dissertation makes a contribution to outstanding efforts on the part of public health researchers and practitioners to tackle the problem of persistent health inequalities in our neoliberal times.

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Chapter 1. Introduction

1.1 Dissertation Overview

There is a vast scientific literature dedicated to the study of health inequalities, by which we mean systematic differences in the health status of populations and population groups.[1] This large body of social epidemiological research provides extensive evidence that health inequalities are pervasive, persistent, and in large part attributable to unjust and avoidable differences in the distribution of key socioeconomic resources, such as income, wealth, and employment.[2–5] To put it simply, those with fewer socioeconomic resources get sicker and die sooner than those higher up in the socioeconomic hierarchy.

While health inequalities are observed everywhere, they are noticeably steeper in some societies than in others.[6] Evidence that health inequalities vary from one societal context to the next suggests that the levers to reduce health inequalities might also be found at the societal level.[7,8] An enduring challenge for those working in the field of public health is therefore to identify and intervene upon the societal-level structures that impact the health of populations and their underlying causes.[9–13] It is in the process of searching for those structures that social epidemiologists have developed a strong interest in the welfare state, narrowly defined as the set of institutions through which the government intervenes to alter market forces, reduce inequalities, and reallocate life chances between social groups.[14–17]

Though the role of the welfare state as a determinant of population health has long been recognized,[18] research in this area of work has expanded rapidly over the past decade. Numerous studies in this literature have leveraged broad measures of welfare state effort to investigate cross-national differences in population health and health inequalities.[16,19–21] More recently, scholarly attention has turned towards examining specific aspects of the welfare state with the aim of identifying the policies that hold the greatest and least promise for promoting health and reducing health inequalities.[22–24] Together, these strands of literature have shifted the focus from hypothesizing that societal conditions matter to generating a strong empirical consensus that

the organization of the welfare state – including the scope and generosity of its various components – has a major influence on the distribution of health within and between societies.

Social epidemiological scholarship on the welfare state has shed important light on the broader societal contexts within which health and health inequalities are produced. Yet, for all its strengths, this growing body of literature has often neglected an important observation: that welfare states are not static phenomena, but rather dynamic structures that evolve over time.[25,26] A notable disjuncture has resulted. On the one hand, contemporary social policy arrangements differ in important respects from the prevailing regimes of the past.[27] On the other hand, social epidemiological studies on the welfare state determinants of health rarely take into consideration how and why these determinants have changed over time.[21,28,29] In other words, despite everything we know about the dynamic nature of these institutional arrangements, the extant literature on this topic is largely agnostic towards the question of welfare state change.

The notion that the field of social epidemiology might benefit from a more dynamic view of the welfare state rings particularly true in light of recent findings that socioeconomic health inequalities are widening in many advanced capitalist societies, including Canada, Germany, the United Kingdom, and the United States.[30–33] At present, we have a relatively limited understanding of the factors driving these problematic trends. Scholars have drawn from a diverse range of theories and frameworks to propose possible explanations (e.g. mathematical artifact, social selection, behavioural, materialist, psychosocial, etc.).[34–36] However, in the evolution of thinking on this matter, the most prominent hypothesis to emerge posits a central role for the onset of neoliberalism in the 1970s and associated patterns of welfare state retrenchment in the ensuing decades.[37–43] This view of the problem suggests that, if welfare state policies exert a major influence on the structure of health inequalities, reductions in the scope and generosity of these policies may in turn explain why health inequalities are widening over time.

Based on the preceding insights, my dissertation is guided by the following research question: How effective are retrenched welfare states at maintaining population health and reducing health inequalities in the neoliberal era? I pursue this question with reference to a specific pillar of the welfare state, unemployment protection, and with a focus on its role in maintaining the health of the unemployed in Canada and Germany. I focus on the relationship between unemployment, unemployment protection, and health for three reasons. First, the neoliberal era has borne witness to a marked decline in labour market conditions, characterized by stagnant wages, the expansion of precarious work, and rising levels of structural unemployment. [44,45] In the field of public health, there is widespread concern that these deteriorating labour market conditions will have negative effects on the health populations.[46] Second, despite the increasing salience of employment status and other indicators of labour market position as determinants of health, [47,48] an overwhelming majority of social epidemiological research has focused on income and education as axes of socioeconomic inequality.[49,50] Consequently, we know relatively little about how the relationship between unemployment and health has evolved over time. Finally, just as the modern welfare state emerged in large part to protect people against unemployment and associated labour market risks, the reconfiguration of unemployment protection stands as perhaps the most prominent feature of contemporary welfare state retrenchment.[51] Thus, a focus on unemployment benefit programs comprises a particularly useful starting point for understanding the relationship between welfare state policies and health in the neoliberal era.¹

In summary, my dissertation aims to explore the associations between unemployment, unemployment protection, and health in Canada and Germany during the neoliberal era of welfare state retrenchment. To meet this aim, the dissertation pursues three distinct but related objectives, which are listed briefly below. These objectives and their corresponding rationales are described more fully in the chapter that follows.

<u>Objective 1</u>: To examine how the association between unemployment and health has evolved over the neoliberal era in Canada.

<u>Objective 2</u>: To investigate whether neoliberal-era unemployment benefits can offset the adverse health consequences of unemployment in Canada.

¹ In this dissertation, I use the terms unemployment protection and unemployment benefits interchangeably.

<u>Objective 3</u>: To evaluate the effect of unemployment benefit retrenchment on the health of the unemployed in Germany.

1.2 Dissertation Structure

This dissertation is written in manuscript format. The initial chapter provides an overview of the dissertation and its structure. Chapter 2 outlines the framework for the research, reviews extant literature relevant to the dissertation topic, and provides a fuller description of the study rationale and objectives. In this chapter, I also present a summary conceptual model to describe the relationship between the dissertation objectives. This is followed by three empirical studies that are presented in Chapters 3 to 5. These chapters are formatted as manuscripts for publication in peer-reviewed scientific journals. They include their own abstract, introduction, methods, results, discussion, and conclusion sections, in addition to accompanying references. In Chapter 3 (Study 1), I examine how self-rated health inequalities between employed and unemployed workers have evolved over time in Canada. I also investigate whether the set of risk factors that are routinely used to account for unemployment-related health inequalities at a single point in time can explain the direction and degree of change in these self-rated health inequalities over time. In Chapter 4 (Study 2), I estimate the effect of receiving neoliberal-era unemployment benefits on the self-rated health of the unemployed in Canada. I also investigate whether the effect of benefit receipt is different between various groups of jobless workers. In Chapter 5 (Study 3), I estimate the health effect of a large-scale unemployment benefit reform in Germany that resulted in a substantial reduction in the average level of benefits paid out to jobless workers. I harness the exogenous reduction in benefit generosity induced by this natural policy experiment to investigate the association between neoliberal welfare state retrenchment and self-rated health among the unemployed. Finally, in Chapter 6, I discuss and synthesize findings across the three empirical studies, highlight the main strengths and limitations of the dissertation, describe potential directions for future research, and present my overall conclusions.

1.3 Role of the Candidate

The candidate developed the research question and study objectives with support from the doctoral supervision committee. The candidate led all aspects of the doctoral project, including study conceptualization and design; selection of analytic strategies; acquisition and analysis of the data; as well as preparation and revision of study manuscripts for publication in peer-reviewed scientific journals.

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Chapter 2. Background and Rationale

2.1 Conceptual Framework

Decades of epidemiological research provide compelling evidence that social, political, and economic conditions have a profound impact on the health of individuals and populations.[1–3] Collectively, these conditions are known as the social determinants of health, of which income, wealth, and employment are consistently found to be the most important.[4,5] Along with other social determinants of health, socioeconomic resources are critical prerequisites for healthy living. They enable individuals to adopt health enhancing behaviours, like eating well and staying active. They facilitate access to various goods and services that are health promoting, including education, housing, and health care. They protect individuals from and render them less vulnerable to adverse exposures, such as stressful life events and common environmental harms. Conversely, the absence of socioeconomic resources denies individuals these conditions, exposes them to harmful circumstances, and raises their risk of morbidity and premature mortality.

Public health researchers have developed numerous models to describe and better understand the influence of the social determinants of health.[6–10] In 2008, the World Health Organization Commission on Social Determinants of Health reviewed and synthesized these models into a single conceptual framework.[11] Depicted in Figure 1.1, the framework is comprised of three components. The first of these components draws our attention to the influence of societal context, referring to a broad set of social, political, and economic processes that influence the distribution of health but are inherently immeasurable at the individual-level (e.g. governance, macroeconomic policy, social policy). These contextual processes in turn have a major influence on systems of social and economic stratification in society (e.g. hierarchies based on class, occupation, race, and gender), which comprise the framework's second component. Finally, the third component refers to the many intermediary pathways by which systems of social and economic stratification shape the distribution of health at the individual level (e.g. access to health care, living and working conditions, health behaviours, and psychosocial factors).



Figure 2.1: Conceptual framework of the World Health Organization Commission on the Social Determinants of Health. Source: Solar and Irwin (2010)

The Commission's framework improves upon previous models by drawing a clear distinction between the social factors that influence health at the individual level and the contextual processes that explain the unequal distribution of these social factors at the population level.[9,11–15] In other words, the framework is careful not to conflate the determinants of *health* with the determinants of *health inequalities*.[16] In so doing, the framework invites explicit questions about the role that social, political, and economic contexts play in the production and maintenance of health inequalities. For instance, whereas individual attributes such as income are strong predictors of health, the framework draws attention to the fact that income is distributed far more evenly in some societies than in others. Similarly, while it is true that poverty poses a demonstrable threat to health, the framework encourages a deeper understanding of the reasons why the prevalence of poverty can vary considerably from one country or region to the next.

In this dissertation, the framework animates a more specific concern about the contextual influence of welfare state policies in general, and unemployment protection in particular, on the relationship between unemployment and health.

2.2 Unemployment and Health

The problem of unemployment has long been a matter of scholarly concern in the field of public health.[17–19] Much of this interest is attributable to the role of employment and related indicators of socioeconomic position as 'fundamental' causes of disease – factors that are associated with a wide range of disease outcomes by virtue of their influence on myriad health-related risks and resources.[4,5] These associations are well documented in the literature, with numerous systematic reviews providing strong evidence of a causal relationship between unemployment and major indicators of morbidity and mortality.[20–27] While some questions remain about the relative contribution of health selection to the observed association between unemployment and health.[28], extant research provides broad support for the notion that job loss has a strong and independent effect on a range of adverse health outcomes, including the outcome of interest in this dissertation – poor self-rated health.[29–31]

At the individual-level, unemployment is hypothesized to affect health through three distinct yet related pathways: a direct material pathway, a direct psychosocial pathway, and an indirect scarring pathway. These pathways are depicted in Figure 2.2 below. The first pathway concerns the direct material effects of job loss on financial earnings and economic security.[32–34] In capitalist society, income is necessary for satisfying many of the social and economic prerequisites for health.[35] Income loss following unemployment can diminish the ability of individuals and households to invest in their health by reducing access to important goods, services, and activities that are health promoting (e.g. housing, health care, and nutritious foods).[36–38] Loss of income also causes heightened levels of financial strain and psychological stress – factors that are damaging to health.[26,39–42] The second pathway linking unemployment and health is psychosocial. This pathway refers to the loss of status, identity, esteem, time structure, and social connections that are otherwise afforded by gainful employment in capitalist society.[35,43,44] The experience of unemployment can frustrate these latent psychosocial

functions, trigger feelings of stress and anxiety, and thus cause further damage to the health of jobless individuals.[26,27,34,45] The third and final pathway captures the indirect scarring effects of unemployment on economic and labour market outcomes later in life.[17] Studies examining the long-term consequences of unemployment show that job loss can incur substantial penalties on future earnings and employment prospects.[46–48] By increasing the future risk of adverse socioeconomic experiences, job loss may have persisting negative effects on health that last beyond the initial spell of unemployment.[49,50]

These three mediating pathways are causally related to one another (e.g. loss of income may contribute to the frustration of latent psychosocial functions; the psychosocial effects of job loss may impact future employment prospects; and lower earnings in the long run implies an extended risk of financial hardship and poverty). Thus, it is the influence and complex interplay of all three pathways that is believed to result in health inequalities between employed and unemployed workers.



Figure 2.2: Connections between unemployment and health.

Emerging evidence from a number of countries suggests that health inequalities between employed and unemployed workers are widening.[51–54] While the main factors driving these problematic trends are as of yet unknown, public health theory suggests that they may be related to widening inequalities in the underlying distribution of the social determinants of health.[32] To test hypotheses of this nature, social epidemiologists can lean on a suite of methods, originally developed in the econometric literature, that are specifically designed to decompose and quantify the contribution of various explanatory factors to group-level inequalities or, more relevantly, to the evolution of group-level inequalities over time.[55–58] While decomposition methods are gaining prominence in the field of public health.[59,60], they have received little attention in the literature on unemployment and health. In a single instance of their application, Brydsten et al. found that a handful of social and economic variables (i.e. income, education, occupational class, and financial strain) could account for a majority share of mental health inequalities between employed and unemployed workers in Sweden.[33] Notably, however, the relative contribution of these various factors may not be the same from one country to the next.[61] Furthermore, the factors that explain unemployment-related health inequalities at a single point in time may differ from the factors that explain why they appear to be growing over time.[12]

Indeed, as discussed in the preceding section, the individual-level pathways underpinning the association between unemployment and health always operate within specific social, political, and economic contexts that have the potential to moderate (i.e. attenuate or magnify) the strength of that association.[61–63] This notion is theoretically substantiated by evidence that the size of the unemployment-health relationship can vary considerably from one study context to the next.[64] Early attempts to explain this observed heterogeneity attributed a major role to macroeconomic conditions, positing that the health effects of job loss might be accentuated during periods of lower unemployment.[18,65] Three decades of empirical work investigating the influence of macroeconomic conditions on the unemployment-health relationship has produced mixed results, with some studies reporting a stronger association between unemployment and health during periods of lower unemployment, and others finding the opposite pattern.[23,26,64]

This dissertation is informed by an alternative and, ultimately, more successful line of research, which has investigated the contextual influence of welfare state policies in general – and unemployment protection in particular – on the association between unemployment and health.[61,63,66–68] In the sections that follow, I review recent conceptual developments in the literature on welfare states and health, before narrowing in more precisely on the literature examining the health effects of unemployment protection.

2.3 Welfare States and Health

The welfare state refers to a specific form of capitalist society in which the government bears substantial responsibility for intervening in the spheres of production and distribution to alter

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market forces, reduce inequalities, and reallocate life chances between social groups.[69] In a narrow sense, the welfare state comprises a finite set of cash transfers, social services, and regulatory measures that aim to prevent or mitigate the harms of poverty, unemployment, old age, injury, sickness, and other sources of socioeconomic risk in market society.[70] In a broader and more theoretical sense, however, the welfare state can be understood as an instrument of decommodification – or, to put it differently, an institutional structure providing a political answer to the problem of commodification.[71]

The notion of commodification was first introduced by Marx to describe the condition of labour in capitalist society.[72] Under capitalism, Marx argued, workers are separated from the means of producing their own commodities and must instead rely on wages to purchase the goods and services that provide for the necessities of life. In these circumstances, the welfare of individual workers depends on their ability to obtain employment and sell their labour power in exchange for wages. Labour market participation therefore constitutes the sole mechanism of securing the means to their subsistence. Put simply, the commodification of labour strips workers of the right to exist outside of the realm of market relations. These arrangements are beneficial for the capitalist class, which in turn purchases labour power as a commodity with the unique capacity to produce surplus value (i.e. profit). To make a profit, however, capitalists must ensure that they pay their workers an amount in wages that is worth less than the value of the commodities they produce. In fact, the lower the wages, the higher the rate at which they can accumulate profit. The competitive logic of capital accumulation thus conspires to maintain the going wage rate as close as possible to its minimum limit. This results in a fundamental contradiction; for, in the process of depressing wages, the pursuit of profit has a tendency to undermine the ability of workers to purchase the commodities they produce, including the goods and services that are necessary for their survival.

The coercive and contradictory nature of commodification bred significant pressures for its opposite – that is to say, for the decommodification of labour.[73] According to Esping-Andersen,[71] labour is decommodified when workers can maintain an adequate standard of living without having to rely on the sale of their labour power in order to survive. Decommodification, in other words, describes a process whereby the welfare of individual workers is rendered as a matter of social right, rather than as a matter of their participation or performance in the labour market. The welfare state is said to be an instrument of decommodification because, in the process of assuming a role in the promotion and maintenance of human welfare, it re-establishes – at least to some extent – the right of individual workers to exist outside of the realm of market relations.[71]

Public health scholars have long hypothesized that the decommodifying function of the welfare state might be a major contributing factor to population health.[74] It is only over the last decade, however, that research in this area of scholarship has expanded rapidly.[75] This growing body of work has produced a relatively strong consensus that the organization of the welfare state is of crucial significance to the distribution of health within and between societies.[76–78] From a conceptual standpoint, there are several plausible points of connection between the welfare state and the social determinants of health.[9,11,61,79-82] First, the welfare state exerts a major influence on the extent of social and economic stratification in society. For example, it can modify the relative distribution of individuals across a hierarchy (e.g. through progressive taxation) or reduce the absolute distance between those occupying the highest and the lowest positions within a hierarchy (e.g. through minimum wage laws). Second, the welfare state can function to reduce both the absolute prevalence of harmful social and economic exposures (e.g. labour market regulations to protect against the risk of unemployment, or tenancy laws to protect against the risk of eviction and subsequent homelessness) and the relative level of risk they pose to individuals and households (e.g. income maintenance programs to mitigate the effects of job loss, or pensions to mitigate the effects of retirement). Furthermore, the welfare state can improve or, in some cases, guarantee access to basic goods and services that are health promoting (e.g. universal education and public health care). Finally, in broader terms, the welfare state can enhance the overall availability and relative distribution of social and economic conditions that operate as critical prerequisites for health (e.g. better living conditions, safer working conditions, and greater social cohesion).

Of course, not all welfare states are created equal. On the contrary, welfare state arrangements vary considerably from one national context to the next, and some of these arrangements are more decommodifying than others.[71,83,84] Public health researchers have

leveraged this cross-national variation to empirically assess the association between the degree of decommodification and population health outcomes. These efforts have largely applied a 'welfare regime approach'.[79,85] Advocates of this approach argue that countries cluster around qualitatively distinct configurations of welfare state arrangements that differ systematically with respect to the degree of decommodification they provide. Drawing on Esping-Andersen's (1990) influential analysis of postwar welfare state developments, scholars distinguish between at least three ideal-typical welfare state regimes. In the liberal welfare regime, the role of the state is severely curtailed and the organizational and distributional logic of the market prevails. Social benefits are relatively meager and generally only available to those who meet the strictest definitions of need. Rather than provide workers with a significant measure of decommodification, social policies in the liberal welfare regime tend to reinforce the notion that the welfare of individual workers is best secured through their participation in the labour market – in other words, they tend to exacerbate market inequalities. In the conservative welfare regime, the state assumes a greater responsibility for the welfare of its citizens. Social benefits are, on average, relatively generous. However, because they are awarded based on an individual's social and economic standing in society, they tend to not benefit workers equally. Instead, social policies in the conservative welfare regime tend to reinforce market-based inequalities. Finally, the social democratic welfare regime is characterized by a strongly interventionist state that aims to displace the organizational and distributional logic of the market through the provision of generous and universal social programs. The state aims to provide for all citizens a substantial measure of security outside of the labour market. Thus, social policy in the social democratic welfare regime tends to be the most decommodifying.

The principal question explored in social epidemiological studies adopting the welfare regime approach is whether countries that most closely approximate the social democratic ideal type exhibit better overall health outcomes and narrower health inequalities.[9] After all, relative to their peer societies, these are the countries that display the deepest commitment to addressing the social determinants of health and their distribution.[86] Notwithstanding the theoretical clarity of this hypothesis, recent reviews of the literature on this topic suggest that this body of work has produced an inconclusive and, in some cases, contradictory set of findings [75-78]. More specifically, while studies consistently report better overall health outcomes in countries that

approximate the social democratic ideal type,[9,79,85,87–92] extant evidence does not provide strong support for the notion that relative health inequalities are narrower in this cluster of countries.[66,92–102] For example, in a now widely cited study on the relationship between unemployment and self-rated health in 23 European countries, Bambra and Eikemo do not find that unemployment-related health inequalities are smaller in social democratic countries. In fact, among women, they find the opposite to be true.[66]

Given what we know about the impact of the welfare state on the social determinants of health and their distribution, it is somewhat of a puzzle why the most social democratic countries do not exhibit the smallest health inequalities.[103,104] The struggle to produce a satisfactory explanation for this paradox has led social epidemiologists to question the conceptual validity of welfare regime typologies as explanatory variables.[82,105] Drawing insight from the broader welfare state literature.[106–108], skeptics argue that welfare regimes are inappropriate units of empirical analysis because they obscure important dimensions of variation across space and over time.[76,77,109,110] First, because policymaking is incremental, cumulative, and disjointed, the structure of social policy can differ considerably across policy areas within a given regime. In other words, 'real' welfare states do not always approximate the 'ideal' categories to which they are assigned. Second, although policy change is a feature of all welfare states, countries within a given regime cluster do not necessarily experience change at the same rate or even in the same direction. Over time, disparate trajectories of change can undermine the validity of established typologies. On both accounts, critics argue that the welfare regime approach is too crude to provide a workable basis for empirical research.

The need to step away from the 'black box' of welfare regime typologies has prompted a search for alternative approaches that are better equipped to capture the diversity of welfare state arrangements. This desire for greater measurement precision has led some scholars to advocate for a conceptual turn towards the empirical study of more specific aspects of the welfare state.[76,77,109,110] These critics argue that the accumulation of evidence on the impact of individual policy areas may present a more constructive direction for future research on the welfare state and health. It is in this context that a relatively large literature has emerged examining the health effects of unemployment protection as a specific area of welfare policy-making.

In the section that follows, I review the conceptual underpinnings and key findings from this expanding body of empirical work on the relationship between unemployment protection and health.

2.4 Unemployment Protection and Health

The welfare state emerged in large part to protect people against the risk of unemployment and related sources of labour market disadvantage.[111] Today, unemployment protection remains a key pillar of national welfare state systems. [112] For present purposes, unemployment protection refers to the finite set of government-administered transfers designed to maintain the income of individuals who are jobless and actively seeking work. While the design of unemployment protection systems can vary considerably from one country to the next, they all involve some combination of the following benefit programs: unemployment insurance, unemployment assistance, and social assistance. In most advanced capitalist countries, unemployment insurance programs comprise the main tier of benefits available to the unemployed. Unemployment insurance programs are financed through employer and employee contributions. Whether or not an individual is eligible to receive unemployment insurance depends on their prior employment and contribution history. Furthermore, the level and duration of benefits to which they are entitled is proportional to their previous earnings and contributions, respectively. In contrast to the contributory nature of unemployment insurance, unemployment assistance programs are taxfinanced, means-tested, and flat-rate benefits that tend not to be tethered to prior employment or earnings. As a rule, unemployment assistance is available for an unlimited duration. However, eligibility is conditional on meeting and maintaining some minimum threshold of household poverty or financial need. Finally, social assistance refers to a broader set of income maintenance policies that are relevant to the unemployed, but not dedicated specifically to them. Intended to provide only a minimum level of income protection, social assistance constitutes a benefit of last resort for the unemployed in most countries. These programs share the same characteristics as unemployment assistance (i.e. tax financed, means-tested, and flat-rate). However, benefit levels are substantially lower and eligibility tends to be conditional on a stricter means test and a harsher set of work-related obligations.

In this dissertation, I focus specifically on the health impact of dedicated unemployment benefits (i.e. unemployment insurance and unemployment assistance). For a review of social assistance programs and health, see Shahidi et al.[113]



Figure 2.3: Connections between unemployment, unemployment protection, and health.

Like most other dimensions of the welfare state, unemployment protection systems were not designed with health in mind. Yet, there are important theoretical reasons why we might expect these policies to have a major influence on population health.[68,114] Income is a well-known determinant of health.[115] As a form of income maintenance, unemployment protection may mitigate the material effects of job loss.[23,114] Studies have shown that unemployment benefits are successful at diminishing the risk of poverty, economic hardship, and financial strain among the unemployed.[40,116–118] There is also considerable evidence that unemployment benefits have the capacity to smooth out the negative consumption effects of job loss, thereby promoting access to important goods and services.[47,119,120] In addition to these material implications, the provision of income may serve to offset the psychosocial consequences of unemployment, by promoting or returning a sense of status, mastery, and esteem to jobless individuals.[26,121] In some instances, unemployment benefits have also been shown to have a beneficial impact on postunemployment trajectories, including higher wages, better job quality, and a reduced risk of future unemployment.[122–124] Consequently, the receipt of unemployment benefits may protect individuals from the long-term scarring effects of job loss. Finally, over and above mitigating the direct and indirect effects of unemployment on health, there is some evidence suggesting that unemployment protection systems operate as 'collective resources' that have external benefits on the health and wellbeing of society as a whole, including the employed population.[125,126] These pathways are depicted in Figure 2.3 above.

In addition to the welfare regime approach reviewed in the preceding section, social epidemiologists have adopted three distinct strategies for studying the health effects of unemployment protection: an expenditure approach, an institutional approach, and an evaluation approach.[76] Advocates of the expenditure approach argue that indicators of public spending provide social epidemiologists with a convenient way of quantifying welfare state effort and studying its impact on population health outcomes.[127] Furthermore, in contrast to the welfare regime approach, the increasing availability of disaggregated government expenditure data has made it possible for researchers to narrow in on specific areas of spending effort, such as spending towards unemployment protection.[128,129] Studies adopting this approach have examined whether the health effects of unemployment are diminished when and where spending on unemployment protection is higher. Somewhat surprisingly, these extant analyses do not provide support for the notion of a cross-national association between relative spending effort and health outcomes among the unemployed.[130–133] One exception to this rule is a single study by Tøge,[42] in which the author finds that a broad measure of expenditure in the area of unemployment was associated with a small reduction in the negative effect of unemployment transitions on self-rated health. Notably, however, the indicator used in this study included spending on non-benefit services (e.g. job training and vocational rehabilitation services). Its inclusion here is therefore disputable. On balance, then, this limited body of work lends little to no support for a contextual effect of unemployment benefit spending on the relationship between unemployment and health.

Although it offers some clear conceptual advantages over the welfare regime approach, the expenditure approach suffers from some notable limitations that may, in turn, explain the negative

findings described above.[134] The use of expenditures has long been criticized for its inability to meaningfully distinguish between welfare state effort and welfare state need.[135] The notion here is that spending differences between two countries – or, alternatively, between two points in time – may reflect underlying differences in the extent of social and economic problems. For example, while rising levels of unemployment generally cause an increase in government expenditures, one can hardly refer to such a growth in spending as an increase in welfare state effort.[136] To address this problem, studies increasingly control for structural variables such as the demographic composition of populations and differences in aggregate unemployment rates.[76,129] However, to the extent that many other factors may be contributing to the relative rate of welfare state need, such an approach provides only a partial and, in many cases, insufficient solution to the problem.[76]

More importantly, however, the expenditure approach eschews qualitative distinctions between different types of welfare state effort that are essential to a theoretically meaningful definition of the welfare state as an instrument of decommodification.[71,136–138] Expenditure measures, even in disaggregated form, tend to conflate interventions that differ considerably in their qualitative form and function. For example, spending on unemployment insurance is often conflated with spending on unemployment assistance, despite the fact that the former category of interventions tends to comprise programs that are considerably less generous and redistributive than the latter. Thus, by assuming that all spending towards unemployment protection is created equal, the expenditure approach fails to distinguish between benefits that are truly decommodifying and those that, in effect, offer only minimal levels of protection outside of the market.

The institutional approach aims to bring these important questions concerning the organizational form and function of social policies to the fore of empirical inquiry on the welfare state determinants of health.[76,109] Rather than focus on spending, social epidemiologists who adopt this second approach are interested in capturing the main institutional characteristics of different welfare state benefits, including those in the realm of unemployment protection.[82,125] They do so by drawing from one of several comparative datasets providing historical information on the precise design and features of legislated benefit entitlements (e.g. Comparative Welfare

Entitlements Dataset; Social Insurance Entitlement Dataset; Social Benefit Recipients Database). Characteristics of interest include the level of income replacement, the duration of benefit receipt, the strictness of eligibility criteria, and the proportion of the relative (i.e. unemployed) population that is in receipt of benefits.[125] In contrast to the expenditure approach, the institutional approach is sensitive to the fact that welfare states are organized according to different principles that provide varying levels of decommodification. Perhaps for this reason, social epidemiological studies adopting an institutional approach have produced a much more decisive pattern of empirical findings on the health effects of unemployment protection. Also using cross-national comparative study designs, this body of work has consistently found that countries characterized by more generous and more universal unemployment benefit programs exhibit better overall health outcomes,[125,126,139–141] and narrower unemployment-related health inequalities.[133,142–144]

Notwithstanding the theoretical and empirical consistency of these findings, the institutional approach is not without its own shortcomings. For example, indicators of benefit generosity and coverage are generally calculated on the basis of assumptions about the demographic and socioeconomic attributes of the 'average production worker'.[137] However, due to the erosion of traditional family structures, the rise of female labour market participation, and the increasing prevalence of non-standard employment contracts, these assumptions no longer hold for significant portions of the population.[145,146] Many indicators, for instance, fail to capture the situation of low-income workers - the group for which the health effects of unemployment protection are likely to be most pronounced. In addition, investigators have noticed substantial discrepancies between comparative welfare state datasets, such that indicators claiming to measure the same set of policy characteristics are in fact reporting highly disparate results.[147,148] A similar problem applies when trying to measure institutional trends over time, as indicators have been known to describe patterns of change that contradict case-specific knowledge (e.g. suggesting a process of increasing benefit generosity or coverage during a period in which these are known to have been retrenched).[147] Finally, whereas comparative research within the framework of the institutional approach has generated important descriptive and associational insights about the role of 'more versus less' unemployment protection, it offers little in the way of discerning the causal effects of specific unemployment benefit programs.[110]

The evaluation approach, by contrast, focuses precisely on this task. It aims to quantify the impact of specific social policy interventions on the health of individuals and populations.[149] Advocates of this final approach stress the value and importance of evaluative research whose findings can help to identify the interventions that hold the greatest and least promise for promoting health and reducing health inequalities.[150–152] They argue that studies of this nature can also aid in assembling evidence on the underlying mechanisms by which welfare state policies influence health. More importantly for present purposes, however, the evaluation approach fits well within a counterfactual framework of causal inference.[110,153] It is therefore highly amenable to the application of rigorous experimental and quasi-experimental research designs that enable the pursuit of explicitly causal (as opposed to descriptive or associational) questions about the health effects of welfare state policies and welfare state change, including the set of questions guiding this dissertation.

Despite the unique conceptual and methodological advantages afforded by the evaluation approach, it does not figure prominently in the literature on the welfare state determinants of health, including the subset of that literature looking at impact of unemployment protection.[68,110,150] Moreover, of the limited studies quantifying the health effects of unemployment benefits, most rely on a suite of descriptive and associational methods that are not explicitly designed to account for the potentially endogenous relationship between benefit receipt and health.[67,154–157] Endogeneity in this case refers to the presence of systematic differences in the underlying characteristics benefit recipients and non-recipients that render a direct comparison of these two groups highly problematic.[158] These differences arise due to the strict eligibility criteria that jobless workers are often expected to meet in order to qualify for unemployment benefits (e.g. a sufficient history of employment and contributions). Numerous methods have been developed specifically for the purpose of tackling this problem. These include techniques such as propensity score matching and synthetic control, which enable researchers to construct well-matched 'treatment' and 'control' groups using observational data.[159-161] Extant analyses in this area of empirical research, however, have neglected to take sufficient advantage of these methods. Consequently, while these studies tend to conclude that unemployment benefit recipients exhibit better health outcomes than their non-recipient

counterparts, it is unclear to what extent these findings reflect the causal effect of receiving benefits or, conversely, the distorting influence of selection bias.

A separate challenge concerns the absence of research evaluating the health effects of policy change in the realm of unemployment protection. Like other dimensions of the welfare state, unemployment benefit programs have undergone substantial transformation over the course of the past several decades.[111,162,163] Despite the widespread nature of these policy developments, no study to date has quantified the impact of unemployment benefit retrenchment on population health. This gap in the literature may reflect the fact that, in contrast to other areas of policymaking, such as tobacco or food labeling, welfare state change tends to proceed incrementally.[164,165] These incremental patterns of change, in turn, do not lend themselves to the application of many of the most rigorous policy evaluation methods, which instead require that researchers identify large and abrupt punctuations in policy.[161] Still, it remains the case that welfare states in general, and unemployment protection systems in particular, have been substantially transformed. More often than not, these changes have implied a reduction in the established scope and generosity of unemployment protection – a process known as welfare state retrenchment.[136,138,166]

In the section that follows, I situate contemporary patterns of welfare state retrenchment within the broader historical arc of neoliberalism, and describe some key theoretical and empirical implications of neoliberal retrenchment for the study of unemployment protection.

2.5 Neoliberal Welfare State Retrenchment

Advanced capitalist societies experienced a 'golden age' of welfare state expansion during the years immediately following the Second World War.[167,168] In response to a growing political consensus in favour of greater state intervention, governments adopted a broad suite of decommodifying social policies designed to alter market forces and decommodify workers by reducing their reliance on employment and wages for securing the means to their subsistence. This major political transformation was fueled, on the one hand, by favourable macroeconomic conditions characterized by high levels of profitability and growth and, on the other hand, by
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powerful and militant labour movements whose demands for emancipation from the market were increasingly difficult to ignore.[167,168] It was during this phase of welfare state expansion that significant improvements took place in the overall availability and relative distribution of the social determinants of health.[169]

By the middle of the 1970s, however, prevailing political and economic conditions in advanced capitalist societies began to show significant signs of erosion.[170] The postwar trend of uninterrupted profitability and growth gave way to a series of consecutive economic crises, resulting in rapidly increasing levels of unemployment and diminishing rates of productivity. Although these macroeconomic conditions generated a functional demand for greater welfare state effort, they simultaneously jeopardized the tax revenues upon which such effort had come to rely. This decline in the fiscal capacity of government did not only impede welfare state growth, but simultaneously restricted the ability of governments to finance their existing welfare state commitments. Gradually, the political and economic assumptions of the postwar period ceased to hold.[69] Consensus shifted sharply to the right, and the welfare state increasingly came to be viewed – particularly among members of the business class – as an institutional distortion interfering with the proper functioning of capitalist markets. Dramatic reforms aimed at curtailing the welfare state and reducing other sources of government spending were therefore presented as seemingly necessary prerequisites for promoting economic recovery and growth.[167,171,172]

While few came to question that the welfare state was facing significant political and economic pressures, scholars interpreted these pressures in different and even contrasting ways. Specifically, these developments stimulated a vigorous debate between those who predicted the relative continuity of existing welfare state arrangements and those who predicted a fundamental transformation in their form and function. On one side of the debate, scholars advanced an institutionalist account of path dependence to posit that welfare states would remain more or less resilient to emerging political and economic pressures.[173–178] While they did not deny the likelihood of change, they argued that welfare state regimes would face unique sets of pressures and, by extension, embark on unique trajectories of change over time. Thus, rather than converge on a common reform agenda, countries were expected to exhibit regime-specific patterns of adjustment corresponding to the underlying logic of their institutional inheritances. Furthermore,

to the extent that they expected change to occur, those who advanced the path dependence argument insisted that it would involve only a minor 'recalibration' of an otherwise 'frozen' welfare state landscape.[174,175] On the other side of the debate, scholars working within a Marxist tradition of political and economic thought argued that the end of the so-called 'golden age' of welfare capitalism would trigger a major shift in the relative balance of class power from labour to capital.[171,179–183] They suggested that this shift in class power would undermine the social foundations of the postwar welfare state settlement and weaken the capacity of welfare regimes to retain their institutional distinctiveness. Mounting pressures would in turn prompt the emergence of a new political settlement; this time, in favour of capitalist class interests. Rather than a minor recalibration of social policy, they predicted that advanced capitalist countries would converge on a radical retrenchment agenda, leading to a fundamental transformation of the welfare state.

Over the course of the past several decades, considerable evidence has accumulated challenging the theoretical assumptions of the institutionalist path dependence perspective. A growing body of evidence suggests that substantial changes have in fact taken place in the core architectures of the welfare state and that these changes amount to more than a mere recalibration of existing policies.[162,184–187] Among those working within a Marxist tradition who predicted such a transformation, these changes in the form and function of the welfare state are interpreted in terms of the political ascendance of neoliberalism.[188,189]

Broadly speaking, neoliberalism can be understood in three distinct but related ways: as a hegemonic ideology, as a policy paradigm, and as a class project. On a first account, neoliberalism can be conceptualized as a system of social, political, and economic thought stating that the welfare of individuals (and society) is best secured through the protection and promotion of the individual right to private property and market exchange.[190,191] It therefore stresses, in theory if not in practice, the necessity and desirability of suppressing non-market forms of social and economic coordination, such as the welfare state. Neoliberalism can also refer to a technical set of policies and programs that governments enact with the implicit or explicit goal of increasing the organizational and distributional logic of the market.[192,193] In this sense, neoliberalism encompasses, among other practices, the privatization of public services, the deregulation of labour

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and financial markets, the removal of trade barriers, the weakening of welfare state provisions, and the reduction of public spending. Finally, neoliberalism can be understood as a political project that aims to restore and consolidate capitalist class power through the recommodification of labour.[179,188,189]

In direct contrast to decommodification, recommodification describes the process whereby social and economic relations are reconfigured in such a way as to imply a greater reliance on, or heightened exposure to, the market as a prerequisite for securing sufficient means of subsistence.[194,195] Thus, while decommodification aims to protect workers from the market, recommodification aims instead to reinforce their dependence on the market by limiting opportunities to exist outside of the realm of market relations. This is achieved in large part through the recommodification of social rights; that is to say, through the retrenchment of the welfare state.

Indeed, neoliberalism has in its various forms contributed to a dramatic transformation of the welfare state. Despite earlier notions of a 'frozen' welfare state landscape, there is growing agreement among a theoretically diverse sample of scholars that social policies have become considerably more market-driven and market-accommodating over the course of the past four decades.[145,162,184–187,196–199] In many advanced capitalist countries, for example, there has been a significant reduction in the generosity and coverage of income maintenance programs, including those designed to protect individuals against the risk of unemployment.[200-203] Moreover, as a result of a normative turn from the social rights to the social responsibilities of citizenship, social protection – and unemployment protection in particular – is increasingly conditional on coercive and punitive workfare measures that aim to 'activate' benefit recipients by reinforcing the obligation to work as a condition for receiving assistance.[111,204] Thus, the emphasis of social policy has shifted from providing passive income support to encouraging or, in some cases, compelling re-entry into the labour market, often by way of the lowest paid and least secure jobs. [205,206] In accordance with this normative reorientation, a notable change has taken place in the relative welfare mix, characterized by a move away from universal and redistributive interventions towards more residual forms of policymaking.[207] Consequently, access to the most generous and decommodifying forms of protection is increasingly restricted to a narrower and narrower segment of the working class, while a growing number of workers are forced to rely on

means-tested social assistance programs that stigmatize recipients and offer minimal levels of support. In short, advanced capitalist countries have enacted an extensive set of neoliberal welfare state reforms over the course of the past four decades and, in the process, have substantially retrenched previously established levels of social protection.

In the next section, I review the literature examining the impact of neoliberal welfare state retrenchment on health. I also situate this literature in light of recent findings that health inequalities – including those between employed and unemployed workers – are widening over time.

2.6 Welfare State Retrenchment and Health

Neoliberalism has had a profound impact on the social, political, and economic fabric of advanced capitalist societies. Its corrosive effects on the welfare state in particular have contributed to an erosion of the social determinants of health and a potential worsening of health inequalities.[169,192] Neoliberal reforms have curtailed the redistributive dimensions of the welfare state and thereby widened existing social and economic inequalities. The deregulation of labour and financial markets has led to an increase in exposure to harmful socioeconomic experiences, including heightened levels of poverty, insecurity, and unemployment. The retrenchment of benefits and social services has simultaneously diminished the welfare state's capacity to respond to these adverse socioeconomic exposures and mitigate their consequences, including their deleterious effects on health. As a result, the burden of responsibility for managing socioeconomic risk has shifted away from the state and onto the individual. More generally, the neoliberal reaction against the welfare state has triggered a broader set of social and economic trends that pose a considerable threat to population health (e.g. more dangerous working conditions, lower levels of social cohesion, and higher costs of living). These theoretical linkages between neoliberalism and health are well-documented in the literature.[81,193,208-216] They are represented with specific reference to the causal connections between unemployment, unemployment protection, and health in Figure 2.4 below.



Figure 2.4: Connections between unemployment, unemployment protection, and health in the context of neoliberal welfare state retrenchment.

While the theoretical salience of neoliberalism as a determinant of health features prominently in the literature, there are surprisingly few well-designed studies aimed explicitly at empirically examining the health effects of neoliberal trends and associated policy measures. Thus, despite overwhelming rhetorical support for the notion that 'neoliberalism is bad for our health',[213] evidence to this effect is lacking. Rigorous evaluations are particularly scant, with a large majority of studies relying on a highly descriptive and associational set of methods to investigate how health outcomes have evolved over the neoliberal era.[51–53,139,216–231] Findings from these empirical studies suggest that the onset of neoliberal reforms is consistently associated with adverse trends in population health, including widening health inequalities between employed and unemployed workers. Critically, however, this body of work falls short of addressing the major methodological challenges that continue to burden research aiming to

evaluate the health impact of neoliberal policies, including the problem of distinguishing causal effects from pre-existing background trends and other sources of unobserved confounding that may lead to biased estimation.[161] In other words, the use of highly descriptive and associational methods makes it difficult to draw decisive conclusions on the basis of the findings generated in this literature.

Experimental designs (e.g. randomized controlled trials) present the most obvious solution to this problem. However, for numerous practical, financial, and ethical reasons, experimental evidence on the health effects of large-scale societal phenomena such as neoliberalism is difficult to come by.[232,233] Increasingly, public health research relies upon the availability of 'natural experiments' to overcome this pressing challenge.[110,234,235] Natural experiments refer to any event occurring outside of the direct control or manipulation of the researcher in which subsets of a given population are differentially exposed to a causal factor of interest.[236] Scholars can use a variety of research designs to harness the promise of natural experiments, including regression discontinuity, interrupted time series, and difference-in-differences approaches.[161,234] When appropriately designed and conducted, natural experiments provide a powerful tool for estimating the causal effects of large-scale policy changes, including those associated with the neoliberal retrenchment of the welfare state.[237,238]

Despite the promise they hold, only a handful of studies in the recent literature have made explicit use of natural experiments to evaluate the health impact of welfare state retrenchment.[239–244] Findings from this small sample of work indicate that neoliberal welfare reforms may be harmful to the health of populations. In the United States, for example, efforts to reduce benefit levels and render them more difficult to obtain were associated with adverse trends in self-rated health, mental health, health behaviours, and mortality among welfare recipients and other groups of socioeconomically disadvantaged individuals.[239,241,242,244] Similar findings have been reported among welfare recipients in the United Kingdom, where reductions in government housing benefits and stricter conditions on the receipt of income support for single mothers were recently enacted as part of a wider programme of welfare reform.[240,243] However, in view of the relative paucity of literature on the topic, further evidence is needed before decisive conclusions can be drawn.

Substantial gaps in the literature also remain. For instance, extant analyses have focused exclusively on welfare reforms enacted in the United States and the United Kingdom. On the one hand, this emphasis may be well placed, given that some of the most notable examples of retrenchment have taken place in these two countries (e.g. the Personal Responsibility and Work Opportunity Reconciliation Act of 1996 in the United States and the Welfare Reform Act of 2012 in the United Kingdom).[205,245] On the other hand, major welfare state transformations have also taken place elsewhere, including Canada and Germany. [246,247] Thus, there is a strong case for extending scholarly attention in this literature to a broader range of cases. Furthermore, the scope of existing research is limited to a narrow subset of welfare state programs (i.e. social assistance programs and housing benefits). To date, no study has examined the effect on health of reducing dedicated unemployment benefits. This is a particularly problematic omission, given how centrally the reconfiguration of unemployment protection has figured in the theory and practice of neoliberal welfare state restructuring.[111,203] A more active and explicit focus on the changing nature of unemployment protection may therefore provide a further avenue for extending our existing understanding of the relationship between welfare state retrenchment and population health.

2.7 Study Objectives

The literature reviewed in this chapter highlights important points of theoretical and empirical connection between unemployment, unemployment protection, and health in the era of neoliberal welfare state retrenchment. As noted throughout the chapter, however, there are persisting gaps in the evidence base on this topic that this dissertation aims to address. In this section, I reintroduce the three objectives of the dissertation and describe the rationale behind each of the corresponding studies. The conceptual focus of each objective is summarized in Figure 2.5 below, which situates the three dissertation studies in relation to the previously reviewed literature.



Figure 2.5: Summary model situating the dissertation studies in relation to the literature on unemployment, unemployment protection, and health in the context of neoliberal welfare state retrenchment.

Objective 1: To examine how the association between unemployment and health has evolved over the neoliberal era in Canada.

Unemployed workers report consistently worse health outcomes than their employed counterparts.[23,24,26,27] Recent evidence suggests that unemployment-related health inequalities may be widening over time.[51–54] Extant analyses have presented several possible explanations for these findings, the most prominent of which posits a role for the retrenchment of the welfare state and resulting changes in the socioeconomic context and consequences of unemployment. At present, however, we still know relatively little about how and why unemployment-related health inequalities are evolving over time.

In my first study, I examine how self-rated health inequalities between employed and unemployed Canadians have changed over the course of the neoliberal era. Using a relatively novel decomposition method,[56] I also investigate the extent to which the demographic, socioeconomic, and proximal risk factors that are routinely used to explain unemployment-related health inequalities at a single point in time can also explain the direction and degree of change in these inequalities over time.

Objective 2: To investigate whether neoliberal-era unemployment benefits can offset the adverse health consequences of unemployment in Canada.

Prior research suggests that unemployment benefit programs play an important role in offsetting the adverse health consequences of joblessness.[68] However, extant studies in this area of research have relied on a highly descriptive and association set of methods that are not well equipped to account for the potentially endogenous relationship between unemployment benefit receipt and health.[158] Furthermore, as a result of substantial welfare state retrenchment, fewer workers than ever are eligible to receive unemployment benefits, and those who do qualify tend to receive fewer benefits today than their counterparts in the past.[111,201,203] These policy developments raise important questions concerning the extent to which neoliberal-era unemployment benefits continue to protect workers against the adverse consequences of joblessness.[98]

In my second study, I estimate the effect of receiving neoliberal-era unemployment benefits on the self-rated health of the unemployed in Canada. To better address the problem of endogeneity, I use propensity score analysis as an explicit framework in which to construct wellmatched samples of unemployment benefit recipients and comparable non-recipient 'controls'. I also investigate whether the effect of receiving neoliberal-era unemployment benefits differs across various groups of workers according to demographic and socioeconomic factors such as age, sex, income, and education. *Objective 3: To evaluate the effect of unemployment benefit retrenchment on the health of the unemployed in Germany.*

Over the course of the past several decades, governments have substantially diminished the generosity and coverage of welfare state programs with the aim of curbing public expenditures and 'activating' the unemployed.[185,204] There is mounting concern about the possible consequences of these neoliberal welfare state reforms, including their short- and long-term impacts on population health.[248,249] Available findings on this topic suggest that such measures may be harmful to health, though rigorous evidence to this effect is still lacking.[239–244] Natural policy experiments such as large-scale benefit reforms afford researchers the ability to investigate the health effects of welfare state retrenchment using methodologically sophisticated study designs.[237] Unfortunately, due to the incremental nature of welfare state change, large and abrupt policy punctuations are difficult to come by.[164,165] In 2005, however, the German government enacted a major overhaul of their unemployment protection system, creating a unique natural experiment in which to examine the association between unemployment benefit retrenchment and health.

In my third and final study, I evaluate the health impact of this large-scale unemployment benefit reform in Germany, which substantially reduced the average level of benefits paid out to jobless workers.[250] Using a difference-in-differences propensity score matching approach, I harness the exogenous reduction in benefit generosity induced by this natural policy experiment to estimate the effect of neoliberal welfare state retrenchment on the self-rated health of the unemployed in Germany.

2.8 Study Context

My dissertation investigates the neoliberal-era connections between unemployment, unemployment protection, and health in two different welfare state contexts: Canada and Germany. These two countries are traditionally viewed as belonging to different welfare state regime clusters; the liberal and conservative types, respectively.[71] Nevertheless, the two countries exhibit striking similarities with respect to the structure and function of unemployment

protection.[200] Specifically, both countries have conventional, earnings-related unemployment insurance programs that score comparably on commonly derived indices of benefit generosity and coverage.[251,252] Furthermore, their unemployment protection systems have converged considerably over the last two decades, having undergone parallel forms of change.[253] During that time, the two countries experienced similar broader labour force trends, including rising female labour market participation and relatively low unemployment rates relative to other advanced capitalist countries which, on average, were hit more strongly by the global economic recession that began in 2008 (see Figure 2.6). Below, I describe the main features of their respective unemployment protection systems, including notable patterns of change over the neoliberal era.



Figure 2.6: Labour force trends in Canada and Germany between 1990 and 2018. Source: OECD Statistics

In Canada, unemployment benefits are administered by the Federal Employment Insurance (EI) Program and financed through contributions from employers (60%) and employees (40%). To qualify for EI benefits, workers must demonstrate that they lost their job through no fault of their own, are ready and willing to work, and are actively searching for paid employment opportunities. Individuals are also required to have worked a minimum number of insurable hours, which can range from 420 to 1400 depending on individual and regional circumstances. Notably, reforms enacted to the EI program between 1970 and 1996 led to precipitous declines in both the

generosity and the coverage of entitlements.[254,255] The maximum rate of income replacement has fallen gradually from 75% of previous earnings in 1971 down to the current rate of 55%. In a similar vein, the proportion of unemployed workers receiving benefits has also dropped, from a high of 80% in 1990 down to 41% as of 2016.[256] Unemployed workers who do not qualify for EI may be eligible to receive less generous and means-tested social assistance benefits, funded through and administered by individual provinces.

In Germany, unemployment benefits are administered through the Federal Employment Agency (Bundesagentur für Arbeit) and financed through equal contributions from both employers and employees. As in Canada, workers qualify for unemployment benefits if they have lost their job through no fault of their own, are willing to work, and demonstrate active job search activities. To be eligible to receive benefits, individuals are also required to have worked a minimum of 360 days in the last three years. Prior to 2005, the German unemployment protection system consisted of two earnings-related schemes: a main unemployment insurance program (Arbeitslosengeld) replacing up to 67% of previous earnings and, for workers who had exhausted their regular benefits, a secondary means-tested unemployment assistance program (Arbeitslosenhilfe) replacing up to 57% of previous earnings. Jobless workers who did not qualify for either of these earnings-related benefits were eligible to apply for a substantially less generous means-tested social assistance benefit (Sozialhilfe). In 2005, the German government enacted a broad suite of labour market reforms - known as the Hartz reforms - that abolished the latter two components of its income maintenance system, and replaced them with a single flat-rate means-tested social assistance benefit (Arbeitslosengeld II) whose structure and entitlements basically correspond to those of the former, substantially less generous Sozialhilfe.[250,257] Untethered from previous earnings, this new social assistance benefit was fixed at a monthly rate of 347€ per month (in 2005), and has since risen to 404€ per month (in 2018). For those who have exhausted their claims to the regular unemployment insurance scheme, this change amounted to a 30% reduction in unemployment benefits.[258] This reform measure is widely viewed to have signaled a critical departure from Germany's prior conservative approach to welfare and its convergence on a more liberal (i.e. residual) form of income maintenance, akin to that observed in countries such as Canada and the United Kingdom.[247,253,257,258]

In summary, whereas Canada and Germany are commonly viewed to embody qualitatively different welfare state contexts, they exhibit roughly similar unemployment protection systems that have undergone comparable and converging transformations over time. Despite the substantial nature of these neoliberal-era policy transformations, their consequences for population health have not yet been sufficiently explored. For these reasons, Canada and Germany present important cases in which to explore the neoliberal-era connections between unemployment, unemployment protection, and health. Based on the study objectives outlined in the preceding section, I examine these empirical connections in Chapters 3 to 5 that follow.

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Chapter 3. Widening Health Inequalities Between Employed and Unemployed Workers: A Decomposition of Trends in Canada (2000-2014)

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3.1 Abstract

Recent developments in the social epidemiological literature indicate that health inequalities between the employed and the unemployed are widening in many advanced capitalist countries. At present, we know relatively little about why these inequalities are worsening. Drawing on nationally-representative data from the largest health survey in Canada, we explored this question by analyzing changes in self-rated health inequalities between employed and unemployed Canadians from 2000 to 2014. Using a regression-based method that decomposes a given inequality into its component sources, we investigated the extent to which risk factors that account for unemployment-related health inequalities at a single point in time can also explain the extent and direction of change in these unemployment-related health inequalities over time. Our results indicate that relative and absolute health inequalities between employed and unemployed Canadians widened over the study period. Between 2000 and 2014, the prevalence of poor selfrated health among unemployed Canadians increased from 10.8% to 14.6%, while rates among employed Canadians were stable at around 6%. Our findings suggest that the demographic, socioeconomic, and proximal risk factors that are routinely used to explain unemployment-related health inequalities may not be as powerful for explaining how and why these inequalities change over time. In the case of unemployment-related health inequalities in Canada, these risk factors explain neither the increasing prevalence of poor self-rated health among the unemployed nor the growing gap between the unemployed and their employed counterparts. We provide several possible explanations for these puzzling findings. We conclude by suggesting that widening health inequalities may be driven by macrosocial trends (e.g. widening income inequality and declining social safety nets) which have changed the meaning and context of unemployment, as well as its associated risk factors, in ways that are not easy to capture using routinely available survey data.

3.2 Introduction

Over the past several decades, scholars have dedicated a large and rapidly expanding body of scientific literature to the study of health inequalities, by which we mean systematic differences in the health of populations and population groups.[1–3] Despite significant advances in our scientific understanding of this pressing problem, recent developments in the literature indicate that little progress has been made towards the goal of reducing health inequalities.[4,5] In fact, a growing body of evidence suggests that health inequalities between socioeconomic groups are widening in many advanced capitalist countries.[6–10]

In this paper, we narrow in on the specific case of widening unemployment-related health inequalities and assess possible explanations for these troubling epidemiological trends. Unlike income and education, employment status and other indicators of labour market position have been awarded relatively scant attention in the health inequalities literature, despite their importance as major determinants of health.[11] Notwithstanding this limitation of the literature, recent findings suggest that relative and absolute health inequalities between the employed and the unemployed are widening over time.[12–14] While the reasons for this trend are not well understood, extant research points to several potential hypotheses, which we review below.[15] A summary of these hypotheses and their corresponding literatures is provided in Table 3.1.

A first hypothesis posits that unemployment-related health inequalities may be widening due to the general tendency for relative inequalities to grow as the absolute prevalence of an outcome declines.[16–20] According to this view of the problem, widening health inequalities between the employed and the unemployed may be a mathematical artifact of underlying improvements in the overall health of the general working-age population. Though such a view raises important questions concerning the choice of absolute or relative indicators in the measurement of health inequality.[21], it falls short of explaining why both relative and absolute health inequalities have increased between the employed and the unemployed.

A second hypothesis suggests that indirect social selection may be a key factor contributing to the evolution of unemployment-related health inequalities.[22–28] The notion here is that, as societies become more socially mobile, personal characteristics such as intelligence and cognitive ability can play an increasing role in shaping socioeconomic outcomes, including those pertaining to the labour market.[4] From this point of view, the growing health gap between employed and unemployed workers may reflect an increasing scope for indirect selection on the basis of these personal traits. In other words, the unemployed today may represent a more negatively selected group of workers than at earlier points in time. Notably, this argument is premised on the assumption that advanced capitalist societies have become more meritocratic over time. However, recent findings indicate that rates of social mobility have remained stable or, worse, declined in recent decades.[29,30]

Another hypothesis addresses the potential contribution of proximal risk factors such as smoking, drinking, physical inactivity, obesity, and stress to the changing magnitude of health inequalities between the employed and the unemployed.[31–38] Recent epidemiologic studies suggest that these proximal risk factors account for more than half of the health inequalities observed between major socioeconomic groups.[39–41] Changes in the magnitude of unemployment-related health inequalities may therefore reflect changes in the patterning of proximal risk factors between the employed and the unemployed. In other words, relative to earlier points in time, the unemployed today may exhibit a worse set of proximal risk factors relative to their employed counterparts, thereby contributing to a widening health gap between these two groups. Indeed, while evidence pertaining specifically to the unemployed is currently lacking, findings from the broader literature suggest that inequalities in proximal risk factors between other key socioeconomic (e.g. income and education) groups have been widening.[42,43]

The fourth and final hypothesis stresses the importance of social conditions as fundamental causes of unemployment-related health inequalities.[12–14,44–50] Those who adopt such a view suggest that widening inequalities between the employed and the unemployed are a predictable consequence of widening inequalities in the distribution of key resources such as income and wealth.[51] Indeed, over the past several decades, we have witnessed a steep increase in the

magnitude of economic inequality in nearly all advanced capitalist countries.[52] This growing economic wedge appears to be driven by underlying changes in the structure of the labour market, including an increasing prevalence of precarious employment conditions, rising levels of structural unemployment, stagnating earnings among low-wage workers, and the enactment of wide-ranging labour market reforms that have curtailed the scope and generosity of redistributive social policies.[53,54] Put simply, these macrosocial trends have widened socioeconomic inequalities, such as those observed between the employed and the unemployed. This may in turn explain why unemployment-related health inequalities between have been widening over time.

In this paper, we adjudicate between these hypotheses by exploring changing patterns of unemployment-related health inequality in Canada. We use nationally representative repeated cross-sectional data from the Canadian Community Health Survey (CCHS) to analyze and explain trends in the self-rated health of employed and unemployed Canadians between 2000 and 2014. Specifically, we use a counterfactual method known as decomposition to investigate whether and to what extent a range of demographic, socioeconomic, and proximal risk factors account for (i) change over time in the self-rated health of unemployed Canadians and (ii) change over time in the magnitude of self-rated health inequalities between employed and unemployed Canadians. We approach the issue in this manner because the factors determining change within a socioeconomically disadvantaged group may differ from the factors determining change between that group and a more socioeconomically advantaged counterpart group.

Based on this approach, we are able to answer the following questions:

- (1) How would the health status of the unemployed in 2013/2014 have differed had they been endowed with the demographic, socioeconomic, and proximal characteristics of their unemployed counterparts in 2000/2001?
- (2) How would the health status of the unemployed have differed at each point in time had they been endowed with the demographic, socioeconomic, and proximal characteristics of their employed counterparts?
- 3.3 Methods

Data and Sample

We drew our data from the master files of the CCHS, accessed through the Toronto Research Data Centre. The CCHS is a repeated cross-sectional survey containing nationally representative data on the health of Canadians above the age of 12. The first cycle was administered in 2000/2001. Cycles were administered biennially until 2005 and annually from 2007 onwards. Our study covered the period from 2000 to 2014. We did not include more recent cycles due to the implementation of a major redesign in 2015. The biennial cycles included approximately 130,000 observations each, while the annual cycles included approximately 65,000 observations each. To establish similar sample sizes and a consistent unit of time, we grouped annual cycles into pairs. This resulted in seven time points corresponding respectively to the following years: 2000/2001, 2003, 2005, 2007/2008, 2009/2010, 2011/2012, and 2013/2014.

The sample included individuals who were between the ages of 18 and 64 and either employed full-time (i.e. 30 or more hours per week) or unemployed and actively seeking work at the time of survey administration. Part-time workers, students, and individuals who were jobless but not actively seeking work (e.g. full-time caregivers, early retirees, discouraged workers, and those permanently unable to work) were excluded from the analysis. We also excluded residents of the northern territories (i.e. Yukon, Northwest Territories, and Nunavut) for whom equivalized household income data could not be collected. The final sample consisted of 337,880 individuals, of which 318,245 were employed full-time and 19,635 were unemployed.

Outcome Variable

The outcome of interest was a dichotomous measure of self-rated health, widely considered to be a valid and reliable predictor of morbidity and mortality.[55] We measured self-rated health using a single five-category variable that asked respondents to rate their general health. The variable distinguished between individuals who reported good ("excellent", "very good", or "good") and poor ("fair" or "poor") self-rated health.

Predictor Variables

We included three groups of predictors, representing demographic, socioeconomic, and proximal determinants of poor self-rated health. Demographic factors included age (years), sex (male versus female), marital status (couple, single, or widowed/divorced), whether any children live in the household, self-identified race (white, black, Aboriginal, Asian, or multiple/other), immigrant status (non-immigrant, immigrant in Canada less than 15 years, or immigrant in Canada for 15 years or more), region (Atlantic, Central, or Western), and urbanicity (urban versus rural).

Socioeconomic factors included education (less than secondary, secondary degree, some post-secondary, or post-secondary degree), home ownership (renter versus owner), household income (decile), and, among the unemployed, household receipt of social assistance or federal unemployment benefits. To account for household size in the measurement of income, we used a method of equivalization adopted in recent OECD publications that involves dividing household income by the square root of the household size.[56]

Proximal risk factors included self-rated stress, chronic conditions, hypertension, obesity, smoking, binge drinking, and physical inactivity. We measured self-rated stress using a single fivecategory question that asked respondents to rate overall levels of stress in their life. The variable distinguished between those who reported low ("a bit", "not very", or "not at all") and high ("quite a bit" or "extremely") levels of stress. A dichotomous variable identified whether respondents had ever been diagnosed with one or more of the following chronic conditions: asthma, chronic bronchitis, heart disease, cancer, diabetes, stroke, or Alzheimer's disease. We selected these conditions because they are listed among the leading causes of death in Canada.[57] A separate dichotomous variable identified whether respondents had ever been diagnosed with hypertension. Obesity was defined as a body mass index of 30 or above, using self-reported height and weight variables. Health behaviours included smoking (non-smoker, former smoker, or current smoker), drinking (non-drinker, current moderate drinker, current binge drinker), and physical activity (sufficiently active, somewhat active, inactive). Following Statistics Canada practice, we defined binge drinking as the consumption of five or more standardized alcoholic drinks on one occasion, twelve or more times over the past year. We measured the sufficiency of physical activity using a derived index variable based on daily activities over the past three months. Though the CCHS includes some questions about adverse psychosocial experiences, dietary behaviours, and food insecurity, they were situated in optional content modules that several provinces chose not to include. As a result, they could not be included in our study.

Empirical Strategy

We used weighted proportions to describe the demographic, socioeconomic, and proximal characteristics of the sample. We provided separate descriptives for employed and unemployed individuals at each time point. For each group, we also plotted unadjusted trends in the prevalence of poor self-rated health over the duration of the study period. Following this descriptive analysis, we performed a decomposition analysis to investigate candidate explanations for (i) change over time in the self-rated health of the unemployed individuals and (ii) change over time in the magnitude of self-rated health inequalities between employed and unemployed individuals.

Decomposition refers to the use of statistical methods to examine the determinants of inequalities.[58,59] Decomposition methods draw on a suite of regression-based techniques to estimate the contribution of specific predictors (or sets of predictors) to a given inequality. Through an evaluation of counterfactuals in which one group is endowed with the characteristics of another, these methods quantify the portion of the inequality that is attributable to differences in the distribution of those characteristics. Relying on this counterfactual approach—also known as the potential outcomes framework—decomposition methods broaden the scope of questions we can ask about inequalities and their underlying causes, beyond those amenable to standard regression methods.[60–63] In the present study, the use of decomposition methods allows us to answer the counterfactual questions we posed in our introduction; namely (i) How would the health status of the unemployed in 2013/2014 have differed had they exhibited the same predictor profile as their unemployed counterparts in 2000/2001?, and (ii) How would the health status of the unemployed have differed had they exhibited the same predictor profile as their employed counterparts at each point in time? Whereas standard regression techniques (e.g. logistic regression) would be most suitable for examining how relative measures of risk associated with (i) time and (ii) employment

status respond as sets of predictors are added to a given regression model, decomposition methods instead enable us to estimate the absolute reduction of risk that would result from the counterfactual elimination of inequalities in each specific predictor. Following earlier debate over the value of counterfactual thinking in the public health sciences.[64–67], decomposition methods have recently gained significant prominence as a powerful tool with which to identify the underlying causes of health inequalities between groups.[44,68–76], as well as the evolution of health outcomes in the same group or population.[77–81]

The most common decomposition method is the Oaxaca-Blinder reweighting procedure, originally used to examine the causes of wage inequalities.[82,83] This procedure was designed for linear outcome models. Because our outcome was binary, we instead used a non-linear extension of the method developed by Fairlie.[84] Following Fairlie, we define the non-linear decomposition of an inequality between reference group R and comparison group C as follows:

$$\bar{Y}^{R} - \bar{Y}^{C} = \left[\sum_{i=1}^{N^{R}} \frac{F(X_{i}^{R}\hat{B}^{R})}{N^{R}} - \sum_{i=1}^{C} \frac{F(X_{i}^{C}\hat{B}^{R})}{N^{C}}\right] + \left[\sum_{i=1}^{N^{C}} \frac{F(X_{i}^{C}\hat{B}^{R})}{N^{C}} - \sum_{i=1}^{N^{C}} \frac{F(X_{i}^{C}\hat{B}^{C})}{N^{C}}\right]$$

where refers to the average value of an outcome, X refers to the average value of a vector of predictors, refers to a vector of coefficient estimates, and N refers to sample size. As shown in the above equation, the non-linear decomposition of a function produces two terms. The first term represents the portion of the difference that is attributable to group differences in the distribution of observed characteristics. The second term captures the portion of the difference that is left unexplained after the comparison group is endowed with the characteristics of the reference group. We refer to these as the endowment and residual terms, respectively. Residual terms arise when there are either unmeasured sources of variation or group differences in the effects of measured characteristics.

We obtained all estimates using sampling weights provided by Statistics Canada. To derive reliable standard errors, we averaged our decomposition results across 1000 repeated bootstrap samples. Decomposition results can depend heavily on the conditional order in which predictors

are entered. For this reason, we ordered predictors randomly across the repeated samples. We conducted all analyses using Stata 13.0 (StataCorp LP, College Station, TX).

Missing Values

We dropped observations missing information on labour market position or self-rated health. This amounted to less than 1% of the original sample. We tested the equivalence of the samples before and after dropping these observations and found no statistically significant differences across all variables (p<0.05). However, sensitivity analyses revealed that dropping observations missing one or more predictor value introduced substantial bias to trends in our outcome variable. We therefore adopted a missing indicator approach and included these observations in our analysis. For applications of this approach in the decomposition literature, see Fairlie and Robb.[85] and Lin and colleagues.[86] Notably, the proportion of observations in any given missing category tended to be very small (i.e. less than 2%). A key exception to this was the high proportion of observations in the first two cycles of the CCHS with missing household income values. From 2005 onwards, all missing household income values were imputed by Statistics Canada. We consider the implications of this missing information in our discussion of the results.

3.4 Results

We present the demographic, socioeconomic, and proximal characteristics of the sample at each time point in Tables 3.2-3.4. Relative to their employed counterparts, unemployed individuals were younger, more likely to be single, and less likely to be white. Unemployed individuals reported lower levels of household income, educational attainment, and home ownership. For example, the proportion of respondents in 2013/2014 who reported household income levels in the highest income decile was 4.9% among the unemployed and 14.3% among the employed. In the same year, the proportion of respondents who reported owning their home was 52.8% among the unemployed and 74.5% among the employed. Unemployed individuals reported consistently higher rates of chronic conditions and smoking but lower rates of drinking and physical inactivity. Both groups experienced similar compositional changes over time. Notable trends included a rightward shift in the distribution of age, an increasing proportion of racialized

minorities and immigrants, and increasing rates of educational attainment. For example, between 2000/2001 and 2013/2014, the proportion of respondents with less than a high school degree decreased from 25.0% to 14.2% among the unemployed and from 14.6% to 7.0% among the employed. Both groups reported increasing rates of obesity and hypertension as well as declining rates of smoking and physical inactivity.

Fig 3.1 depicts trends in the unadjusted prevalence of poor self-rated health over the study period, separated by employment status. As expected, unemployed individuals reported consistently worse levels of poor self-rated health than their employed counterparts. Between 2000/2001 and 2013/2014, rates of poor self-rated health were relatively stable among the employed, hovering from year to year between 5.6% and 6.0%. By contrast, the prevalence of poor self-rated health increased from 10.8% to 14.6% among the unemployed. Due to these diverging trends, absolute unemployment-related inequalities in poor self-rated health increased from 5.2 percentage points to 8.7 percentage points over the study period.

We decomposed change over time in the self-rated health of unemployed Canadians (Table 3.5). Between 2000/2001 and 2013/2014, the prevalence of poor self-rated health in this group increased by 3.8 percentage points. The decomposition results suggest that demographic, socioeconomic, and proximal risk factors included in our study fail to account for this increase. Endowing those who were unemployed in 2013/2014 with the full predictor profile of their counterparts in 2000/2001 was predicted to widen the gap by a further 0.5 percentage points (SE: 0.006, p = 0.425). The demographic endowment was predicted to narrow the gap by 1.0 percentage points (SE: 0.005, p = 0.033), while the socioeconomic and proximal endowments were predicted to widen the gap by 1.1 percentage points (SE: 0.004, p = 0.012) and 0.4 percentage points (SE: 0.004, p = 0.398), respectively. Because the deficits induced by the socioeconomic and proximal endowment, the decomposition model predicted a larger residual difference than that which was originally observed (4.3 percentage points versus 3.8 percentage points).

We also decomposed self-rated health inequalities between employed and unemployed Canadians at each separate point in time (Table 3.6). We observed large and positive endowment terms across all time points, though the portion of unemployment-related health inequalities accounted for by the full set of predictors varied considerably from one time point to another. For example, they accounted for 3.6 of the 5.2 percentage point gap in 2000/2001 (SE: 0.003, p<0.001) and 4.0 of the 8.7 percentage point gap in 2013/2014 (SE: 0.005, p<0.001). Demographic factors appeared to play very little role in this story, as they were consistently associated with small or negligible individual and overall endowment terms. By contrast, we observed large socioeconomic endowment terms at each point in time. For example, endowing unemployed individuals with the more favourable socioeconomic profile of their employed counterparts was predicted to narrow the gap in poor self-rated health by 2.3 percentage points in 2000/2001 (SE: 0.003, p<0.001) and 2.8 percentage points in 2013/2014 (SE: 0.006, p<0.001). Finally, the endowment of proximal risk profiles produced moderately sized estimates. For example, proximal endowments were predicted to close the gap by 1.3 percentage points in 2000/2001 (SE: 0.001, p<0.001) and 0.8 percentage points in 2013/2014 (SE: 0.003, p = 0.003). Notably, closing the gap in the demographic, socioeconomic, and proximal characteristics of the employed and unemployed subgroups was not sufficient to eliminate self-rated health inequalities between them, as evidenced by the large unexplained residual terms reported at each point in time.

As noted above, the absolute gap in self-rated health between the employed and unemployed subgroups widened over the study period from 5.2% to 8.7%. However, we did not observe commensurate growth in the explanatory capacity of our predictors. The demographic and proximal endowment terms did not grow larger over time. In fact, the proximal endowment term decreased from 1.3 percentage points in 2000/2001 (SE: 0.001, p<0.001) down to 0.8 percentage points in 2013/2014 (SE: 0.003, p = 0.003). Our results provide some indication of a small absolute increase in the size of the socioeconomic endowment terms, from 2.3% percentage points in 2000/2001 (SE: 0.003, p<0.001) to 2.8 percentage points in 2013/2014 (SE: 0.006, p<0.001). This increase appears to be entirely attributable to household income, whose absolute contribution as an individual predictor increased from 1.5 percentage points in 2000/2001 (SE: 0.002, p<0.001) to 2.3 percentage points in 2013/2014 (SE: 0.005, p<0.001). Overall, the predictors accounted for a smaller portion of observed inequalities in 2013/2014 than in 2000/2001. Consequently, the residual term was larger in 2013/2014. Whereas the unexplained difference was 1.6 percentage points in 2000/2001, it was 4.7 percentage points in 2013/2014.

3.5 Discussion

We used population-based data from a repeated cross-sectional survey to examine changing patterns of self-rated health among employed and unemployed Canadians from 2000 to 2014. Our results indicate that relative and absolute inequalities in poor self-rated health increased between the two groups over the study period. These findings mirror those reported in recent studies that have also documented widening unemployment-related health inequalities in Germany, Sweden, and the United Kingdom.[12–14] Unexpectedly, in our decomposition of these trends, demographic, socioeconomic, and proximal risk factors did not explain the growing self-rated health inequalities declined over time. As a result, the unexplained portion of the gap grew from 1.6 percentage points in 2000/2001 to 4.7 percentage points in 2013/2014.

In the introduction of our study, we presented several candidate explanations for widening unemployment-related health inequalities. The mathematical artifact hypothesis maintains that relative inequalities in the health status of the employed and the unemployed may have a tendency to grow as a result of overall improvements in the absolute prevalence of adverse health outcomes.[16–20] However, we found no evidence of an overall decline in the prevalence of poor self-rated health. Among the employed, for example, the prevalence of poor self-rated health did not vary substantially from one time point to the next. Furthermore, the self-rated health gap between the employed and the unemployed grew in both relative and absolute terms. Thus, it is unlikely that our findings are merely an artifact of measurement.

A second view of the problem suggests that unemployment-related health inequalities may be widening due to increasing opportunities for indirect social selection on the basis of personal characteristics such as intelligence and cognitive ability, which may predict both the health and labour market outcomes of individuals.[22–28] As noted earlier, this argument is premised on the assumption that advanced capitalist societies have become more meritocratic over time. However, evidence from the broader literature indicates that rates of social mobility in Canada have declined over the past few decades.[87] Moreover, levels of educational attainment among unemployed increased substantially over the study period. Whereas 25.0% of unemployed Canadians reported having less than a high school degree in 2000/2001, only 14.2% of unemployed Canadians belonged to this category in 2013/2014. In other words, our evidence suggests that unemployed Canadians become a less negatively selected group over time. Although we were unable to test the indirect selection hypothesis directly, these empirical developments are at odds with its theoretical expectations.

The third hypothesis posits that unemployment-related health inequalities may be widening due to widening inequalities in the uneven distribution of proximal risk factors between the employed and the unemployed.[31–38] Although they went part of the way in explaining why unemployed individuals reported worse levels of self-rated health than their employed counterparts, trends in the distribution of these proximal risk factors explained neither the increasing prevalence of poor self-rated health among unemployed individuals nor the growing health gap between employed and unemployed individuals. These findings may reflect the fact that we did not capture the full set of proximal mechanisms linking unemployment and health, including those whose salience may have increased over time (e.g. psychosocial factors, dietary behaviours, and food insecurity). It may also be the case that, for reasons not yet understood, the adverse returns to specific exposures have increased over time, such that widening unemploymentrelated health inequalities do not reflect changes in the distribution of proximal risk factors but rather changes in the strength of their association with health. Prior research suggests that the association between a given risk factor and health can vary over time.[88], and that this variation can contribute to widening health inequalities between socioeconomic groups[89] For example, there is evidence that the widening mortality gap between educational groups in the United States is not a result of changes in the distribution of risk factors such as smoking and obesity but, rather, is explained by the increasing severity of the mortality consequences associated with these risk factors.[90] Because differences in the effects of predictors are hidden in the residual component of our decomposition, we were not able to quantify the contribution of this heterogeneity to the growing gap.

Our final hypothesis suggests that unemployment-related health inequalities may be worsening due to increasing inequalities in the underlying social determinants of health.[12–

14,44–49] While socioeconomic factors such as income, education, and home ownership provided the strongest explanation for self-rated health inequalities between employed and unemployed Canadians, they accounted for only a marginal portion of the growth observed in the magnitude of these inequalities over time. Furthermore, they were incapable of accounting for the increasing prevalence of poor self-rated health among the unemployed. These results could reflect the fact that key factors such as wealth, life-course socioeconomic position, and financial strain-factors which are known to differ substantially between the employed and the unemployed—were not reported in the CCHS and therefore could not be included in our analysis. Indeed, a growing body of research suggests that, variables such as financial strain exhibit an independent association with health, over and above conventional measures of income.[48,91,92] Another possible explanation may be that markers of socioeconomic position are not equivalent over time. Rather, their meaning may change from one historical context to the next and, as a result, their association with health may also change over time. For example, given that the cost of housing has outpaced average earnings in Canada.[93], it is possible that the relative disadvantage associated with renting as opposed to owning one's home has increased over time. Similarly, given widening levels of income inequality, it may be the case that the extent of deprivation experienced by those in the lowest decile of earnings has increased in a manner that our categorical income variable is incapable of capturing. Put simply, whether an unemployed individual is as likely as before to fall into one or another socioeconomic category may matter less than changes over time in the magnitude of the effects associated with a given category. Indeed, in supplementary analyses of our data (not shown), we found evidence that the strength of the association between key socioeconomic factors (e.g. home ownership and income) and health grew substantially over the course of the study period. As noted above, this heterogeneity in effect sizes is hidden in the residual component of the decomposition and must therefore be investigated elsewhere.

The notion that the meaning of socioeconomic categories can change over time presents the possibility of a final and related explanation of our findings; namely, that the health status of employed and unemployed Canadians may be diverging as a result of changing macrosocial contexts whose underlying dynamics and consequences cannot be captured using routinely available survey data. From the broader literature, we know that similar socioeconomic experiences do not produce the same set of health outcomes from one national context to the next. For example, the magnitude of unemployment-related health inequalities varies considerably across countries.[14,50,94,95] These findings are thought to reflect the fact that structural factors such as policy environments (e.g. unemployment benefit systems) play a pivotal role in shaping the health gradient.[96,97] In a similar vein, contextual trends such as rising levels of income inequality, weakening social safety nets, and declining levels of social spending may be fundamental contributors to widening health inequalities, including those observed between the employed and the unemployed.[6,7,12,14,77,98] Unfortunately, due to the nature of our data, we were unable to directly quantify the contribution of these broader societal trends. Nevertheless, these developments are elsewhere understood as part of a broader neoliberal transformation of society whose implications for health are increasingly well-documented.[99–102]

Our study has several limitations in addition to those mentioned above. First, like many of its peer nations, Canada experienced a recession between 2008 and 2010. Unemployment rates in Canada increased between 2000 and 2009, from 5.7% to 7.0%, then declined in a secular fashion to 5.8% in 2014.[103] During this time, overall labour force participation rates remained stable. fluctuating between 66.0% and 67.6%.[103] In general, Canada experienced a shorter and milder recession than other advanced capitalist countries.[104] Nevertheless, it is possible that fluctuating rates of unemployment over the course of the study period biased our results.[105] However, an earlier Canadian study found that the association between unemployment and health did not vary according to local unemployment rates.[106] Moreover, unemployment rates were very similar at our first and final time points (i.e. approximately 6%). Thus, any resulting bias is not likely to have influenced our most important set of findings. A related concern, however, is the possibility of selection bias arising from other changes over time in the underlying composition corresponding characteristics of employed and unemployed workers over time. For example, while we control for age as a confounding factor, we are unable to take explicit account of cohort effects that may, for example, have resulted from the retirement (i.e. the gradual 'selection out' from our sample) of Baby Boomers who, over the course of their working lives, experienced different labour market and welfare state conditions than those experienced by younger cohorts of workers.

Second, there is evidence that, over the study period, a growing proportion of jobless individuals became discouraged and gave up on actively seeking employment.[107] The

increasing tendency for these discouraged workers to select out of unemployment and into inactivity may have biased our findings. However, because these individuals could not be identified in the CCHS, we were unable to investigate the impact of this potential selection problem on our results. Third, many of our measures, including our outcome of interest, relied on self-report and are therefore susceptible to corresponding biases. For example, there is some evidence of an interaction between socioeconomic status and the predictive validity of self-rated health, though findings on this issue are mixed.[108] In addition, the use of self-report in both the outcome and some predictor variables could have contributed to sole source bias.[109] Fourth, trends in unemployment-related health inequalities, as well as their underlying causes, may differ between men and women.[13,110] However, due to a limited sample of unemployed persons as well as the nature and number of the covariates included in our models, we lacked sufficient statistical power to conduct separate analyses for men and women. This is an important gap for future research to address. Fifth, risk factors such as smoking, binge drinking, and physical inactivity may precede and contribute to unemployment.[111] For example, there is literature suggesting that earlier binge drinking is as associated with later life socioeconomic adversity, including job loss.[112–114] Given the cross-sectional nature of our data, we were unable to account for this potential endogeneity problem.

Finally, as we have previously noted, a substantial portion of household income values were missing in 2000/2001 and 2003. Prior research suggests that individuals who withhold from reporting income values tend to have a worse socioeconomic profile relative to those who do report.[115] Indeed, our own supplementary analyses (not shown) revealed that respondents in the missing category reported lower levels of educational attainment and home ownership than their non-missing counterparts. Thus, we expect that the true distribution of income among those who were unemployed in 2000/2001 was worse than the distribution we observed and could endow to their counterparts in 2013/2014. Accordingly, we anticipate that the true explained component in Table 6 is even smaller (i.e. more negative) than that we would have reported in our results. In other words, the results we have reported are likely more conservative than those we would have reported for 2000/2001 and 2003 are on par with those reported in neighboring years (e.g. 2005 and

2007/2008). Thus, again, we do not anticipate that missing income information caused any substantial bias.

3.6 Conclusion

Notwithstanding these limitations, there are important insights to be gained from our study. Most notably, the factors that are known to explain why the employed are healthier than their unemployed counterparts do not appear to explain why health inequalities between these two groups have widened over time.[116] While unemployed Canadians tended toward less favourable socioeconomic and proximal risk profiles, these individual-level predictors could not account for adverse trends in the relative or absolute health status of this group. These findings lend support to the notion, now common in the social epidemiological literature, that there are forces acting upon the health of populations over and above the set of individual-level attributes on which data are routinely collected.[117-119] The implication is that changing patterns of unemploymentrelated health inequality must be situated within the context of broader macrosocial trends such as widening income inequalities, declining social safety nets, and decreasing social spending. These higher-order phenomena are not always easily incorporated into the individual risk functions that prevail in contemporary epidemiologic research. Nevertheless, if our results are any indication, making sense of widening health inequalities between the employed and the unemployed may depend on our willingness to appropriately measure and model these underlying macrosocial trends.

3.7 References

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Table 3.1: Su	mmary of hypotheses to help explain widening unemploy	ment-related health inequalities
Hypothesis	Explanation	Underlying Literature
Mathematical Artifact	Evidence of widening unemployment-related health inequalities is an artifact of the general mathematical tendency for relative inequalities to increase following declines in the overall frequency of an outcome.	Eikemo et al. [16]; Houweling et al. [17]; Huijts and Eikemo [18]; Mackenbach [19]; Scanlan [20]
Indirect Social Selection	Due to an increasing scope for social selection on traits such as intelligence and cognitive ability, the unemployed consist of an increasingly negatively selected group of individuals, resulting in widening unemployment-related health inequalities.	Boyle et al. [22]; Dowd and Hamoudi [23]; Hughes et al. [24]; Jusot et al [25]; Lundin et al. [26]; Mackenbach [4]; Steele et al. [27]; Tøge and Blekesaune [28]
Proximal Risk Factors	Widening unemployment-related health inequalities are a product of widening inequalities in the distribution of proximal risk factors (e.g. smoking, drinking, and physical inactivity) between the employed and the unemployed.	Deb et al [31]; Kalousova and Burgard [32]; Macy et al. [33]; Marcus [34]; Monsivais et al. [34]; Mossakowski [36]; Schunck and Rogge [37]; Virtanen et al. [38]
Social Conditions	Widening unemployment-related health inequalities are a product of widening inequalities in the distribution of key socioeconomic resources (e.g. income, education, and wealth) between the employed and the unemployed.	Brydsten et al. [44]; Córdoba-Doña et al. [49]; Farrants et al. [12]; Huijts et al. [45]; Kroll and Lampert [13]; McCartney et al. [51]; McLeod et al. [50]; Nelson and Tøge [14]; Price et al. [46]; Riumallo-Herl et al. [47]; Tøge [48]

3.8 Tables and Figures

Table 3.2: Weighted demo	graphic p	rofile of th	e sample, Un	by emplor employed	yment sta [.]	tus: CCHS	(2000-201	t)			mployed			
1	2000/01	2003	2005	2007/08	2009/10	2011/12	2013/14	2000/01	2003	2005	2007/08	2009/10	2011/12	2013/14
Number of Observations	2724	2769	2801	2540	3089	2949	2763	51574	48229	48198	47415	41946	41038	39845
Age														
18-24	21.1%	18.8%	20.8%	18.3%	18.5%	19.5%	18.9%	9.7%	8.6%	8.7%	8.7%	8.3%	7.7%	8.2%
25-34	22.9%	26.3%	22.6%	25.0%	21.7%	21.1%	23.9%	23.4%	22.5%	22.0%	22.8%	21.7%	22.2%	22.4%
35-44	29.2%	26.1%	27.1%	21.4%	25.8%	20.0%	21.0%	31.5%	31.0%	29.2%	26.8%	25.8%	25.1%	24.7%
45-54	20.2%	19.9%	19.5%	21.2%	22.1%	23.7%	21.4%	25.7%	26.3%	27.8%	27.9%	29.0%	27.8%	26.6%
55-64	6.6%	8.9%	10.0%	14.2%	11.8%	15.7%	14.8%	9.7%	11.6%	12.4%	13.7%	15.3%	17.2%	18.0%
Sex														
Male	54.7%	56.6%	51.4%	56.0%	55.3%	54.6%	54.4%	59.8%	59.6%	59.5%	58.7%	57.6%	58.2%	57.8%
Female	45.3%	43.4%	48.6%	44.0%	44.7%	45.4%	45.6%	40.2%	40.4%	40.5%	41.3%	42.4%	41.8%	42.2%
Marital Status														
Couple	48.2%	51.4%	52.0%	53.3%	49.1%	46.7%	47.4%	69.0%	69.6%	70.5%	67.5%	69.2%	68.4%	68.0%
Single	38.8%	38.7%	37.0%	36.9%	37.4%	41.7%	42.5%	22.0%	21.5%	21.0%	23.0%	21.4%	21.9%	22.6%
Widowed or divorcec	12.9%	9.8%	11.0%	9.8%	13.3%	11.3%	9.8%	9.0%	8.8%	8.4%	9.4%	9.3%	9.5%	9.3%
Missing	0.1%	0.0%	0.0%	0.1%	0.2%	0.4%	0.3%	0.1%	0.2%	0.1%	0.1%	0.1%	0.2%	0.1%
Children														
None	37.9%	38.9%	37.6%	39.3%	41.7%	41.6%	41.6%	39.1%	38.9%	39.2%	43.0%	43.8%	44.1%	43.0%
One or more	61.0%	59.4%	61.8%	59.7%	58.1%	57.7%	57.2%	59.9%	60.1%	60.0%	56.3%	55.5%	55.3%	56.5%
Missing	1.1%	1.6%	0.7%	1.0%	0.2%	0.7%	1.2%	1.0%	1.0%	0.8%	0.7%	0.7%	0.6%	0.5%
Race														
White	78.5%	75.0%	73.0%	70.0%	70.0%	67.8%	65.9%	85.9%	84.6%	83.1%	80.0%	79.8%	77.6%	75.7%
Black	3.2%	2.5%	3.0%	3.1%	4.1%	5.7%	5.2%	1.6%	1.7%	1.8%	2.4%	2.3%	2.1%	2.7%
Aboriginal	3.5%	2.9%	4.4%	7.1%	4.6%	5.9%	6.0%	1.1%	1.3%	2.0%	2.8%	2.9%	3.2%	3.1%
Asian	12.3%	14.4%	13.3%	15.1%	16.4%	16.8%	16.8%	8.9%	9.3%	9.8%	11.7%	11.8%	13.1%	14.1%
Multiple or other	2.4%	4.8%	5.7%	4.4%	4.1%	2.3%	5.2%	2.3%	3.0%	2.8%	2.5%	2.8%	3.2%	3.7%
Missing	0.1%	0.3%	0.6%	0.3%	0.8%	1.6%	0.9%	0.1%	0.1%	0.4%	0.5%	0.4%	0.8%	0.8%
Immigrant Status														
Non-immigrant	77.1%	72.6%	73.6%	73.2%	71.7%	72.3%	70.3%	79.5%	78.9%	78.6%	76.9%	76.6%	76.3%	74.9%
Immigrant: <15 years	12.9%	15.9%	14.3%	15.6%	13.8%	12.7%	16.2%	8.4%	8.2%	8.0%	9.0%	9.4%	9.3%	10.1%
lmmigrant: 15+ years	8.6%	10.8%	10.8%	9.7%	12.5%	13.6%	12.2%	11.8%	12.7%	13.0%	13.6%	13.4%	13.2%	13.7%
Missing	1.5%	0.6%	1.3%	1.5%	2.0%	1.5%	1.4%	0.3%	0.3%	0.4%	0.4%	0.6%	1.2%	1.3%
Region														
Atlantic Canada	10.8%	10.8%	9.0%	10.0%	8.5%	9.0%	9.0%	7.3%	7.2%	7.1%	6.9%	6.9%	6.6%	6.5%
Central Canada	63.2%	62.8%	65.6%	66.8%	62.3%	64.4%	65.4%	63.0%	62.1%	62.1%	61.6%	61.5%	61.0%	60.2%
Western Canada	26.0%	26.4%	25.3%	23.3%	29.2%	26.6%	25.5%	29.7%	30.7%	30.7%	31.5%	31.6%	32.4%	33.3%
Area														
Urban	82.7%	81.1%	82.6%	83.1%	82.6%	84.3%	85.4%	82.0%	82.0%	82.4%	82.8%	82.7%	82.8%	82.4%
Rural	17.3%	18.9%	17.4%	16.9%	17.4%	15.7%	14.6%	18.0%	18.0%	17.6%	17.2%	17.3%	17.2%	17.6%

				nemployed				1			Employed			
	2000/01	2003	2005	2007/08	2009/10	2011/12	2013/14	2000/01	2003	2005	2007/08	2009/10	2011/12	2013/14
Number of Observations	2724	2769	2801	2540	3089	2949	2763	51574	48229	48198	47415	41946	41038	39845
Education														
Post-secondary	16.5%	20.1%	20.2%	18.8%	20.1%	17.6%	17.6%	21.2%	23.2%	25.0%	26.0%	27.9%	23.1%	23.2%
Some post-secondary	29.5%	32.8%	35.4%	35.6%	37.6%	41.1%	35.1%	35.3%	36.8%	41.1%	41.2%	40.9%	42.4%	39.7%
Secondary	28.5%	26.6%	25.9%	27.3%	24.7%	23.3%	32.6%	28.5%	27.1%	22.9%	23.1%	22.3%	26.4%	29.6%
Less than secondary	24.8%	19.5%	18.2%	18.2%	17.0%	17.2%	14.2%	14.5%	11.7%	10.6%	9.4%	8.6%	7.5%	7.0%
Missing	0.7%	1.0%	0.3%	0.1%	0.7%	0.7%	0.4%	0.5%	1.2%	0.4%	0.2%	0.3%	0.7%	0.5%
Income Decile														
1st	24.1%	20.1%	23.2%	24.8%	23.9%	24.4%	21.0%	3.9%	4.1%	4.4%	4.3%	4.0%	3.8%	3.9%
2nd	13.0%	11.4%	12.9%	14.4%	14.3%	13.2%	16.8%	5.3%	5.5%	5.8%	5.8%	5.4%	5.6%	5.5%
3rd	10.1%	10.1%	11.6%	11.4%	10.6%	13.5%	11.5%	7.0%	6.9%	7.0%	7.3%	7.3%	7.6%	7.8%
4th	8.5%	8.0%	10.0%	9.9%	8.6%	9.5%	9.5%	8.2%	8.5%	8.6%	9.0%	9.2%	8.7%	8.7%
5th	8.3%	10.2%	9.6%	8.4%	10.7%	9.3%	10.4%	9.8%	9.5%	10.3%	10.1%	9.8%	9.5%	10.0%
6th	5.8%	6.5%	8.4%	7.3%	8.6%	6.1%	8.6%	10.0%	9.9%	10.6%	11.0%	11.1%	10.7%	10.9%
7th	5.2%	5.2%	7.8%	7.6%	7.7%	7.7%	7.1%	11.0%	10.5%	12.0%	11.4%	12.4%	12.7%	12.4%
8th	4.7%	4.9%	6.0%	6.3%	6.5%	6.1%	5.6%	11.9%	11.2%	12.6%	13.1%	13.0%	12.7%	13.0%
9th	5.1%	4.3%	5.9%	5.5%	4.6%	4.8%	4.6%	12.0%	12.3%	14.3%	13.4%	13.5%	14.0%	13.7%
10th	5.1%	4.5%	4.5%	4.4%	4.5%	5.4%	4.9%	13.0%	12.9%	14.4%	14.6%	14.3%	14.5%	14.3%
Missing	10.2%	14.8%	0.0%	0.0%	0.0%	0.0%	0.0%	7.9%	8.7%	0.0%	0.0%	0.0%	0.0%	0.0%
Home Ownership														
Renter	50.4%	40.5%	41.1%	45.1%	43.2%	43.4%	47.1%	27.9%	23.0%	21.8%	24.1%	23.5%	24.8%	25.4%
Owner	49.3%	59.2%	58.3%	54.9%	56.5%	56.0%	52.6%	71.9%	76.7%	77.4%	75.2%	76.3%	74.8%	74.2%
Missing	0.4%	0.3%	0.6%	0.0%	0.3%	0.6%	0.3%	0.2%	0.2%	0.8%	0.6%	0.2%	0.4%	0.4%
Employment Insurance														
Not receiving	68.2%	56.7%	63.3%	67.3%	54.3%	63.3%	62.6%							
Receiving	29.8%	40.0%	32.8%	29.6%	39.3%	30.5%	31.6%							
Missing	2.0%	3.3%	3.9%	3.2%	6.4%	6.2%	5.8%							
Social Assistance														
Not receiving	75.1%	82.1%	79.7%	81.5%	78.5%	76.2%	78.5%							
Receiving	22.8%	14.6%	16.4%	15.3%	15.1%	17.6%	15.7%							
Missing	2.0%	3.3%	3.9%	3.2%	6.4%	6.2%	5.8%							

nrofile of the samule hy employment status: CCHS (2000-2014) , inc Table 3.3: Weighted sorioecon 95

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-			5	Internation							inpioyeu			
	2000/01	2003	2005	2007/08	2009/10	2011/12	2013/14	2000/01	2003	2005	2007/08	2009/10	2011/12	2013/14
Number of Observations	2724	2769	2801	2540	3089	2949	2763	51574	48229	48198	47415	41946	41038	39845
Self-Rated Stress														
Low	72.1%	74.5%	73.1%	74.8%	72.2%	75.5%	75.2%	69.3%	6.69%	71.6%	72.9%	71.4%	71.6%	71.9%
High	27.8%	25.3%	26.4%	24.6%	27.4%	24.1%	24.7%	30.6%	29.9%	28.1%	26.8%	28.5%	28.1%	27.9%
Missing	0.1%	0.5%	0.4%	0.6%	0.5%	0.3%	0.1%	0.1%	0.2%	0.3%	0.3%	0.1%	0.3%	0.2%
Chronic Conditions														
No	81.5%	82.3%	83.5%	82.5%	83.9%	81.2%	82.3%	87.3%	86.7%	86.4%	81.7%	86.1%	85.7%	85.7%
Yes	18.2%	17.3%	16.3%	17.1%	15.6%	18.5%	17.1%	12.7%	13.1%	13.4%	18.1%	13.7%	14.0%	14.1%
Missing	0.3%	0.5%	0.2%	0.4%	0.5%	0.2%	0.6%	0.1%	0.2%	0.2%	0.2%	0.2%	0.3%	0.2%
Hypertension														
No	92.1%	90.6%	91.0%	87.5%	88.1%	87.8%	86.4%	91.8%	90.3%	89.6%	89.0%	88.4%	87.8%	87.9%
Yes	7.7%	8.8%	8.7%	12.2%	11.7%	11.8%	12.1%	8.0%	9.6%	10.2%	10.7%	11.4%	11.9%	11.9%
Missing	0.2%	0.7%	0.3%	0.3%	0.1%	0.4%	1.5%	0.1%	0.2%	0.2%	0.3%	0.2%	0.3%	0.2%
Obesity														
No	82.1%	82.2%	81.1%	77.2%	78.9%	76.2%	77.2%	81.6%	82.2%	81.3%	79.7%	79.1%	78.0%	77.3%
Yes	14.9%	14.7%	16.1%	18.0%	17.8%	20.2%	18.6%	14.4%	15.1%	16.2%	16.5%	17.7%	18.6%	19.6%
Missing	3.0%	3.1%	2.8%	4.8%	3.3%	3.6%	4.1%	3.9%	2.7%	2.4%	3.8%	3.2%	3.4%	3.1%
Smoking														
Never smoked	26.5%	29.3%	31.5%	30.5%	33.7%	31.6%	32.5%	31.3%	30.7%	33.0%	35.0%	37.1%	37.1%	39.3%
Former smoker	26.8%	33.3%	29.9%	30.9%	26.7%	30.6%	30.5%	38.1%	41.2%	40.6%	38.8%	39.2%	39.0%	38.6%
Current smoker	46.6%	37.4%	38.5%	38.6%	39.5%	37.6%	36.9%	30.4%	27.9%	26.3%	26.1%	23.7%	23.7%	21.9%
Missing	0.1%	0.0%	0.0%	0.1%	0.2%	0.2%	0.0%	0.2%	0.2%	0.1%	0.1%	0.1%	0.2%	0.1%
Drinking														
Non-drinker	19.5%	19.7%	18.9%	20.4%	20.3%	20.2%	20.5%	12.9%	12.4%	12.5%	12.9%	13.5%	13.9%	14.5%
Moderate drinker	55.0%	56.6%	59.4%	55.4%	54.3%	54.3%	54.3%	65.8%	64.9%	64.0%	63.9%	63.1%	61.3%	60.1%
Binge drinker	25.0%	23.3%	21.4%	23.6%	24.9%	25.0%	24.1%	20.8%	22.3%	22.9%	22.7%	23.0%	24.3%	24.8%
Missing	0.5%	0.4%	0.4%	0.6%	0.5%	0.6%	1.2%	0.5%	0.5%	0.5%	0.5%	0.5%	0.5%	0.6%
Physical Activity														
Sufficiently active	22.7%	29.5%	28.8%	29.2%	29.3%	32.2%	33.8%	18.0%	23.8%	23.6%	22.9%	25.5%	26.1%	27.0%
Somewhat active	22.7%	24.8%	25.1%	23.7%	24.6%	25.7%	22.9%	21.7%	25.5%	25.2%	24.7%	25.1%	26.0%	26.0%
Inactive	49.4%	43.8%	45.5%	45.4%	45.4%	40.9%	42.6%	52.6%	49.6%	50.5%	51.1%	48.8%	47.4%	46.7%
Missing	5.1%	1.9%	0.6%	1.7%	0.7%	1.2%	0.7%	7.7%	1.2%	0.8%	1.3%	0.6%	0.5%	0.3%

Table 3.4: Weighted proximal risk profile of the sample, by employment status: CCHS (2000-2014)

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Figure 3.1: Estimated trends in the prevalence of poor self-rated health, by employment status: CCHS (2000-2014).
Unemployed (2013/2014)	14.6%		
Unemployed (2000/2001)	10.8%	N=2	724
		Model 2	
	Estimate	SE	р
Difference			
Total	3.8%	0.015	0.013
Explained	-0.5%	0.006	0.425
Unexplained	4.3%		
Decomposition			
Demographic			
Age	0.003	0.003	0.253
Sex	0.000	0.000	0.924
Marital Status	0.001	0.001	0.636
Children	0.004	0.002	0.025
Race	0.004	0.004	0.320
Immigrant Status	-0.002	0.003	0.537
Region	0.000	0.001	0.938
Urban/Rural	-0.001	0.001	0.357
Total	0.010	0.005	0.033
Socioeconomic			
Education	-0.004	0.003	0.168
Income	-0.002	0.004	0.522
Home Ownership	0.000	0.001	0.959
Employment Insurance	-0.002	0.001	0.080
Social Assistance	-0.003	0.002	0.188
Total	-0.011	0.004	0.012
Proximal			
Stress	-0.003	0.002	0.081
Chronic Conditions	0.001	0.002	0.479
Hypertension	0.006	0.002	0.017
Obesity	0.000	0.001	0.674
Smoking	-0.003	0.002	0.065
Drinking	-0.001	0.001	0.295
Physical Activity	-0.003	0.002	0.140
Total	-0.004	0.004	0.398

Table 3.5: Decomposition of Poor Self-Rated Health: Unemployed Versus

 Unemployed

Note: Estimates and standard errors (SE) are generated from 1000 bootstrap samples.

Table 3.6: Decomposition (of Poor Se	lf-Rated	Health: L	Jnemploye	ed Versu	s Unempl	oyed					
		000/01			2003			2005		2	007/08	
Unemployed	10.8%	N=2	:724	10.8%	N=2	769	11.4%	N=2	801	12.0%	N=2!	540
Employed	5.6%	N=5.	1574	5.8%	N=48	3229	5.8%	N=48	3198	6.0%	N=47	'415
	Estimate	SE	d	Estimate	SE	d	Estimate	SE	d	Estimate	SE	d
Difference												
Total	5.2%	0.008	<0.001	5.0%	0.001	<0.001	5.6%	0.009	<0.001	6.0%	0.011	<0.001
Explained	3.6%	0.003	<0.001	2.7%	0.003	<0.001	2.5%	0.003	<0.001	3.6%	0.004	<0.001
Unexplained	1.6%			2.4%			3.1%			2.4%		
Decomposition												
Demographic												
Age	-0.004	0.001	<0.001	-0.001	0.001	0.232	-0.002	0.001	0.054	-0.003	0.001	0.018
Sex	0.000	0.000	0.620	0.000	0.000	0.132	-0.001	0.000	0.106	0.000	0.000	0.409
Marital Status	0.003	0.001	0.002	0.001	0.001	0.265	0.002	0.001	0.036	0.004	0.001	0.002
Children	0.000	0.000	0.183	0.000	0.000	0.717	0.000	0.000	0.674	0.000	0.000	0.667
Race	0.001	0.001	0.223	0.002	0.001	0.039	0.001	0.001	0.308	0.002	0.001	0.058
Immigrant Status	-0.001	0.000	0.171	0.000	0.001	0.674	-0.001	0.001	0.434	-0.002	0.001	0.084
Region	0.000	0.000	0.523	0.000	0.000	0.103	-0.001	0.000	0.002	-0.002	0.001	0.004
Urban/Rural	0.000	0.000	0.390	0.000	0.000	0.519	0.000	0.000	0.895	0.000	0.000	0.941
Total	0.000	0.001	0.752	0.003	0.002	0.114	-0.002	0.002	0.329	-0.001	0.002	0.615
Socioeconomic												
Education	0.006	0.001	<0.001	0.005	0.001	<0.001	0.005	0.001	<0.001	0.006	0.001	<0.001
Income	0.015	0.002	<0.001	0.012	0.003	<0.001	0.013	0.003	<0.001	0.019	0.004	0.000
Home Ownership	0.002	0.001	0.078	0.000	0.001	0.791	0.000	0.001	0.925	0.001	0.002	0.671
Total	0.023	0.003	<0.001	0.017	0.003	<0.001	0.019	0.003	<0.001	0.026	0.004	<0.001
Proximal												
Stress	-0.001	0.000	0.063	-0.002	0.000	<0.001	0.001	0.000	0.030	0.000	0.000	0.618
Chronic Conditior	0.009	0.001	<0.001	0.007	0.001	<0.001	0.006	0.001	<0.001	0.006	0.001	<0.001
Hypertension	-0.001	0.000	0.015	-0.001	0.000	0.034	-0.002	0.000	<0.001	0.001	0.000	0.007
Obesity	0.001	0.000	0.085	0.000	0.000	0.454	0.000	0.000	0.591	0.001	0.000	0.024
Smoking	0.005	0.001	<0.001	0.003	0.001	<0.001	0.006	0.001	<0.001	0.005	0.001	<0.001
Drinking	0.002	0.001	<0.001	0.002	0.001	0.002	0.002	0.000	<0.001	0.002	0.001	0.002
Physical Activity	-0.003	0.001	<0.001	-0.003	0.001	<0.001	-0.003	0.001	<0.001	-0.004	0.001	<0.001
Total	0.013	0.001	<0.001	0.007	0.001	<0.001	0.008	0.001	<0.001	0.011	0.002	<0.001
Note: Estimates and stand:	ard errors	(SE) are	generate	d from 10	00 boot	strap sam	ples.					

		2009/10			2011/12			2013/14	
Unemployed	13.0%	N=3	8089	12.3%	N=2	2949	14.6%	N=2	2763
Employed	6.0%	N=4	1946	5.8%	N=4	1038	5.8%	N=3	9845
	Estimate	SE	р	Estimate	SE	р	Estimate	SE	р
Difference									
Total	7.0%	0.010	< 0.001	6.5%	0.012	<0.001	8.7%	0.013	<0.001
Explained	3.4%	0.004	<0.001	4.4%	0.004	<0.001	4.0%	0.005	<0.001
Unexplained	3.6%			2.1%			4.7%		
Decomposition									
Demographic									
Age	0.002	0.003	0.592	-0.001	0.001	0.425	-0.001	0.002	0.732
Sex	0.000	0.000	0.809	0.000	0.000	0.962	0.000	0.000	0.263
Marital Status	0.001	0.004	0.827	0.005	0.002	0.005	0.004	0.002	0.107
Children	0.000	0.000	0.696	0.000	0.000	0.884	0.000	0.000	0.340
Race	-0.001	0.003	0.693	0.002	0.001	0.120	0.002	0.001	0.105
Immigrant Status	0.000	0.002	0.838	0.000	0.001	0.984	-0.001	0.001	0.123
Region	-0.001	0.001	0.481	-0.002	0.001	0.005	-0.001	0.001	0.383
Urban/Rural	0.000	0.000	0.984	0.000	0.000	0.955	0.000	0.000	0.132
Total	0.000	0.005	0.974	0.004	0.002	0.136	0.003	0.003	0.232
Socioeconomic									
Education	0.007	0.001	<0.001	0.005	0.001	<0.001	0.003	0.001	0.003
Income	0.015	0.004	<0.001	0.021	0.005	<0.001	0.023	0.005	<0.001
Home Ownership	0.004	0.004	0.314	0.003	0.002	0.113	0.001	0.002	0.691
Total	0.026	0.005	<0.001	0.028	0.005	<0.001	0.028	0.006	<0.001
Proximal									
Stress	0.001	0.002	0.492	-0.002	0.001	0.004	0.000	0.001	0.660
Chronic Condition	0.006	0.001	<0.001	0.008	0.001	<0.001	0.007	0.001	0.000
Hypertension	0.000	0.001	0.630	0.001	0.000	0.066	0.000	0.001	0.677
Obesity	0.000	0.001	0.807	0.001	0.001	0.084	-0.001	0.001	0.077
Smoking	0.003	0.003	0.324	0.005	0.001	<0.001	0.007	0.002	<0.001
Drinking	0.001	0.001	0.718	0.001	0.001	0.153	0.000	0.001	0.995
Physical Activity	-0.003	0.001	<0.001	-0.004	0.001	<0.001	-0.004	0.001	<0.001
Total	0.008	0.005	0.069	0.012	0.002	<0.001	0.008	0.003	0.003

 Table 3.6 (continued): Decomposition of Poor Self-Rated Health: Unemployed Versus Employed

Note: Estimates and standard errors (SE) are generated from 1000 bootstrap samples.

Chapter 4. The Effect of Unemployment Benefits on Health: A Propensity Score Analysis

Reference: Shahidi FV, Muntaner C, Shankardass K, Quiñonez C, Siddiqi A. The effect of unemployment benefits on health: a propensity score analysis. Social Science & Medicine. 2019;226:198–206.

4.1 Abstract

In the wake of the Great Recession, an expanding body of research has highlighted the role of social protection policies in mitigating the deleterious effects of adverse socioeconomic experiences, including poverty, job insecurity, and unemployment. In this paper, we examine whether unemployment benefits – a key pillar of national social protection systems – can offset the negative health consequences of unemployment. Using cross-sectional nationally representative data from the Canadian Community Health Survey covering the period between 2009 and 2014, we employed an extensive set of propensity score matching techniques to estimate the effect of receiving unemployment benefits (i.e. Employment Insurance) on the probability of reporting poor self-rated health among the unemployed. After matching benefit recipients to comparable non-recipient 'controls', we found that receiving unemployment benefits was associated with better self-rated health. In our main analyses, benefit recipiency reduced the probability of reporting poor self-rated health among the unemployed by up to 4.9% (95% CI -7.3, -2.5). Sensitivity analyses stratified by socioeconomic position revealed stronger treatment effects among lower income and less educated individuals. By contrast, treatment effects were small or, in many cases, negligible among higher income and more educated individuals. Our findings provide evidence that unemployment benefits can play an important role in offsetting the negative health consequences of unemployment, particularly among socioeconomically disadvantaged individuals. These findings lend support to recent calls, including many from within the field of public health, for governments to respond to current labour market trends by expanding the generosity and scope of social protection policies.

4.2 Introduction

The past several decades has borne witness to a marked decline in labour market conditions characterized by stagnant wages, the expansion of precarious work, and rising levels of structural unemployment.[1] In the field of public health, there is widespread concern that these deteriorating labour market conditions will produce adverse effects on the health of socioeconomically vulnerable populations.[2–4] Such concern has directed attention not only to the negative health consequences of recent labour market trends, but also to the role of social protection policies in mitigating their effects on the public's health.[5–8]

Against the backdrop of the Great Recession and subsequent jobs crisis, unemployment benefit programs have figured prominently in this rapidly expanding body of work on the health effects of social protection policies.[9–17] These programs are designed to provide temporary income support to workers who have lost their jobs. As a form of income maintenance, unemployment benefits can alleviate the financial strain associated with joblessness and ensure a modicum of access to health-promoting goods and services, such as food and shelter.[18,19] In addition to counteracting the material effects of job loss, unemployment benefits may provide psychological relief against the non-pecuniary consequences of joblessness, including the loss of identity and status otherwise afforded by gainful employment.[20,21] Accordingly, there is a strong theoretical case for the notion that unemployment benefits can function to protect the health of jobless individuals.[14]

Despite these clear theoretical linkages, there are inherent difficulties in drawing causal inferences about the health effects of unemployment benefits. More specifically, such efforts are hindered by the presence of systematic differences in the underlying characteristics of recipients and non-recipients that render a direct comparison of these groups highly problematic.[22] Most notably, because of strict eligibility criteria that require individuals to have worked a certain amount of time, recipients of unemployment benefits tend to exhibit a more favourable socioeconomic profile than their non-recipient counterparts. A key challenge that arises from these a priori differences is the need to separate out true benefit effects from the influence of selection bias and other sources of confounding.[23] To address this challenge, scholars can exploit a range

of quasi-experimental techniques, such as propensity score matching and synthetic control, which enable the construction of well-matched 'control' groups in situations where ideal comparison populations are not immediately obtainable from the available data.[24]

Despite the widespread availability of these quasi-experimental techniques, a recent review of empirical literature on the health effects of unemployment benefit programs notes that extant studies in this area have relied overwhelmingly on descriptive methods that are not as equipped as their quasi-experimental counterparts to deal with the problem of selection bias.[15] While these studies tend to conclude that unemployment benefit recipiency is associated with better health outcomes,[25–29] their analyses do not take sufficient account of underlying differences between recipients and non-recipients and thus risk overestimating the strength of this association. In a more recent study, Cylus and Avendano make an effort to address this shortcoming of the existing literature by employing propensity score matching, in combination with more traditional linear probability modeling, to better account for potential selection effects.[22] In a matched sample of unemployed Americans, they found that receiving unemployment benefits reduced the probability of reporting poor self-rated health by 3.0%. However, likely owing to a small and potentially underpowered sample, this effect did not reach the threshold of statistical significance. Thus, questions remain concerning the validity and strength of the observed association between unemployment benefits and health.

In the present study, we use propensity score matching to estimate the effect of unemployment benefit recipiency on self-rated health in a nationally representative sample of unemployed Canadians. Building on Cylus and Avendano's recent contribution to the literature on this topic,[22] our study has the advantage of (i) drawing from a larger and therefore more powered sample of benefit recipients and (ii) making use of a more extensive set of matching algorithms to take fuller advantage of the strengths of propensity score methods.

4.3 Methods

Data and Sample

We drew our data from the master files of the Canadian Community Health Survey (CCHS), accessed through the Toronto Research Data Centre. The CCHS is a repeated crosssectional survey providing the most comprehensive source of nationally representative data on the health of the Canadian population. We pooled annual cycles covering the period from 2009 to 2014. We excluded earlier cycles because they lacked an appropriate measure of unemployment benefit recipiency. We excluded later cycles due to a major survey redesign in 2015. Our sample consisted of adults 18 to 64 years of age who reported being unemployed and actively seeking work. We excluded residents of the northern territories (i.e. Yukon, Northwest Territories, and Nunavut) for whom equivalized household income data was unavailable. Because the missing rate for any given variable was relatively low (i.e. less than 2%), we applied listwise deletion to remove observations with missing data. The final sample consisted of 7558 individuals.

Exposure Variable

The main exposure variable was unemployment benefit recipiency. In Canada, unemployment benefits are administered through the federal Employment Insurance (EI) program. To qualify for EI, claimants must also demonstrate that they lost their job through no fault of their own, are ready and willing to work, and are actively searching for paid employment opportunities. Individuals are also required to have worked a minimum number of insurable hours, which can range from 420 to 1400 hours, depending on the individual's specific circumstances. In the CCHS, respondents are asked to identify sources of personal income. We defined individuals as unemployment benefit recipients if they reported EI as a source of personal income during the preceding year. Of the final sample of 7558 individuals, 2917 were defined as recipients and 4641 were defined as non-recipients. The benefit coverage rate of 38.6% observed in our sample is similar to those reported in other population-based surveys from the same time period, sitting approximately two percentage points below corresponding rates reported in the Canadian Labour Force Survey and the Employment Insurance Coverage Survey.[30,31]

Outcome Variable

The main outcome variable was self-rated health, a well-validated and widely used outcome.[32] Self-rated health was measured using a single five-item Likert scale that asked respondents to rate their general health status as "fair", "poor", "good", "very good", or "excellent". We collapsed the scale into a dichotomous outcome to distinguish between those who reported "fair" or "poor" health and those who reported "excellent", "very good", or "good" health. Dichotomous measures of self-rated health have been shown to be valid and reliable predictors of objective measures of health, including mortality.[33,34] In addition, prior analyses suggest that this approach produces similar results to alternative specifications which treat self-rated health as an ordered categorical outcome.[35]

Empirical Strategy

We used propensity score matching to estimate the effect of unemployment benefit recipiency on the probability of reporting self-rated health. As noted in our introduction, the presence of substantial differences in the underlying characteristics of benefit recipients and non-recipients may render them incomparable using standard regression methods, which assume that covariates follow a common distribution and functional form across groups.[36] If, as in the present case, relevant covariates are not distributed evenly across groups, this assumption can lead to appreciably biased estimates of exposure effects. In such a situation, propensity score methods provide an explicit framework for selecting comparable subsets of exposed and unexposed individuals from a given source population.[24,37,38] The goal is to approximate random assignment by constructing two groups that exhibit similar distributions on all known covariates and differ only with respect to treatment status; in this case, unemployment benefit recipiency.

We began by describing the key characteristics of the sample. Next, we estimated a propensity score for every individual, representing their probability of receiving unemployment benefits, conditional on a set of observed covariates that are known to predict both treatment assignment and health status. We included the following covariates: age (years), sex (male versus female), marital status (couple, single, or widowed/divorced), whether there are children living in the household, self-reported race/ethnicity (white, black, Aboriginal, Asian, or multiple/other), immigrant status (non-immigrant, immigrant less than 15 years, or immigrant 15 years or more),

geographical region (Atlantic, Central, or Western), urbanicity (urban versus rural), education (less than secondary, secondary degree, some post-secondary, post-secondary degree), home ownership (owner versus renter), and survey year. We then matched recipients and non-recipients on the propensity score using five matching algorithms: nearest neighbor matching, caliper matching without replacement, caliper matching with replacement, kernel matching, and local linear matching. For a detailed description of these matching algorithms, see Caliendo and Kopeinig.[39] We assessed match quality by using two-sample t-tests to ensure that there were no significant differences in the distribution of covariates between matched recipients and non-recipient 'controls'. Assuming sufficient balance, we interpreted any remaining difference in the outcome as the average treatment effect on the treated (ATT).

A key assumption of propensity score matching is that treatment assignment is independent of the outcome conditional on the covariates used to estimate the propensity score.[37] A key challenge in this respect is the dual role of income as both an independent predictor of benefit receipt and the principal mediating pathway by which unemployment benefits are hypothesized to affect health. While we control for some major socioeconomic factors (i.e. education and home ownership), the decision to exclude income from the initial pool of confounders may result in residual bias leading to an overestimation of benefit effects. On the other hand, because it is the key mediator between treatment and outcome, matching recipients and non-recipients on income levels may artificially attenuate benefit effects. Nevertheless, given the centrality of income to our hypothesis, we ran a second model where recipients and non-recipients were also matched on household income, in addition to the original set of covariates, to ascertain whether our results were sensitive to this analytic decision. However, to address the aforementioned challenge, we calculated a revised measure of household income in which the average annual EI benefit amount (\$8246) was subtracted from the reported income values of individuals in the recipient group. This mitigated some of the concern around including income in the model, since after accounting for benefit receipt, income should be independent of treatment assignment. To calculate the annual average benefit amount, we multiplied the average duration of EI benefits by the average weekly benefit level over the study period – 21.7 weeks and \$380, respectively.[40] We included a second model in which recipients and non-recipients were matched on this revised household income measure.

A second major challenge concerns the lack of sufficient information on respondents' recent labour market history, which is likely to influence both benefit receipt and health status. For example, individuals who experience more frequent and longer spells of unemployment are both more likely to report adverse health-related events and also less likely to be eligible for benefits.[41–43] To address this challenge, we treated chronic conditions as a proxy for labour market disadvantage - albeit a limited one - and ran a supplementary set of models in which we restricted our analysis to the subset of individuals who reported having no chronic conditions. While this approach does not eliminate the problem entirely (i.e. labour market disadvantage is not a perfect predictor of chronic conditions, and vice versa), the notion here is that, by removing a potential source of residual bias, we can derive a more conservative set of estimates for the effect of unemployment benefits on self-rated health. Chronic conditions were measured using a series of questions asking respondents to indicate whether they had ever been diagnosed with any of the following: asthma, chronic bronchitis, heart disease, cancer, diabetes, stroke, or Alzheimer's disease. We selected these conditions because they are listed among the leading causes of death in Canada and are known to shape labour market outcomes and employment stability among individuals.[44–51] Due to sample size constraints, we were unable to run a similar analysis on the subset of individuals who reported having chronic conditions.

Following previous research,[52] we conducted additional sensitivity analyses in which we stratified our main models by household income (bottom five deciles versus top five deciles), education (high school education or less versus more than a high school education), sex (men versus women), and age (44 years and below versus 45 years and above). By stratifying our models in this manner, we are able to examine heterogeneity in treatment effects across key sociodemographic groups, while simultaneously mitigating the influence of these variables as potential sources of confounding.

We also tested whether our results were sensitive to an alternative specification of the outcome variable, where "good" self-rated health was restricted to those who reported the "very good" or "excellent" categories.

We completed all analyses using Stata 13.0 (StataCorp LP, College Station, TX). We calculated standard errors based on 1000 repeated bootstrap samples.

4.4 Results

The key characteristics of the sample are presented in Tables 4.1 and 4.2. Before matching, we observed significant differences in the demographic and socioeconomic characteristics of benefit recipients and non-recipients. Recipients were older, more likely to be married and have no children, and more likely to live in a rural setting. Recipients reported higher household incomes and rates of home ownership. For example, only 10.2% of unemployment benefit recipients reported household incomes in the lowest decile, whereas 27.4% of non-recipients fell into this category. By contrast, recipients reported lower levels of educational attainment. For instance, the proportion of respondents with a post-secondary degree with 11.4% among recipients and 17.1% among non-recipients.

After matching recipients and non-recipients on the estimated propensity score, these differences were substantially reduced or even eliminated. As indicated by the post-match t-tests presented in Table 4.3, matched subsets of recipients and non-recipients exhibited no statistically significant differences in the relevant covariates at p<0.05, indicating sufficient balance on these observed characteristics.

Treatment effects for our main analyses along with the number of observations selected in each match are listed in Table 4.4. In Model 1, which excluded household income from the propensity score estimation, benefit recipients reported consistently better health outcomes than their non-recipient 'controls'. Receiving benefits reduced the probability of reporting poor self-rated health by 3.6% (95% CI -6.3, -0.8) when using nearest neighbour matching, by 4.9% (95% CI -7.3, -2.5) when using caliper matching without replacement, by 4.0% (95% CI -6.7, -1.3) when using caliper matching with replacement, by 3.9% (95% CI -5.9, -1.9) when using kernel matching, and by 4.0% (95% CI -6.0, -2.0) when using local linear matching. In Model 2, we included an adjusted measure of household income in the estimation of the propensity score. Treatment effects in this second model were somewhat attenuated, though they retained their

statistical significance. Receiving benefits reduced the probability of reporting poor self-rated health by 3.0% (95% CI -4.8, -1.2), 3.4% (95% CI -5.6, -1.2), 2.8% (95% CI -5.3, -0.3), 3.4% (95% CI -5.2, -1.6), and 3.2% (95% CI -5.6, -0.7), depending on the matching technique.

Treatment effects for our sensitivity analyses in which we restricted the sample to the subset of individuals who reported no chronic conditions are presented in Table 4.5. These results did not differ substantially from those in our main analyses. In Model 1, estimates ranged from 3.3% (95% CI -6.0, -0.6) to 4.6% (95% CI -7.1, 2.1). In Model 2, they ranged from 2.6% (95% CI -4.6, -0.6) to 3.8% (95% CI -6.1, -1.4).

Treatment effects for our sensitivity analyses in which models were stratified by household income are listed in Tables 4.6 and 4.7. Among individuals who fell in the lower end of the income distribution, the treatment effects associated with receiving unemployment benefits were considerably larger than those estimated in our main analyses. Within this group, receiving benefits reduced the probability of reporting poor self-rated health by between 6.0% (95% CI -8.0, -4.0) and 6.8% (95% CI -10.5, -3.1), depending on the matching technique. In Model 2, where income was added to the pool of confounders, these treatment effects were substantially attenuated, though they remained sizeable and statistically significant. In this second model, receiving benefits reduced the probability of reporting poor self-rated health by up to 5.4% (95% CI -7.8, -3.0). By contrast, treatment effects among individuals who fell in the higher end of the income distribution were small and statistically insignificant in both Model 1 and Model 2.

Sensitivity analyses in which we stratified our models by education produced similar results to those reported in the preceding income-stratified models. These results are presented in Tables 4.8 and 4.9. Among individuals with a high school degree or less, receiving benefits reduced the probability of reporting poor self-rated health by between 5.1% (-9.4, -0.8) and 6.9% (95% CI -11.4, -2.4), depending on the matching technique. As in the preceding analyses, these estimates were somewhat attenuated in Model 2, though they retained their statistical significance. Receiving benefits reduced the probability of reporting poor self-rated health by up to 5.4% (95% CI -7.4, -0.8) in this second model. Among individuals with more than a high school degree,

treatment effects were relatively smaller in Model 1 and, after adjusting for pre-treatment income in Model 2, they failed to reach the threshold of statistical significance.

Supplementary analyses in which we stratified our models by sex and age did not produce results that were substantially different from those reported in our main analyses. Similarly, estimated treatment effects were robust to an alternative specification of the outcome where "good" health included only the "very good" and "excellent" response categories. Results from these additional analyses are reported in Tables 4.10 through 4.14, respectively.

4.5 Discussion

Prior literature suggests that unemployment benefits may play a role in protecting the health of jobless individuals.[14] Several studies have documented how unemployment benefit recipients report better physical and mental health outcomes than their non-recipient counterparts.[22,25–29] With the aim of contributing to this available body of evidence, the present study employed propensity score methods to better account for underlying differences in the characteristics of benefit recipients and non-recipients that may bias the estimation of the health effects of unemployment benefit programs.

In our sample, unemployment benefit recipients differed substantially from their nonrecipient counterparts with respect to key factors such as income, education, home ownership, and marital status. On balance, recipients exhibited a more favourable demographic and socioeconomic profile, highlighting the role of these variables as potential sources of confounding that might influence the association between unemployment benefit recipiency and self-rated health. Our results suggest that the positive association between unemployment benefits and health persists even after using a method that more appropriately controls for the influence of these confounding factors. Despite concerns that prior studies may have overestimated the health effects of unemployment benefit programs by neglecting the full extent of differences between recipients and non-recipients, our findings are consistent with the existing literature on this topic.[15,22] Put simply, they support the notion that, by maintaining the income of those who experience job loss, unemployment benefits can simultaneously serve to maintain their health. Specifically, after using the estimated propensity score to match unemployed benefit recipients to comparable nonrecipient 'controls', we found that benefit receipt was associated with sizeable and robust reductions in the probability of reporting poor self-rated health.

Notably, results from our sensitivity analyses suggest that the positive association between unemployment benefit recipiency and self-rated health is only observed among lower income and less educated individuals. In fact, we found no statistically significant treatment effects among their higher income and more educated counterparts. Thus, just as the direct effect of unemployment has been shown to vary by socioeconomic position, [53] our results suggest that the health effects of unemployment benefits, while strongly protective among more socioeconomically disadvantaged individuals, may be small or, as in the case of our study, even negligible among less socioeconomically disadvantaged individuals. Within the broader population health literature, there is growing recognition that the reporting of average treatment effects can be highly problematic, given the possibility of heterogeneous responses to a similar exposure.[54] In line with these concerns, our findings suggest that, by taking an undifferentiated view of the question, prior studies on the health effects of unemployment benefits have potentially underestimated its protective role among the socioeconomically disadvantaged and overestimated its impact among their more socioeconomically advantaged counterparts. Future research could examine whether the heterogeneous treatment effects observed in the present study are also found in other jurisdictions.

The above findings notwithstanding, caution is warranted in the interpretation of our results and a causal interpretation of the study results should be avoided. While we used a method wellsuited to account for potential selection effects, our study results may be biased by unmeasured sources of confounding. For example, due to data limitations, we were unable to match recipients and non-recipients on an extensive set of socioeconomic characteristics (e.g. wealth, occupational sector, and duration of unemployment), despite the central role these factors play in determining both health and benefit status. Unfortunately, information on these characteristics is not routinely collected in health surveys such as the CCHS. While such information is more readily available in longitudinal surveys on labour and income, these latter surveys suffer from very small sample sizes. As an alternative approach, future work in this area may seek to link health surveys to administrative records that cover a more comprehensive set of socioeconomic characteristics.[55]

Our study is limited in several other important respects. First, because we tested our hypothesis at the individual-level, we are unable to comment on whether the positive association between unemployment benefits and health observed in our study translates at the aggregate level. Nevertheless, studies in the existing literature do support the notion that societies with more generous unemployment benefit systems exhibit better health outcomes and narrower work-related health inequalities.[10–12,16,17,26]

Second, by virtue of the cross-sectional nature of our data, the temporal ordering between our exposure and outcomes of interest could not be established. Given that poor health can be a contributing factor to labour market exit and subsequent take-up of unemployment benefits,[56] the presented results may be biased by our inability to control for prior health status. Similarly, in the absence of longitudinal data, we were unable to control for prior income, a factor which as noted earlier can result in the overestimation of the health effects of unemployment benefits.

Third, our outcome measures rely on self-reported data and thus suffer from any corresponding biases. For example, if we are correct in assuming that recipients and non-recipients are socioeconomically distinct groups, they may subjectively interpret their health in different ways.[57] Future research should aim to replicate these findings using a broader set of indicators, including more objective measures of health status, including those available in administrative health records.

Finally, it is possible that some of the confounders we included in our estimation of the propensity score are correlated to the level of benefits received. Due to data limitations, we are unable to test this problem directly. Nevertheless, matching on these factors may result in attenuated benefit effects, giving further need for caution in the interpretation of our study results.

4.6 Conclusion

Our study highlights the role that unemployment benefits can potentially play in offsetting the negative health impact of unemployment. Using propensity score matching to construct the most suitable comparisons possible, we showed that unemployed individuals in receipt of benefits report consistently better self-rated health than non-recipient 'controls'. Departing from the existing literature on this topic, however, our results also suggest that this positive association is restricted to those who fall in the lower end of the income distribution. Although these results were consistent across several different matching algorithms, caution is warranted and a causal interpretation should be avoided, given the cross-sectional nature of the data and our inability to control for several important unmeasured sources of confounding. In addition to making an empirical contribution to the literature, our study offers some important insights for the future of social and economic policymaking. Labour market insecurity is on the rise in many advanced capitalist countries.[1] Partly as a result of these adverse labour market trends, the prevalence of low-wage jobs is growing and fewer workers than ever qualify to receive unemployment benefits and other forms of social protection. [30,58] The confluence of these factors may, in turn, explain the growing number of studies documenting widening socioeconomic health inequalities, including those between employed and unemployed persons.[59-65] Our study lends support to recent calls, including many from within the field of public health, for governments to respond to these troubling developments by expanding the generosity and scope of existing social protection policies.[6,8,66-68]

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4.8 Tables and Figures

2014)		
	Employmer	it Insurance
	Voc	No
	N=2798	N=4331
Age		
18-24	6.9%	20.5%
25-34	19.3%	20.6%
35-44	21.9%	19.0%
45-54	25.5%	19.8%
55-64	26.5%	20.1%
Sex		
Male	58.3%	52.8%
Female	41.7%	47.2%
Marital Status		
Couple	51.5%	39.2%
Single	32.0%	46.0%
Widowed or divorced	16.5%	14.9%
Children		
None	65.0%	53.1%
One or more	35.0%	46.9%
Race		
White	84.5%	76.7%
Black	1.4%	2.6%
Aboriginal	7.5%	8.8%
Asian	4.8%	8.9%
Multiple or other	1.9%	3.0%
Immigrant Status		
Non-immigrant	89.7%	82.9%
Immigrant: <15 years	4.1%	8.1%
Immigrant: 15+ years	6.2%	9.0%
Region		
Atlantic Canada	27.6%	11.6%
Central Canada	51.7%	56.6%
Western Canada	20.7%	31.8%
Area		
Urban	63.6%	78.7%
Rural	36.4%	21.3%
Year	10.00/	17.20/
2009	19.6%	17.3%
2010	18.9%	17.2%
2011	16.5%	18.2%
2012	14.3%	16.3%
2013	16.1%	15.9%
2014	14.5%	15.0%

Table 4.1: Demographic characteristics of the sample: CCHS (2009-2014)

sample: CCHS (2009-2014)		
	Employmer	nt Insurance
	Cove	erage
	Yes	No
	N=2798	N=4331
Education		
Post-secondary degree	11.4%	17.1%
Some post-secondary	45.4%	38.8%
Secondary	24.5%	27.5%
Less than secondary	18.7%	16.6%
Home Ownership		
Renter	32.7%	43.4%
Owner	67.3%	56.6%
Household Income Decile		
1st	10.2%	27.4%
2nd	13.5%	13.1%
3rd	12.9%	9.6%
4th	11.5%	8.5%
5th	11.7%	8.0%
6th	10.8%	7.6%
7th	8.5%	7.8%
8th	8.6%	6.1%
9th	6.7%	5.7%
10th	5.6%	6.3%
Self-Rated Health		
Good	88.0%	85.2%
Poor	12.0%	14.8%
Chronic Conditions		
No	80.1%	79.2%
Yes	19.9%	20.8%

 Table 4.2: Socioeconomic and health-related characteristics of the sample: CCHS (2009-2014)

Table 4.3: Assessment of Covariate Balance Before and After Matching: CCHS (2009-2014)

I able 4.3: Assessment of Covarie	are Dalalice	DEIDIE AIIU	AILEI IVIALC		TNZ-GNNZ	+/						
	Unmat	ched	Nearest N	leighbour	Caliper / Replac	Mithout ement	Calipe Replac	r With ement	Ker	nel	Local L	inear
	t-test	p-value	t-test	p-value	t-test	p-value	t-test	p-value	t-test	p-value	t-test	p-value
Age												
18-24	-16.68	0.000	-0.45	0.651	-0.05	0.956	-0.42	0.675	-0.13	0.893	-0.40	0.700
25-34	-1.57	0.116	0.77	0.442	-1.07	0.285	-0.67	0.504	0.54	0.588	0.00	1.000
35-44	3.15	0.002	0.48	0.632	0.66	0.512	-0.65	0.516	-0.45	0.653	-1.78	0.075
45-54	6.27	0.000	-1.37	0.17	0.04	0.970	0.69	0.489	-0.54	0.587	00.0	1.000
55-64	6.72	0.000	0.51	0.612	0.37	0.711	0.82	0.412	0.56	0.576	1.83	0.060
Female	-4.46	0.000	-0.71	0.475	0.83	0.405	0.00	1.000	-0.65	0.516	-1.11	0.267
Marital Status												
Married or cohabitating	10.87	0.000	-0.31	0.753	-1.54	0.125	0.62	0.532	0.39	0.697	-0.03	0.979
Widowed or divorced	2.00	0.046	0.43	0.669	0.84	0.400	-0.04	0.970	-0.36	0.720	0.14	0.887
Single	-12.45	0.000	-0.05	0.956	0.92	0.356	-0.63	0.531	-0.13	0.896	-0.08	0.933
Children												
Yes	-10.81	0.000	0.25	0.799	-0.30	0.768	0.12	0.906	0.14	0.887	1.19	0.236
Kace												
White	8.62	0.000	-1.07	0.284	-1.35	0.178	-1.61	0.108	0.19	0.847	-1.07	0.284
Black	-3.56	0.000	0.45	0.653	0.50	0.614	0.90	0.368	-0.51	0.613	0.45	0.653
Aboriginal	-2.46	0.014	0.77	0.444	0.39	0.699	0.66	0.509	0.36	0.716	0.77	0.444
Asian	-6.75	0.000	-0.12	0.902	0.76	0.448	0.33	0.745	-0.41	0.680	-0.12	0.902
Mixed or other	-3.22	0.001	1.25	0.212	1.10	0.270	0.76	0.447	-0.11	0.913	1.25	0.212
Immigrant Status												
Non-immigrant	8.13	0.000	0.68	0.497	-1.50	0.134	-1.41	0.159	0.86	0.389	0.43	0.670
Immigrant <15 years	-6.86	0.000	-0.77	0.441	0.75	0.455	0.27	0.784	-0.54	0.587	-0.26	0.795
Immigrant 15+ years	-4.27	0.000	-0.22	0.829	1.26	0.207	1.87	0.062	-0.64	0.524	-0.32	0.747
Region												
Atlantic	17.41	0.000	-0.56	0.579	1.03	0.301	0.14	0.886	0.17	0.864	0.41	0.681
Central	-3.64	0.000	-0.18	0.854	-0.06	0.948	-0.32	0.752	0.31	0.757	-0.47	0.637
Western	-10.76	0.000	0.85	0.396	-0.81	0.420	0.24	0.812	-0.57	0.571	0.13	0.897
Urban	14.81	0.000	0.16	0.870	-0.04	0.971	1.06	0.290	1.1	0.273	1.59	0.112
Education												
Post-secondary degree	-6.35	0.000	-0.61	0.539	-0.66	0.509	0.39	0.694	-0.56	0.573	0.08	0.934
Some post-secondary	6.15	0.000	-0.87	0.385	-0.26	0.798	-1.17	0.243	0.06	0.950	-0.32	0.752
Secondary	-3.39	0.001	0.21	0.831	-0.40	0.687	0.00	1.000	-0.05	0.957	-0.81	0.415
Less than secondary	1.88	0.060	1.4	0.163	1.40	0.161	1.21	0.226	0.44	0.659	1.26	0.209
Home Owner	9.25	0.000	0.86	0.389	0.72	0.474	1.03	0.301	1.09	0.277	0.08	0.933
Year												
2009	2.63	0.009	-0.10	0.921	0.16	0.871	-1.00	0.316	0.02	0.981	-1.44	0.151
2010	2.08	0.038	-1.85	0.065	-0.12	0.901	0.36	0.716	-0.66	0.507	-0.03	0.973
2011	-2.06	0.040	0.21	0.831	0.97	0.332	1.31	0.189	-0.24	0.808	0.75	0.452
2012	-2.05	0.041	1.87	0.061	-0.62	0.532	-0.88	0.379	0.22	0.827	0.04	0.970
2013	-0.02	0.982	1.33	0.185	0.39	0.697	0.31	0.758	0.45	0.653	0.11	0.915
2014	-0.77	0.442	-1.21	0.227	-0.85	0.393	-0.08	0.936	0.28	0.778	0.75	0.453

Table 4.4: Average treatment effect (ATT) of	employment insurance	on unemployed Ca	nadians: CCHS (2009-2014)		
		Model 1			Model 2	
	ATT	SE	p-value	ATT	SE	p-value
Poor Self-Rated Health						
Nearest Neighbour	-0.036	0.014	0.013	-0.030	0.00	0.001
Caliper, without replacement	-0.049	0.012	0.000	-0.034	0.011	0.002
Caliper, with replacement	-0.040	0.014	0.005	-0.028	0.013	0.040
Kernel	-0.039	0.010	0.000	-0.034	0.00	0.000
Local Linear	-0.040	0.010	0.001	-0.032	0.013	0.023
Observations						
Unmatched	T = 2917	C = 4641		T = 2917	C = 4641	
Nearest Neighbour	T = 2911	C = 2911		T = 2895	C = 2895	
Caliper, without replacement	T = 1970	C = 1970		T = 1962	C = 1962	
Caliper, with replacement	T = 2481	C = 1388		T = 2449	C = 1509	
Kernel	T = 2911	C = 4605		T = 2895	C = 4620	
Local Linear	T = 2911	C = 1448		T = 2895	C = 1581	
Notes: Model 1 includes age, sex, marital status, children, race, Model 2 includes all covariates in Model 1 plus equivaliz Caliper width is set to 0.2 of the standard deviation of th Abbreviations: ATT, Average Treatment Effect on the Tre	, immigrant status, geographic ted household income, measu he logic of the propensity scor eated; SE, standard error; T, tr	:al region, urbanicity, ed red in deciles and adjus e (Austin, 2011). 'eatment; C, control.	ucation, home own ed for benefit recei	ership, and survey yea pt.	Ŀ	

Table 4.5: Average treatment effect (ATT) c	of employment insurance	on unemployed Cal	nadians who rep	oort no chronic cor	nditions: CCHS (200	9-2014)
		Model 1			Model 2	
	ATT	SE	p-value	ATT	SE	p-value
Poor Self-Rated Health						
Nearest Neighbour	-0.040	0.009	0.000	-0.028	0.009	0.002
Caliper, without replacement	-0.043	0.011	0.000	-0.030	0.011	0.004
Caliper, with replacement	-0.046	0.013	0.001	-0.038	0.012	0.002
Kernel	-0.035	0.010	0.001	-0.027	0.010	0.009
Local Linear	-0.033	0.014	0.021	-0.029	0.013	0.028
Observations						
Unmatched	T = 2327	C = 3657		T = 2327	C = 3657	
Nearest Neighbour	T = 2322	C = 2322		T = 2312	C = 2312	
Caliper, without replacement	T = 1475	C = 1475		T = 1402	C = 1403	
Caliper, with replacement	T = 1865	C = 1109		T = 1765	C = 1220	
Kernel	T = 2322	C = 3623		T = 2312	C = 3632	
Local Linear	T = 2322	C = 1188		T = 2312	C = 1314	

Notes:

Model 1 includes age, sex, marital status, children, race, immigrant status, geographical region, urbanicity, education, home ownership, and survey year. Model 2 includes all covariates in Model 1 plus equivalized household income, measured in deciles and adjusted for benefit receipt. Chronic conditions include asthma, chronic bronchitis, heart disease, cancer, diabetes, stroke, or Alzheimer's disease.

All standard errors are bootstrapped using 1000 repeated samples. Caliper width is set to 0.2 of the standard deviation of the logic of the propensity score (Austin, 2011). Abbreviations: ATT, Average Treatment Effect on the Treated; SE, standard error; T, treatment; C, control.

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Table 4.6: Average treatment effect (ATT) of € (2009-2014)	employment insurance	on unemployed Caı	adians in the bo	ottom five deciles	of household incom	ie: CCHS
		Model 1			Model 2	
	АТТ	SE	p-value	АТТ	SE	p-value
Poor Self-Rated Health						
Nearest Neighbour	-0.066	0.018	0.000	-0.046	0.018	0.00
Caliper, without replacement	-0.063	0.016	0.000	-0.040	0.016	0.012
Caliper, with replacement	-0.068	0.019	0.001	-0.051	0.017	0.003
Kernel	-0.060	0.010	0.000	-0.054	0.012	0.000
Local Linear	-0.066	0.013	0.000	-0.051	0.017	0.003
Observations						
Unmatched	T = 1756	C = 3112		T = 1756	C = 3112	
Nearest Neighbour	T = 1754	C = 1754		T = 1731	C = 1731	
Caliper, without replacement	T = 1188	C = 1188		T = 1096	C = 1096	
Caliper, with replacement	T = 1463	C = 924		T = 1344	C = 951	
Kernel	T = 1754	C = 3106		T = 1731	C = 3092	
Local Linear	T = 1754	C = 996		T = 1731	C = 1041	
Notes: Model 1 includes age cex marital status children race i	immiarant status geographic	al region - urbanicity - ed	ication home owne	rshin and survey veal		
Model 2 includes all covariates in Model 1 plus equivalize	ed household income, measu	red in deciles and adjust	ed for benefit receip	ot.	:	
Caliper width is set to 0.2 of the standard deviation of the Abbreviations: ATT, Average Treatment Effect on the Tre:	e logic of the propensity scori ated; SE, standard error; T, tr	e (Austin, 2011). eatment; C, control.				

1able 4. /: Average treatment effect (A11) of 2014)	t empioyment insurance	on unempioyed ca	hadians in the to	op tive deciles of n	ousenola income: c	-6002) CH2
		Model 1			Model 2	
	АТТ	SE	p-value	АТТ	SE	p-value
Poor Self-Rated Health						
Nearest Neighbour	0.003	0.018	0.885	0.006	0.012	0.582
Caliper, without replacement	-0.013	0.014	0.349	0.005	0.013	0.708
Caliper, with replacement	-0.004	0.017	0.822	0.014	0.016	0.376
Kernel	0.004	0.016	0.813	0.005	0.013	0.700
Local Linear	0.003	0.014	0.818	0.006	0.017	0.726
Observations						
Unmatched	T = 1161	C = 1475		T = 1161	C = 1475	
Nearest Neighbour	T = 1152	C = 1152		T = 1136	C = 1136	
Caliper, without replacement	T = 829	C = 829		T = 810	C = 810	
Caliper, with replacement	T = 1067	C = 541		T = 1084	C = 573	
Kernel	T = 1152	C = 1475		T = 1136	C = 1520	
Local Linear	T = 1152	C = 543		T = 1136	C = 573	
Notes:						
Model 1 includes age, sex, marital status, children, race Model 2 includes all covariates in Model 1 plus equivali	e, immigrant status, geographic ized household income, measu	al region, urbanicity, ed: red in deciles and adiust	ucation, home own ed for benefit recei	ership, and survey year pt.		
Caliper width is set to 0.2 of the standard deviation of t Abbreviations: ATT, Average Treatment Effect on the Ti	the logic of the propensity scor reated; SE, standard error; T, tr	e (Austin, 2011). eatment; C, control.				

Table 4.8: Average treatment effect (ATT) of	^e employment insurance	on unemployed Ca	nadians with a h	nigh school educati	on or less: CCHS (2)	009-2014)
		Model 1			Model 2	
	ATT	SE	p-value	ATT	SE	p-value
Poor Self-Rated Health						
Nearest Neighbour	-0.051	0.015	0.000	-0.030	0.013	0.016
Caliper, without replacement	-0.060	0.020	0.003	-0.034	0.013	0.00
Caliper, with replacement	-0.069	0.023	0.002	-0.041	0.017	0.016
Kernel	-0.052	0.015	0.000	-0.039	0.016	0.015
Local Linear	-0.051	0.022	0.021	-0.039	0.022	0.076
Observations						
Unmatched	T = 1271	C = 2109		T = 1271	C = 2109	
Nearest Neighbour	T = 1270	C = 1270		T = 1261	C = 1261	
Caliper, without replacement	T = 695	C = 695		T = 654	C = 654	
Caliper, with replacement	T = 904	C = 569		T = 961	C = 586	
Kernel	T = 1270	C = 2094		T = 1261	C = 2090	
Local Linear	T = 1270	C = 658		T = 1261	C = 686	
Notes:						
Model 1 includes age, sex, marital status, children, race, Model 2 includes all covariates in Model 1 plus equivalis	 immigrant status, geographic zed household income. measu 	al region, urbanicity, ed: red in deciles and adiust	ucation, home own ed for benefit recei	ership, and survey year pt.		
Caliper width is set to 0.2 of the standard deviation of the	he logic of the propensity scor	e (Austin, 2011).		i.		
Abbreviations: ATT, Average Treatment Effect on the Tr	reated; SE, standard error; T, tr	eatment; C, control.				

Table 4.9: Average treatment effect (ATT) of e	mployment insurance	on unemployed Car	adians with mo	ore than a high sch	ool degree: CCHS (2	009-2014)
		Model 1			Model 2	
	ATT	SE	p-value	АТТ	SE	p-value
Poor Self-Rated Health						
Nearest Neighbour	-0.021	0.011	0.056	-0.021	0.011	0.055
Caliper, without replacement	-0.032	0.014	0.022	-0.007	0.015	0.642
Caliper, with replacement	-0.024	0.018	0.183	-0.005	0.016	0.750
Kernel	-0.026	0.011	0.018	-0.016	0.012	0.188
Local Linear	-0.027	0.018	0.133	-0.016	0.016	0.324
Observations						
Unmatched	T = 1646	C = 2533		T = 1646	C = 2533	
Nearest Neighbour	T = 1641	C = 1641		T = 1636	C = 1636	
Caliper, without replacement	T = 1097	C = 1097		T = 899	C = 899	
Caliper, with replacement	T = 1388	C = 672		T = 1130	C = 796	
Kernel	T = 1641	C = 2522		T = 1636	C = 2524	
Local Linear	T = 1641	C = 730		T = 1636	C = 918	
Notes: Model 1 includes age, sex, marital status, children, race, ir Model 2 includes all covariates in Model 1 plus equivalize Caliper width is set to 0.2 of the standard deviation of the Abbreviations: ATT, Average Treatment Effect on the Trea	mmigrant status, geographic d household income, measu logic of the propensity scor ted; SE, standard error; T, tr	ial region, urbanicity, ed red in deciles and adjust e (Austin, 2011). eatment, C, control.	ıcation, home own ed for benefit recei	ership, and survey year pt.		

Table 4.10: Average treatment effect (ATT)	of employment insurance	e on unemployed m	en in Canada: C	:CHS (2009-2014)		
		Model 1			Model 2	
	ATT	SE	p-value	ATT	SE	p-value
Poor Self-Rated Health						
Nearest Neighbour	-0.042	0.012	0.001	-0.027	0.012	0.032
Caliper, without replacement	-0.039	0.013	0.003	-0.029	0.013	0.037
Caliper, with replacement	-0.046	0.018	0.014	-0.035	0.018	0.057
Kernel	-0.044	0.011	0.000	-0.032	0.012	0.008
Local Linear	-0.044	0.018	0.013	-0.033	0.016	0.039
Observations						
Unmatched	T = 1679	C = 2428		T = 1679	C = 2428	
Nearest Neighbour	T = 1674	C = 1674		T = 1666	C = 1666	
Caliper, without replacement	T = 973	C = 973		T = 837	C = 837	
Caliper, with replacement	T = 1278	C = 391		T = 1085	C = 759	
Kernel	T = 1674	C = 2415		T = 1666	C = 2414	
Local Linear	T = 1674	C = 792		T = 1666	C = 878	
Notes: Model 1 includes age, sex, marital status, children, race Model 2 includes all covariates in Model 1 plus equival Caliper width is set to 0.2 of the standard deviation of t Abbreviations: ATT, Average Treatment Effect on the T	e, immigrant status, geographic ized household income, measu the logic of the propensity scor reated; SE, standard error; T, tr	:al region, urbanicity, ed red in deciles, adjusted f e (Austin, 2011). eatment, C, control.	ıcation, home own or benefit receipt.	ership, and survey year	e	

Table 4.11: Average treatment effect (ATT) (of employment insurance	e on unemployed w	omen in Canad	a: CCHS (2009-201.	4)	
		Model 1			Model 2	
	ATT	SE	p-value	АТТ	SE	p-value
Poor Self-Rated Health						
Nearest Neighbour	-0.039	0.014	0.007	-0.030	0.013	0.027
Caliper, without replacement	-0.036	0.016	0.028	-0.029	0.015	0.048
Caliper, with replacement	-0.043	0.021	0.036	-0.027	0.021	0.195
Kernel	-0.043	0.015	0.004	-0.034	0.015	0.018
Local Linear	-0.045	0.021	0.041	-0.032	0.021	0.120
Observations						
Unmatched	T = 1238	C = 2190		T = 1238	C = 2190	
Nearest Neighbour	T = 1237	C = 1237		T = 1232	C = 1232	
Caliper, without replacement	T = 751	C = 751		T = 643	C = 643	
Caliper, with replacement	T = 930	C = 582		T = 783	C = 583	
Kernel	T = 1237	C = 2190		T = 1232	C = 2193	
Local Linear	T = 1237	C = 677		T = 1232	C = 728	
Notes:						
Model 1 includes age, sex, marital status, children, race	e, immigrant status, geographic	cal region, urbanicity, ed	ucation, home own	ership, and survey year	Ŀ	
Caliber width is set to 0.2 of the standard deviation of t	the logic of the propensity scor	e (Austin. 2011).				
Abbreviations: ATT. Average Treatment Effect on the Tr	reated: SE. standard error: T. tr	eatment: C. control.				

Table 4.12: Average treatment effect (ATT) c	of employment insurance	e on unemployed C	anadians below	the age of 45: CCH	HS (2009-2014)	
		Model 1			Model 2	
	ATT	SE	p-value	ATT	SE	p-value
Poor Self-Rated Health						
Nearest Neighbour	-0.042	0.012	0.000	-0.030	0.012	0.016
Caliper, without replacement	-0.051	0.015	0.001	-0.032	0.015	0.026
Caliper, with replacement	-0.049	0.018	0.009	-0.032	0.016	0.038
Kernel	-0.035	0.011	0.002	-0.025	0.012	0.029
Local Linear	-0.038	0.018	0.044	-0.026	0.016	0.094
Observations						
Unmatched	T = 1213	C = 2559		T = 1213	C = 2559	
Nearest Neighbour	T = 1210	C = 1210		T = 1211	C = 1211	
Caliper, without replacement	T = 751	C = 751		T = 663	C = 663	
Caliper, with replacement	T = 928	C = 590		T = 812	C = 611	
Kernel	T = 1210	C = 2523		T = 1211	C = 2532	
Local Linear	T = 1210	C = 671		T = 1211	C = 731	
Notes: Model 1 includes age, sex, marital status, children, race Model 2 includes all covariates in Model 1 plus equivali; Caliper width is set to 0.2 of the standard deviation of th	, immigrant status, geographic zed household income, measu he logic of the propensity scor	al region, urbanicity, ed red in deciles and adjust e (Austin, 2011).	ucation, home own ed for benefit recei	ership, and survey year pt.		
Abbreviations: ATT, Average Treatment Effect on the Tr	eated; SE, standard error; T, tr	eatment; C, control.				

Table 4.13: Average treatment effect (ATT)	of employment insurance	e on unemployed C	anadians aged ^z	15 and above: CCH	S (2009-2014)	
		Model 1			Model 2	
	ATT	SE	p-value	АТТ	SE	p-value
Poor Self-Rated Health						
Nearest Neighbour	-0.045	0.014	0.001	-0.034	0.013	0.008
Caliper, without replacement	-0.050	0.013	0.000	-0.031	0.014	0.035
Caliper, with replacement	-0.036	0.022	060.0	-0.030	0.021	0.184
Kernel	-0.043	0.014	0.001	-0.030	0.015	0.044
Local Linear	-0.047	0.019	0.033	-0.034	0.019	0.110
Observations						
Unmatched	T = 1704	C = 2082		T = 1704	C = 2082	
Nearest Neighbour	T = 1700	C = 1700		T = 1681	C = 1681	
Caliper, without replacement	T = 953	C = 953		T = 851	C = 851	
Caliper, with replacement	T = 1266	C = 703		T = 1112	C = 743	
Kernel	T = 1700	C = 2082		T = 1681	C = 2082	
Local Linear	T = 1700	C = 803		T = 1681	C = 876	
Notes:						
Model 1 includes age, sex, marital status, children, rac Model 2 includes all covariates in Model 1 nhus equival	e, immigrant status, geographic lized household income measu	al region, urbanicity, ed red in deciles and adiust	ucation, home own ed for henefit recei	ership, and survey year int	÷	
Caliper width is set to 0.2 of the standard deviation of	the logic of the propensity score	e (Austin, 2011).				
Abbreviations: ATT, Average Treatment Effect on the T	<pre>Lreated; SE, standard error; T, tr</pre>	eatment; C, control.				
Table 4.14: Average treatment effect (ATT) of e	employment insurance	e on unemployed C	anadians: CCHS	(2009-2014)		
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		Model 1			Model 2	
	ATT	SE	p-value	АТТ	SE	p-value
Less Than Very Good Health						
Nearest Neighbour	-0.036	0.013	0.008	-0.034	0.013	0.009
Caliper, without replacement	-0.042	0.015	0.005	-0.031	0.015	0.038
Caliper, with replacement	-0.047	0.019	0.018	-0.030	0.018	0.076
Kernel	-0.037	0.013	0.004	-0.036	0.014	0.010
Local Linear	-0.038	0.019	0.046	-0.033	0.018	0.067
Observations						
Unmatched	T = 2917	C = 4641		T = 2917	C = 4641	
Nearest Neighbour	T = 2910	C = 2910		T = 2868	T = 2868	
Caliper, without replacement	T = 2035	C = 2035		T = 1915	C = 1915	
Caliper, with replacement	T = 2545	C = 1357		T = 2395	C = 1544	
Kernel	T = 2910	C = 4581		T = 2868	C = 4612	
Local Linear	T = 2910	C = 1412		T = 2868	C = 1619	
Notes: Model 1 includes age, sex, marital status, children, race, im Model 2 includes all covariates in Model 1 plus equivalized Caliper width is set to 0.2 of the standard deviation of the I Abbreviations: ATT, Average Treatment Effect on the Treat	imigrant status, geographic household income, measu ogic of the propensity scor ed; SE, standard error; T, tr	al region, urbanicity, ed red in deciles and adjust e (Austin, 2011). eatment, C, control.	ıcation, home own ed for benefit recei	ership, and survey ye pt.	ar.	

Chapter 5. The Effect of Unemployment Benefit Retrenchment on Health: Evidence from a Natural Experiment

5.1 Abstract

Over the course of the past several decades, governments in advanced capitalist countries have enacted a vast number of welfare reforms aimed at reducing the scope and generosity of social benefits. Available public health theory and evidence suggests that these reforms may have deleterious effects on population health. In this paper, we examine the health impact of a largescale unemployment benefit reform enacted in Germany - the 2005 Hartz IV reform. Using a difference-in-differences propensity score matching approach, we harness the exogenous reduction in benefit levels induced by this natural policy experiment to investigate the association between welfare state retrenchment and health. Drawing on data from the German Socio-Economic Panel Study covering the period between 1994 and 2016, we compare a group of policyaffected benefit recipients to a group of policy-unaffected controls with the aim of estimating the effect of the Hartz IV reform on the self-rated health of the unemployed. In our unmatched and fully matched analyses, respectively, the Hartz IV reform was associated with 3.6 (95% CI: 0.9, 6.2) and 3.4 (95% CI: 0.1, 6.8) percentage point increases in the prevalence of poor self-rated health among unemployed individuals affected by the policy – a roughly 15% relative increase above their pre-reform levels. In line with recent concerns about the possible health consequences of welfare state retrenchment and accompanying calls for government action to promote stronger systems of social protection, our study shows that a recently legislated reduction in unemployment benefits was associated with adverse trends in the health of the unemployed in Germany.

5.2 Introduction

Unemployment is a major determinant of health, with an extensive literature providing firm evidence of a causal relationship between job loss and adverse physical and mental health outcomes.[1–3] Against a backdrop of findings correlating more generous welfare states with better population health outcomes,[4–7] recent work in this area of scholarship has sought to examine whether welfare state policies are capable of alleviating the harmful health consequences

of unemployment.[8–11] In line with this hypothesis, a growing body of cross-national comparative research suggests that unemployment-related health inequalities are narrower in countries characterized by more generous and encompassing unemployment protection systems.[12–16] In a similar vein, studies evaluating the health effects of specific unemployment benefit programs have shown that jobless individuals in receipt of such benefits tend to exhibit better health outcomes than their non-recipient counterparts.[17–21] Taken together, these strands of literature support the underlying notion that welfare state policies can serve as effective levers with which to promote population health and reduce health inequalities.[4–7]

Despite mounting evidence for the health benefits of a strong social safety net, governments in many advanced capitalist countries have scaled back their welfare state policies over the course of the past four decades.[22,23] In line with an overarching framework of fiscal austerity, they have enacted far-reaching welfare reforms aimed at reducing the scope and generosity of benefit programs, including those targeted to the poor and the unemployed.[24–26] These developments have prompted concern among researchers and practitioners about the possible health consequences of austerity and associated policy measures.[27–29] Numerous studies in this regard have documented a consistent association between broad spending cuts and adverse health outcomes.[30–48] Fewer studies in the recent literature have examined the health effects of specific welfare reforms.[49–54] Available findings suggest that efforts to reduce benefit levels or render them more difficult to obtain may be harmful to the health of populations,[55] though evidence to this effect is still limited.

In the present study, we evaluate the health impact of a large-scale welfare reform enacted in Germany, known as the Hartz IV reform. Embedded within a broader package of policy measures designed to 'activate' the unemployed, the 2005 Hartz IV reform entailed a major overhaul of the unemployment benefits system in Germany.[56,57] Previously, jobless workers who did not qualify for regular unemployment insurance benefits were eligible to receive a second tier of means-tested unemployment assistance (*Arbeitslosenhilfe*) that replaced up to 57% of their lost earnings. In 2005, however, the government abolished this latter component of the system and replaced it with a similarly means-tested but substantially less generous social assistance (i.e. welfare) programme (*Arbeitslosengeld II*). Unlike its predecessor, the new programme is not tied to earnings and instead takes the form of a basic, flat-rate benefit providing €424 per month. Among individuals relying on the means-tested assistance, the introduction of this new, less generous welfare programme amounted to a roughly 25% reduction in benefit levels. [58]

Here, we harness the exogenous reduction in benefit levels induced by this natural policy experiment to investigate the association between welfare reform and health. Specifically, using a quasi-experimental difference-in-differences design, we compare trends in the policy-affected group (i.e. unemployed individuals receiving unemployment assistance during the pre-reform period or social assistance during the post-reform period) to trends in a policy-unaffected group (i.e. unemployed individuals not in receipt of these benefits) with the aim of estimating the impact of the Hartz IV reform on the self-rated health of the unemployed in Germany.

5.3 Methods

Data and Sample

We used data from the German Socio-Economic Panel (SOEP), a household panel survey providing comprehensive information on the social, economic, and health-related characteristics of the German population. The SOEP was first administered in 1984 and has been repeated on an annual basis since. We pooled waves from 1994 to 2016 (i.e. the most recently available data). We excluded earlier waves as they lack information on self-rated health. Each wave includes an annual-cross-sectional weight which enables researchers to produce population-representative estimates. Our population of interest consisted of working-age adults (18 to 64) who reported being unemployed and actively seeking work. We applied listwise deletion to remove observations with missing data. Because the missing rate for any given variable was very low, we were able to retain greater than 96% of the original sample. Our final study sample consisted of 25,656 observations from 16,974 individuals in 13,268 households.

Outcome Variable

The main outcome of interest was self-rated health. Self-reported measures of health have been shown to be reliable and valid indicators of objective health status, as well as strong predictors of mortality.[59] Self-rated health was measured using a single question asking respondents to rate their current health status as "bad", "poor", "satisfactory", "good", or "very good". In keeping with previous work that has used this measure,[60–62] we collapsed the scale into a dichotomous variable to distinguish between those who reported "bad" or "poor" health and those who reported "satisfactory", "good", or "very good" health.

Empirical Strategy

The objective of our study was to estimate the impact of a large-scale policy change on the health of those affected by the intervention. Treatment effects of this nature are often evaluated using simple pre-post research designs in which outcomes in the policy-affected treatment group are compared before and after the intervention.[63] While relatively easy to implement, studies of this nature are severely limited with respect to their ability to distinguish policy effects from background trends, such as secular improvements in population health over time.[63,64] The difference-in-differences approach is a quasi-experimental research design intended to address the methodological shortcomings of simple pre-post evaluation studies. The DID approach introduces a policy-unaffected control group that is similar to the policy-affected treatment group with respect to all relevant factors except the intervention of interest.[63–66] Rather than compare pre-post differences in the treatment group alone, DID mimics an experimental design by comparing pre-post differences in both the treatment and the control groups. As its name suggests, the DID approach attributes the difference in these pre-post differences to the causal effect of the policy intervention on the affected treatment group.

Unbiased DID estimation is predicated on two main identifying assumptions concerning the quality of the match between treated and control units. The 'parallel trends' assumption states that the two groups should exhibit similar trends in the outcome during the pre-intervention period. Assuming this holds, it stands to reason that, in the absence of the intervention, these pre-existing trends would persist into the post-intervention period. The 'common shocks' assumption states that any event occurring in the post-intervention period should affect outcomes in the treatment and control groups similarly. Thus, exposure to the intervention should be independent of unmeasured determinants of the outcome. Provided that these assumptions are met, a well-designed DID study can 'difference out' two sources of confounding: factors that vary between groups but not over time (i.e. heterogeneity in group-level attributes that are time-invariant) and factors that vary over time but not between groups (i.e. background trends that are group-invariant).

The DID approach represents a powerful tool for estimating the effects of large-scale policy changes, including the withdrawal or, in the present case, reduction of an existing intervention.[67] In practice, however, it is not uncommon for policy-affected and policy-unaffected groups to differ in ways that violate the parallel trends and common shocks assumptions, rendering them incomparable within a conventional DID framework.[64] Most notably in the present case, because eligibility for the benefits under investigation here is conditional on meeting a strict means test, individuals in the recipient treatment group will, by definition, exhibit a less favourable socioeconomic profile than individuals in the non-recipient control group (e.g. lower levels of wealth, income, and education).[55] Furthermore, as these are secondary benefits designed for those who have exhausted their eligibility within the main unemployment insurance system, individuals in the recipient treatment group are also expected to have experienced longer and more frequent spells of unemployment.[58] Consequently, it is likely that exogenous factors such as macroeconomic fluctuations have differential impacts on the overall composition and labour market experiences of these two groups. During recessionary periods, for example, declining employment opportunities may have stronger repercussions for the incidence and consequences of short-term unemployment, given that the long-term unemloyed comprise individuals that exhibit a weaker degree of labour market attachment and lower baseline re-employment rates.[68]

To overcome the challenge posed by these underlying differences between policy-affected and policy-unaffected units, DID methods are increasingly being used in combination with techniques such as propensity score matching and synthetic control methods, which enable researchers to obtain more appropriate treatment and control groups that better satisfy the DID design criteria.[64,66,69] For example, studies have recently employed a difference-in-differences propensity score matching (DID-PSM) approach to estimate the causal effect of employment and welfare transitions on health.[70,71]

In this study, we used a combination of DID and DID-PSM to estimate the impact of the 2005 Hartz IV reform on the self-rated health of the unemployed in Germany. We estimated treatment effects by comparing changes in the self-rated health of unemployed benefit recipients (i.e. the policy-affected treatment group, n=11,658) to simultaneous changes in the self-rated health of all other unemployed individuals (i.e. the policy-unaffected control group, n=13,998). The former group consisted of individuals who reported currently receiving either the former unemployment assistance (during the pre-reform period) or the new social assistance (during the post-reform period). For our DID-PSM analyses, the treatment and control groups were matched on factors that are known to predict both benefit recipiency and health status. The list of confounders used to estimate the propensity score included the following: age (years), age squared, sex (male or female), marital status (married/cohabitating, single, or widowed/divorced), children (ves or no), immigrant status (German-born or foreign-born), region (West Germany or East Germany), urbanicity (rural or urban), pre-transfer household income adjusted for inflation and household size (\in) , education (less than secondary, secondary, or post-secondary), home ownership (owner or tenant), lifetime unemployment experience (months), and severe disability (yes or no). The treatment and control groups were matched within six consecutive sub-periods (1994-1997, 1998-2001, 2002-2004, 2005-2008, 2009-2012, 2013-2016). We used one-to-one matching without replacement to identify comparable subsets of observations from within the treatment and control groups. Thus, each member of the matched treatment group was paired with a single member of the matched control group, and members of the control group could only be used in a single matched pair. We also applied a caliper to the matching procedure, such that the distance in the propensity score for any given pair of matched units did not exceed 0.003 - aconservative threshold that produced a tight and efficient match.[72] We selected this matching technique over alternatives, such as caliper matching with replacement and kernel weighting, because it generated the strongest possible covariate balance. These various matching techniques are described in greater detail elsewhere.[73]

We began our main analyses by describing the demographic and socioeconomic characteristics of the treatment and control groups before and after the 2005 Hartz IV reform. We also estimated and plotted group-level trends in the prevalence of poor self-rated health over the study period. Next, we estimated the association between the Hartz IV reform and self-rated health using a DID linear probability model which took the following form:

$$Y_{ii} = \beta_0 + \beta_1 \text{Reform}_i + \beta_2 \text{Treated}_i + \beta_3 (\text{Reform}_t \times \text{Treated}_i) + \beta_4 Z_{ii} + \varepsilon_{ii}$$

where for individual *i* in year *t*, *Y* represents the probability of reporting poor self-rated health; Reform is a dummy variable that equals one if the observation is in the post-reform period; Treated is a dummy variable that equals one if the observation is a member of the treatment group; and *Z* is a vector of covariates including the measured confounders listed above. The key parameter is β_3 , which isolates the impact of the Hartz IV reform on the probability of reporting poor self-rated health among treated observations. This is also known as the DID estimator.

Before model estimation, we conducted a parametric test of the parallel trends assumption by running the above regression equation isolated to the pre-reform period and interacting a continuous time variable with the treatment status dummy.[64] We rejected the null hypothesis of parallel trends if we observed a significant interaction term.

To further test the validity of our treatment variable (i.e. whether it captured the right set of individuals), we conducted additional analyses in which we ran the above DID equation with annual post-transfer household income as the outcome of interest. Assuming members of the treatment group have been appropriately identified (i.e. that they are truly treated), we expect the observed impact of the reform on the post-transfer household income of this group to be similar to its known (or 'true') effect, which falls in the range of \notin 1300-1900.[58]

We completed all statistical analyses using STATA 13.0 (StataCorp LP, College Station, TX). Estimates are presented with 95% confidence intervals (CI) obtained using cluster-robust standard errors that account for heteroscedasticity and serial correlation at the individual and household levels.

5.4 Results

In Table 5.1, we describe the demographic and socioeconomic characteristics of the unmatched study sample before and after the 2005 Hartz IV reform. Relative to their counterparts in the policy-unaffected control group, individuals in the treatment group were younger, more likely to be men, less likely to be married or cohabitating, and more likely to have children. Treated individuals also reported lower levels of educational attainment, lower rates of home ownership, longer lifetime experiences of unemployment, and lower levels of pre-transfer household income. The treatment and control groups exhibited similar demographic trends over time, including an increase in the proportion of single-person households and an increase in the proportion of group remained relatively stable between the pre-reform and post-reform periods, individuals in the treatment group reported unfavourable socioeconomic trends over time, including lower levels of educational attainment, lower rates of pre-transfer household income in the protection of socioeconomic trends over time, including lower levels of educational attainment, lower rates of the control group remained relatively stable between the pre-reform and post-reform periods, individuals in the treatment group reported unfavourable socioeconomic trends over time, including lower levels of educational attainment, lower rates of home ownership, and lower levels of pre-transfer household income in the post-reform period.

In Table 5.2, we describe the demographic and socioeconomic characteristics of the matched study sample before and after the 2005 Hartz IV reform. After matching the treatment and control groups on the propensity score and restricting the sample to comparable subsets of individuals, we observed no substantial differences in the demographic and socioeconomic characteristics of the two groups. Trends in the demographic and socioeconomic characteristics of the matched sample were similar to those observed among treated individuals in the unmatched sample. Over time, the proportion of single-person households and the proportion of individuals born outside of Germany increased. Treated and untreated individuals in the matched sample also experienced declining rates of home ownership and declining levels of pre-transfer household income in the post-reform period.

Figure 5.1 presents group-level trends in the adjusted prevalence of poor self-rated health over the study period in the unmatched and matched study samples. In both samples, the prevalence of poor self-rated health was substantially higher during the post-reform period.

Conforming to our hypothesis, individuals in the treatment group exhibited a notable rise in the prevalence of poor self-rated health immediately after the implementation of the Hartz IV reform (i.e. between the 2002-2004 and 2005-2008 sub-periods) that was not observed among individuals in the control group for whom levels of poor self-rated health remained stable between these time points.

The results of the parallel trends test are presented at the bottom of Table 5.3. Reflecting the patterns depicted in Figure 5.1, we found evidence of parallel pre-reform trends in both the matched and unmatched study samples, as evidenced by the absence of a statistically significant interaction between treatment status and time during the pre-reform period (unmatched: β : -0.3, 95% CI: -0.9, -0.3; matched: β : -0.1, 95% CI: -0.9, 0.7). We therefore fail to reject the null hypothesis of parallel trends. In other words, the treatment and control groups in both study samples shared common pre-reform trends in the prevalence of poor self-rated health, supporting a major assumption of our estimation strategy.

Estimates for the association between the Hartz IV reform and self-rated health are presented in Table 5.3. In the unmatched and matched samples, respectively, the Hartz IV reform was associated with a 3.6 (95% CI: 0.9, 6.2) and 3.4 (95% CI: 0.1, 6.8) percentage point increase in the prevalence of poor self-rated health among unemployed individuals in the policy-affected group relative to unaffected controls. These estimates correspond to a roughly 15% increase in the relative risk of reporting poor self-rated health among individuals in the policy-affected treatment group (i.e. individuals receiving means-tested assistance).

Estimates for the association between the Hartz IV reform and annual post-transfer household income are presented in Table 5.4. Given our earlier findings concerning the parallel trends assumption, we only present estimates for the matched sample. In the matched sample, Hartz IV was associated with a \notin 1,595 decrease (95% CI: -2303, -887) in annual post-transfer household income. This interval includes the known (or 'true') effect on earnings, which falls in the range of \notin 1300-1900.

5.5 Discussion

Using data from a large, population-based household panel survey covering the period from 1994 to 2016, we examined the impact of the 2005 Hartz IV reform on the health of the unemployed in Germany. This measure replaced the former unemployment assistance scheme with a new means-tested social assistance scheme providing substantially lower benefits. Applying a combination of DID and DID-PSM, we found that unemployed individuals directly affected by the reform experienced a substantial rise in the prevalence of poor self-rated health relative to unaffected but similarly unemployed controls. This negative association appeared immediately following the implementation of the policy measure and has endured since (Figure 5.1). Put simply, our results suggest that the reduction in benefit levels induced by the Hartz IV reform was harmful to the health of the unemployed.

The findings presented here are consistent with those in the existing literature on this topic.[55] Recent studies examining the impact of welfare reform in the United States have reported that such measures were associated with adverse trends in self-rated health, mental health, health behaviours, and mortality among welfare recipients and socioeconomically disadvantaged mothers.[49,51,52,54] Similar findings have also been reported among benefit recipients in the United Kingdom, where reductions in a government housing allowance and restrictions to income support for single mothers were recently enacted as part of a wider programme of austerity and welfare reform.[50,53] Our study adds to this growing body of literature on the relationship between welfare reform and health by extending the scope of available evidence to a new jurisdiction (i.e. Germany) and by focusing on a previously unexamined group commonly affected by welfare reform measures (i.e. the unemployed). While previous descriptive work has hinted at a possible link between Hartz IV and adverse health trends among the unemployed in Germany,[60–62] to our knowledge, this is the first study to explicitly test this hypothesis empirically.

Theoretically speaking, our findings are supported by a vast body of literature substantiating the importance of income for health. The loss of material security and ensuing financial strain resulting from reduced income supplementation provide a key pathway by which welfare reform might directly affect an individual's health.[74–76] In support of this notion,

evidence from quantitative and qualitative research indicates that experiences of material deprivation and financial hardship increased among benefit recipients in the wake of the Hartz IV reform.[61,77] It may also be the case that benefit reductions have an indirect effect on health by increasing recipients' exposure or vulnerability to precarious labour market conditions. Indeed, there is substantial evidence that efforts to 'activate' the unemployed by reducing their benefits can compel them to enter poorly protected jobs that are low-paid and short-lived.[78–81] Such forms of marginal labour market attachment can, in turn, trigger a harmful cycle of transitions in and out of precarious employment conditions, which may contribute to a decline in the health of those affected by 'activating' welfare reform measures.[82,83]

Though there exists a strong theoretical basis for the negative association between welfare reform and health observed in the present study, several limitations prohibit a causal interpretation of our findings. First, the study results may be biased due to unmeasured sources of confounding. For example, while our models controlled for a wide range of characteristics, we lacked rigorous measures of life-course socioeconomic position – a factor known to predictor both benefit recipiency and health status.[84] Thus, it is possible that our findings reflect residual differences in unobserved group-level attributes that influence self-rated health but are unrelated to treatment.

Second, because the SOEP includes repeated observations on the same sample of people, individuals can transition between treatment categories from one wave of data to the next. An individual's treatment status can also vary within a given year in such a way that could not be captured using available survey instruments. As a result of these dynamics, some individuals in the control group may in fact have been previously exposed to treatment. Misclassification of this nature can bias treatment effects towards the null and, accordingly, could lead to an attenuated association between welfare reform and health.[85]

Third, due to data limitations, we were unable to explore potential heterogeneity in the association between welfare reform and health across different social groups, such as men and women. This is because our attempts to do so resulted in low quality matches between treatment and control units which failed to meet the DID criteria we were able to satisfy using our full sample of observations.

Fourth, the 'common shocks' assumption states that unbiased DID estimation requires treatment-unrelated events occurring in the post-intervention period to affect individuals in the treatment and control groups equally. A key challenge in this respect is the onset of the Great Recession in 2008. As we noted earlier, by virtue of differences in their underlying socioeconomic characteristics, it is plausible that the treatment and control groups were differentially impacted by the macroeconomic effects of the recession. On the other hand, these effects were exceptionally mild in Germany, as evidenced by stable rates of unemployment during the recession years.[86] Still, insofar as this is an untestable aspect of our 'common shocks' assumption,[64] we are unable to determine with certainty whether and, if so, in what direction this exogenous shock influenced our results.

A related challenge concerns the possibility of selection bias arising from the differential propensity for benefit recipients and non-recipients to transition into employment and therefore leave our population following the implementation of the Hartz IV reform. Available evidence suggests that job match improved in the wake of the reform.[87–89] Assuming healthier individuals are better situated to take up employment,[90] a stronger effect on the transition probabilities of individuals in our treatment group would bias our results towards a negative association between welfare reform and health. By contrast, a stronger effect on the transition probabilities of individuals in our control group would lead us to underestimate the strength of this association. As is it unclear whether, if at all, the effect was stronger in one group or the other, we are unable to adjudicate between these hypotheses and determine the direction of any resulting bias.

Finally, our analyses rely on self-reported data and may suffer from corresponding biases. For example, due to the stigma associated with means-tested benefits, recipients may choose not to report that they are receiving assistance, resulting in further misclassification bias.[91] In addition, given that the socioeconomic experiences of benefit recipients and non-recipients differ in some fundamental ways, it is possible that they subjectively interpret and report their health in a different manner.[92] Future research could aim to replicate these findings using more objective exposure and outcome measures, such as those available through administrative record linkage.[93]

5.6 Conclusion

Over the past several decades, governments in advanced capitalist countries have taken major steps to diminish the scope and generosity of welfare state policies with the aim of curbing public expenditures and 'activating' the unemployed. Efforts to reduce benefit levels and render them more difficult to obtain have figured prominently in this reform agenda. There is mounting concern among researchers and practitioners about the possible consequences of these policy developments, including their short- and long-term impacts on population health and health equity. In line with these concerns and accompanying calls for government action to strengthen social protection systems,[22,23,29] our study suggests that the enactment of a large-scale reduction in unemployment benefits had an adverse impact on the health of the unemployed in Germany. Similar reforms are currently being debated or introduced in peer countries, such as Canada, the United Kingdom, and the United States. The findings presented here imply that such measures pose a direct threat to the health of populations, and socioeconomically disadvantaged groups in particular.

5.7 References

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5.8 Tables and Figures

	Pre-Refo	orm Period (199	4-2004)	Post-Ref	orm Period (200	05-2016)
	Control	Treatment	<u> </u>	Control	Treatment	<u> </u>
	n = 8,002	n = 3,054	þ	n = 5,996	n = 8,604	þ
Age						
18-24	12.2%	4.7%	< 0.001	15.4%	7.8%	<0.001
25-34	18.2%	20.2%	0.094	18.7%	22.6%	<0.001
35-44	17.8%	28.6%	< 0.001	18.5%	22.2%	<0.001
45-54	19.8%	25.2%	< 0.001	21.5%	25.2%	0.001
55-64	32.0%	21.3%	< 0.001	26.0%	22.2%	0.001
Sex						
Male	52.3%	57.4%	0.012	54.7%	54.7%	0.076
Female	47.7%	42.6%	0.015	45.3%	45.3%	0.976
Marital status						
Married or cohabitating	55.8%	43.4%	< 0.001	46.7%	26.7%	<0.001
Single	25.6%	27.3%	0.202	36.9%	41.7%	<0.001
Widowed or divorced	18.6%	29.3%	< 0.001	16.5%	31.5%	<0.001
Children						
No children	72.8%	67.0%	<0.001	73.0%	69.2%	0.010
One or more children	27.2%	33.0%	<0.001	27.0%	30.8%	0.010
Immigrant status						
German-born	81.5%	79.4%	0 207	77.8%	74.1%	0.022
Foreign-born	18.5%	20.6%	0.207	22.2%	25.9%	0.025
Region						
West Germany	65.1%	60.5%	0.016	74.3%	66.3%	<0.001
East Germany	34.9%	39.5%	0.010	25.7%	33.7%	<0.001
Urbanicity						
Urban	61.8%	58.2%	0 069	64.6%	65.2%	0 712
Rural	38.2%	41.8%	0.005	35.4%	34.8%	0.712
Education						
Less than secondary	23.6%	28.7%	<0.001	23.5%	35.7%	<0.001
Secondary	68.3%	66.1%	0.121	64.0%	56.0%	<0.001
Post-secondary	8.1%	5.2%	<0.001	12.5%	8.4%	<0.001
Home ownership						
Renter	65.7%	81.0%	<0.001	64.2%	92.6%	<0.001
Owner	34.3%	19.0%	0.001	35.9%	7.4%	\$0.001
Lifetime unemployment experience						
<2 years	62.4%	14.3%	< 0.001	58.2%	17.1%	<0.001
2-4 years	23.0%	35.0%	< 0.001	20.4%	20.0%	<0.001
>4 years	14.6%	50.7%	< 0.001	21.4%	62.9%	<0.001
Severe disability						
No	90.0%	89.6%	0.724	87.2%	86.9%	0.814
Yes	10.0%	10.4%	0.727	12.8%	13.1%	0.014
Pre-transfer household income	€ 17,963	€ 6,929	<0.001	€ 19,416	€ 3,760	<0.001

Table 5.1: Descriptive characteristics of the unmatched study sample before and after the 2005 Hartz IV reform: SOEP (1994-2016)

Notes: Treatment group consists of unemployed individuals receiving unemployment assistance during the pre-reform period or social assistance during the post-reform period; Control group consists of all other unemployed individuals.

	Pre-Refe	orm Period (199	4-2004)	Post-Ref	orm Period (200)5-2016)
	Control	Treatment	n	Control	Treatment	n
	n = 2,100	n = 2,100	Р	n = 2,517	n = 2,517	þ
Age						
18-24	6.7%	6.0%	0.341	13.7%	13.5%	0.837
25-34	21.6%	21.9%	0.852	21.5%	22.5%	0.358
35-44	25.2%	26.2%	0.458	23.5%	23.4%	0.947
45-54	22.4%	23.1%	0.607	21.7%	21.6%	0.891
55-64	24.1%	22.9%	0.363	19.6%	19.0%	0.568
Sex						
Male	50.0%	49.3%	0 688	48.5%	46.9%	0 247
Female	50.0%	50.7%	0.000	51.5%	53.1%	0.247
Marital status						
Married or cohabitating	55.7%	56.0%	0.852	43.4%	43.6%	0.887
Single	22.5%	22.1%	0.767	35.8%	35.8%	0.977
Widowed or divorced	21.8%	21.9%	0.940	20.9%	20.7%	0.835
Children						
No children	63.3%	62.7%	0 678	52.2%	50.7%	0 284
One or more children	36.7%	37.3%	0.070	47.8%	49.3%	0.201
Immigrant status						
German-born	74.2%	74.6%	0.805	70.9%	71.3%	0.780
Foreign-born	25.8%	25.4%	01000	29.1%	28.7%	01700
Region						
West Germany	54.1%	54.0%	0.901	65.8%	66.2%	0.721
East Germany	45.9%	46.0%		34.2%	33.8%	
Urbanicity						
Urban	42.1%	44.5%	0.533	60.6%	59.9%	0.624
Rural	42.8%	43.8%		39.4%	40.1%	
Education						
Less than secondary	30.8%	29.6%	0.382	31.9%	31.5%	0.843
Secondary	63.7%	64.8%	0.482	59.3%	59.2%	0.556
Post-secondary	5.4%	5.6%	0.777	8.8%	9.3%	0.659
Home ownership						
Renter	75.5%	76.0%	0.692	82.5%	82.6%	0.882
Owner	24.5%	24.0%		17.5%	17.4%	
Lifetime unemployment experience						
<2 years	18.0%	19.0%	0.361	41.4%	42.8%	0.291
2-4 years	42.1%	40.0%	0.158	25.1%	23.3%	0.139
>4 years	40.0%	41.0%	0.489	33.5%	33.9%	0.811
Severe disability						
No	90.4%	90.6%	0.834	88.1%	87.6%	0.546
Yes	9.6%	9.4%		11.9%	12.4%	
Pre-transfer household income	€ 10,014	€ 10,102	0.785	€ 8,075	€ 8,029	0.855

Table 5.2: Descriptive characteristics of the matched study sample before and after the 2005 Hartz IV reform: SOEP (1994-2016)

Notes: Treatment group consists of unemployed individuals receiving means-tested benefits; Control group consists of all other unemployed individuals; The sample is restricted to propensity score matched subsets of the treatment and control groups using one-to-one caliper matching without replacement; Caliper width is set to 0.003.





	Model 1: Unm	atched Sample	Model 2: Mai	tched Sample
	Control	Treatment	Control	Treatment
	n = 13,998	n = 11,658	n = 4,617	n = 4,617
Prevalence of poor self-rated health (%)				
Pre-reform	24.2 (23.0, 25.4)	24.1 (22.1, 26.2)	24.8 (22.8, 26.8)	24.9 (22.7, 27.1)
Post-reform	26.2 (24.9, 27.5)	29.7 (28.3, 31.1)	27.6 (25.8, 29.4)	31.0 (29.1, 33.0)
Difference in poor self-rated health (%)				
Pre-reform	-0.1 (-:	2.2, 2.1)	0.1 (–2	.6, 2.8)
Post-reform	3.5 (1.	.7, 5.4)	3.5 (0.	9, 6.0)
Difference-in-differences estimator (%)				
Estimate	3.6 (0.	.9, 6.2)	3.4 (0.	1, 6.8)
P-value	0.0	600	0.0)47
Test of the parallel trends assumption (%)				
Estimate	-0.3 (0.9, 0.3)	-0.1 (-0	0.9, 0.7)
P-value	0.0	359	0.8	386

region, urbanicity, pre-transfer household income, education, home ownership, lifetime unemployment experience, and severe disability; 95% confidence intervals obtained using robust standard errors are presented in parentheses. during the post-reform period); In Model 2, the sample is restricted to propensity score matched subsets of the treatment and control groups, using one-to-one caliper matching without replacement; Caliper width is set to 0.003; All estimates are adjusted for age, age squared, sex, marital status, children, immigrant status,

Germany: SOEP (1994-2016)		
	Control	Treatment
	n = 4,617	n = 4,617
Mean post-transfer household income (€)		
Pre-reform	19,001 (18,627, 19,374)	20,881 (20465, 21,298)
Post-reform	22,704 (22,332, 23,076)	22,989 (22,594, 23,385)
Difference in post-transfer household income (${f \varepsilon})$		
Pre-reform	1,880 (1,36	3, 2,402)
Post-reform	286 (-223	(, 794)
Difference-in-differences estimator (${f \epsilon}$)		
Estimate	-1595 (-230	13, -887)
P-value	<0.00	1
Test of the parallel trends assumption $({f \varepsilon})$		
Estimate	-24 (-11	, 160)
P-value	0.72	4
Notes: Treatment group consists of unemployed individu assistance during the post-reform period; Control group	ials receiving unemployment assistance du consists of all other unemployed individual	ing the pre-reform period or social s; The sample is restricted to matched

Table 5.4: The association between welfare reform and post-transfer household income among working-age unemployed adults in

σ income, education, home ownership, lifetime unemployment experience, and severe disability; 95% confidence intervals obtained using estimates are adjusted for age, age squared, sex, marital status, children, immigrant status, region, urbanicity, pre-transfer household subsets of the treatment and control groups using one-to-one caliper matching without replacement; Caliper width is set to 0.003; All robust standard errors are presented in parentheses.

Chapter 6. Discussion

6.1 Summary of the Findings

My dissertation set out to explore the following research question: How effective are retrenched welfare states at maintaining population health and reducing health inequalities in the neoliberal era? Given the particularly prominent role that the labour market has played in the theory and practice of neoliberal welfare state retrenchment,[1–3] I chose to pursue this question with specific reference to the neoliberal-era relationship between unemployment, unemployment protection, and health in Canada and Germany – two welfare state contexts that exhibit similar unemployment protection systems that have undergone comparable transformations over time. With this aim in mind, the objectives of my dissertation were as follows: (i) To examine how the association between unemployment and health has evolved over the neoliberal era in Canada; (ii) To investigate whether neoliberal-era unemployment benefits can offset the adverse health consequences of unemployment in Canada; and (iii) To evaluate the effect of unemployment benefit retrenchment on the health of the unemployed in Germany. Below, I summarize the key findings from my three dissertation studies.

Study 1: Self-Rated Health Inequalities Between Employed and Unemployed Workers Widened Over the Neoliberal Era in Canada

In my first study, I examine how self-rated health inequalities between employed and unemployed workers have evolved over the course of the neoliberal era in Canada. In addition to describing these trends, I review and adjudicate between previously untested hypotheses concerning the etiology of changing unemployment-related health inequalities. My findings show that trends in the self-rated health of employed and unemployed Canadians have diverged in recent years, resulting in a pattern of widening unemployment-related health inequalities. Somewhat surprisingly, however, I find that the risk factors routinely used to account for the presence of unemployment-related health inequalities do not provide a compelling explanation for how and why they have evolved over time. Thus, while unemployed Canadians reported consistently worse risk factors than their employed counterparts, changes in their respective risk profiles could not explain why these two groups of workers grew further apart over time. In fact, unemployed Canadians appear to have experienced declining health trends despite showing notable improvements in the prevalence of major risk factors. In response to these findings, I suggest that unemployment-related health inequalities may be widening due to neoliberal societal trends – including declining welfare state provisions – that have changed the meaning and context of unemployment in a manner that is difficult to capture in the language of individual-level risk factors. This conclusion animates a subsequent set of questions about the potentially declining role of the welfare state as a source of social protection against the harmful effects of unemployment.

Study 2: Neoliberal-Era Unemployment Benefits Continue to Protect Workers Against the Adverse Health Consequences of Unemployment in Canada

In turn, my second study offers a preliminary investigation of the hypothesis that, in the neoliberal era, the welfare state may play less of a role in protecting the health of the unemployed. Focusing my attention on the impact of unemployment protection as a particularly relevant dimension of the welfare state, I examine whether, if at all, neoliberal-era unemployment benefits are effective at alleviating the adverse impact of unemployment on health. Specifically, I estimate the effect of receiving unemployment benefits on the self-rated health of jobless Canadians. After matching unemployment benefit recipients to comparable non-recipient controls, I find robust evidence of a positive association between unemployment benefit recipiency and self-rated health. Consistent with public health theory, I also show that the protective effect of receiving unemployment benefits is considerably stronger among more socioeconomically disadvantaged individuals. Conversely, my analyses reveal that corresponding effects among their more socioeconomically advantaged counterparts are weak and, in some cases, even absent. This caveat aside, findings from my second study indicate that unemployment benefits continue to offset the adverse health consequences of unemployment in Canada, despite their erosion over the course of the neoliberal era. By way of conclusion, I suggest that these findings support the wider notion that welfare state policies remain effective levers with which to promote population health and reduce health inequalities - even, or perhaps especially, in the neoliberal era of rising labour market insecurity.

Study 3: Neoliberal Unemployment Benefit Retrenchment Negatively Impacted the Health of Unemployed Workers in Germany

In view of the finding that unemployment benefits continue to moderate the impact of unemployment on health, my third and final study examines whether the neoliberal retrenchment of unemployment protection can provide a plausible explanation for the broader finding that health inequalities between employed and unemployed workers are widening over time. Short of a randomized controlled trial, natural policy experiments provide a 'next best' approach for evaluating the health effects of policy change. In theory, large and abrupt policy punctuations provide the strongest possible context in which to conduct such natural experiments. However, due to the generally incremental nature of retrenchment, these conditions are difficult to come by in practice. In 2005, however, the German government enacted a major overhaul of their unemployment protection system, affording me a unique opportunity to examine the relationship between unemployment benefit retrenchment and health within the context of a natural experiment. Here, I estimate the effect of this neoliberal reform on the self-rated health of the unemployed in Germany. Using a rigorous quasi-experimental study design, I find that the legislated reduction in unemployment benefits led to a significant decline in the health status of policy-affected jobseekers. Furthermore, in favour of a causal interpretation of these results, I show that this negative association appeared immediately following the implementation of the benefit reform. In sum, my findings implicate neoliberal welfare state retrenchment as an important factor contributing to adverse trends in the health of the unemployed and, by extension, as a driving force behind widening unemployment-related health inequalities observed in Germany and, potentially, in peer countries such as Canada.

6.2 Relationship to Previous Findings

Changing Unemployment-Related Health Inequalities

Monitoring trends in health inequalities is vital, not only for measuring progress towards the achievement of health equity, but also for gaining insights and clues into the etiological factors

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contributing to their evolution over time.[4–6] As I noted at the outset of my dissertation, an overwhelming majority of social epidemiological research documenting these historical trends has focused on income and education as axes of socioeconomic inequality.[7,8] Thus, despite the growing salience of unemployment and related indicators of labour market position as sources of socioeconomic risk, we have very little sense of how unemployment-related health inequalities are changing and what factors might be associated with that change.

Notably, what little research exists on this topic suggests that health inequalities between employed and unemployed workers have increased over time.[9–12] Evidence to this effect is as of yet only available for a small number of countries - namely, England, Germany, Greece, and Sweden. In each case, however, widening inequality trends have unfolded in the context of major neoliberal reforms, including punitive austerity measures and associated patterns of welfare state change. My dissertation makes an important contribution to this modest body of empirical literature. Specifically, using population-based data from a flagship health survey in a novel national context (i.e. Canada), Study 1 provides further evidence suggesting a widening pattern of unemployment-related health inequality, similar to those previously found in the peer countries listed above. Moreover, by testing and adjudicating over prevailing hypotheses regarding these observed trends,[13–15] my dissertation highlights an important conceptual and methodological challenge for research aiming to expand our etiological understanding of changing health inequalities: namely, that the driving forces behind these problematic trends may involve contextual phenomena (e.g. neoliberal welfare state retrenchment) that are difficult to measure in the language of individual-level risk functions that dominates mainstream epidemiological theory, data, and methods of inference.[16–18]

To date, no study has explored trends in the magnitude of unemployment-related health inequalities and their underlying determinants in the Canadian context. In fact, research examining the association between unemployment and health in Canada is limited to less than a handful of studies.[19–23] All but one of these analyses rely on data collected over two decades ago; that is to say, prior to the brunt of neoliberal welfare state restructuring in Canada.[19–22] Furthermore, the only recent study to look at this association was based on a small sample of working-age adults living in a single metropolitan centre.[23] Thus, in addition to offering a first view of how the

association between unemployment and health has changed in Canada, Study 1 provides – to the best of my knowledge – the first set of population-based estimates on this association in over two decades.

The Health Effects of Income Maintenance Programs

On the basis of a vast literature substantiating the importance of socioeconomic resources for health, [24–27] scholars have long hypothesized that social policies improving the level and distribution of income within a given population provide particularly effective levers for improving health and reducing socioeconomic health inequalities. [28] Empirical research on the health effects of income maintenance programs and related welfare state measures has expanded rapidly over the course of the past decade, leading to a broad consensus that more generous and more universal policies contribute to more favourable population health outcomes. [29–32] My dissertation adds further evidence to this growing body of work, by way of examining the health effects of a specific income maintenance program; namely, unemployment benefits.

Previous research focusing primarily, though not exclusively, on cross-national comparisons of European countries has found that higher levels of unemployment protection correlate with better overall health outcomes and narrower unemployment-related health inequalities.[33–40] Drawing on a more policy-evaluative approach, others have investigated the individual-level association between unemployment benefits and health, finding that jobless individuals who receive unemployment benefits report consistently better health outcomes than their non-recipient counterparts.[41–46] This relationship has previously been observed in a handful of countries, including Germany, Spain, the United Kingdom, and the United States. Adopting such an approach, Study 2 of my dissertation extends the scope of these earlier findings to a novel country setting, demonstrating that unemployment benefits have a protective effect on the self-rated health of the unemployed in Canada.

My second study also contributes substantively to questions about what income maintenance policies work, in what circumstances, and for whom.[47–49] In the field of public health, there is growing concern that the reporting of 'average' treatment effects can assume away

the possibility that distinct groups might respond differently to the same exposure, resulting in heterogeneous treatment effects.[50] Consistent with this notion, my results indicate that prior studies on the health effects of unemployment protection may have underestimated the role it plays in offsetting the negative consequences of unemployment among more socioeconomically disadvantaged populations (i.e. lower income and lower educated groups) and, conversely, may have overestimated its impact on the health of their more socioeconomically advantaged counterparts. Whereas previous literature has observed that the effect of unemployment can vary from one subgroup to another,[41,51] to my knowledge, Study 2 provides a first line of evidence demonstrating that the health effects of unemployment protection can vary significantly between higher and lower socioeconomic groups.

The finding that unemployment benefits offset the negative health consequences of unemployment in Canada is particularly interesting in light of recently emerging evidence that social assistance programs (i.e. less generous and more means-tested income maintenance policies) do not confer a similar health advantage among unemployed Canadians. [52,53] On the contrary, social assistance recipients in Canada report worse or, at best, similar health outcomes relative to comparable low-income non-recipient controls. Similar findings were reported more than a decade ago in Canada as well as in peer nations such as Australia, Germany, Sweden, the United Kingdom, and the United States. [45,46,54–57] Together with this literature, my findings in Study 2 imply that not all income maintenance programs are created equal. Rather, available evidence suggests that dedicated unemployment benefits rendered as a matter of right rather than more strictly as a matter of demonstrable 'need' have a greater capacity to mitigate the health impact of adverse socioeconomic exposures such as unemployment. Reasons for this discrepancy may relate to the lower level of benefits afforded by social assistance, the social stigma associated with the receipt of means-tested welfare, the punitive work-related obligations that recipients are expected to meet in order to maintain their eligibility for social assistance.[58] I return to this issue in my discussion of future research directions later in this chapter.

The Health Effects of Welfare State Retrenchment

Welfare states have undergone profound transformation over the course of the neoliberal era.[59–61] As a result of these changes, contemporary income maintenance policies differ in important respects from those of decades past. Unemployment protection systems in particular have been substantially retrenched, with an overwhelming majority of advanced capitalist countries having reduced the generosity of unemployment benefits or tightened the criteria for obtaining them.[62–64] At the same time, due to adverse labour market trends such as the increasing prevalence of insecure and low-wage jobs, a rising number of workers find themselves falling outside of the proverbial safety net of postwar welfare state systems.[65–68] In the field of public health, there is broad rhetorical support for the notion that these neoliberal welfare state developments may have important – and likely negative – consequences for the health of populations, and the health of socioeconomically disadvantaged groups in particular.[69–71]

Against this important theoretical backdrop, a large body of social epidemiological research has examined how health outcomes have evolved over the course of the neoliberal era.[10,11,72–85] Relying on a largely descriptive and associational set of methods, these studies strongly suggest that neoliberal welfare state reforms have contributed to adverse health trends, including widening socioeconomic health inequalities.[86,87] A smaller but related literature has sought to harness specific neoliberal policy measures as natural experiments,[88] with the aim of investigating the health effects of welfare state retrenchment within the context of more sophisticated study designs.[89–94] Findings from this body of research suggest that policy efforts in the United States and the United Kingdom to roll back the generosity and coverage of welfare benefits have harmed population health, and the health of socioeconomically disadvantaged single mothers in particular.

While empirical support for the notion that neoliberal welfare state retrenchment is 'bad for our health' is rapidly accumulating, rigorous evidence to this effect is still somewhat lacking. Notable gaps also remain, with available findings restricted to a small number of countries (i.e. the United States and the United Kingdom), a limited set of policy areas (i.e. social assistance and housing benefits), and a narrow segment of the population theoretically affected by retrenchment (i.e. socioeconomically disadvantaged single mothers). The empirical insights gained in Study 3 are therefore novel in several respects. First, as in the preceding study, they expand the geographic scope of available evidence to a new context; in this case, Germany. Second, I provide a first set of rigorous estimates on the health effects of welfare state retrenchment in the area of unemployment protection. Whereas previous research has hinted towards a possible link between neoliberal unemployment benefit reforms and adverse health inequality trends in England, Germany, and Sweden,[11,12,83,95] my dissertation is the first to explicitly test this hypothesis empirically. Finally, Study 3 contributes to the literature on the topic of welfare state retrenchment and health by focusing on a previously neglected group that, by all accounts, is one of the most strongly affected by neoliberal reform measures; namely, the unemployed.

6.3 Broader Contributions to Scholarship

Moving Beyond Static Comparisons in the Study of the Welfare State Determinants of Health

In the process of incorporating the welfare state into the study of population health, social epidemiologists have neglected an important observation: that welfare states are not static phenomena, but rather dynamic structures that have undergone significant change over the course of the neoliberal era.[60] Given their impact on the social and economic fabric of advanced capitalist societies, one might expect health inequalities researchers to display a great deal of interest in neoliberal welfare state developments.[96] In fact, social epidemiologists have awarded strikingly little attention to the neoliberal turn in social policy.[97,98] Extant analyses have instead adopted a distinctly static view of the welfare state to pursue a relatively narrow set of questions about the role of 'more versus less' welfare state effort. [29-32,98,99] As a result, the prevailing question today remains, in many respects, the same as it was two decades ago: Are countries characterized by more generous social policies better able than their less generous counterparts to protect population heath and promote health equity?[100–105] While this prevailing emphasis on the diversity of welfare state forms has led to a steady and meaningful extension of social epidemiological knowledge, the tendency towards static comparisons has simultaneously impeded theoretical and empirical progress by placing out of view consequential questions about how and why the welfare state determinants of health have changed over time. The nature of this problem is perhaps best illustrated with reference to the enduring influence of the welfare regime approach within this body of literature.
Today, as vesterday, social epidemiologists draw on conceptual rubrics developed in the 1980s to codify countries into one or another welfare regime type whose underlying logic is assumed to have persisted more or less uninterrupted over the course of the neoliberal era.[e.g. 38,106–111] They assume, in other words, that a cross-sectional snapshot taken over three decades ago provides a suitable framework for informing research today. In the field of public health, this uncritical preoccupation with welfare regime typologies has encouraged a severely truncated view of neoliberalism, whereby the theoretical problem of retrenchment is grafted onto 'liberal' welfare states and the institutional contours of 'non-liberal' welfare states are presumed, implicitly or explicitly, to have remained more or less intact over time.[71,86,112] Commensurate with this view of the problem, empirical work on the health effects of welfare state retrenchment has fixated on a small number of traditionally liberal welfare states, such as the United Kingdom and the United States.[89–94] Yet, as empirical findings in the broader welfare state literature demonstrate, the notion of 'immovable' or 'frozen' welfare state landscapes serves as a weak starting point for characterizing social policy developments in the neoliberal era. [59,61,62,113,114] In fact, neoliberal welfare state restructuring is observed in an overwhelming majority of advanced capitalist societies.[1,115-118] In some cases, these neoliberal trends are most pronounced in countries that have historically been described as 'non-liberal'.[119–121]

My dissertation serves, in part, to illustrate the value gained from moving beyond 'static comparativism' in the study of the welfare state determinants of health.[11,122] In particular, it highlights how such a move can bring into theoretical and empirical focus new questions about the relationship between neoliberalism and health, including the nature and consequences of that relationship in traditionally non-liberal societies, such as Germany. More broadly, my dissertation illustrates how a more dynamic view of the welfare state can contribute to important and outstanding debates in the field of epidemiology, including, most notably, ongoing efforts to explain the supposed 'paradox' of persisting health inequalities.[14]

Explaining the 'Paradox' of Persisting Health Inequalities

One of the most important insights to emerge from recent epidemiological work is the finding that socioeconomic health inequalities have persisted or, worse, widened in many, if not most, advanced capitalist societies.[7,123–127] This troubling finding has puzzled public health scholars, who view it as something of a 'paradox' that modern welfare states have proven incapable of eliminating or even reducing the problem of health inequalities.[13,14,128] In a now well-cited review of extant hypotheses on this apparent paradox, Mackenbach presents two related arguments.[14] He suggests, firstly, that societies have become more socially mobile and, consequently, that socioeconomically disadvantaged groups are increasingly comprised of negatively selected individuals who exhibit unfavourable traits and characteristics that lead to adverse social and health outcomes. He also argues that modern welfare states, though relatively successful at addressing the socioeconomic drivers of health inequalities, have left untouched a wide range of non-material (e.g. cultural and behavioural) resources that have accrued disproportionately to individuals occupying better positions within the socioeconomic hierarchy.

This oft-cited account of recent epidemiological trends is objectionable on numerous grounds. First, findings from neighbouring fields such as sociology and economics generally indicate that advanced capitalist societies have become less, and not more, socially mobile over the course of the neoliberal era.[129–131] Second, a vast body of empirical literature substantiates the notion that socioeconomic resources are primarily the causes, and not the consequences, of personal traits that correlate with health.[15,26,132,133] Furthermore, while governments have implemented a wide variety of policies and programs in the name of reducing health inequalities, these have largely failed to address the root socioeconomic causes of those inequalities.[134–137] If we accept as fact that health inequalities are fundamentally attributable to underlying inequalities in the distribution of key socioeconomic resources, such as income, wealth, and employment,[24,27] it should come as no surprise that routine public health interventions (e.g. education programs that aim to produce individual behaviour change) have proven wholly inadequate for eliminating or even reducing health inequalities.[15,138] Indeed, at odds with the preceding account, underlying socioeconomic inequalities have not only remained intact in recent decades, but have in fact widened considerably over the course of the neoliberal era.[70,139,140]

Following these earlier insights, the research presented in this dissertation advances an alternative account of recent epidemiological trends; one that emphasizes their potential roots in the neoliberal restructuring of advanced capitalist societies and related patterns of welfare state retrenchment. Indeed, if my findings are any indication, the persistence of health inequalities in modern welfare states may not be as paradoxical as previously suggested – at least not when they are viewed in their contemporary neoliberal context. To the contrary, a compelling, if partial, answer to this puzzle can be found in recent changes to the welfare state that have exacerbated the problem of socioeconomic disadvantage and, by extension, its associated impacts on population health. From this point of view, health inequalities have persisted not in spite of the modern welfare state,[14] but, rather, precisely as a result of the major shortcomings of its neoliberal reconfiguration.

Putting Neoliberal Theories of Work and Welfare to the Test

The empirical findings presented in this dissertation should be considered in light of the theoretical arguments routinely presented to justify the enactment of neoliberal welfare state reforms.[141–143] Key elements of these arguments can be summarized briefly as follows. The welfare state is ineffective; that is, despite major investments in social programs designed to mitigate disadvantage, these have not been successful at eliminating or even reducing the problem of poverty. In addition, the welfare state is unproductive, acting as a disincentive to work and promoting a culture of dependency among recipients of state assistance. Finally, because it is ineffective and unproductive, the welfare state is also inefficient, placing excessive and unsustainable fiscal demands on the state. From a neoliberal standpoint, then, the retrenchment of the welfare state serves the dual purpose of 'activating' the unemployed and curbing public expenditures.

It is not within the explicit scope of this dissertation to evaluate the empirical validity of this theoretical standpoint. Yet, my findings do provide some important insights into the soundness of some of its claims. First, I show, at least from a public health point of view, that welfare state policies can, in fact, function to offset the adverse consequences of socioeconomic disadvantage. Thus, even after decades of neoliberal erosion, unemployment benefits appear to confer a

protective effect on the health of jobless individuals. Contrary to neoliberal claims about the ineffectiveness of the welfare state, this finding is likely to reflect the fact that such policies have a tangibly positive impact on the material security of the unemployed.[144–147] Furthermore, my dissertation casts empirical doubt on the neoliberal assumption that reducing welfare benefits provides an effective and fiscally prudent means of promoting labour market attachment. Prior research provides strong evidence that poor health is a major contributing factor to involuntary labour market exit as well as longer spells of unemployment.[148–150] If my findings are correct in suggesting that welfare state retrenchment has had deleterious effects on the health of the unemployed, it stands to reason that the reduction or withdrawal of benefits can have the perverse effect of prolonging unemployment and generating new social and economic costs, including lower worker productivity and greater demands on health care systems.[139,151–158]

Regardless of whether neoliberal welfare state reforms have been successful at meeting their stated aims of promoting employment and curbing public expenditures, my dissertation research alerts us to the possibility, if not the fact, that governments have pursued these objectives at the direct expense of the health of socioeconomically disadvantaged groups. In that sense, my dissertation contributes, albeit modestly, to a longstanding intellectual tradition which has sought to document how the political and economic organization of capitalism can come into frequent conflict with the public's health.[17,32,159–165]

Affirming the Continuing Importance of the Welfare State for Health

By and large, the welfare state was not designed with health in mind. Yet, as I have previously noted, the role of the welfare state as a major lever with which to protect and promote population health has long been a matter of principal concern among social epidemiologists.[166–168] It is no surprise, then, that the political ascendance of neoliberalism has sparked an enormous literature dedicated to examining how, among its many other social and economic consequences, the systematic retreat of the welfare state has posed a substantial threat to the public's health.[69–71,86,112,139,160,169–176] Using health as a terrain upon which to investigate the human impact of neoliberalism, this expansive body of work has led to a broad consensus that neoliberal social and economic policies are empirically and ethically unjustified. Despite overwhelming evidence

to this effect, the neoliberal 'political attack' on health continues, particularly in the wake of the 2008 Great Recession and subsequent roll-out of austerity measures.[69,177–179] In numerous jurisdictions (e.g. Canada, France, the United Kingdom, and the United States), reform efforts are underway to further reduce welfare state benefits and render them more difficult to obtain. At the same time, broader socioeconomic conditions in these countries continue to decline, as evidenced by stagnating wages, widening income inequalities, the expansion of precarious work, and rising levels of structural unemployment.[68,180,181] Given the predictable consequences this combination of trends is likely to bear on the health of populations, there is a pressing need now, perhaps more than ever, for scholars to present a rigorous, evidence-based case in favour of stronger and more comprehensive systems of social protection.[170,175,182] Of course, evidence alone will not suffice to bring about such change, and the contest of political forces is likely to play a far more decisive role in the story.[177,183–186] Still, empirical studies, such as those presented in this dissertation, lend useful support to mounting political demands for governments to expand the regulatory and redistributive functions of the welfare state.

6.4 Methodological Limitations

Data Sources

This dissertation makes use of repeated cross-sectional data from two nationallyrepresentative surveys: the Canadian Community Health Survey (CCHS) and the German Socio-Economic Panel Study (GSOEP). These surveys were selected on the grounds that they provide the most up-to-date and comprehensive information on the health and benefit status of the Canadian and German populations. Despite being the most appropriate sources of data to pursue the study objectives, their use in this dissertation implies three notable limitations. First, by virtue of the cross-sectional nature of my analyses, I am unable to draw decisive conclusions about the causal nature and direction of observed relationships, including the positive association observed between unemployment benefit recipiency and health in Study 2. In Study 3, repeated observations would ideally have been measured longitudinally on the same set of individuals over time.[93] In this sense, the panel structure of the GSEOP ought to have opened up additional analytic opportunities.[187] However, I was unable to take advantage of the longitudinal nature of the survey, due to a combination of small samples, inconsistent response, and attrition over time.

Second, whereas the CCHS was first administered in the year 2000, the most important changes to the unemployment protection system in Canada took place in the 1970s and 1990s.[66,188] Consequently, trends in the association between unemployment and health that I describe and decompose in Study 1 leave out the most relevant period of neoliberal welfare state retrenchment. While the National Population Health Survey (NPHS) provides a supplemental information that covers the period from 1994 to 2011, it is based on a different and less representative sampling frame than the CCHS, and also captures a much smaller sample of respondents.

Finally, reliance on secondary data sources limited the universe of variables available for study. While the CCHS and the GSOEP provided the most comprehensive information available on factors of known relevance, they did not cover some important areas of interest. I return to this issue below in my discussion of confounding and competing explanations.

Bias

As noted in the preceding chapters, the studies included in this dissertation suffer from several potential sources of bias. First, self-reported indicators of health status carry a risk of measurement error due to the tendency for individuals to rate their health differently depending on their socioeconomic position.[189–192] Thus, the predictive validity of this measure may vary systematically between the exposure groups examined in this dissertation, including (i) employed and unemployed workers and (ii) unemployment benefit recipients and their non-recipient counterparts.

Second, self-reported indicators of employment status and benefit recipiency may be influenced by social desirability bias, resulting in further sources of measurement error across all three of the dissertation studies.[193] For example, as noted in the conclusion of Study 3, sources of income that are stigmatized or otherwise viewed as being undesirable may be underreported

and therefore result in the misclassification of benefit recipients into non-recipient categories.[194,195] Previous findings also suggest that individuals tend to underreport negative labour market outcomes, including the experience of being unemployed.[196] On both counts, resulting measurement errors are likely to bias my results towards the null by artificially attenuating the strength of my findings about the connections between unemployment, unemployment benefits, and health.

A third source of bias potentially affecting my study findings concerns the influence of selection effects arising from differential probabilities of exposure to unemployment and benefit recipiency. Thus, in Study 1 and Study 3, contextual labour market conditions – including the onset of the Great Recession in 2008 – may have triggered changes in the composition of the labour force that biased my results by affecting some groups of workers more than others. It is possible, for example, that the propensity for discouraged workers to select out of the labour force and enter inactivity increased in the wake of the recession and subsequent labour market slump,[197,198] rendering a simple comparison of employed and unemployed groups over time somewhat problematic. Due to limitations in available data and evidence, I was unable to directly or indirectly examine the extent of this problem. Nevertheless, as I note in both of these chapters, given that Canada and Germany experienced mild labour market shocks during the most recent recession, any resulting biases are unlikely to have influenced my main findings in a substantial way.

In Study 2 and Study 3, I also note how systematic differences in the underlying characteristics of unemployment benefit recipients and their non-recipient counterparts pose a major challenge to the unbiased estimation of benefit- and retrenchment-related effects on health. In both studies, I use propensity score matching as an explicit framework with which to account for these underlying differences by identifying comparable subsets of individuals from the 'exposed' and 'unexposed' groups. As a result of this matching process, however, a substantial portion of observations is lost from each group. Given the non-random nature of this loss of information, matching has the potential to introduce new sources of selection bias, as remaining members of the exposed and unexposed groups are no longer representative of their respective sources populations.[199] Specifically, there is a possibility that the findings I report in Study 2 and Study 3 do not apply to individuals in the highest and lowest socioeconomic positions (i.e.

those who were dropped in the matching process). In spite of this important limitation, the use of matching maximized the internal validity of my findings on the effects of unemployment benefits and benefit retrenchment on health.

Finally, while the analyses in this dissertation account for a broad suite of confounding factors, there remain several potential sources of omitted variable bias. Most importantly, despite providing the most comprehensive information available on the demographic, socioeconomic, and health-related characteristics of populations in Canada and Germany, the CCHS and GSOEP lack rigorous measures of life-course socioeconomic position. In all three studies, insufficient information on this construct is likely to represent the single largest source of unmeasured confounding.[200] Additional omitted variables of consequence relevant to all three studies include related indicators of socioeconomic position, such as social class, wealth, and occupational sector in the last job, as well as the reason and duration of the current spell of unemployment. Due either to lack of measurement or, in the case of the GSOEP, inconsistent response and attrition, this information was not readily obtainable from either of the data sources.

Generalizability

In theory, the main findings presented in this dissertation are generalizable to other advanced capitalist countries with similar unemployment protection systems. However, the results may not be generalizable to societies in which unemployment benefit programs are either considerably more or less generous. On the assumption that greater wage replacement may lend itself to better health outcomes, [43] we might hypothesize that the effects of income maintenance on health are stronger (weaker) in societies characterized by more (less) generous unemployment benefits. Conversely, on the assumption of diminishing health returns to income, [201,202] we might hypothesize that the effects of retrenching income maintenance are stronger (weaker) in societies characterized by less (more) generous unemployment benefits. As extant analyses on this topic are limited to set of countries with very similar unemployment protection systems (i.e. Canada, Germany, the United Kingdom, and the United States), further research is needed to assess the validity of these hypotheses.

Furthermore, while my dissertation explores the associations of unemployment, unemployment benefits, and unemployment benefit retrenchment with self-rated health, my findings may not be generalizable to other health outcomes, including major indicators of morbidity and mortality. The use of self-rated measures of general health status is widely validated in the literature.[192,203–205] In some contexts, the predictive validity of self-rated health has even increased over time.[206] Thus, there are reasons to believe that the patterns and associations observed here may extend to other outcomes. On the other hand, evidence suggests that, in some instances at least, changes in self-rated health do not track well with changes in more objective and clinically-relevant outcomes.[207,208] In addition, comparisons of identical self-rated health indicators across multiple surveys targeting the same population have been shown to report disparate baseline levels and trends, particularly among socioeconomically disadvantaged groups.[209] Future work in this area may therefore seek to replicate these findings using a broader set of indicators, including more objective measures of health status, such as those available through data linkages with administrative health records.[210]

6.5 Future Research Directions

Expanding the Scope of Empirical Findings on Welfare State Retrenchment and Health

Research on the health effects of welfare state retrenchment will no doubt continue to expand in the coming years. Given how widely neoliberal policy reforms have been enacted, opportunities remain for leveraging existing natural policy experiments to investigate the relationship between welfare state retrenchment and health. Future research may seek to expand the scope of existing evidence and knowledge on this topic in the following ways: (i) by addressing previously neglected areas of social policymaking (e.g. pension reform and disability reform);[78,152] (ii) by increasing the number of countries for which such evidence is available, including countries in the Global South, where neoliberal reforms were first and most vigorously imposed;[172,211–213] (iii) by examining whether the health consequences of retrenchment have borne out more heavily on some social groups than on others (e.g. across axes of class, gender, race, and immigration status);[214,215] and (iv) by looking at other health outcomes, including more objective and clinically-relevant indicators of morbidity and mortality.

Validating Cross-Sectional Findings by Leveraging Longitudinal Data Sources

A vast majority of existing findings on the health effects of welfare state policies and welfare state retrenchment is cross-sectional in nature and suffers from corresponding risks and biases. Future research would benefit from leveraging available longitudinal data sources to adopt a more life-course based approach to the study of individual health as it changes through rapidly evolving welfare state contexts.[96,30] In Canada, major sources of longitudinal, population-based data ceased to be collected in 2011, with the termination of both the National Population Health Survey (NPHS) and the Survey on Labour and Income Dynamics (SLID). However, the increasing availability of internationally harmonized datasets, such as the Cross-National Equivalent File (CNEF) and the European Union Statistics on Income and Living Conditions (EUSILC), open up new opportunities for conducting longitudinal research within a comparative framework, using multiple panel surveys across numerous country contexts.[216,217]

Linking Together Socioeconomic and Health Administrative Data

A major limitation of existing research on the topic of welfare state policies and health concerns the nearly singular reliance of this literature on self-reported measures of key exposures (e.g. benefit receipt) and common outcomes (e.g. self-rated general and mental health).[29] The integration and use of administrative data sources across multiple domains and sectors, such as health, labour, and welfare, therefore represents another important priority and avenue for future research in this area of work.[210] In Canada, for example, the increasing availability and coverage of administrative information is yielding novel opportunities for historical linkages between personal health records, tax files, and benefit enrollment data.[218] Data linkages of this nature will provide a powerful platform for advancing the breadth, validity, and reliability of existing findings on the health effects of welfare state policies and policy reforms.

Broadening Our View to the Welfare State to the Arena of Predistribution

To date, empirical research on the health effects of social policies has focused heavily on the redistributive functions of state intervention: that is to say, the subset of welfare state programs designed to correct or mitigate market-generated risks and inequalities through the reallocation of resources between distinct social and economic groups. By contrast, this literature has awarded considerably less attention to the arena of 'predistribution' – an increasingly common term used to describe the repertoire of antecedent policies and regulations through which governments intervene against market forces to prevent socioeconomic risks and inequalities from arising in the first place. [219,220] Indeed, the neoliberal restructuring of the welfare state has entailed a much broader suite of changes than those enacted to unemployment benefits and related income maintenance programs: it has manifested wholesale shifts in the regulation of the labour market and other key areas of the economy (e.g. education, finance, housing, and childcare).[139,140,221] Public health evidence in these areas of policymaking are still very much patchy.[100,222] For example, we know very little about the population health effects of minimum wage laws, employment protection legislation, and union membership or collective bargaining coverage.[223–230] We know even less about whether or to what extent changes to these societal institutions have contributed - positively or negatively, depending on the nature of these changes - to population health trends over time. Given the sharp decline in 'predistribution' during the neoliberal era, [68, 180, 181] future developments in the field of public health should give greater attention to these issues and their related social, economic, and health-related consequences.

6.6 Conclusion

The field of public health has long recognized the theoretical and empirical salience of the welfare state as a determinant of health. Yet, surprisingly, it has neglected to explore a wide range of relevant questions about how and why the welfare state determinants of health have changed over time. This dissertation presents novel insights on the nature and consequences of this change, with specific reference to the empirical connections between unemployment, unemployment protection, and health in the neoliberal era. Taken together, the findings presented in this dissertation illustrate how a more dynamic view of the welfare state can contribute to ongoing discussions and debates in the field of public health. Most importantly, they contribute to

outstanding efforts on the part of social epidemiologists to explain and, ultimately, to tackle the problem of persistent health inequalities in our neoliberal times.

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