

INEQUITY IN HEALTH COVERAGE POLICY FOR MIGRANTS & MEDICATION

HEALTH AND PRESCRIPTION DRUG COVERAGE INEQUITY: TOWARDS
INCLUSIVE MIGRATION AND HEALTH POLICY

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A Thesis Submitted to the School of Graduate Studies in Partial Fulfillment of the
Requirements for the Degree Doctor of Philosophy

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McMaster University DOCTOR OF PHILOSOPHY (2020) Hamilton, Ontario
(Health Research Methods Evidence and Impact)

TITLE: Health and Prescription Drug Coverage Inequity: Towards Inclusive Migration
and Health Policy

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NUMBER OF PAGES: vii, 345

Lay Abstract

Universal Health Coverage aims to ensure that all people can use the high-quality health services they need. It also ensures that the cost of funding health services is shared fairly across society so that no one experiences poverty from having to pay out-of-pocket for high healthcare costs. Migrants are often excluded from national health coverage plans and these plans may not cover the costs of prescription drugs, leaving some individuals without financial protection. This dissertation addresses these migrant and prescription drug gaps in health coverage by 1) revealing how political actors use policy ideas to define migrant health problems and enact change, 2) reviewing quantifiable evidence on the health impacts of health coverage for migrant populations, 3) examining the relationship between health services use and prescription drug coverage status for migrants and non-migrants in Ontario and 4) exploring how factors that challenge or assist migrants' access medications affects their health.

Abstract

Health financing policies implemented by nations around the world vary based on who receives coverage and what health system resources are covered. Although, many health systems are attempting to move towards Universal Health Coverage, part of their populations continue to incur out-of-pocket payments for using all or some health services. Some health systems restrict health insurance for certain migrant populations, providing coverage for emergency care only, or none at all. Other health systems fail to provide coverage for prescription drugs, leaving those without the ability to pay out-of-pocket for medications behind. The lack of financial protections against catastrophic or impoverishing healthcare expenditures for these patients may deter them from seeking the care they need or increase the risk of severe financial hardships. This dissertation addresses these migrant and drug coverage gaps by examining the impacts of health financing policies and how these can be changed to move health systems towards Universal Health Coverage.

First, this dissertation examines restrictions to refugee health policy in Canada by conducting an interpretive policy analysis to reveal how political actors strategically use causal stories to enact policy change. Second, quantitative studies assessing the effects of health insurance on migrants' health-related outcomes are systematically reviewed. Third, this dissertation explores a provincial health system without universal prescription drug coverage to establish associations between health services use, prescription drug coverage and immigrant category. Finally, given migrants experience health outcome and health services utilization disparities, an exploratory analysis of factors that impede or

assist migrants' access to prescription drugs is conducted to uncover how these factors influence their health. While each study is distinct, together, these chapters build on each other using mixed methodological approaches to identify ways that address health financing policy gaps to reduce health inequities, build inclusive and cost-effective health systems and strengthen global health security.

Acknowledgements

This PhD dissertation has made its journey from conception to completion not as a solitary endeavor, but through the support of many people to whom I would like to express my gratitude.

First, to my supervisor, Dr. Lisa Schwartz. Thank you for your mentorship and guidance throughout the PhD and research process. Your unwavering support these past four years and your motivating creative and critical counsel encouraged me every step of the way. May we continue to “write what should not be forgotten.” To my committee members, Dr. Andrea Baumann, Dr. Emmanuel Guindon and Dr. Olive Wahoush, thank you for your thoughtful feedback, brilliant insights and constant support. Dr. Andrea Baumann, without your support and encouragement, I never would have thought to embark on this PhD journey – thank you. Dr. Emmanuel Guindon, thank you for your quantitative insights and expanding my research capacity. Dr. Olive Wahoush, I am grateful for your mentorship to teach and inspire others in the field of migrant health. The opportunities to work with each of you in different capacities and disciplines has helped me grow in ways I never imagined – thank you.

I have been fortunate in the Health Policy Program to have the opportunity to learn from and work with a number of strong role models. Dr. Julia Abelson, Dr. Arthur Sweetman, Dr. David Feeny, Dr. Christopher Longo, and Dr. Chelsea Gabel, thank you for your support at various stages of this PhD journey. To my external examiner, Dr. Michaela Hynie, thank you for your remarkable insights and feedback at the final stages of this work. To my professors outside of the program, Prof. Michael Ladouceur and Prof. Heather Sampson, thank you for inspiring me to pursue a research career before this journey began.

To Lydia Garland, Terry Martens, and Sheri Burns, thank you for your friendship and generosity, helping me navigate the complexities of graduate studies and always lending a shoulder to lean on. To Dr. Li Wang, Dr. Peter Kitchen, Dr. Mustafa Ornek and Anna Kata, thank you for making my transition into McMaster University’s Research Data Centre seamless – it has been a great experience and I am eager to return.

To my Health Policy PhD colleagues and friends – Sultana, Ahmed, Amilcar, Benard, and my peers in other years of the program – thank you for making the PhD experience unforgettable. Our tightknit community made the solitary PhD experience a myth. To my colleagues and friends in other programs who have supported this work along the way – Laura Banfield, Japteg Singh, Nimitha Paul and Mary Crea – thank you.

To the organizations I collaborated with, including Compass Community Health, Dixie Bloor Neighbourhood Centre and others, your work with the migrant and uninsured communities is important – thank you for your insights and assistance in making this research possible. I would also like to acknowledge the financial support I received for this research from the MacData Institute, Ontario Drug Policy Research Network, Canadian Research Data Centre Network and the government of Ontario.

Finally, we are nothing without the people who make us who we are. To my brother, Christopher, thank you for always being there for me. Thank you to my parents, Benita and Gerard Antonipillai, you believed in me before I could believe in myself.

Table of Contents

Chapter 1. Introduction	1
Chapter 2. Policy Agenda-Setting and Causal Stories: Examining how organized interests redefined the problem of refugee health policy in Canada	25
Introduction.....	28
Analytical Framework and Methods.....	30
Results.....	32
Discussion	40
Conclusion	43
Chapter 3. The Effects of Health Insurance on Migrant Health-Related Outcomes: A Systematic Review	56
Introduction.....	60
Methods	63
Results.....	66
Discussion	78
Conclusion	84
Chapter 4. Health services utilization by prescription drug coverage and immigration category in Ontario: An Intersectional Analysis.....	159
Introduction.....	163
Methods	170
Results.....	176
Discussion and Conclusion	182
Chapter 5. Patient and provider perspectives on how migrants access prescription drugs in Ontario: Implications for health policy and practice	259
Introduction.....	262
Methods	266
Results.....	271
Discussion	289
Conclusion	296
Chapter 6. Conclusion.....	311

List of Figures and Tables

Chapter 1:

Figure 1. Determinants of health for migrants along four phases of migration.....	5
---	---

Chapter 2:

Figure 1. The problem definition process – transforming political issues into policy problems.....	50
Figure 2. Media and document search strategy	51
Table 1. 2012 Interim Federal Health Program reform information	52
Table 2. Stone’s (1989, 2012) theory of causal stories framework	53

Chapter 3:

Figure 1. Study Selection Process.....	92
Figure 2. Health policy interventions examined by included peer-reviewed and grey literature	93
Figure 3. Number of studies for each health-related outcomes showing effects of health insurance status or policy intervention	94
Table 1. Characteristics of 26 Included Studies.....	95
Table 2. Summary of Findings on the Effects of Health Insurance on Migrants’ Health-related Outcomes	100

Chapter 4:

Figure 1. Descriptive Statistics of Drug Coverage Status by Immigrant Category and Sex	198
Figure 2. Predicted probabilities of health services utilization for working-aged adults by drug insurance status and immigrant category, separately, Ontario (2005, 2008, 2013, 2014)	199
Figure 3. Predicted probabilities of health services utilization in working-aged adults by drug insurance, immigrant category and sex in Ontario (2005, 2008, 2013, 2014)	200
Table 1.. Public Prescription Drug Coverage Plan Eligibility Criteria and Cost-sharing Mechanisms in Ontario	201

Table 2. Characteristics of Working-aged Adults from the Canadian Community Health Survey and Immigrant Longitudinal Database in Ontario (2005, 2008, 2013, 2014)	202
--	-----

Table 3. Average marginal effects (AME) of reporting at least one visit to a general practitioner, specialist or hospital in the last year, Ontario (2005, 2008, 2013-14).....	205
--	-----

Chapter 5:

Table 1. Characteristics of participants.....	302
---	-----

Figure 1. The process of how challenges to access medication influence migrant health	303
---	-----

Figure 2. Existing community and healthcare provider support to improve prescription drug access for uninsured and underinsured migrant patients	304
--	-----

Appendices:

Appendix A. Policy Agenda-Setting and Causal Stories.....	54
---	----

Appendix B. Systematic Review	106
-------------------------------------	-----

Appendix C. Health services utilization by prescription drug coverage and immigration category in Ontario	206
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Appendix D. Patient and provider perspectives on how migrants access prescription drugs in Ontario	305
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Appendix E. The Promise and Pitfalls of Ontario's Prescription Drug Coverage System	337
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List of all Abbreviations

ACA	Affordable Care Act
AGC	Attorney General of Canada
AIC	Akaike's Information Criterion
AME	Aide Médicale d'Etat
AME	Average Marginal Effects
BP	Blood Pressure
CAWEM	Citizen/Alien Waived Emergency Medical Care
CCHS	Canadian Community Health Survey
CCR	Canadian Council for Refugees
CDRC	Canadian Doctors for Refugee Care
CENTRAL	Cochrane Central Register of Controlled Trials
CHA	Canada Health Act
CHIPRA	Children's Health Insurance Program Reauthorization Act
CIC	Citizenship Immigration Canada
CIHI	Canadian Institute of Health Information
CMU	Couverture Maladie Universelle
COPD	Chronic Obstructive Pulmonary Disorder
COVID	Coronavirus Disease
CRDCN	Canadian Research Data Centre Network
CRNA	Cost-related Non-adherence
CTAS	Canadian Triage Acuity Score
ED	Emergency Department
EHIC	Electronic Health Insurance Card
EPHPP	Effective Public Health Practice Project
GP	General Practitioner
HCP	Health Care Provider
HiREB	Hamilton Integrated Research Ethics Board

HQO	Health Quality Ontario
ICESCR	International Committee on Economic, Social and Cultural Rights
IMDB	Longitudinal Immigration Database
IOM	International Organization for Migration
IRCC	Immigration, Refugees, and Citizenship, Canada
LMIC	Low- Middle-income country
NHI	National Health Insurance
ODB	Ontario Drug Benefit
ODPRN	Ontario Drug Policy Research Network
ODSP	Ontario Disability Support Program
OHIP	Ontario Health Insurance Plan
OPP	Out-of-pocket payments
PRISMA	Preferred Reporting Items for Systematic Reviews and Meta-Analyses
PROSPERO	International Prospective Register of Systematic Reviews
PRWORA	Personal Responsibility and Work Opportunity Act
RDC	Research Data Centre
RDL	Royal Decree Law
SCHIP	State Children's Health Insurance Program
SDG	Sustainable Development Goal
SSRI	Selective Serotonin Reuptake Inhibitors
TDP	Trillium Drug Program
UHC	Universal Health Coverage
UN	United Nations
UNHCR	United Nations High Commissioner for Refugees
VIF	Variance Inflation Factor
WES	World Education Services
WHO	World Health Organization

Declaration of Academic Achievement

This dissertation presents four original research studies (Chapters 2-5), an introductory chapter (Chapter 1) and a concluding chapter (Chapter 6). Chapter 2 has been published in *Healthcare Policy = Politique de Santé*. Written permission has been provided to reprint this article as part of this dissertation. I, Valentina Antonipillai, am the lead author of each co-authored chapter. I conceived of all research questions with input at various stages from committee members and colleagues, completed all data collection, analyses and wrote the manuscripts. Chapter 2 is co-authored with Julia Abelson, Olive Wahoush, Andrea Baumann and Lisa Schwartz. Chapter 3 is co-authored with Lisa Schwartz, Japteg Singh, Olive Wahoush and Andrea Baumann. Chapter 4 is co-authored with Emmanuel Guindon, Arthur Sweetman, Andrea Baumann, Olive Wahoush and Lisa Schwartz. Chapter 5 is co-authored with Lisa Schwartz, Olive Wahoush and Andrea Baumann.

CHAPTER 1. Introduction

This dissertation is comprised of four original research studies that focus on inequitable health financing policies, which challenge the adoption of Universal Health Coverage (UHC). UHC is a health policy that aims to ensure that all people obtain access to essential health services without suffering undue financial hardship when required to pay out-of-pocket (WHO, 2018). Some health financing policies implemented by nations around the world exclude migrant populations and/or fail to provide their residents with universal coverage for prescription drugs. The studies in this dissertation examine the implications of prescription drug and migrant health policy gaps and contribute toward achieving health equity in Canada and around the world by advancing the United Nations' Sustainable Development Goal (SDG) principle of "leaving no one behind."

Globally, nearly 100 million people are left behind, impoverished by healthcare expenses each year (Wagstaff et al., 2017), and many more are unable to afford the costs. With inequitable access to health coverage, research predicts up to five billion people will be unable to access healthcare in 2030 (WHO & World Bank, 2020). Among them are migrants, many of whom are living with uncertain or limited access to healthcare.

A lack of universal access to affordable and high-quality health services places human lives at risk of morbidity and death, endangering nations' long-term economic prospects, especially in times of crises. The COVID-19 pandemic exposes glaring weaknesses of national health system policies, whereby vulnerable populations without the means to access healthcare are disproportionately admitted to hospital and dying (Barrett et al., 2020; Dyer, 2020; King, 2020). UHC offers global health security,

protecting those most vulnerable while strengthening health systems by promoting accessible and affordable health services. Policymakers are now compelled by current circumstances to recognize the value of investing in healthcare, and these expenses are lower than the financial repercussions of inaction. While this dissertation does not examine the history and impact of UHC in the global context, it does contribute evidence to support policymakers considering the implementation of UHC as they are faced with two fundamental questions: (1) Who receives coverage? and (2) What health system resources are covered? As such, this dissertation explores (1) the implications of including and excluding migrants as recipients of national health coverage and (2) how the lack of prescription drug coverage affects health services use and access across non-migrant and migrant populations. This chapter provides an overview of the dissertation's four original studies, outlining their objectives, rationales and contributions in the following sections.

Objectives

The overarching aim of this dissertation is to provide evidence for policymakers to use during decision-making processes about whether to include coverage for migrants and essential medications when formulating universal health insurance plans.

As such, the specific objectives of the dissertation are to:

- (1) Examine the case of restricting health coverage for refugees in Canada to determine how political actors use causal stories to define policy problems and enact change (Chapter 2).

- (2) Synthesize and assess quantitative evidence that examines the effects of health coverage on health-related outcomes of migrants residing in high-income nations using systematic review methodology (Chapter 3).
- (3) Determine how health services utilization by working-age migrants and non-migrants is associated with their reported prescription drug coverage status, gender/sex and immigration category (Chapter 4).
- (4) Explore experiences and perspectives of migrant patients and migrant-serving providers in Ontario on factors that impede migrants' access to prescription drugs and those that assist uninsured and underinsured migrants access their essential medications (Chapter 5).

The following section outlines the background and rationales for all four original research studies in this dissertation. Migrants and individuals without access to prescription drug coverage are often left behind by national healthcare systems, and this research explores the mechanisms that drive these exclusory policies and their impact on health. It begins with an overview of health policy responses to migrants in Canada and around the world, followed by a summary of Canada's health system that lacks universal prescription drug coverage.

Background and Study Rationales

2.1. Migration and Health Policy

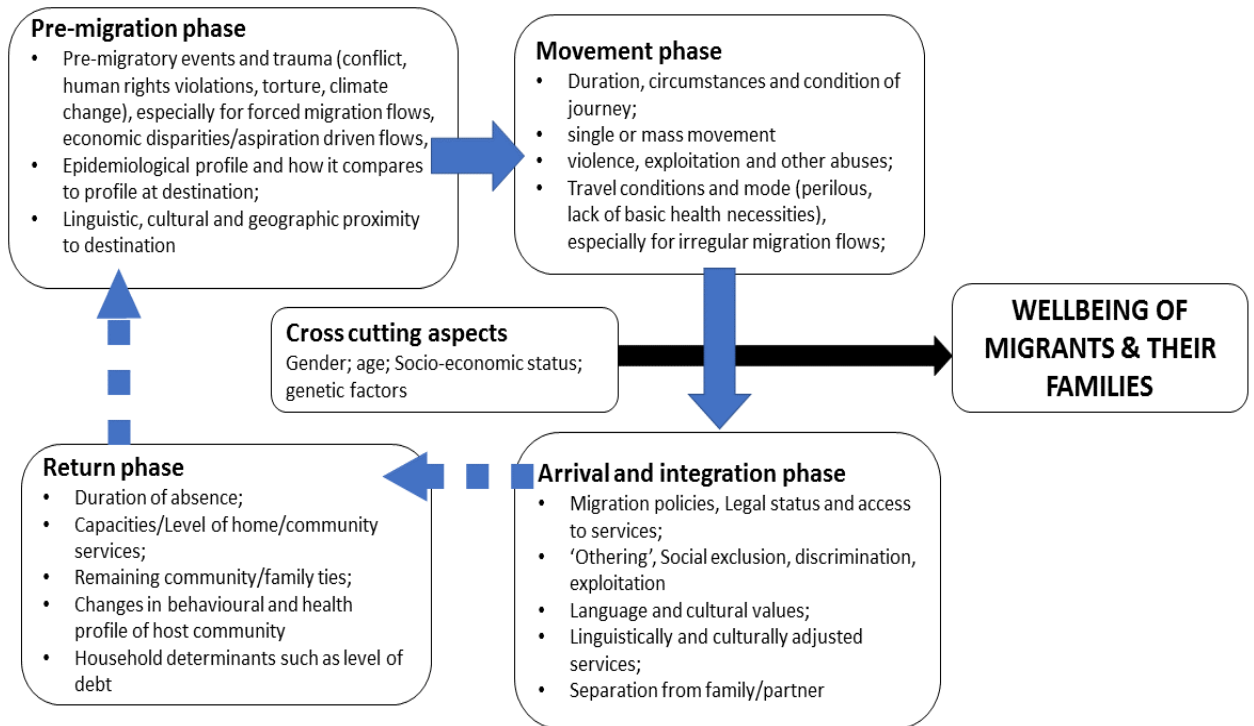
2.1.1. Background

Economic disparity, conflict and climate change have contributed to unprecedented population movements across the globe. In 2019, migration levels reached their highest proportions, propelling policymakers and healthcare providers to contend with the health implications of shifting population demographics (UN, 2019). There are multiple determinants of migrants' health at the individual/social and structural/policy levels before, during and after the migration journey (Figure 1). It is important to recognize that migrants are not a homogenous group and so their needs, vulnerabilities and resilient characteristics vary based on how their migration trajectories interact with factors that determine their health.

The studies in this dissertation focus on the arrival and integration phase. At this phase, figure 1 depicts social factors, such as one's age, gender and cultural values, as well as structural factors, such as migration policies and legal status, influence health in positive or negative ways (Zimmerman et al., 2011). International migration can indirectly benefit one's health by improving income levels and educational prospects (Clemens et al., 2009; Gibson and McKenzie, 2011). According to the World Bank, individuals who choose to emigrate from low-income countries to high-income countries experience a 15-fold increase in income, two times more school enrollments, and a 16-fold decrease in child mortality, on average (World Bank, 2016). However, some migrants experience greater exposures to health risks if migration is not managed properly, especially in the host country upon their arrival. For example, reviews reveal that following resettlement, migrants' experience increased maternal and mental health outcome disparities compared to native-born populations, as a result of determinants of

health that affect their successful integration (Hynie, 2018; Steel et al., 2009; Bollini et al. 2009).

Figure 1. Determinants of health for migrants along four phases of migration



From Migration Data Portal (2020), adapted from Gushulak, Weekers and MacPherson (2009)

Immigration is essential to sustainable economic growth and human development for most nations, especially when there are adequate policies to address migrants’ health needs and facilitate their societal integration. The SDGs identify migration as an impetus for sustainable development and recognize that their founding principle “to leave no one behind” must be applied to achieve UHC for all, irrespective of migration or legal status. Despite this global call to include migrants and the existence of international conventions developed to protect migrant health rights (ICESCR, 2005), many national policies governing equitable access to health services exclude migrant populations in part or

entirely. High and middle-income countries have frequently restricted health coverage for some migrant populations over decades, based on the reasoning to conserve financial resources (Antonipillai et al., 2018; Green et al., 2016; Ledoux et al., 2018). The exclusion of migrants from access to affordable health services through UHC may negatively impact their health and the host nation's health system in the long-term.

In Canada, refugees and refugee claimants receive publicly funded health coverage under Canada's Interim Federal Health Program (IFHP) policy. The federal government cutback healthcare coverage provided through the IFHP from 2012 to 2016, severely limiting access to healthcare services for some categories of refugees (Government of Canada, 2012). Prior to these cuts, refugees received comprehensive healthcare insurance, including coverage for physician, hospital, drug and supplementary (vision and dental) care (CIC, 2006). As healthcare coverage gaps persisted for refugees and claimants, provincial government-led insurance programs and clinics for newcomers emerged to bridge the gap for refugees to access healthcare. Provinces underwent significant healthcare financing and organization changes to accommodate refugees without access to the essential health services. Although the initial goal of the reforms was to contain the financial cost of healthcare financing for refugees, the reforms increased refugee health outcome disparities and transferred refugee health costs to provincial authorities and healthcare institutions (Antonipillai et al., 2017).

2.1.2. Rationale

The first study of this dissertation (Chapter 2) builds on previous research (Antonipillai et al., 2017; Antonipillai et al., 2018) to examine how political actors on opposing sides of the issue defined the refugee health policy problem using different causal story mechanisms. There is widespread recognition that the political discourse around migration policy has changed drastically in recent years, whereby the politics of fear and division have frequently framed pertinent national policy decisions (Butz and Kehrburg, 2019; Carreras et al., 2019; Collyer et al., 2020). Understanding how advocates of refugee health policy expansions shape policy ideas is essential to address anti-immigrant and populist rhetoric that exclude migrants and fuel restrictive policy changes. Our findings reveal that causal ideologies play a crucial role in migrant health policy-making processes, often drawing upon values and tacit knowledge due to limited evidence examining the impacts of restrictive health policies on migrant health outcomes. As such, the second study of this dissertation (Chapter 3) serves to generate evidence on the impacts of restrictive and inequitable health policies on the health-related outcomes of migrant populations. In Chapter 3, a systematic review of evidence on the effects of health insurance for migrant populations is conducted by identifying quantitative studies that assess the effects of health policy expansions, health policy restrictions and comparisons between those with and without health insurance on migrant health-related outcomes: health services use, access and health outcomes. Given the lack of research examining the effects of health policies on migrant health outcomes, the remaining two studies in this dissertation (Chapters 4 and 5) continue to employ an inclusive lens to generate evidence to inform policies for migrant and non-migrants alike. Chapters 4 and

5 focus on how a lack of prescription drug coverage influences health services use and medication access for migrants and non-migrants.

2.2. Prescription drug coverage gaps in Canada

2.2.1. *Background*

In Canada, publicly financed health insurance plans are regulated by provincial and territorial governments to provide all residents with coverage for medically necessary services administered by hospitals and physicians (Deber, 2003). The national health insurance system – also known as Canadian Medicare - was built in stages through provincial initiative and conditional grants from the federal government. It was eventually instituted across the nation by two policies: The Hospital Insurance and Diagnostic Services Act (1957) and the Medicare Act (1966). In 1984, the Canada Health Act (CHA) was passed to replace the federal hospital and medical insurance acts, consolidating their principles by establishing criteria on portability, accessibility, universality, comprehensiveness, and public administration (Health Canada, 2011). In particular, the principle of universality requires that “all residents of a province or territory be entitled, on uniform terms and conditions, to the publicly funded health services covered by provincial or territorial plans” (Kirby et al., 2002, p.308). Contrary to the principle, provinces and territories do not provide universal coverage for medically necessary medication outside of hospitals, despite increasing reliance on prescription drugs to treat illnesses and reduced hospital stays. Nearly one-third of Canadian adults

live with at least one chronic disease and require treatment through prescription medications (Canadian Chronic Disease Indicators Steering Committee, 2018).

Although advances in prescription medications have marked major improvements in the management and treatment of disease, outpatient prescription drug costs are not covered by Canada's healthcare system. Canada is the only high-income country with a universal healthcare system that does not include prescription drug coverage for its residents (Morgan, Daw and Law, 2013). Instead, prescription drugs are covered through a mix of public and private insurance, or through out-of-pocket payments (OPP) by patients (Daw et al., 2010). There is substantial variability in public drug coverage programs regulated across federal and provincial/territorial jurisdictions in the drug formulary composition, cost-sharing mechanisms (deductible, copayment, premium, etc.) and eligibility for coverage (Hurley, 2010). These public programs are complemented by hundreds of private drug insurance programs offered by employers, professional associations and unions that vary in many ways (Morgan and Boothe, 2016). This patchwork of drug coverage programs leads to gaps in coverage for some Canadians, especially for those who are not eligible for public plans or cannot afford private insurance. In 2019, Canadian households paid \$6.8 billion out-of-pocket for prescription drugs, which account for 20% of Canada's total prescription drug costs (CIHI, 2019). One in five Canadian households spent \$500 or more on pharmaceuticals through OPPs each year (Angus Reid, 2015). With high OPP spending, several surveys report that one in ten Canadians do not fill their prescription or adhere to medications as prescribed because of the cost (Kennedy and Morgan, 2009; Law et al., 2012; Law et al., 2018; Lee

and Morgan, 2017). This phenomenon, termed cost-related non-adherence (CRNA), is high in Canada by comparison to other high-income countries (Morgan and Lee, 2017).

As prescription drug insurance reduces the cost of medications, economic theory predicts patients may purchase more pharmaceuticals than they would have purchased at the normal market price, a phenomenon known as moral hazard (Hurley, 2010).

However, Nyman (2004) explains that prescription drug coverage improves access to medications by providing patients with an income to either cover the costs of prescription drugs they would otherwise purchase, or cover the cost of treatments that they would typically not be able to afford, thereby representing a welfare gain for society. There is evidence to support welfare gains associated with drug insurance, which suggest that a patients' health may be compromised if they do not have access to prescription drugs, especially among vulnerable populations (Soumerai et al., 1991; Soumerai et al., 1994; Tamblyn et al., 2001). A systematic review, conducted by Lexchin and Grootendorst (2004), examined the effects of prescription drug cost-sharing on patient health outcomes, use and costs of health services among vulnerable populations including the elderly, low-income individuals and those living with serious chronic disease. The authors revealed that the use of essential and non-essential prescription drugs declines in response to the introduction of copayments. To address the impact that OPPs may have on medication use, it is vital to understand price elasticity, or how the demand for medication may be affected when patients are faced with changes in the price of their pharmaceutical treatments. The authors found that for most vulnerable populations, drug price elasticity ranged from -0.11 to -0.5, indicating that a 10% increase in the price of a

prescription medication would reduce the patient's drug use by 1-5% (Lexchin and Grootendorst. 2004).

In Canada, the adverse health effects following increases in public drug plan deductibles and copayments for beneficiaries in both Quebec (1997) and British Colombia (2003) have been well-documented. Tamblyn et al. (2001) examined the impact of increased prescription drug cost-sharing for the elderly and welfare recipients in Quebec on the use of essential and less-essential medications. The authors found that reductions in the use of essential prescription drugs were significantly associated with increased adverse health outcomes and increased Emergency Department visits among the elderly and low-income families. Dormuth et al. (2008) examined the effect of two cost-sharing policies in British Colombia on emergency hospitalizations due to chronic obstructive pulmonary disease, asthma or emphysema (CEA), among elderly users of long-term inhaled medications. The authors found that increasing cost-sharing through an income-based deductible policy with 25% coinsurance was positively associated with an increased risk for emergency hospitalization for CAE chronic diseases. Without timely access to prescription drug treatments, a disease may progress to acute levels, resulting in an increased likelihood of adverse health outcomes and using more expensive secondary health care services.

2.2.2. Rationale

Health financing systems have attempted to address the rising costs of pharmaceuticals through cost containment strategies that limit the scope of medication

coverage to categories defined by the drug formulary, restrictive eligibility criteria or higher levels of cost-sharing between the insurer and the insured. These drug coverage policies have been shown to compromise health and quality of care (Carone et al., 2012; Puig-Junoy et al., 2014; Tamblyn et al., 2001). Essential medications are an integral part of UHC, and without universal coverage for prescription drugs, patients in vulnerable situations may be placed at greater risk of financial hardship for catastrophic drug expenditures.

As previously mentioned, some migrant categories may be more susceptible to experience health vulnerabilities following resettlement due to different interactions with individual and structural determinants of health (Figure 1). For example, refugees are at a higher risk than the general population for specific mental illnesses due to pre-migration stressors from traumatic experiences of forced migration, such as exposure to war, violence and torture (Kirmayer et al., 2011). The conditions associated with migration and resettlement may increase vulnerability to poor health (Davies et al., 2009; Hynie, 2018). Research suggests that migrant populations are less likely to use health services and obtain prescription drug coverage compared to their Canadian-born counterparts (Sanmartin & Ross, 2006; Muggah et al., 2012; HQO, 2016). As such, a quantitative analysis that examines the association between prescription drug insurance status and health services utilization and whether this association differs across non-migrants and migrant populations (economic immigrants, family-class immigrants and refugees) was conducted in Chapter 4.

Our findings revealed that prescription drug coverage was associated with primary and specialist care service use for non-migrants and economic immigrants alike. However, family-class and refugee women demonstrated that even with public drug insurance they were less likely to use health services than their uninsured counterparts, suggesting the existence of additional barriers to accessing prescription medications. This finding led to the fourth study of this dissertation (Chapter 5), which is a qualitative study that explores the experiences and perspectives of migrant patients and migrant-serving providers on factors that impede and assist migrants' access to essential medications. Together, Chapter 4 and 5 reveal important insights for policymakers intending to expand universal health coverage to include prescription drugs and for healthcare providers serving migrant patients.

Study Approaches

This dissertation addresses gaps in the literature through four original scientific contributions that adopt a transdisciplinary approach, informed by political science, economics, social epidemiology and global health. The research conducted in this dissertation is situated within the pragmatist paradigm, in which the ontological position adopted recognizes the existence of multiple realities, those which are subjectively constructed and objectively observable in the social world (Onwuegbuzie et al., 2009). As such, this dissertation employs quantitative and qualitative methodologies which are conducted in parallel, yet, build on each other so that the findings are mixed at the interpretation stage (Onwuegbuzie and Leech, 2009). A parallel mixed analysis allows

for the separation of research paradigms across all four chapters so that data can be analysed within each study, before being compared in the final chapter (Chapter 6). The epistemological positions of the first and last study (Chapters 2 and 5) assert that social constructions generate knowledge, through the policy discourse (Chapter 2) and experiences of migrant patients and migrant-serving providers (Chapter 5). In contrast, Chapters 3 and 4 are firmly founded within the post-positivist epistemology, which asserts that there is an objective reality to be studied, but that all observation is inherently fallible, relying on inferential statistics and estimating probabilities, rather than certainties (Onwuegbuzie et al., 2009).

The four chapters presented in this dissertation build on each other. Specifically, insights gained from the policy analysis (Chapter 2) exposed the need to strengthen the evidence base for policymakers to draw on during the formulation of migrant policies, prompting the systematic review of the effects of health insurance on migrant health-related outcomes (Chapter 3). The review findings suggested health insurance influenced health services utilization and access of migrant populations, serving as the impetus for a quantitative analysis (Chapter 4) to assess the relationship between health services use and prescription drug coverage, given that medication coverage remains a locus of inequity in Canada's universal health system. Finally, the results of the quantitative research suggested that more than prescription drug coverage gaps influenced migrant health disparities, which inspired the execution of qualitative research (Chapter 5) to develop grounded theories that revealed how challenges and facilitators of medication access influenced migrant health.

The mix of research paradigms and associated methodologies permits a flexible and holistic investigative approach to address the range of complex research objectives raised in this dissertation. Chapter 2 employs an interpretative policy analysis to explore the case of Canada's restrictive refugee health policy reform by examining the political discourse through the qualitative technique of content analysis. Chapter 3 systematically reviews a diverse body of peer-reviewed and grey literature produced by over eighty high-income countries, narratively synthesizing evidence generated by non-randomized studies of various designs, from quasi-experimental to cross-sectional. The protocol of this systematic review was registered on PROSPERO. Chapter 4 employs a cross-sectional study design using linked data derived from a national health survey and administrative immigration database representing a sample population residing within the provincial setting of Ontario (See Appendix E). A novel intersectional intercategorical approach is applied to this quantitative research, which posits that the social identity of migrants and social structure of the patchwork prescription drug coverage system interact to influence health services utilization. Predicted probabilities and average marginal effects are estimated to facilitate comparisons across drug insurance status and immigrant category. Chapter 5 uses a grounded theory methodology to qualitatively explore the perspectives and experiences of migrant patients and migrant-serving providers on factors that impede migrants' access to prescription drugs and those that assist uninsured and under-insured migrants access the medications they need. In-depth interviews with participants provided data to develop an integrated set of theoretical concepts that

synthesize, interpret and display processual relationships of accessing prescription drugs in Ontario.

Study Contributions

Compared to other scholarship in this area, this dissertation is unique in how all four studies acknowledge migrants are not a homogenous group of individuals and experience varying levels of health vulnerabilities and resiliencies based on their migration trajectory. Chapter 2 recognizes differences between refugees and refugee claimants, also known as asylum-seekers, and outlines how the 2012 health policy reforms imposed different restrictions for different refugee cohorts within these two categories. Chapter 3 adopts a broader view to synthesize evidence from all high-income countries and discern how health insurance affects migrant health, but still maintains three distinct categories upon analysis, acknowledging that immigrants, refugees and asylum-seekers have different interactions with determinants of health along their respective migration journeys. Chapter 4 explores the association between health services use and prescription drug coverage for non-migrants, economic immigrants, family-class immigrants and refugees. It is one of the first quantitative explorations of health across migrant category in Canada due to the recent availability of linked and disaggregated migration health data. As such, migrant categories are determined by the data available and do not include information on any migrants with temporary status, such as refugee claimants. Therefore, the qualitative study in Chapter 5 explicitly gathers interview data from all migrant categories, from economic immigrants, family-class immigrants,

refugees, and refugee claimants to explore factors that influence their access to prescription drugs.

This dissertation reveals the role of causal stories in the migrant health policy-making process in Canada, providing interested stakeholders with the tools to address anti-immigrant ideologies in the shift towards inclusive policy and practice. It also provides quantitative and qualitative research findings to strengthen the evidence base that policymakers and practitioners can draw from when making decisions about universal health coverage or serving migrant patients, respectively. Methodologically, this dissertation employed novel applications of intersectionality theory to quantitative inquiry (Chapter 4) and developed an enhanced version of the Effective Public Health Practice Project (EPHPP) to account for the statistical analysis of specific quantitative study designs (Chapter 3). It is also one of the first works to utilize the Canadian Community Health Survey linked to the Longitudinal Immigrant Database to explore migration and health in Ontario (Chapter 4). Theoretically, this dissertation contributes a framework depicting the policy problem definition process, incorporating Deborah Stone's work on causal stories (Chapter 2) and developed conceptual and processual theories which emerged from the qualitative analysis of interview data (Chapter 5). These grounded theories expose how various factors influence migrants' health through impeding and assisting their access to prescription medications. Collectively, these theoretical contributions advance our understanding of how to support migrant patients and practitioners in strengthening inclusive and migrant sensitive healthcare systems.

In summary, this dissertation addresses the following four questions:

- (1) How do political actors on opposing sides of the refugee health policy reforms issue use causal stories to (re)define the policy problem and enact change? (Chapter 2)
- (2) What are the effects and associations of health insurance on the health-related outcomes of migrants residing in high-income host countries? (Chapter 3)
- (3) What is the association between health services utilization and prescription drug coverage among working-age individuals in Ontario, and does this association differ by gender/sex and immigration category? (Chapter 4)
- (4) How do factors that influence migrants' access to prescription drugs in Ontario impact their health? (Chapter 5)

Together, these studies address questions about adopting Universal Health Coverage pertaining to the inclusion of migrants in national health coverage plans and the expansion of prescription drug coverage for all.

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CHAPTER 2. Policy Agenda-Setting and Causal Stories: Examining how organized interests redefined the problem of refugee health policy in Canada

Preface

This chapter has been published in *Healthcare Policy = Politique de Santé* journal under Longwoods Publishing. This chapter explores how political actors on opposing sides of an issue defined the problem of refugee health policy reforms in Canada using Stone's causal story framework. An interpretive policy analysis of the Interim Federal Health Policy reforms was conducted examining the political discourse to reveal how policy actions were shaped by policy ideas. This research provides policymakers and stakeholders with migrant health policy agenda-setting strategies during the problem definition process.

I was responsible for conceptualizing the research question, study design, and methods, through consultations with Dr. Julia Abelson. I was responsible for all the data collection and analysis, which took place between September and December 2016. Drs. Julia Abelson, Lisa Schwartz, Andrea Baumann and Olive Wahoush each provided feedback on the drafts, which were incorporated into the final version of the chapter. Permission has been provided to McMaster University to reprint this article as part of this dissertation.

Original Research Paper

Policy agenda-setting and causal stories: Examining how organized interests redefined the problem of refugee health policy in Canada

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Word count: 3975 (including in-text citations)

Abstract word count: 147

Exhibits: 2 tables, 2 figures, 1 Appendix (3 tables)

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Key words: refugee, health policy, IFHP reforms, causal stories, problem definition

Antonipillai, V., Abelson, J., Wahoush, O., Baumann, A., & Schwartz, L. (2020). Policy Agenda-Setting and Causal Stories: Examining How Organized Interests Redefined the Problem of Refugee Health Policy in Canada. *Healthcare Policy = Politiques De Santé*, 15(3), 116–131. <https://doi.org/10.12927/hcpol.2020.26126>

Abstract

The development of refugee health policies is significant, given the increased volume of displaced persons seeking refuge in Canada and around the world. Changes to the Canadian refugee health policy, known as the Interim Federal Health Program (IFHP), limited healthcare access for refugees and refugee claimants from 2012 to 2016. In this article, we present a policy analysis using the case of the IFHP retrenchments to examine how political actors on opposing sides of the issue defined the problem using different causal story mechanisms. This analysis reveals that organized interests dramatically changed the problem definition of the IFHP reforms. Following their use of causal stories in redefining the problem, the courts declared that the reforms to refugee healthcare were a form of cruel and unusual treatment. Understanding policy strategies used by proponents of refugee healthcare coverage expansion is important for countries responding to the current, enduring refugee crisis.

Introduction

The United Nations High Commissioner for Refugees (UNHCR 2019) reports that there are 70.5 million forcibly displaced migrants worldwide, representing the highest level of forced migration since World War II. Following the protraction and persistence of refugee crises around the world, Canada has resettled more than 132,000 refugees and refugee claimants over the past four years, many of whom receive healthcare coverage under the Interim Federal Health Program (IFHP; Government of Canada 2019). The IFHP is a federally funded program established in 1957 that provides comprehensive healthcare insurance for refugee populations seeking protection in Canada (CIC 2006; IRCC 2017). Before 2012, refugees and claimants received healthcare coverage for physician and hospital visits as well as supplementary care, including optical, dental and drug coverage. On April 25, 2012, the former Conservative government of Canada introduced cutbacks to health coverage provided under the IFHP. These retrenchments separated refugee recipients into categories that provided varying levels of coverage depending on their country of origin and immigration status, significantly limiting healthcare access for this vulnerable population (Campbell et al. 2012; CIC 2012; Table 1).

(Insert Table 1)

Within a month, professional organizations and advocacy groups collectively voiced concerns for refugees' restricted healthcare access. Following their organized protest and legal challenge, the Federal Court of Canada ruled that the IFHP cuts constituted "cruel and unusual" treatment, violating Section 12 of the *Charter of Rights*

and Freedoms (CDRC v. AGC 2014). In response, the Federal Government of Canada announced “temporary measures” for the IFHP on November 4, 2014. This program revision was not a full reversal of the 2012 cuts, as ordered by the federal court, but it did restore some health services coverage for refugee women and children.

This policy analysis examines how political actors on opposing sides of the refugee healthcare cuts issue defined the problem to enact policy changes. It is based on the causal stories framework developed by Stone (1989, 2012), resting within the post-structural tradition of narrative policy research. Stone (2012) argued that the process of policy making entails a struggle over the meaning and significance of policy ideas and their influence on values embedded in community life. Disputes over collective community values drive policy debates articulated through relations of power and structures of governance. Subsequently, political discourse and language shape how policy ideas are communicated and translated into practice (Campbell 2002). An examination of the policy discourse will reveal the problem definitions and associated causal story constructions used by various government actors who initiated the IFHP cutbacks and by organized interest groups who called for its reversal. This analysis identifies stories or themes used to frame policy ideas of actors on both sides of the IFHP issue, contributing to our understanding of how political actors control interpretations, assign responsibility and influence policy decisions in refugee policy debates.

Analytical Framework and Methods

Stone's (1989, 2012) causal stories framework argues that causal ideas are at the core of understanding how difficult conditions or circumstances are transformed into political problems within the policy discourse. This process – referred to as “problem definition” – relies on the ability to attribute cause, blame and responsibility, while being amenable to human intervention (Stone 1989). Causal ideas are theories of causation that frame problems, strategically crafted using stories, symbols and numbers, applied by political actors on different sides of an issue to describe harms, assign responsibility and garner support to propose a policy solution. Throughout the problem definition process, political actors struggle for control over interpretations of the issue and compete to influence which causal idea becomes the main guide to policy (Stone 2012). These ideas are categorized into one of four causal theories that define problems based on the intentionality of the action and predictability of the consequences (Table 2). For instance, intentional causal theory suggests that the problem is derived from a deliberate action that produces expected consequences. Mechanistic causation refers to an unexpected action, such as a mechanical mishap, that leads to predictable outcomes, whereas accidental causal theory suggests that an unexpected action produces unpredictable consequences. Inadvertent causal theory indicates that the problem stems from an intended action resulting in unpredictable consequences.

(Insert Table 2)

Causal theories create the resulting problem definition using stories, symbols and numbers in the political discourse (Figure 1). According to Stone (1989, 2012), stories

are composed with heroes, villains, problems and solutions and categorized into those involving either change or power struggles. *Stories of change* include *stories of decline*, which depict changes for the worse or stymied progress, whereas *stories of rising* depict successful transformations. *Stories of power* include those of *control* or *helplessness*, which represent the gain or loss of power, respectively. Symbols can include powerful literary devices, such as synecdoche and metaphor, as well as ambiguity, which synchronize motivations and values that fuel collective action. In this context, a synecdoche is defined as “a small part of the policy problem, used to represent the whole” (Stone 2012, p. 159). Numbers are descriptions of the world, derived from measuring and counting a problem, that support stories and symbols based on their interpretations (Stone 2012).

(Insert Figure 1)

We used the policy case of the IFHP retrenchments in 2012 and their partial reversal in 2014 to examine how each problem definition process was constructed and how different causal mechanisms were used to define the problem by political actors on opposing sides of the issue (Yin 2009). An interpretive policy analysis of government documents, organizational reports, academic papers and a court proceeding was conducted. These documents were retrieved from ProQuest databases, PubMed, governmental and organizational websites and Google Scholar and examined to abstract different problem definitions of the refugee health policy reforms. In addition, news media articles on refugee health policy in Canada were searched using the LexisNexis database. Keywords included a combination of “Canada,” “health policy,” “refugee,”

“healthcare,” “coverage” and “IFHP.” The database search retrieved English-language newspaper articles only.

Canadian media reports ($n = 262$) were identified, and 135 articles were included in this study (Figure 2). News media coverage spanned nine provinces, of which 84% of articles were published in the top 10 newspaper sources (Appendix A). Documents ($n = 33$) published after the 2012 IFHP changes and before the introduction of the “temporary measures” to the IFHP in November 2014 were included. A content analysis was employed using a constant comparative approach to abstract themes of problem definition and causal stories, drawing on inductive discursive analysis techniques (Glynos et al. 2009). Triangulation of sources was conducted by assessing the consistency of data themes abstracted from the variety of documents analyzed in this study, strengthening the credibility and trustworthiness of the results (Patton 1999).

(Insert Figure 2)

Results

Causal theories were used by political actors on opposing sides of the issue to convey different representations of the problem of IFHP cutbacks: governmental actors used *intentional causation* and organized interests used *inadvertent causation*. This section examines each of these causal theories, deconstructing the causal stories used within each and revealing strategies used by political actors to gain support for their interpretation of the problem.

Causal Theory One: Intentional causation as a defense of the federal position

Federal government actors identified the issue of increasing refugee claims from European Union “democracies” that were rejected by the refugee determination system in Canada (Campion-Smith and Keung 2012; Appendix A). They transformed the issue into a political problem by framing the submission of failed asylum claims as the willful illegal action of fraudulent asylum seekers in Canada, which justified the implementation of the 2012 IFHP cutbacks. In this causal story, intentional causation is used to defend the federal government’s position of withdrawing or limiting healthcare coverage to certain groups of refugees, whereby the problem’s cause is assigned to an intended outcome resulting from guided, deliberate action. In turn, IFHP cutbacks were portrayed as a means to deter false refugee claims, contain costs and ensure fairness to Canadians.

Causal story strategies using intentional causation

DETECTING FALSE REFUGEE CLAIMS

The causal story portrayed by governmental actors is one of power and control, as the retrenchments are framed as a solution to “stop the abuse of Canada’s generous and overburdened healthcare system by bogus refugees” (Keung 2012a). According to then Prime Minister Harper, healthcare benefits were removed “if we had clearly bogus refugees who have been refused and turned down” (Gulli 2015). In this case, a symbolic device, the *synecdoche*, is used to convey that “bogus refugees” define the entire problem and policy response. However, labelling all claimants who were refused refugee status as “bogus refugees” represents only part of the story. As a result, the IFHP cuts not only eliminated coverage for failed claimants, it also limited healthcare access for claimants awaiting a decision on their claims as well as for privately sponsored refugees (Table 1).

One year following the implementation of the IFHP reforms, the then Immigration Minister Chris Alexander stated that “Under the old, broken refugee system, abuse was commonplace. Thanks to our reforms, we’ve seen the number of asylum claims from safe countries fall by 87%” (Alexander 2014). The Minister presented a *story of rising* in which progress was made as a result of the policy response. Despite the use of numbers to justify this *story of change*, “numbers in policy debates cannot be understood without probing how people produced them,” (Stone 2012, p. 159). Therefore, *ambiguity*, which is essentially the capacity to have multiple meanings, underlies the origin of these numbers, urging the question of whether these figures were produced as a result of the IFHP cutbacks or whether they were generated as a result of the changes to the refugee determination system that same year (Bhuyan et al. 2014).

CONTAINING COSTS

Under the intentional causal problem definition, governmental actors present the causal story that increased intake of fraudulent refugees costs the healthcare system, and the IFHP cuts are a cost-containment measure. According to governmental actors,

the cost of the IFHP continued to rise as a result of... the increasing number of people eligible for IFHP coverage. For example, there were 105,326 people eligible for IFHP benefits in 2003, whereas, there were 128,586 people eligible for benefits in 2012. ... the IFHP cost Canadian taxpayers \$50,600,000 in 2002/2003 and almost \$91,000,000 in 2009/2010. As consequence cost containment was a driving principle underlying the decision to reform (CDRC v. AGC 2014).

This causal *story of decline* reveals that with increasing numbers of refugees, there were harms in the form of increased costs to taxpayers. Political actors strategically used numbers to assert that the rising cost phenomenon was occurring frequently, even though “overall expenditure on the IFHP is a tiny fraction (0.04%) of the percentage of total health expenditure in Canada” (Stall 2012).

Governmental actors used symbolic devices, such as the *container metaphor*, to convey that the IFHP costs were overflowing and needed a container to prevent spillover. Moreover, Stone (2012) indicated that *stories of decline* serve as the impetus for *stories of control*. As such, governmental actors used the empirical argument of containing costs to set the stage for the *story of control*, whereby they emphasize that the IFHP reforms would “ensure that tax dollars are spent wisely,” saving taxpayers money (Keung 2012b).

ENSURING FAIRNESS TO CANADIANS

Governmental actors normatively argue that the cutbacks are a means to ensure fairness to Canadians. According to Alexis Pavlich, Immigration, Refugee and Citizenship, Canada spokeswoman,

Canadians have been clear that they do not want illegal immigrants and bogus refugee claimants receiving gold-plated healthcare benefits that are better than those Canadian taxpayers receive (Keung 2013a; Komarnicki 2014).

Again, political actors use synecdochical labels such as “illegal immigrants” and “bogus refugees” to represent all who were affected by the reforms. Moreover, “gold-plated healthcare benefits” is an *evocative metaphor* used to generate anger among Canadian citizens for having received fewer healthcare benefits than refugees. According

to Stone, “the emotional impact of symbolic devices can make it harder for audiences to recognize and question the underlying factual assumptions” (Stone 2012, p. 177). In this case, the public overlooks the plight of refugees, who flee their homelands seeking refuge from endemic violence. The fact that refugees receive coverage “equivalent to Canadians on social assistance” (Payne 2014) was omitted by actors in this problem definition.

Advocates describe the government’s response to refugees as one that excludes refugees as “aliens who are treated with suspicion, not as guests needing help” (Stanbrook 2014).

This label presents refugees as the other, an inhuman entity, undeserving of the social support and healthcare coverage that was previously provided to them.

Causal Theory Two: Inadvertent causation and the mobilization of organized interests

Organized interests transformed the issue of limited healthcare access for refugees into a political problem, in which the IFHP cuts were defined as “both inequitable and possibly inhumane in light of the extreme hardship and mistreatment many [refugees] have already experienced” (Arya et al. 2012, p.1876). In contrast to the government’s framing, interest groups used the theory of inadvertent causation to re-define the problem as one of guided action by the government with unintended consequences, “inadvertently introducing new system-level barriers to healthcare” (Arya et al. 2012, p.1876). The IFHP reforms created suffering for refugees, generated ethical dilemmas for healthcare providers, threatened public health and downloaded costs to provinces, healthcare institutions and taxpayers. These organized interests included health professional associations, refugee-serving organizations, provincial governments and refugees who organized to instigate the legal challenge (Appendix A).

Causal story strategies using inadvertent causation

PRODUCING PREVENTABLE SUFFERING FOR REFUGEES

The causal story depicted by organized interests is one of helplessness, in which tensions are portrayed explicitly on the assumption that situations were better in the past and have changed for the worse (Stone 2012). According to academic, media, legal and interest group reports (Barnes 2013; CCR 2013; CDRC v. AGC 2014; Raza et al. 2012; Seeking Solutions 2012; Sheikh et al. 2013), advocates conveyed that the situation before the reforms provided better access to healthcare for refugees, during which they received services equivalent to those received by Canadians on social assistance. In particular, organized interests conveyed how the IFHP reforms caused suffering for refugees on several accounts, for example, “Since the federal cuts, people with cancer cannot access chemotherapy, pregnant women are denied prenatal care, and diabetic children are not entitled to insulin medication.” (Payne 2014). These *stories of helplessness* are *synecdoches*, representing parts of the whole problem.

Some of these stories are represented in the media as “horror stories” (Stone 2012). According to Dr. Buchman, who treated a 72-year-old failed refugee claimant,

Her tumors were very large and disfiguring. Her chest wound was open and bleeding and infected. She was not eligible for cancer treatment... we needed to find a place to accept her and allow her a peaceful, comfortable, dignified death (Keung 2014a).

Horror stories generate fear, as expressed by healthcare professionals: “Watching our patients become ill as a direct result of this policy has left us feeling desperate. We

frankly fear for the lives of our patients” (Kraeker and O’Shea 2012). These *stories of helplessness* and *horror* are symbolic representations that allow people to identify with refugees, particularly the hardships and suffering endured as a result of the limited access to healthcare created by the IFHP reforms.

GENERATING ETHICAL DILEMMAS

A corresponding *story of helplessness* conveyed by organized interests in their problem redefinition is the loss of control by physicians and other healthcare workers in administering refugee care. According to Ontario’s former Health Minister, Dr. Eric Hoskins,

Cuts to the Interim Federal Health Program left refugee claimants unprotected and put our doctors in an untenable position, forcing them to choose who should be treated (Keung 2014b).

The ethical dilemma of placing healthcare providers in a position to deny providing care for a vulnerable group of people was a frequently discussed issue by the health provider community. According to advocates, “Healthcare workers should be deciding what care people need based on their illness – not their income or refugee status” (Hayes 2012).

THREATENING PUBLIC HEALTH

According to organized interests, the IFHP cutbacks harmed not only refugees but also the public. A causal *story of decline* is presented in which the reforms place the public at risk of developing communicable diseases. According to one interest group,

Even though treatment for a select list of public health conditions remain covered [for refugees], the testing needed to diagnose these conditions often isn’t,

paradoxically. This results in a failure to protect either the public or the patient (Stanbrook 2014).

Again, powerful literary devices are used to portray the negative outcomes of retrenching diagnostic services, to generate fear and mobilize action. An example of the use of the *synecdoche* appears in the following statement from Dr. Gruner of the Canadian Doctors for Refugee Care:

If they've got a cough, it could be tuberculosis but we're never going to know because they're not going to the doctor... But they are going to the playgrounds, the schoolyards, the shopping centres, putting the rest of us at risk (Levitz 2013).

DOWNLOADING COSTS

Organized interests argue that the reforms generate harm through the IFHP cutbacks because they download the cost of refugee healthcare from the federal level to healthcare organizations, provinces and, simultaneously, taxpayers. A causal *story of decline* is portrayed, where taxpayers lose money if refugees are not cared for. According to advocates, because the reforms limit access to preventive and primary care,

when a person with uncontrolled diabetes ends up in the emergency department...

Canadians will bear the burden of these policy changes through their taxpayer supported provincial health plans (Arya et al. 2012, p.1876).

The *story of decline* is further supported by empirical evidence in the form of numbers and facts, reported by hospitals that were absorbing the healthcare costs for refugees. According to media reports, "Sick Kids absorbed \$131,615 in outstanding costs," and

“the University Health Network... expects to foot a bill of \$800,000” as a result of the refugee healthcare cuts (Cauderella and Evans 2014; Evans et al. 2014; Keung 2013b).

One scientific study at the Hospital for Sick Children in Toronto, which examined emergency department (ED) admission rates six months before and after the IFHP cutbacks, demonstrated that the number of ED admissions among children doubled from 6.4% to 12.1%, with clinical significance (Evans et al. 2014). Empirical research facilitates the gain of political support when causal theories are successfully appealed to in scientific studies (Stone 1989). Thus, organized interests voiced the causal story supported by numbers and scientific evidence that the IFHP reforms limited refugees’ access to preventive care, which subsequently increases ED visits, and costs to provinces and taxpayers.

Discussion

The IFHP policy case reveals important insights into the role and subsequent impact of causal stories in defining and re-defining policy problems. Our results demonstrate a dramatic change in the way that the IFHP reform was initially justified and then later represented using different causal theories and accompanying strategies to portray them. The causal stories, in turn, had considerable shaping effects on resulting policy decisions by (1) changing interpretive social constructions of refugees, (2) garnering political support through both empirical and normative arguments, (3) assigning responsibility for the problem and (4) challenging or protecting the existing social order.

To control the interpretive frame, governmental actors defended the implementation of the reforms using intentional causal theory, depicting refugees as bogus and blaming them for deliberately submitting false claims to undermine the refugee determination system. The negative constructions generated by governmental actors fuelled a discourse of othering where providing refugees with healthcare generated the perception of “unfairness” or unequal healthcare opportunities among Canadian citizens, motivating public support. Governmental actors assigned blame by portraying the negative consequences of high healthcare costs on the supposed fraudulent actions of refugees. This analysis demonstrates that intentional causal theory was used as an instrument of social control to maintain existing global patterns of dominance over refugee reception, in which most Western host countries contain population movements to the global South, within regions of origin, and unevenly share the responsibility of refugee resettlement (Gottwald 2014).

To counter these stories, organized interests redefined the problem of the IFHP reforms using the theory of inadvertent causation, attributing the unintended effects of government action as the cause of suffering for refugees. Problem redefinition generated a normative shift, in which refugees were portrayed as doubly victimized, fleeing persecution only to endure intolerable suffering through restricted healthcare access. These social constructions humanized refugees through stories of relatable healthcare hardships in Canada, conveyed through select narratives of suffering or health decline following the reforms. Beatson (2016) argued that both governmental actors and advocates used simplistic framing strategies that other refugees as either bogus or the

victim. The author recommends that future advocacy entail a human-rights-centred approach that shifts “the emphasis on access to healthcare from charity to obligation,” legitimizing refugees as healthcare users while protecting them from fluctuating populist sentiment (Beatson 2016, p. 131). Our analysis reveals that in addition to changing the interpretive frame depicting refugees, causal stories are an important component of gaining political support through normative and empirical arguments. Following the IFHP cutbacks, normative arguments structured around core community values raised political awareness and public concern about the equity of refugee healthcare access, efficiency of the healthcare system and liberty of healthcare providers to appropriately practise. The assignment of blame on unintentional policy consequences placed accountability on the federal government to rectify not only refugee access to primary care but also the high burden of costs assumed by healthcare institutions and provincial governments. On the empirical level, costs for taxpayers were no longer solved by the reforms but were caused by them.

Moreover, shifting the location of responsibility from refugees to government action restructured alliances among refugee-serving groups, contributing to the growing mobilization of healthcare providers, advocacy groups, legal organizations, provincial governments and even a few refugees themselves. The causal stories implicitly appealed for a redistribution of power, whereby organized interests explicitly requested the federal government to cease producing harm, or the “cruel and unusual treatment” of refugees, a dominant belief supported by the Federal Court in their decision that the IFHP reforms violated the *Charter of Rights and Freedoms* (CRDC v. AGC 2014). Holtzer et al.’s

(2017) policy analysis recognizes the influence of external drivers such as the legal venue of the courts and the 2015 federal election that created opportunities for alternative causal stories to enter the political discourse. In addition to causal stories and external drivers, factors such as organized interest group interactions and institutional mechanisms that contributed to the full reversal of the IFHP retrenchments in 2016 require further investigation.

Limitations

There are several limitations to this study. First, a limitation of this study relates to the minimal exploration of interest group and institutional mechanisms for policy change. Second, although an examination of the way causal stories are used by political actors is valuable to understand the problem definition process and respond to the problematization of key issues, it is difficult to attribute select causal pathways to complex settings, such as politics. Finally, a limitation of this study involves the focus on English-language media sources only, which may have excluded important perspectives that were only covered in French-language news media.

Conclusion

Understanding causal story mechanisms used by advocates of refugee policy expansion is essential for those contesting restrictive measures implemented in response to enduring refugee crises around the globe. Restrictive refugee policy proponents construct migrants as the problem, portraying them as deviants eroding the regulated systems of host nations. The resulting political discourse situates moral responsibility and

economic costs on refugees. By using Stone's causal stories framework, this analysis reveals strategies for organized interest groups to contest populist and anti-immigrant ideologies in the problem re-definition process. Ultimately, changing the policy in question involves transforming the interpretive framework by redefining the problem, composed of causal stories that generate empirical and normative strategies to dismantle opposing arguments, shift accountability and challenge the existing social order.

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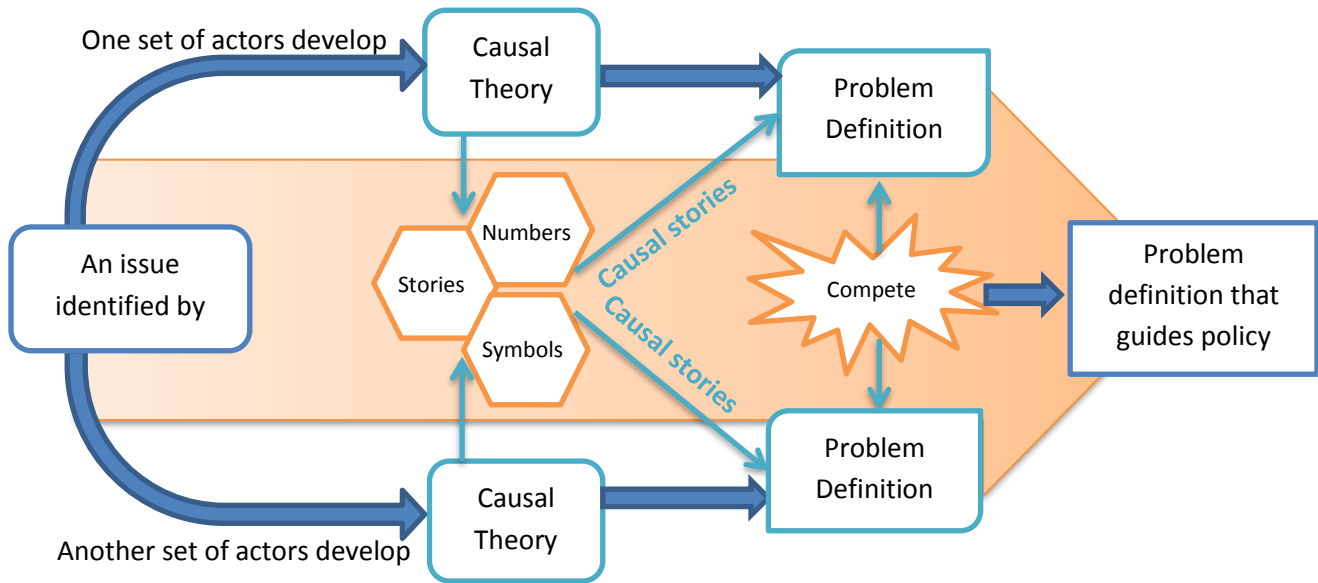
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Figure 1. The problem definition process – transforming political issues into policy problems.



Footnote: The problem (re)definition process occurs when at least two different groups of political actors develop causal theories, composed of mechanisms (stories, symbols and numbers) that frame divergent problem definitions, which compete against each other to gain precedence on the political agenda and guide policy-making processes

Figure 2. Media and document search strategy

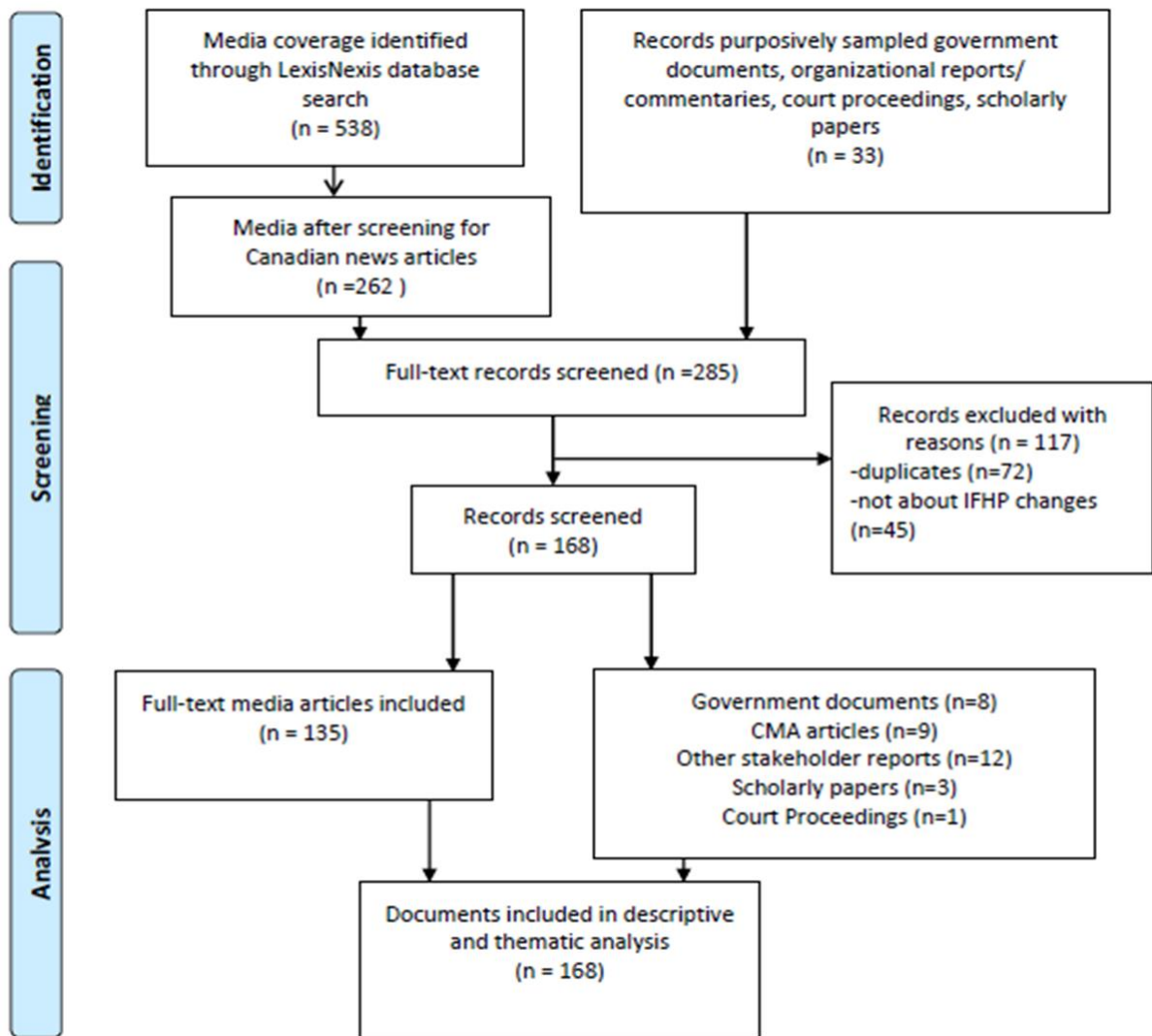


Table 1. 2012 Interim Federal Health Program reform information

Interim Federal Health Program group Who is eligible?	Coverage What are they eligible for?
Government-assisted refugees and other refugees who are receiving governmental resettlement assistance in the form of income support, including visa office-referred refugees and refugees coming to Canada through the Joint Assistance Sponsorship Program	Expanded healthcare coverage includes coverage of the following: • hospital services, • services of physicians, registered nurses and other healthcare professionals licensed in Canada, • laboratory, diagnostic and ambulance services, • supplemental services (audio care, home care occupational therapy, physiotherapy, dental care, optical care, etc.), • supplemental products (immunizations, medications) and • translation services for health purposes.
Privately sponsored refugees – Resettled refugees while under sponsorship who do not receive and have not received governmental resettlement assistance in the form of income support	Healthcare Coverage includes coverage of hospital services, services of a doctor or registered nurse who is licensed in Canada and laboratory, diagnostic and ambulance services, with some limitations. Medications and vaccines only when needed to prevent or treat a disease posing a risk to public health or to treat a condition of public safety concern, such as HIV or tuberculosis (TB).
Refugee claimants who are from a designated country of origin – a country deemed safe by the Immigration Minister	Public health or public safety healthcare coverage includes coverage of hospital services, services of a doctor or registered nurse licensed in Canada, laboratory and diagnostic services and medication and vaccines, only if they are required to diagnose, prevent or treat a disease posing a risk to public health or to diagnose or treat a condition of public safety concern Immigration medical examination
Refugee claimants who are not from a designated country of origin	Healthcare coverage and immigration medical examination
People whose refugee claim has been suspended	Public health or public safety healthcare coverage and immigration medical examination
Rejected refugee claimants	Public health or public safety healthcare coverage and immigration medical examination
Persons for whom the Minister exercises discretion on his own initiative for humanitarian and compassionate considerations or for public policy considerations	Expanded healthcare coverage and immigration medical examinations

Table 2. Stone's (1989, 2012) theory of causal stories framework

Consequences		
Actions	Intended	Unintended
Unguided	Mechanical cause ^a • Intervening agent • Machines	Accidental cause ^b • Fate • Natural disaster
Guided	Intentional cause ^c • Oppression • Blaming the victim	Inadvertent cause ^d • Unanticipated harmful side effects of policy

^a Mechanistic causation – unguided action(s) resulting in predictable consequences.

^b Accidental causation – unguided action(s) with unpredictable consequences (such as fate, the absence of human control).

^c Intentional causation – guided action(s) leading to intended consequences (involving complete human control).

^d Inadvertent causation – guided action(s) leading to unintended consequences.

Appendix A. Policy Agenda-Setting and Causal Stories Appendix

Appendix 1. Top 10 media newspaper sources

Newspaper	Number of articles	Percentage of data sets
<i>The Toronto Star</i>	33	24.4
<i>The Hamilton Spectator</i>	18	13.3
<i>The Ottawa Citizen</i>	17	12.6
<i>The Globe and Mail (Canada)</i>	9	6.7
<i>The Star Phoenix (Saskatoon)</i>	9	6.7
<i>The Record (Waterloo)</i>	8	5.9
<i>The Montreal Gazette</i>	5	3.7
<i>The Edmonton Journal</i>	5	3.7
<i>The Calgary Herald</i>	5	3.7
<i>The National Post (Canada)</i>	4	3.0

Appendix 2. Governmental actors and representatives involved in the Interim Federal Health Program reform problem definition

Federal governmental actors	Other political actors
Immigration Minister Jason Kenney	Government lawyers
Immigration Minister Chris Alexander	Perry Brodtkin, former Ontario Health Insurance Plan lawyer
Citizenship and Immigration Canada Spokeswoman Alexis Pavlich	Kelly Block, Member of Parliament
Former Prime Minister Steven Harper	

Appendix 3. Organized interests involved in the Interim Federal Health Program reform problem redefinition (identified from media coverage and interest group reports)

Healthcare professional associations	Refugee-serving organizations
College of Family Physicians of Canada Canadian Psychiatric Association Canadian Association of Optometrists Canadian Association of Social Workers Canadian Dental Association Canadian Medical Association Canadian Nurses Association Canadian Association of Community Health Centres Canadian Pharmacists Association Canadian Doctors for Medicare Canadian Association of Midwives Registered Nurses Association of Ontario Canadian Federation of Nurses Union Canadian Paediatric Society Royal College of Physicians and Surgeons of Canada Association of Medical Microbiology and Infectious Diseases Canada	Canadian Doctors for Refugee Health Canadian Association for Refugee Lawyers Canadian Council for Refugees Inter-cultural Association of Greater Victoria The Alberta Refugee Care Coalition Jewish Holocaust Survivors of Canada Justice for Children and Youth
	Provincial governments
	Provincial Government of Quebec Provincial Government of Ontario Provincial Government of Alberta Provincial Government of Saskatchewan Provincial Government of Manitoba Provincial Government of Nova Scotia
	Refugees
Ontario's Council of Medical Officers of Health Canadian Association of Occupational Therapists Canadian Association of Emergency Physician Public Physicians of Canada	Hanif Ayubi* Daniel Garcia Roderigues* Eight anonymous refugees/refugee claimants* *These individuals organized to instigate legal challenge

CHAPTER 3. The Effects of Health Insurance on Migrant Health-Related Outcomes: A Systematic Review

Preface

This chapter continues its focus on migrant health policies, expanding the scope to systematically review quantitative studies examining the effects and associations of health insurance on the health-related outcomes of migrants residing in high-income countries. Despite the existence of international conventions to protect migrants' health rights, migrant populations are often subject to changes in policies that govern their access to health services, depending on the political climate. This systematic review aims to strengthen the evidence base on which policymakers can rely to formulate equitable, evidence-informed and inclusive migrant health policy. I was responsible for conceptualizing the research questions, design and executing the data collection and analysis. The systematic search and narrative synthesis of included studies was conducted between November 2019 to June 2020. I was responsible for drafting the protocol with input from all supervisory committee members. Laura Banfield, Health Sciences Librarian, and Dr. Emmanuel Guindon were consulted to construct search terms. Japteg Singh and I independently screened title and abstracts, assessed the full text of each study and performed data extraction of half of the included articles while reviewing the other half for accuracy and completeness. We also independently assessed the quality of each included study. I was responsible for narratively synthesizing the findings. I drafted the thesis chapter and my supervisory committee members (Drs. Lisa Schwartz, Emmanuel Guindon, Olive Wahoush and Andrea Baumann) provided feedback, which were incorporated into the final version of the chapter. It has been submitted for publication.

Systematic Review

The Effects of Health Insurance on Migrant Health-Related Outcomes: A Systematic Review

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Word count: 6126 (including in-text citations)

Abstract word count: 345

Exhibits: 2 tables, 3 figures, 1 appendix

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Conflict of Interest: None

Key words: systematic review, health insurance, migrant health, Universal Health Coverage

Abstract

Background: Changing political ideologies that shape nations' immigration policies influence amendments to health policies for migrants and may impact their health. In the context of moving towards Universal Health Coverage (UHC), this systematic review analyses the evidence from quantitative studies that assess the effects and associations of health insurance coverage on the health-related outcomes of migrant populations residing in high-income countries.

Methods: We systematically searched peer-reviewed and grey literature databases for quantitative studies that examined the effects of health insurance expansions, restrictions or comparisons between those with and without coverage on migrants' health services use, access and health outcomes. Qualitative studies and those without at least one migrant group counterfactual were excluded. There were no data or language restrictions imposed on the search. We used a modified version of the Effective Public Health Practice Project Quality Assessment Tool to critically appraise the quality of included studies. Due to high heterogeneity, we employed a narrative synthesis to examine health insurance effects and associations by exposure type (expansions, restrictions, and comparisons) and by health-related outcome. The study protocol is registered with PROSPERO, number CRD42020166744.

Findings: After reviewing 5418 records, 26 studies met our inclusion criteria representing 1,400, 427 individuals from six high-income countries. The findings reveal that expanding health insurance to migrant populations improved their access to and use of primary and prenatal care services but did not significantly affect health outcomes. Restrictions reduced access and use of primary care and did not influence outcomes, except increased mortality rates for undocumented immigrants. Having health insurance was positively associated with improved use, access and health outcomes for migrant populations studied.

Interpretation: Despite significant heterogeneity in migrant population and outcome measures, clear evidence indicates that providing migrants residing in high-income host nations with health insurance is beneficial to their health. Governments seeking to meet Sustainable Development Goal 3.8 and implement UHC should include migrants in national health financing plans to reduce migrant health inequity, build inclusive and cost-effective health systems and strengthen global health security.

Funding: None to disclose.

Introduction

Global migration has grown significantly over the past decade. Approximately, 258 million individuals have resettled outside of their country of birth and nearly two-thirds (165 million) reside in high-income host nations (United Nations, 2017).

Immigration contributes to inclusive and sustainable economic growth and human development, when there are adequate policies to address migrants' health needs and integrate them into their host societies. The Sustainable Development Goals include the target of achieving Universal Health Coverage (UHC) to ensure access to quality, essential health services and protection from undue financial hardship when using those services for all people, including migrants (World Health Organization [WHO], 2018). In September 2019, at the first UN General Assembly High-level Meeting on UHC, the International Organization for Migration (IOM) stipulated that for UHC to be truly universal, health policies need to include migrants, especially those in marginalized situations of vulnerability (IOM, 2019; UN, 2019).

Despite the existence of international conventions developed to protect the health rights of migrant populations (ICESCR, 2005), many lack access to health services and financial protection because of their health or migration status (Legido-Quigley et al., 2019). Over decades, health insurance eligibility criteria has been extended or restricted numerous times, resulting in the inclusion and exclusion of certain migrant populations intending to resettle in high-income nations, such as Canada, Germany, and the United States of America (U.S.), among others (Antonipillai et al., 2018; Gray and van Ginneken, 2012; Green et al., 2016). Restrictions to migrant health coverage policies

have been implemented by governments on the basis of conserving financial resources and protecting public health with little evidence to support such claims. Migrants face challenges accessing health services in high-income countries due to several factors including language barriers, discrimination, immigration status, a lack of migrant-inclusive health policies and lack of affordable health services (Spitzer et al., 2019).

The implementation of UHC would reduce reliance on out-of-pocket payments, improve access to health services and subsequently, protect migrants from impoverishing financial risks (Summers, 2015). Indirectly, UHC would benefit vulnerable immigrants, such as refugees, through the provision of official documentation, reducing precariousness while producing accurate data to enhance utilization and health outcome analyses in this under-researched population (Guterres & Spiegel, 2012). Moreover, migrants who are not covered for preventative and primary healthcare services may delay seeking healthcare, resulting in long-term health complications, or emergencies. Exacerbated health conditions would subsequently lead to more visits to the Emergency Department, larger health outcome disparities and increased costs incurred by the healthcare system (Kardamanidis & Armstrong, 2006). These findings are primarily conveyed in commentaries by migrant-serving professionals and organizations with tacit knowledge (Caulford & D'Andrade, 2012; Eggertson, 2013; Arya et al., 2012), as there is limited research conducted within countries to substantiate them. Tacit knowledge has been a crucial source of information within migrant health policy decision-making processes in countries because of the paucity of available empirical evidence.

Previous systematic reviews have assessed the health effects of non-health targeted policies, such as entry and integration policies (Juarez et al., 2019), detention policies (Filges et al., 2015; Robjant et al., 2019) or anti-immigrant policies in general (Martinez et al., 2005). These syntheses, however, do not examine the isolated effect of policies that govern healthcare access among migrant groups resettled in high-income host nations. This systematic review synthesizes evidence from relevant studies in the peer-reviewed and grey literature that sought to understand migration-related inequities and evaluate migrant health policies to determine whether their health outcomes, access to and use of health services are improved through the receipt of comprehensive health coverage. This review comes at a time when migration levels have reached their highest proportions and policymakers are looking for ways to reconcile the health implications of shifting population demographics. As governments grapple with immigration policy legacies, practitioners are faced with the challenges of serving a more diverse patient population, where they sometimes experience conflicts between following the law and their professional norms (Suphanchaimat et al., 2015). This review offers insights for policymakers intending to implement UHC initiatives in high-income countries by elucidating the relationship between health insurance and migrant population health. We aimed to systematically review the evidence on the effects and associations of health insurance coverage to improve health-related outcomes of migrant populations in high-income nations.

Methods

Search strategy and selection criteria

We conducted a systematic review following a registered protocol and the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) guidelines (Moher et al., 2009) (Appendix). We searched Embase, MEDLINE, EconLit, PsychINFO and Cochrane Central Register of Controlled Trials (CENTRAL) databases in November 2019 for peer-reviewed studies with no restrictions on language or publication date. We also searched grey literature in two working paper databases (National Bureau of Economic Research and IDEAS), the first 100 results from Google, and websites of the United Nations High Commissioner for Refugees (UNHCR), WHO, and Migration Policy Institute, among others.

Backward and forward citation searches for included studies and topic expert consultations were employed to help identify additional literature for inclusion. The search strategy was developed in consultation with a research librarian who has expertise in database searching specific to health sciences research, with English search terms (Appendix). Medical Subject Heading (MeSH) terms were used in combination with keywords to improve precision in the search process. Terms were grouped according to four constructs: (1) Health insurance intervention terms; (2) Migrant population terms; (3) Health-related outcome terms; (4) Study design terms.

Studies were eligible for inclusion if populations of interest pertained to migrants in host countries who chose to integrate into society, excluding those who intended to remain temporarily for work or study purposes. Immigrants, refugees and asylum-seekers

were the main population cohorts included in this review (IOM, 2011). Records were included if authors presented primary data from one or more of the 81 high-income countries, as defined by the 2019 World Bank analytic classification, and used an immigrant comparison group (i.e. between intervention and control groups, or before and after policy implementation with the migrant population).

To assess the effects and associations of health insurance we included studies that focused on two mechanisms by which insurance influences health: (1) Health insurance status, by comparing migrants with and without health insurance, and (2) Health insurance coverage policy, by examining the effects of (a) restricting healthcare coverage and (b) of expanding health insurance (Institute of Medicine Committee on the Consequences of Uninsurance, 2002). As a result, three types of interventions were included: (1) Insurance Expansions, (2) Insurance Restrictions, and (3) Comparisons of those with and without insurance within the migrant populations of interest. Health insurance effects on migrant population health were measured by three health-related outcomes: (1) health services access, (2) health services utilization, (3) and health outcomes. Accessibility refers to the availability of quality health services which are financially affordable and physically attainable for persons in need of care (WHO, 2015). Quality health services are those delivered in alignment with good medical practice. Health services utilization refers to the realized and quantifiable use of services by persons to prevent and treat health problems, promote health and well-being, or obtain information about one's health (Carrasquillo, 2013). All quantitative designs and quantitative components of mixed methods designs were considered. With the use of a

piloted form (Appendix), two reviewers (VA and JS) independently screened titles and abstracts, retrieved full texts of potentially relevant articles and assessed article eligibility for inclusion.

Data analysis

Two reviewers (VA and JS) used a custom data extraction form to obtain information from included full-text studies pertaining to the study design, methods, population, sampling frame, health-related outcomes, policy or intervention description, and results (Appendix). Each reviewer extracted relevant data from half of the included studies, followed by a review of the data extracted by the other reviewer on the remaining half of the studies to ensure accuracy and completeness. Disagreements and ambiguities were resolved by consensus. Risk of bias of included studies were assessed using a modified version of the Effective Public Health Practice Project (EPHPP) Quality Assessment Tool for Quantitative Studies (Appendix). The quality assessment instrument was modified according to Waddington et al. (2012) guidelines to assess consistent internal validity of the reviewed studies, specific to their study design (i.e. randomized control trial, difference-in-differences, cohort study using matching and analytical cross-sectional study). Each included study was independently assessed by two reviewers (VA and JS) for six individual components and an overall risk of bias assessment (Appendix). We examined variability within studies in our quality scoring, which included considerations about instruments used to gather data, various forms of bias, as well as selective outcome and analysis reporting. Significant heterogeneity between studies,

particularly in the outcome and exposure (policy expansion, restriction or insurance status comparison) measures precluded quantitative synthesis and meta-analysis.

Our analytical approach entailed a narrative synthesis of all included studies guided by Popay et al. (2006) who suggests that the general framework for a narrative synthesis consists of four elements: (1) development of a theory on how an intervention works, why and for whom, (2) development of a synthesis of findings of included studies, (3) an exploration of relationships within and between studies, (4) quality and robustness assessment. Rather than developing a theory, this study utilized a conceptual framework pertaining to health insurance mechanisms (Appendix) to guide the assessment of health insurance interventions and exposures (Institute of Medicine Committee on the Consequences of Uninsurance, 2002). The narrative synthesis examined the findings within and between each included study as they pertain to the health-related outcomes (health services use, access and health outcomes) of migrant populations and the health insurance intervention/exposure they experienced. We analyzed differences between migration categories, age group, gender and outcomes by health insurance intervention. The protocol of this study is registered with PROSPERO, number CRD42020166744.

Role of the funding source

There was no funding for this study. The corresponding author had full access to all data in the study and had final responsibility for the decision to submit for publication.

Results

Our peer-reviewed literature search of databases identified 5418 records. After the removal of 1419 duplicates, 3906 records were excluded based on their title or abstract,

primarily because the study did not assess the role of health insurance among migrant populations, nor did they measure quantifiable empirical outcomes. We assessed 93 full-text articles, of which 25 met our inclusion criteria. Our grey literature search retrieved 807 documents, articles, web pages and reports, among which we identified one article that met the same inclusion criteria used for peer-reviewed articles. Altogether, we reviewed 26 articles in the narrative synthesis from six high-income countries and presented data for 1,400,427 individuals. The median sample size was 1902 (range 260 to 583,917) (figure 1; table 1).

Nine articles presented data evaluating the expansion of a health insurance policy intervention (Atkins et al. 2018; Bustamente et al. 2019; Claassen & Jager, 2018; Drewry et al. 2015; Sharif et al. 2019; Swartz et al. 2017; Swartz et al., 2019; Torres-Cantero et al., 2007; Wherry et al. 2017), and five articles assessed the effects associated with restricting health insurance for migrants (Atkins et al. 2017; Bakewell et al. 2018; Evans et al. 2014; Kaushal and Kaestner, 2007; Mestres et al. 2018). A description of all health policy interventions examined in the identified literature is presented in figure 2. One study assessed both an expansion and a restriction of health insurance (Unuigbo, 2019), while another study examined a restriction and compared those with and without health insurance (Yeo, 2017). Ten articles solely presented data that compared migrant populations with and without health insurance (Cheng & Guo, 2018; Gagnon et al., 2013; Lebrun, 2012; Lee et al., 2012; Mullerschön et al., 2019; Rousseau et al., 2013; Sadarangani et al., 2019; Shakya et al., 2018; Siddiqi et al., 2009; Vignier et al., 2017). Seven of ten articles reported on associations between having no insurance and migrant

health-related outcomes (Gagnon et al., 2013; Mullerschön et al., 2019; Rousseau et al., 2013; Sadarangani et al., 2019; Shakya et al., 2018; Siddiqi et al., 2009; Vignier et al., 2017), whereas three articles presented data on the effects associated with having insurance (Cheng & Guo, 2018; Lebrun, 2012; Lee et al., 2012).

Two articles reported data from the United States and Canada (Lebrun, 2012; Siddiqi et al., 2009); one reported on comparisons across insurance status only for American immigrants obtained from the National Health Interview Survey (Lebrun, 2012), while the other examined insurance across countries, using the Joint Canada/United States Survey of Health (Siddiqi et al., 2009). The remaining 24 articles reported data from one country each. 18 studies were conducted in North America, the majority (14) of which analyzed migrant populations residing in the United States, and the remaining four in Canada. Five studies were conducted in Europe, whereas only one article was retrieved about migrants in an Asian country (table 1). There were no included articles that assessed health insurance for migrants in other continents.

More than half of the included studies were published after 2015 (Atkins et al. 2017; Atkins et al. 2018; Bustamante et al. 2019; Bakewell et al. 2018; Cheng & Guo, 2018; Mestres et al. 2018; Mullerschön et al., 2019; Sadarangani et al., 2019; Shakya et al., 2018; Sharif et al. 2019; Swartz et al. 2017; Swartz et al., 2019; Vignier et al., 2017; Wherry et al., 2017) and the remaining nine studies were published between 2007 and 2015 (Drewry et al. 2015; Gagnon et al., 2013; Evans et al. 2014; Kaushal and Kaestner, 2007; Lebrun, 2012; Lee et al., 2012; Rousseau et al., 2013; Siddiqi et al., 2009; Torres-Cantero et al., 2007). Eleven studies were designed as controlled before-after studies,

most of which used repeated cross-sectional data. Three studies were uncontrolled before-after studies, and 12 studies were cross-sectional, nine of which employed an analytical design while three were descriptive (table 1). One study was not peer-reviewed.

Overall, nine studies were assessed as low quality, nine were moderate and eight were of high quality, leading to a moderate risk of bias across studies (appendix). The most common study weaknesses were the existence of bias and the potential for unmeasured confounding due to the design of the study. The lack of randomization results in the inability to sufficiently control for important confounding variables that could influence the measured association or effect. Studies about refugees and asylum-seekers were more likely to be of lower quality and have smaller sample sizes. Studies reporting data on immigrant women residing in the US, specifically reporting prenatal health-related outcomes and examining the effects of policy expansions, tended to have larger sample sizes and were of higher quality than those for other populations, interventions and outcomes. Most studies were funded by governments, universities, did not disclose a funding source or did not receive funding.

There was significant heterogeneity in the migrant populations studied and how the effects or associations of health insurance were analyzed. Eight studies sampled immigrant women, five focused on undocumented immigrants, four studied refugees and asylum-seekers, three studies examined immigrant mothers with low educational attainment, two studies involved children and youth under 18 years old, two studies included immigrant elders over 50 years of age, two studies sampled migrants from Sub-

Saharan Africa, one recruited Nepalese migrants and one included only migrants from Equatorial Guinea. Two studies stratified immigrants by citizenship status and length of stay, two stratified immigrants by region of origin and one study stratified immigrants by their immigration category. A summary of all included studies is presented in table 1 and a summary of their findings is presented in table 2.

Expansions

Health insurance policy expansions were evaluated by 10 studies (Atkins et al. 2018; Bustamente et al. 2019; Claassen & Jager, 2018; Drewry et al. 2015; Sharif et al. 2019; Swartz et al. 2017; Swartz et al., 2019; Torres-Cantero et al., 2007; Unuigbo 2017; Wherry et al. 2017); five studies were of high quality, three were moderate and two were of low quality. Most studies were conducted in the United States, and only two in Europe.

Utilization

Eight studies reported the effects of health insurance expansions on the health services utilization of migrant populations. Data were derived from survey and administrative data, and for the most part were provided by national statistics institutes. Seven of eight studies found that health insurance expansions were associated with increased migrants' use of health services (Atkins et al. 2018; Bustamente et al. 2019; Claassen & Jager, 2018; Drewry et al. 2015; Swartz et al. 2017; Unuigbo 2017; Wherry et al. 2017). Four studies reported immigrants or refugees were more likely to seek their medical provider at an outpatient visit following health insurance coverage expansions (Bustamente et al. 2019; Claassen & Jager, 2018; Swartz et al. 2017; Unuigbo 2017). The exception to this predominant finding was reported by a study of lower quality,

conducted in Spain. The authors found that there were no differences in the health services use of undocumented migrants compared to their documented counterparts following coverage expansion (Torres-Cantero et al., 2007). The associations of insurance expansions may have diminished over time considering this cross-sectional study was conducted three years after the policy change. Bustamente and colleagues (2019) reported no statistically significant differences in the use of Emergency Department services before and after coverage expansions for citizen, non-citizen, recent and long-term immigrants in the United States.

Four high quality studies indicated statistically significant increases in the number of prenatal visits among immigrant women in regions that enacted expansions across the United States in response to the 1996 Personal Responsibility and Work Opportunity Act (PRWORA) reforms (Atkins et al. 2018; Drewry et al. 2015; Swartz et al. 2017; Wherry et al. 2017). In these settings, low-income (Unuigbo, 2019), less educated (Drewry et al., 2015; Wherry et al., 2017), single parent (Drewry et al. 2015), undocumented (Atkins et al., 2018; Swartz et al. 2017) or non-citizen (Bustamente et al. 2019) groups experienced a more pronounced statistically significant increase in using health services following coverage expansions than the general immigrant population. Wherry and colleagues (2017) reported that although immigrant women with lower education levels used prenatal care more often following health coverage expansions, they also had an increased likelihood of having a caesarian delivery. Swartz et al. (2017) conducted an analysis into prenatal care use and reported significant increases in vaccination for Tdap, fetal ultrasound administration, gestational diabetes screening, prenatal care visits in the

first trimester and immunoglobulin administration during pregnancy for undocumented migrant women following coverage expansions.

Access

Seven studies, all of which were conducted in the United States, found that expanding health insurance improved migrants' access to health services (Atkins et al. 2018; Bustamante et al. 2019; Drewry et al. 2015; Sharif et al., 2019; Swartz et al. 2017; Swartz et al. 2019; Wherry et al. 2017). Two studies of moderate quality assessed access to healthcare for immigrants following the Affordable Care Act (2014) implementation and reported that immigrants were less likely to forgo care due to the cost (Bustamante et al. 2019; Sharif et al., 2019). While Bustamante and colleagues (2019) noted that naturalized citizens and recent non-citizens were less likely to delay seeking care following expansions compared to before the policy change, Sharif and colleagues (2019) found that immigrants stratified by region of origin did not demonstrate a decreased odds of delaying care. These authors also contrastingly found that immigrants from Western Europe reported a two-fold increased odds [95% CI: 1.08-3.88] of being refused care as a new patient by a doctor following coverage expansions (Sharif et al., 2019).

Five high quality studies examined access to prenatal health services by using different measures calculated by the Adequacy of Prenatal Care Utilization Index (Atkins et al. 2018; Drewry et al. 2015; Swartz et al. 2017; Swartz et al. 2019; Wherry et al. 2017). Three studies reported that health coverage policy expansions increased access to prenatal care by improving adequate prenatal care use among undocumented immigrant women, including those with high-risk pregnancies (Atkins et al. 2018; Swartz et al.

2017; Swartz et al. 2019). Two studies reported that although the general population of immigrant women did not experience statistically significant improvements in access to prenatal care, health coverage policy expansions increased utilization by low-educated and single parent immigrant women (Drewry et al. 2015; Wherry et al. 2017).

Outcomes

Two studies assessed the effect of policy expansions on immigrant health outcomes (Swartz et al. 2019; Unuigbo, 2019). Swartz and colleagues (2019) reported that expanding health coverage did not affect severe maternal morbidity across all pregnancies or high-risk pregnancies for undocumented immigrant women. Unuigbo (2019) reported that expansions to health insurance eligibility criteria had no statistically significant effect on the self-reported health status of immigrant parents, regardless of income.

Restrictions

Seven studies assessed the effects of restricting health insurance for migrant populations residing in three high-income host nations: US, Canada and Spain (Atkins et al. 2017; Bakewell et al. 2018; Evans et al. 2014; Kaushal and Kaestner, 2007; Mestres et al. 2018; Unuigbo, 2019; Yeo, 2017). Two studies were graded low quality, two were moderate and three were of high quality. Two studies were conducted in Canada and pertained only to refugee and asylum-seeking populations.

Utilization

Four studies reported on the health services utilization of immigrant and refugee populations, which demonstrated that migrants in more vulnerable situations were

particularly affected by health insurance restrictions (Bakewell et al. 2018; Evans et al. 2014; Unuigbo, 2019; Yeo, 2017). Two studies assessed the effects of the 1996 PRWORA Medicaid eligibility restriction in the US which reported that although there was no significant differences in the health services use for general migrant populations with permanent residency (Unuigbo, 2019), older immigrants were less likely to use outpatient services after the ban (Yeo, 2017). Two studies assessed the associations of the 2012 Interim Federal Health Program (IFHP) health coverage restrictions in Canada. The authors reported that refugee and asylum-seeking children and adults displayed a statistically significant reduction in the use of Emergency Department services following these cutbacks (Bakewell et al., 2018; Evans et al., 2014). Asylum-seeking children also experienced increased hospital admission rates, with clinical significance ($p=0.08$) (Evans et al., 2014).

Access

Three studies measured access to health services following restrictions to health coverage among marginalized migrant cohorts. Kaushal and Kaestner (2007) demonstrated the 1996 PRWORA restriction to Medicaid was associated with increases in the proportion of low-educated single immigrant mothers reporting delays or failure to obtain care due to the cost. A decade later, Atkins et al. (2017) reported undocumented immigrant women were more likely to receive inadequate prenatal care following Nebraska's health coverage restrictions. Bakewell and colleagues (2018) reported that fewer refugees had access to a regular family physician following restrictions to health coverage in Canada.

Outcomes

Six studies reported on migrants' health outcomes following health policy restrictions (Atkins et al., 2017; Bakewell et al. 2018; Evans et al. 2014; Kaushal and Kaestner, 2007; Mestres et al. 2018; Unuigbo, 2019). Five out of six studies reported no statistically significant differences among immigrants or refugees in health outcomes before and after restrictions, including self-reported health status (Kaushal and Kaestner, 2007; Unuigbo, 2019), gestational conditions (Atkins et al., 2017), or illness severity as assessed by Canadian Triage Acuity Scale (CTAS) scores (Bakewell et al. 2018; Evans et al. 2014). These studies were uncontrolled before-after studies using cross-sectional medical records or controlled before-after studies using repeated cross-sectional data. A notable exception was found from a study of high quality conducted in Spain by Mestres and colleagues (2018), that found health coverage restrictions for undocumented migrants increased their monthly mortality rate by 15% ($p < 0.01$), and their deaths were caused by issues that could have been resolved by healthcare intervention.

Comparisons

Eleven studies examined the association of health insurance status on migrant health-related outcomes, by comparing those with and without health insurance in North American, European and Asian high-income countries (Cheng & Guo, 2018; Gagnon et al., 2013; Lebrun, 2012; Lee et al., 2012; Mullerschön et al., 2019; Rousseau et al., 2013; Sadarangani et al., 2019; Shakya et al., 2018; Siddiqi et al., 2009; Vignier et al., 2017; Yeo, 2017). Five studies employed cross-sectional study designs and were of low quality (Cheng & Guo, 2018; Mullerschön et al., 2019; Rousseau et al., 2013; Shakya et al.,

2018; Vignier et al., 2017). Five studies were assessed as being of moderate quality (Gagnon et al., 2013; Lebrun, 2012; Lee et al., 2012; Sadarangani et al., 2019; Siddiqi et al., 2009) and one was a high-quality study (Yeo, 2017).

Utilization

Six studies reported that immigrants who have insurance use more health services (Cheng & Guo, 2018; Lebrun, 2012; Lee et al., 2012; Mullerschön et al., 2019; Yeo, 2017). Compared to their uninsured counterparts, insured immigrants had a 1.15 [95% CI: 1.03-1.29] to 3.73 [95% CI: 3.15-4.40] times higher odds of visiting their physician (Cheng & Guo, 2018; Lebrun, 2012; Yeo, 2017), nearly 2 [95% CI: 1.37-2.77] times higher odds of receiving a Pap smear (Lebrun, 2012; Lee et al., 2012), 2 [95% CI: 1.68-2.50] times higher odds of visiting the eye doctor (Lebrun, 2012), 83% [95% CI: 1.38-2.44] higher odds of receiving a prostate exam (Lee et al. 2012) and a two to three times higher odds of using prescribed medications ($p < 0.01$) (Cheng and Guo, 2018). Migrants without health insurance were less likely to visit their physician or hospital and had lower odds of being tested for HIV relative to those with insurance (Mullerschön et al., 2019). In contrast to these findings, Gagnon and colleagues (2013) reported that migrant women who did not report having insurance had a 2.8 times higher odds [95% CI: 1.2-6.3] of having used emergency caesarian services, compared to their insured counterparts.

Access

Four studies assessed the effects of health insurance on health services access among migrant populations, all of which demonstrated that migrants without health insurance experienced statistically significant disparities accessing health services than

their insured counterparts (Lebrun, 2012; Shakya et al., 2018; Siddiqi et al., 2009; Vignier et al., 2017). Two studies of moderate quality reported that health insurance improved access to a usual source of care or regular provider among migrant patients (Lebrun, 2012; Siddiqi et al., 2009), one of which conducted a cross-country comparison between the United States and Canada. Two studies also indicated uninsured immigrants had a 4 times higher odds [95% CI: 2.41-6.52] of reporting an unmet healthcare need than insured immigrants; one study was conducted in Japan among Nepalese migrants (Shakya et al., 2018) and the other was conducted to compare uninsured American immigrants to insured Canadian immigrants (Siddiqi et al., 2009). Migrants without health insurance also reported decreased perceptions in access to a doctor (Shakya et al., 2018), refusal of care by a physician and delayed entry into Hepatitis B care by a median of four years (Vignier et al. 2017).

Outcomes

Only two studies examined the health outcomes of migrants with and without health insurance (Sadarangani et al., 2019, Rousseau et al., 2013). One was conducted in Canada (Rousseau et al., 2013) and the other in the United States (Sadarangani et al., 2019). Both studies reported that migrant cohorts experienced statistically significant health outcome disparities without insurance coverage, compared to those with insurance. Sadarangani and colleagues (2019) reported that elderly immigrants in the US without insurance experienced a 1.7 times increased likelihood [95% CI: 1.52-1.91] of cardiovascular disease risk compared to their insured counterparts, an effect that is more pronounced among non-citizens. Rousseau and colleagues (2013) reported that there was

a higher proportion of uninsured than insured immigrant children presenting in the very urgent triage category at three Canadian Emergency Departments for injuries, trauma and mental health problems. The authors revealed that the effects associated with having health insurance transcend immigrant category differences across children in Canada.

Overall, health insurance policy expansions were associated with increases in health service access and utilization, whereas coverage restrictions were negatively associated with health services access and use for migrant populations. Although most studies evaluating changes in a health policy intervention reported no significant differences in the health outcomes of migrants, those without health insurance were less likely to use or access health services and more likely to have an increased risk for illnesses (table 2; figure 3). While the included studies presented clear patterns for health services use and access related to health insurance, heterogeneity between outcome measures, populations and a paucity of evidence around migrant health outcomes following insurance expansions limit the certainty of these findings.

Discussion

This systematic review examined the effects and associations of health insurance status and policy interventions on migrants' health services utilization, access and health outcomes. We found evidence that health policy expansions improved use of primary and prenatal care services for immigrants and refugees. Restricting health coverage negatively affected older immigrant and vulnerable immigrant cohorts like refugees and asylum-seekers, reducing use of primary care services offered through outpatient settings and the Emergency Department, while increasing tertiary care services use among

children. Access to health services was improved by expansions and exacerbated by restrictions to health coverage for migrants, particularly among undocumented immigrants, low-educated single parent women and refugees. This finding highlights the importance of understanding the effects of health insurance in the context of intersectionality (Hankivsky, 2012), where the overlapping effects of different aspects of status, identity and structural inequity can magnify the influence of social determinants of health, such as education, income and legal status, on migrant health disparities following health system changes. As Marmot et al. (2008) note, “the healthcare system itself is a social determinant of health, influenced by and influencing the effect of other social determinants.”

Although restrictions and expansions were associated with health services use and access for migrants, there was largely no significant difference in migrants’ health outcomes following policy interventions. Our analysis reveals that these inconsistencies are not related to study quality, but rather to how the study was conducted and how health outcomes were measured. First, this finding may be attributed to the synthesis of studies examining mostly cross-sectional data, rather than longitudinal data, and the type of outcome assessed. Changes to an individual’s health outcomes as a result of impaired or improved access to and use of health services depends on the type of outcome measured. For example, a patient’s progression towards a chronic disease diagnosis occurs over the long-term and the effect of policy interventions on chronic disease development may be better assessed by longitudinal studies that follow populations over long periods of time. Secondly, most studies that examined the effects of health insurance policy changes on

health outcomes were conducted either immediately following the policy changes for approximately one year or after a long period of time. Studies conducted years after the implementation of a policy intervention may fail to capture the effects on health because the population may have found alternative strategies to cope with illness and survive. Studies conducted immediately after a health coverage expansion or restriction may not have obtained a large enough sample to detect a statistically significant effect on population health.

Finally, our review presents evidence that migrant populations without health insurance were less likely to use primary care services or medications, receive diagnostic tests or screening services and were more likely to use emergency services due to unforeseen complications. Immigrants without insurance were also more likely to have no usual source of care, experience unmet healthcare needs and delay seeking care. Uninsured immigrant children and elders demonstrated worse health outcomes compared to their uninsured counterparts. These findings suggest that a lack of financial risk protections from out-of-pocket healthcare payments dissuaded migrants residing in high-income countries from using health services and prohibited health practitioners from providing care. The limitations on health services use and access experienced by a lack of health insurance coverage promotes diagnostic or treatment delays, deteriorates migrant health and increases more expensive emergency and hospital care.

Our findings are consistent with reviews of studies conducted in high-income and low- and middle-income settings that have demonstrated that health insurance increases utilization of primary, preventative and prenatal care services with mixed findings on

health outcomes for general populations (Comfort et al., 2013; Erlangga et al., 2019; Freeman et al., 2008; Mitra et al., 2017; Spaan et al., 2012; Qin et al., 2019). Our review suggests that the benefits conferred by health insurance coverage may be more pronounced for migrants in vulnerable situations, such as those with low incomes, undocumented status, low education levels, single parenthood and refugee or asylum-seeker status. However, further studies on various migrant populations are needed to uncover approximate magnitudes of these health insurance effects.

This systematic review was completed following PRISMA reporting guidelines and a registered protocol, assessing risk of bias using well-established criteria (Thomas et al., 2004; Waddington et al., 2012). The impacts of health insurance on immigrant and refugee health is widely averred by health practitioners in immigration debates, infrequently supported by evidence within countries that restrict access to health services, requiring significant advocacy instigated by health professionals to combat restrictive migrant health policies (Antonipillai et al., 2020; Royal College of General Practitioners, 2013; Tsiligianni et al., 2013). To our knowledge, this is the first systematic review to examine the effects of health insurance on health-related outcomes for migrant populations and it is the first study to report that health insurance expansions were associated with improved access to and use of primary and prenatal care for migrants.

Our review has several strengths, including its systematic approach to narratively synthesizing all available evidence from the scientific peer-reviewed and grey literature. The lack of language restrictions in our search permitted the inclusion of a full-text French language article. We also considered the adequate composition of counterfactuals

or comparators to consist of at least one immigrant population to isolate the effect of health insurance policies from migration-related factors associated with health. However, our decision to restrict our search to high-income countries might have excluded relevant policy evaluations from LMICs with strong health systems that could support migrants outside of the European and North American contexts. The heterogeneity of migrant populations, policy contexts and health-related outcome measures constrained our ability to conduct a meta-analysis. Finally, a key limitation of our review is that the certainty of evidence was largely influenced by our inclusion of available data which employed observational or quasi-experimental designs, limiting the ability to control for unmeasured confounding.

This limitation reflects the lack of access to reliable, comparable and nationally representative data on refugee and migrant health in the vast majority of high-income countries, where two-thirds of migrants reside. At the end of 2017, only four EU Member States, Austria, Croatia, Germany and Portugal, had defined indicators to measure the integration of immigrants and refugees in their health systems (Mikaba, 2018). Few national health information systems disaggregate data in a way that permits analysis of migrant health issues. In Canada, to address the absence of migrant health-related data, immigrant administrative databases have recently been permitted for linkage to routinely collected health data providing researchers with the tools necessary to examine refugee and migrant health using more robust study designs (Sanmartin et al., 2016). With the advent of linked databases and the push for advances in migrant health data collection, future research should aim to update the work summarized here to expand the evidence

base on the health effects of insurance policies for migrant populations. In particular, a focus on LMICs and the integration of migrants into their health systems would contribute towards decisions on whether the uptake of Universal Health Coverage in low-resource settings can effectively include migrants without incurring greater expenses.

Debates about expanding health insurance for migrants are often subject to opposition based on arguments that cite the health system's incapacity to cover migrant health expenses. Wealthier, high-income host nations have frequently restricted refugee and migrant healthcare coverage to save financial resources (Antonipillai et al., 2018; Ledoux et al., 2018; Peralta-Gallego et al., 2018). For this reason, high-income countries, such as Denmark and Belgium, have delayed equalizing access to healthcare for refugees and asylum-seekers with that of the general population (Médecins du Monde, 2017). 11 out of 16 EU countries also fail to provide access to care for undocumented immigrants except for urgent conditions or if they can afford to pay expenses out-of-pocket (Médecins du Monde, 2017). Despite the implementation of these restrictive measures to reduce costs, a quasi-experimental analysis in Germany revealed that delayed access to care for refugees and asylum-seekers following health policy restrictions increased per capita expenditure (Bozorgmehr & Razum, 2015). Our study aligns with this evidence and recommends that policymakers in high-income countries amend legislation to include immigrants and refugees into public health insurance systems. By doing so, they could reduce the costs and consequences associated with delaying essential primary and prenatal care use for the benefit of health systems and migrants, themselves.

Conclusion

The findings of this systematic review provide empirical evidence that health insurance interventions affect refugee and immigrant health-related outcomes, supporting policymakers to adopt Sustainable Development Goal 3.8, towards achieving Universal Health Coverage. Expanding insurance for migrant populations would improve use and access to high quality health assessments that enable continuity of care following arrival, essential vaccinations and preventative and curative health services. Refugees' and immigrants' access to quality health services is of paramount importance towards building inclusive and cost-effective health systems, strengthening global health security and realizing public health efforts aimed at reducing migrant health inequities.

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Figure 1. Study Selection Process

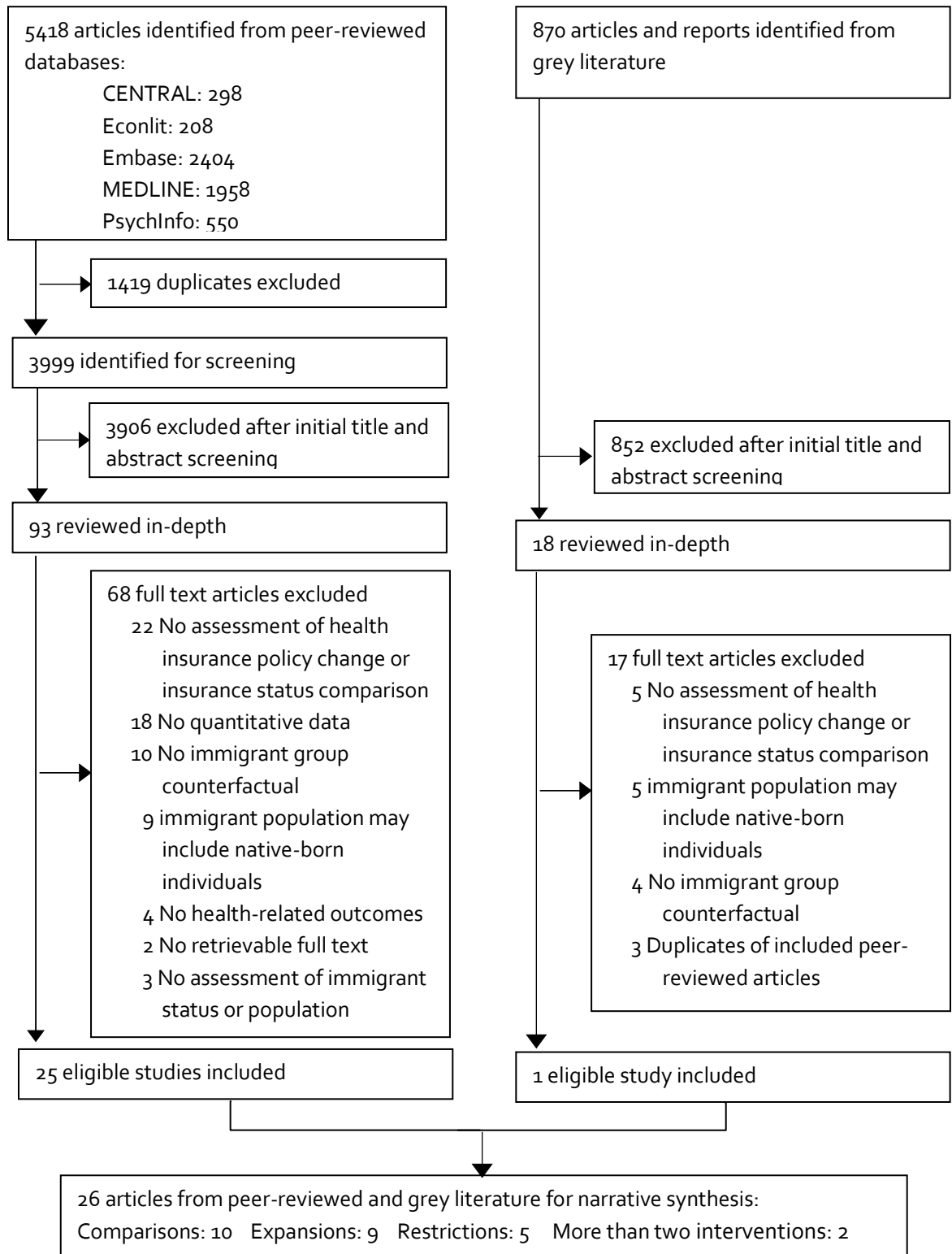


Figure 2. Health policy interventions examined by included peer-reviewed and grey literature

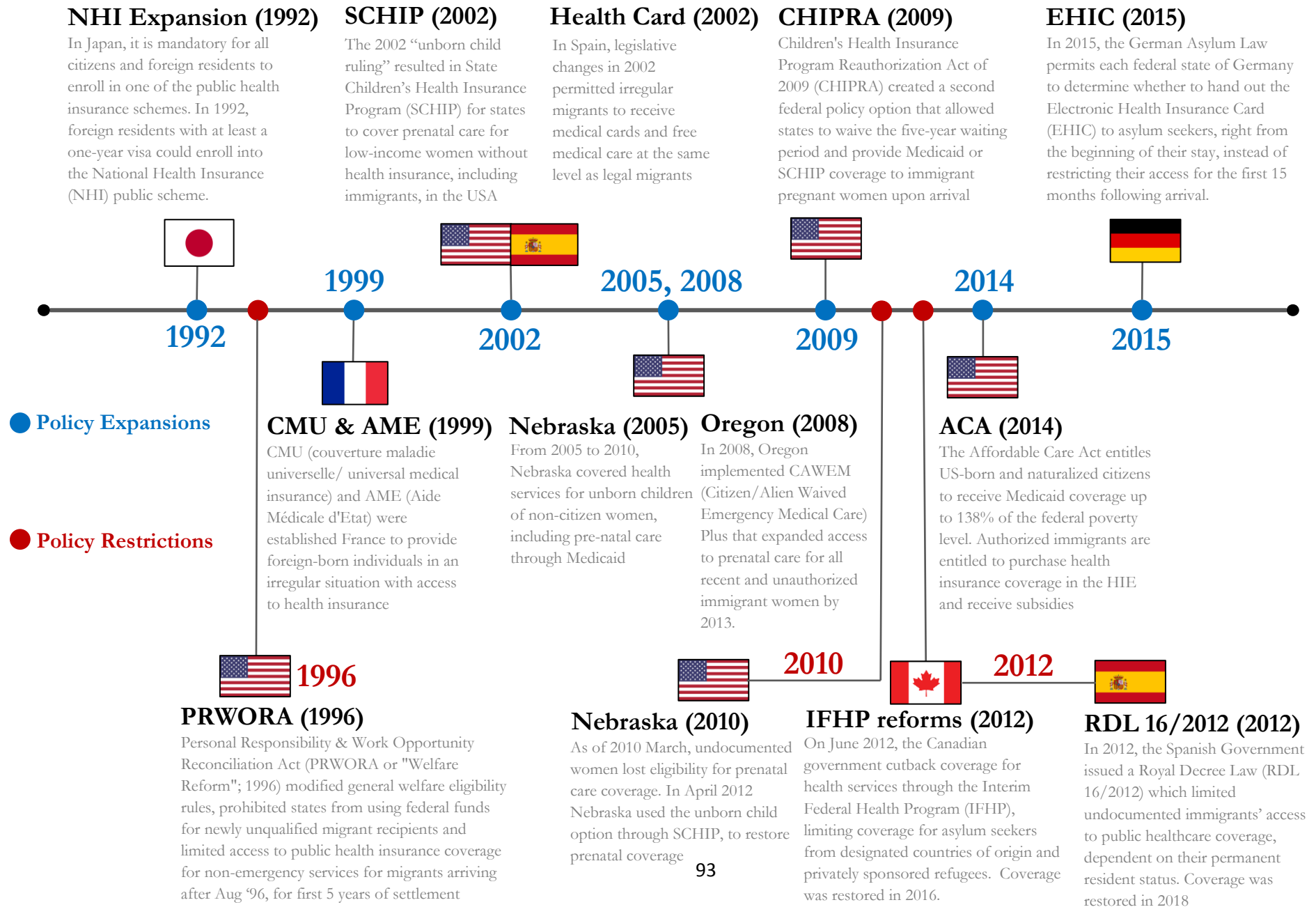


Figure 3. Number of studies for each health-related outcome showing effects of health insurance status or policy intervention

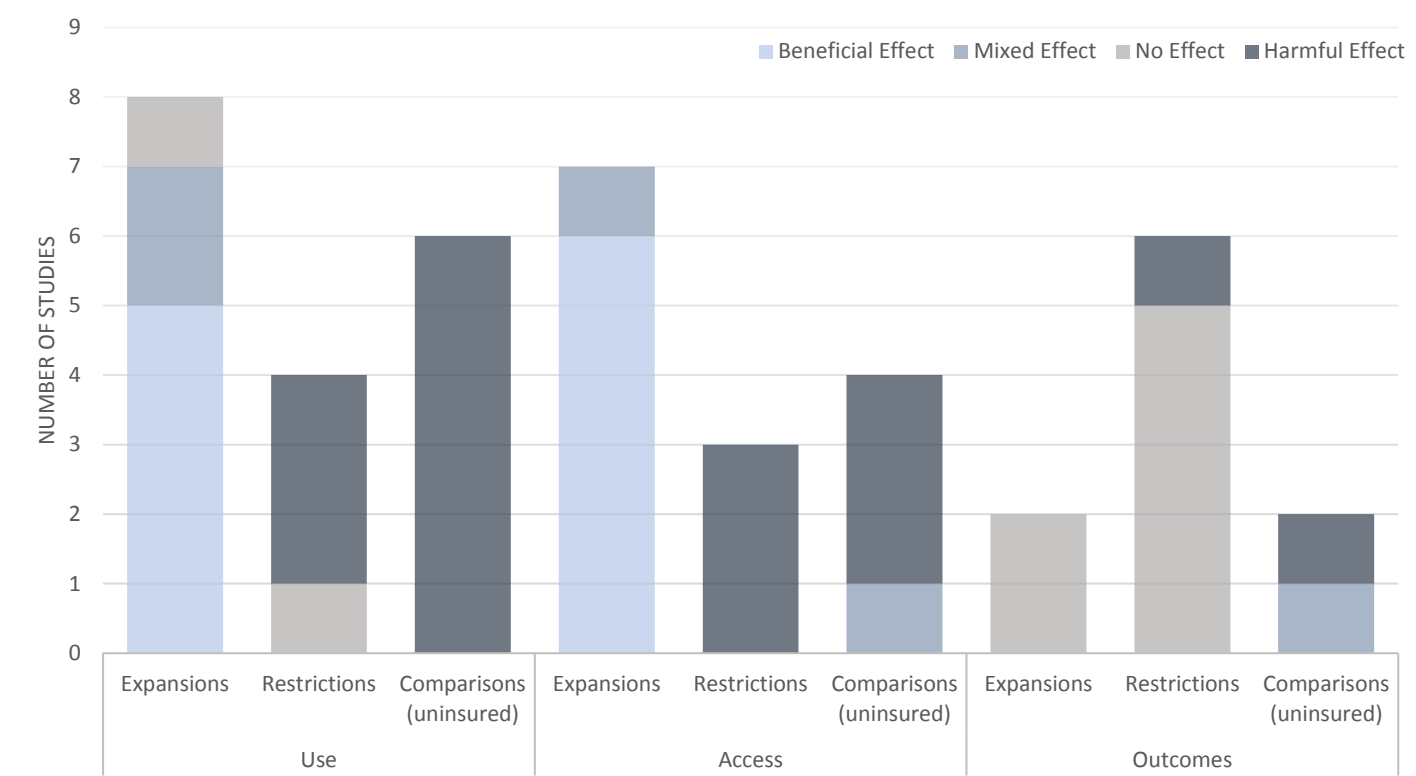


Table 1. Characteristics of 26 Included Studies

Author, year	Site, Time period	Study Design	Participant No.	Population	Age (yrs)	Intervention Type	Health-related Outcome	Limitations
Immigrants (n=14)								
Bustamente 2019	USA, 2011-13 (Pre-policy) 2014-16 (Post-policy)	Controlled before-after study (repeated cross-sections)	22,926	Adult immigrants (by citizenship and length of stay)	18-64	Policy Expansion	Use: physician visit, ED visit Access: forgo care due to cost, delay care	cross-sectional design: limited causal inference, recall bias, social desirability bias; potential unmeasured confounding
Sharif 2019	USA, Pre-policy: 2011-2013 and post-policy: 2014-2016	Controlled before-after study (repeated cross-sections)	119, 198	Adult Immigrants (by region of origin)	18-64	Policy Expansion	Access: usual source of care, delaying care, forgo care due to cost, refused by a doctor	cross-sectional design: limited causal inference, recall bias, social desirability bias; omitted variable bias: generational and legal status not available
Torres-Cantero 2007	Spain, 2005	Descriptive Cross-sectional	380	Equatorial Guinea migrants	>15	Policy Expansion	Use: outpatient medical services	cross-sectional design: limited causal inference, recall bias, social desirability bias; selection bias: convenience sampling; confounding bias: no confounders controlled for in analysis; non-response bias; selective outcome and analysis
Unuigbo 2019	USA, 1996, 2001 and 2004	Controlled before-after study (repeated cross-sections); analytic Cross-sectional	5744	Immigrant parents (subset: low income)	18-64	Policy Expansion & Policy Restriction	Use: medical provider visit Outcome: self-reported health status	unclear if parallel trends assumption is met; unmeasured confounding bias as there were other modifications in parental eligibility
Mestres 2018	Spain, Pre-policy: 2009-2012 Post-policy: 2013 – 2015	Controlled before-after study (repeated cross-sections)	8103	Undocumented immigrants (by region of origin)	<65	Policy Restriction	Outcome: monthly mortality rate	Potential for unmeasured confounding
Yeo 2017	USA, 1993 to 1996 and 2002 to 2013	Controlled before-after study (repeated cross-sections)	174, 854	Elderly immigrants	>64	Policy Restriction & Comparison	Use: outpatient medical visit	Cross-sectional data: recall bias, social desirability bias; Potential for unmeasured confounding

Author, year	Site, Time period	Study Design	Participant No.	Population	Age (yrs)	Intervention Type	Health-related Outcome	Limitations
Cheng 2018	USA, 2011 to 2012	Analytic Cross-sectional	1480	Adult Immigrants	18-64	Comparison – insured vs. uninsured	Use: physician visit, prescription medication use	cross-sectional design: limited causal inference, recall bias, social desirability bias; unclear whether confounders were adjusted for in models
Lebrun 2012	USA & Canada, 2007-2008	Analytic Cross-sectional	7440 (US)	Adult Immigrants	18-64	Comparison – insured vs. uninsured	Use: physician visit, eye doctor visit, Pap smear Access: usual source of care	cross-sectional design: limited causal inference, recall bias, social desirability bias; misclassification bias due to combination of two national surveys; omitted variable bias on age at immigrants, years since migration
Lee 2012	USA, May and November 2003	Analytic Cross-sectional	6381	Recent immigrants	All ages	Comparison – insured vs. uninsured	Use: Pap smear, prostate exam	cross-sectional design: limited causal inference, recall bias, social desirability bias; some selection bias towards recent immigrants; potential for unmeasured confounding
Mullerschön 2019	Germany, January 2015 to February 2016	Analytic Cross-sectional	1919	Migrants from sub-Saharan Africa	>18	Comparison – uninsured vs. insured	Use: physician or hospital consult, HIV testing	cross-sectional design: limited causal inference, recall bias, social desirability bias; selection bias: convenience sampling; non-response bias
Sadarangani 2018	USA, 2007 to 2012	Analytic Cross-sectional	1902	Older immigrants (by citizenship and length of stay)	>50	Comparison – uninsured vs. insured	Outcome: Cardiovascular risk	cross-sectional design: limited causal inference, recall bias, social desirability bias; misclassification bias: regarding race and ethnicity; omitted variable bias: no education variable
Shakya 2018	Japan, April to July 2016	Analytic Cross-sectional	642	Nepalese migrants	18-60	Comparison – uninsured vs. insured	Access: unmet need, perception of better access to doctor	cross-sectional design: limited causal inference, recall bias, social desirability bias; selection bias: convenience sampling
Siddiqi 2009	USA & Canada, November	Analytic Cross-sectional	730 (US) 659 (CAN)	Adult and Elderly Immigrants	>18	Comparison – uninsured vs. insured	Access: access to a regular provider, unmet need	cross-sectional design: limited causal inference, recall bias, social desirability bias;

Author, year	Site, Time period	Study Design	Participant No.	Population	Age (yrs)	Intervention Type	Health-related Outcome	Limitations
	2002 to March 2003							
Vignier 2017	France, February 2012 to May 2013	Descriptive Cross-sectional	778	Migrants from sub-Saharan Africa	18-59	Comparison – uninsured vs. insured	Access: refused care by a doctor and years to entry into Hep B care	cross-sectional design: limited causal inference, recall bias, social desirability bias; confounding bias: no confounders controlled for in analysis
Refugees and asylum-seekers (n=4)								
Bakewell 2018	Canada, Pre-policy: January 2011 to June 2012 Post-policy: July 2012 to December 2013	Uncontrolled before-after study	612	Refugees and asylum-seekers	All ages	Policy Restriction	Use: ED visits (by claim) Access: access to a family doctor Outcome: CTAS score, diagnosis at ED	Selection bias: representative of refugees with IFH at triage, not those who had coverage revoked, avoided ERs or in receipt of other sources of care; unadjusted odds ratios reported: confounding bias
Evans 2014	Canada, Pre-policy: January to June 2012 Post-policy: July to December 2012	Uncontrolled before-after study	315	Refugee and asylum-seeker children	<18	Policy Restriction	Use: ED visits, hospital admission rate Outcome: CTAS score	Selection bias: towards those who use the ER, excludes those who had coverage revoked, avoided ERs or in receipt of other sources of care; Confounding bias: no confounders controlled for in analysis
Claassen 2018	Germany, October 2016 to October 2017	Analytic Cross-sectional	260	Asylum seekers	18-66	Policy Expansion	Use: physician visit	cross-sectional design: limited causal inference, recall bias, social desirability bias; selection bias, omitted variable bias, non-response bias
Rousseau 2013	Canada, January 2008 to December 2009	Descriptive Cross-sectional	2124	Asylum seeker, undocumented immigrant, and other immigrant children	<18	Comparison – uninsured vs. insured	Outcome: CTAS score, diagnosis in ED	Selection bias: recruitment from hospital, excludes uninsured who use CHCs, clinics; confounding base: no confounders were controlled for in models; measurement bias: use of chart reviews

Author, year	Site, Time period	Study Design	Participant No.	Population	Age (yrs)	Intervention Type	Health-related Outcome	Limitations
								entail observer bias & inaccuracies
Immigrant Women (n=8)								
Atkins 2017	USA, Pre-policy– (2007-2009) Post-policy – (2010-2011)	Uncontrolled before-after study	6,262	Nebraskan Undocumented immigrant women who gave birth	>18	Policy Restriction	Access: adequate prenatal care utilization	cross-sectional data: limited causal inference; omitted variable bias: mother birth history not available; misclassification bias due to assumption that women without social insurance number are undocumented
Kaushal 2007	USA, 1993-96 (Pre-policy) 1998-2002 (Post-policy)	Controlled before-after study (repeated cross-sections)	3678	Low-educated single immigrant mothers	18-54	Policy Restriction	Access: delay care or forgo care due to cost Outcome: self-reported health status	cross-sectional data: recall bias, social desirability bias; Omitted variable bias: no variable on legal or citizenship status
Atkins 2018	USA, Pre-policy– (2007-2009) Post-policy – (2010-2011)	Controlled before-after study (repeated cross-sections)	20, 876	Nebraskan and South Carolina Undocumented immigrant women who gave birth	>21	Policy Expansion	Access: adequate prenatal care utilization	Misclassification bias and reporting bias due to assumption that women without social insurance number are undocumented; unclear if parallel trends assumption is met
Drewry 2015	USA, 2000-2007	Controlled before-after design	583, 917	Foreign-born Latina mothers (subset: Mexican-born, single, low educated mothers)	Not disclosed	Policy Expansion	Use: early prenatal care utilization Access: adequate prenatal care utilization	Measurement bias: inaccuracies in birth certificate, prenatal care and birth outcome data categorizations due to combining old and new datasets; unmeasured confounding potential; unclear if parallel trends assumption is met
Swartz 2017	USA, 2003-2015	Controlled before-after study	213,746 (pregnancies)	Low-income, undocumented immigrant women with singleton pregnancies	12-51	Policy Expansion	Use: prenatal visits, immunoglobulin administration, fetal ultrasound, vaccination for Tdap, prenatal visit in	misclassification bias: input errors and omissions; Omitted variable bias: no information on obstetric risk factors; potential for unmeasured confounding

Author, year	Site, Time period	Study Design	Participant No.	Population	Age (yrs)	Intervention Type	Health-related Outcome	Limitations
							the first trimester, diabetes screening Access: adequate prenatal care utilization	
Swartz 2019	USA, 2003-2015	Controlled before-after study	213, 746	Low income, undocumented immigrant women with singleton pregnancies	12-51	Policy Expansion	Access: adequate prenatal care utilization Outcome: severe maternal morbidity	misclassification bias: input errors and omissions; Bias towards the null because women with severe complications would seek care prior to intervention; potential for unmeasured confounding
Wherry 2017	USA, 1998-2013	Controlled before-after study (repeated cross-sectional)	Individual data aggregated by state (n=33) in ecological analysis	Immigrant mothers (subset: low-educated Latina mothers)	Not disclosed	Policy Expansion	Use: prenatal visits, any prenatal care use, c-section delivery Access: adequate prenatal care utilization	unclear if parallel trends assumption is met; potential for unmeasured confounding
Gagnon 2013	Canada, February 2006 to March 2009	Analytic Cross-sectional	1025	Immigrant women with C-section birth	Not disclosed	Comparison – uninsured vs. insured	Use: emergency c-section	cross-sectional design: limited causal inference, recall bias, social desirability bias; non-response bias; omitted variable bias; potential for unmeasured confounding

Table 2. Summary of Findings on the Effects of Health Insurance on Migrants' Health-related Outcomes

Author, year	Outcome	Magnitude of Effect/Association	Beneficial or Harmful or No effect/ association
Health Insurance Expansions			
Atkins 2018	Use	Undocumented women living in Nebraska during Medicaid expansions in 2007-2009 had approximately one more prenatal care visit compared to women who did not have access to the expanded Medicaid coverage (IRR:1.05; 95% CI: 1.01-1.08)	Beneficial effect
Bustamante 2019	Use	After ACA implementation naturalized citizens were 0.03% more likely to visit the physician (p=0.006), non-citizens residing in the US for 5 years or more were 0.04% more likely to visit the physician (p=0.004). ACA implementation is not statistically significant with ED use.	Beneficial effect, no effect
Claassen 2018	Use	Of those who had used healthcare-vouchers and then received the electronic health insurance care, there was a 27% (p<0.01) increase in visits to the doctor/ consultations with an ambulant physician. Asylum-seekers with electronic health insurance cards had increased consultation rates by approximately 0.3 (95% CI: 0.19-0.42) doctor visits per month, compared to those without the EHIC.	Beneficial Effect
Drewry 2015	Use	early prenatal care was significantly better at baseline for enacting states compared to non-enacting: overall population – 0.044 (0.005-0.08); high-risk – 0.06 (0.013-0.11). Early prenatal care also improved significantly over time: overall: 0.022 (0.00-0.05); high-risk: 0.044 (0.005-0.08). But the difference-in-differences estimator was not statistically significant for both groups.	Beneficial and no effect (Mixed)
Swartz 2017	Use	Following Emergency Medicaid Plus expansion, there was 7.22 additional prenatal visits per pregnancy, (95% CI 6.46 to 7.98) and 9.81 additional outpatient visits, (CI 9.03 to 10.59) for undocumented immigrant women 32%-point (CI: 29-36) increase from baseline (2%) in the probability that undocumented immigrant women had at least one prenatal visit in the first trimester 0.8% (CI: 0.4- 1.2) increase above baseline rate of 0.8% in likelihood of having Rh immunoglobulin administration during pregnancy 19% (CI: 13-25) increase from baseline of 1% in likelihood of vaccination for Tdap 19% (CI: 13-25) increase from baseline of 1% in diabetes screening with oral glucose tolerance testing 61% (CI: 56-65) increase from baseline of 2% in fetal ultrasound administration	Beneficial effect
Torres-Cantero 2007	Use	No differences were observed in the utilization of health services between documented and undocumented migrants following policy expansions	No effect

Author, year	Outcome	Magnitude of Effect/Association	Beneficial or Harmful or No effect/ association
Unuigbo 2019	Use	Among the lower income group of immigrant citizens there is a clinically significant 21.9 percentage point increase (95% CI: -0.02; 0.45) in the probability of a medical provider visit, following expansions. No statistically significant effect below the p=0.1 threshold for immigrants overall.	Beneficial and no effect (Mixed)
Wherry 2017	Use	States' adoption of coverage policies for all immigrant women increased the mean number of prenatal visits for immigrant women by 0.2 visits (95% CI: 0.004-0.396) Expansions for immigrant women with less than a high school diploma was associated with a 1.4-percentage-point-increase (95% CI: 0.62-2.18) in any prenatal care use and a significant increase of 0.4 visits (95% CI: 0.20-0.60) in the mean number of prenatal visits. There was a significant increase of 2.2 percentage points (95% CI: 2.0-2.4) in the likelihood of having a cesarean delivery among immigrant women with low education following expansions.	Beneficial effect (except mixed effect regarding cesarean deliveries)
Atkins 2018	Access	Undocumented women living in Nebraska during Medicaid expansions in 2007-2009 had a 28% increased odds (OR:1.28; 95% CI: 1.08-1.51) of being in receipt of adequate prenatal care compared to women who did not have access to the expanded Medicaid coverage.	Beneficial effect
Bustamante 2019	Access	After ACA implementation, naturalized immigrant citizens were 3.92% less likely to delay care and 2.21% less likely to forgo care (p<0.01). Non-citizens residing for less than 5 years were 4.53% less likely to delay care and 3.23% less likely to forgo care after ACA implementation (p<0.05). Finally, non-citizens residing in the US for 5 years or more were 1.77% less likely to forgo care due to the cost (p<0.01).	Beneficial effect
Drewry 2015	Access	Adjusted regression results produced a significant (p<0.05) APNCU (adequacy of prenatal care use) DD (difference-in-differences) estimator (0.044, 0.005-0.083) indicating that when controlling for all other observed and unobserved (through fixed effects) the enactment of the expansion increased prenatal care utilization in this high-risk group of foreign-born Latinas. For the overall foreign-born population, the DD estimator for APNCU was not statistically significant (p = 0.12)	Beneficial and no effect (Mixed)
Sharif 2019	Access	ACA expansion was associated with decreased odds of lacking a usual source of care for immigrants from Africa (AOR = 0.60; 95% CI 0.41, 0.86), Asia (AOR = 0.67; 95% CI 0.50, 0.90) and Mexico, Central America or Caribbean (AOR = 0.74; 95% CI 0.67, 0.81). The ACA was not associated with decreased odds of delaying care in the past 12 months for immigrant groups. The ACA was associated with reduced odds of not getting needed care due to being unable to afford it for immigrants from Africa (AOR = 0.55; 95% CI 0.37, 0.80), Asia (AOR = 0.64; 95% CI 0.43, 0.93), Middle East (AOR = 0.52; 95% CI 0.30, 0.92), South America (AOR = 0.71; 95% CI 0.52, 0.98), South	Beneficial effect (except one Harmful effect for a specific immigrant cohort from Western Europe)

Author, year	Outcome	Magnitude of Effect/Association	Beneficial or Harmful or No effect/ association
		East Asia (AOR = 0.72; 95% CI 0.53, 0.98), Western Europe (AOR = 0.71; 95% CI 0.53, 0.98) and Mexico, Central America or Caribbean (AOR = 0.52; 95% CI 0.30, 0.92). The ACA was associated with increased odds of being rejected by a doctor as a new patient among immigrants from Western Europe (AOR = 2.05; 95% CI 1.08, 3.88).	
Swartz 2017	Access	There was a 28% (CI: 26-31) increase in the probability that undocumented immigrant women received adequate prenatal visits following expansions	Beneficial effect
Swartz 2019	Access	Expansions reduced inadequate care among all pregnancies by 31.75% (95% CI: – 34.47; – 29.02) and by 38.60% among high risk pregnancies (95% CI: – 44.17; – 33.02)	Beneficial effect
Wherry 2017	Access	A 2.5-percentage-point (95% CI: 0.91-4.09) increase in adequate prenatal care utilization among immigrant women with less than a high school diploma was found following health coverage expansions	Beneficial effect
Swartz 2019	Outcome	Expansions did not affect severe maternal morbidity (all pregnancies 0.05%, 95% CI: – 0.29; 0.39; high-risk pregnancies 2.20%, 95% CI: – 0.47; 4.88)	No effect
Unuigbo 2019	Outcome	No statistically significant differences following expansion on health outcomes for immigrants	No effect
Health Insurance Restrictions			
Bakewell 2018	Use	After the cutbacks there was a 26.4% reduction in the frequency of patients claiming IFHP coverage (from 201 to 148 patients). Prescriptions were dispensed by providers at a similar rate before and after the cutbacks (40% and 46%, p=0.14).	Harmful effect, no effect
Evans 2014	Use	173 refugee claimant children visited the ER pre-cuts and 143 visited post-cuts. The number of refugee claimant children presenting to the ER after the cuts significantly decreased (p<0.01). After implementation of funding cutbacks, the admission rate of refugee claimant children increased from 6.4% to 12% (p=0.08).	Harmful effect
Unuigbo 2019	Use	Following Medicaid restrictions for permanent residents, there is no significant difference in the use of health care services compared to foreign born citizens	No effect
Yeo 2017	Use	Disparities increased after restrictions in the use of out-patient services for immigrants who resided in the US from 5-to-9-years and 10-to-14 years (b = -0.268 for pre- reform vs. b = -0.710 for post-reform; p<0.001, p<0.05) and the 10-to-14-year cohort (b = -0.069, for pre-reform vs. b = -0.487 for post-reform; p=0.4; p<0.001).	Harmful effect

Author, year	Outcome	Magnitude of Effect/Association	Beneficial or Harmful or No effect/ association
Atkins 2017	Access	Undocumented women who are Medicaid beneficiaries receive more adequate plus (17.86% vs. 14.80%) and excessive (51.85% vs. 49.03%) prenatal care than women without Medicaid ($p < 0.05$). However, non-Medicaid undocumented women more often received inadequate prenatal care (6.96% vs. 10.28%) ($p < 0.01$).	Harmful effect for uninsured
Bakewell 2018	Access	After the cuts, only 20.4% of patients had access to a family physician (FP) documented on their ED chart, compared to 30.0% before the cuts (unadjusted OR 1.67, 95% CI: 1.14–2.44; $p = 0.009$)	Harmful effect
Kaushal 2007	Access	1996 restrictions is associated with 9.7 percentage point increase in the probability of delaying care due to cost and a 6.5 percentage point increase in the probability of not obtaining care due to cost for single, low-educated, immigrant mothers ($p < 0.01$)	Harmful effect
Atkins 2017	Outcome	No significant differences in gestational diabetes, gestational hypertension, or smoking during pregnancy	No effect
Bakewell 2018	Outcome	The presentations and diagnoses of patients were similar before and after the IFH cuts. Illness severity as assessed by the CTAS and hospital admission rates were similar in the two groups.	No effect
Evans 2014	Outcome	No significant difference in mean length of stay, or CTAS scores pre- and post reforms.	No effect
Kaushal 2007	Outcome	No statistically significant effect between restriction and reporting poor or fair health	No effect
Mestres 2018	Outcome	Restrictions increased the monthly mortality rate of undocumented immigrants by 0.66 deaths per 100000 persons, ($p < 0.01$). This effect corresponds to an increase of 15% (95% CI: 0.0-30.0) in the pre-reform monthly mortality rate.	Harmful effect
Unuigbo 2019	Outcome	Following Medicaid restrictions for permanent residents, there is no significant difference in the measures of health status compared to foreign born citizens	No effect
Health Insurance Comparisons: Uninsured vs. Insured			
Cheng 2018	Use	The odds of visiting a physician was positively associated among immigrants with private insurance (OR = 3.01, $p < .01$), and public insurance (OR = 2.31, $p < .01$) compared to those without insurance. The odds of using a prescription medication was positively associated with having private insurance (OR = 2.02, $p < .01$), and having public insurance (OR = 3.14, $p < .01$) compared to having no insurance.	Harmful effect for uninsured

Author, year	Outcome	Magnitude of Effect/Association	Beneficial or Harmful or No effect/ association
Gagnon 2013	Use	Without insurance, migrant women were at greater risk for emergency cesarean compared to those with insurance (OR, 2.8; 95% CI, 1.2–6.3)	Harmful effect for uninsured
Lebrun 2012	Use	Immigrants in the US who reported having health insurance had 3.73 times increased odds of consulting with a health professional in the past year compared to an immigrant who reported having no health insurance (95% CI: 3.15-4.40). Immigrants in the US who reported having health insurance had 2.05 times higher odds of consulting an eye doctor than those who were uninsured (95% CI: 1.68-2.50). Insured US immigrants had a 2.62 times higher odds of taking the flu shot in the last year compared to uninsured immigrants (95% CI: 2.13-3.23). Finally, immigrants with health insurance had a 95% increased odds (OR: 1.95 [1.37-2.77]) of receiving a Pap test compared to their uninsured counterparts in the US.	Harmful effect for uninsured
Lee 2012	Use	Insured immigrants had a higher odds than uninsured immigrants to have received preventive screenings for Pap smear: OR = 1.98, 95% CI: 1.64, 2.40; prostate exam: OR = 1.83, 95% CI: 1.38, 2.44.	Harmful effect for uninsured
Mullerschön 2019	Use	Immigrants from sub-Saharan Africa with a health insurance card were more likely to visit the physician (90% vs. 66% vs. 41%; $p < 0.001$) or pharmacy (23% vs. 4% vs. 17%; $p < 0.001$) than participants with a medical treatment voucher from social welfare offices or no insurance. Participants who had no insurance compared to those with health insurance card (adjusted OR = 0.36; 95% CI: 0.21–0.60), were consulting a physician or hospital less often. Those with no insurance had a 45% decreased odds of being tested for HIV compared to those with a health insurance card (adjusted OR = 0.55; 95% CI: 0.31–0.95).	Harmful effect for uninsured
Yeo 2017	Use	Before the restrictions, immigrant elders with insurance had a higher odds of using health services than their uninsured counterparts. (OR [95% CI]: 1.22 [1.04-1.44]; 1.15 [1.03-1.29]; 1.63 [1.44-1.84] for private, Medicare and Medicaid insurance, respectively) After restrictions, immigrant elders with insurance had a higher odds of using health services than their uninsured counterparts. (OR [95% CI]: 1.15 [1.03-1.29], 1.58 [1.37-1.84], 1.41 [1.27-1.57] for private, Medicare and Medicaid insurance, respectively)	Harmful effect for uninsured
Lebrun 2012	Access	Immigrants in the US who reported having health insurance had 7.92 increased odds of having a usual source of care compared to an uninsured immigrant (95% CI: 6.67-9.41)	Harmful effect for uninsured
Shakya 2018	Access	For those who did not pay for health insurance they had a decreased perception of better access to a doctor/ health worker (AOR 0.21 [95CI: 0.41-0.89] compared to those that pay for health insurance	Harmful effect for uninsured

Author, year	Outcome	Magnitude of Effect/Association	Beneficial or Harmful or No effect/ association
		For those who did not pay for health insurance reported increased odds of unmet needs (AOR 4.09 [95CI: 2.75-6.08] compared to those that pay for health insurance	
Siddiqi 2009	Access	Uninsured American immigrants had 12.83 increased odds (95% CI:7.93–20.75) of lacking a regular provider, compared to Canadian insured immigrants. Insured American immigrants (AOR: 1.08; 95% CI: 0.92–1.28) did not differ from Canadian immigrants in lack of a regular provider. uninsured American immigrants (AOR: 3.96; 95% CI: 2.41–6.52) had increased odds of reporting unmet medical needs than Canadian immigrants, assumed to be insured. The unmet medical needs of insured American immigrants (AOR: 1.10; 95% CI: 0.69–1.75) did not differ from Canadian immigrants.	Harmful effect for uninsured
Vignier 2017	Access	Of the sub-Saharan African immigrants who forwent care due to the cost in France, 31.2% had no insurance, 18% had basic insurance, 23.8% had Universal Health Coverage and 28.5% had State Medical Aid (p=0.06). Of immigrants who were refused care by a doctor, 22.1% had no insurance, 14.7% had basic insurance, 11% had Universal coverage and 6.4% had State Medical Aid (P<0.01). Delayed entry into Hepatitis B care is more frequent among people without health coverage in the year of diagnosis or arrival in France (20.6%) than among those with insurance (6.8%, p<0.001).	Harmful effect for uninsured; some harmful effect for insured (Mixed)
Rousseau 2013	Outcome	Uninsured immigrant children were more likely to be categorized under urgent and very urgent triage scores than refugee claimant children with insurance (1.3% and 11.5% vs. 0.3% and 8.5%), which was statistically significant (p<0.001) Uninsured children presented more often for musculoskeletal injuries or lacerations (20.7% vs. 12.1%; P<0.001), depression (3.0% vs. 0.4%; P<0.001), post-traumatic stress disorder (1.4% vs 0.0%; P<0.001), suicidal thoughts (2.3% vs 0.8%; P=0.008) or substance abuse (0.9% vs, 0.2%; P=0.048), compared to insured refugee claimants. Refugee claimants presented more often for respiratory viruses (30.2% vs. 23.4%; p<0.001), abdominal pain (4% vs 2.3%; p<0.05) and appendicitis (1.3% vs 0.2%; p<0.01), compared to uninsured patients.	Harmful effect for uninsured; some harmful effect for insured (Mixed)
Sadarangani 2018	Outcome	Lack of health insurance coverage among elderly immigrants was associated with a 1.7 fold increase in the likelihood of being at risk for cardiovascular disease (OR:1.7; 95% CI: 1.52-1.91)	Harmful effect for uninsured

Appendix B. Systematic Review Appendices 1-8

Appendix 1. MEDLINE Keyword Search Strategy (Ovid)

Search	Query November 01 2019	Items Found
Health Insurance Intervention Terms		
1	exp insurance, health/	140531
2	exp insurance coverage/	15285
3	exp economics, medical/	14085
4	"fees and charges"/	8925
5	exp financing, government/	94920
6	insurance/ or insurance benefits/	8229
7	"cost sharing"/	2406
8	Health Care Reform/	31779
9	Universal Health Insurance/	3158
10	health expenditures/	18490
11	health coverage.ti,ab,kw.	2552
12	deductible.ti,ab,kw.	548
13	health care policy.ti,ab,kw.	2689
14	"Deductibles and Coinsurance"/	1703
15	(coinsurance or co-insurance).ti,ab,kw.	313
16	uncompensated care/	1898
17	((health or medical or immigrant) adj2 (policy or policies or legislat* or law* or reform* or program* or coverage or insurance)).ti,ab,kw.	130108
18	(Medicaid or medicare).ti,ab,kw.	55166
19	medical scheme.ti,ab,kw.	182
20	or/1-19	358416
Target Migrant Population Terms		
21	exp "emigrants and immigrants"/	10764
22	exp refugees/	9149
23	immigrant*.ti,ab,kw.	23238
24	migrant*.ti,ab,kw.	17524
25	refugee*.ti,ab,kw.	9434
26	asylum-seek*.ti,ab,kw.	1469
27	or/21-26	51319
Health Outcome Terms		
28	exp Health Status/	304178

29	exp "Outcome Assessment (Health Care)"/	988458
30	Health Services Administration/	4380
31	Delivery of Healthcare/	83291
32	Mortality/	41059
33	Morbidity/	28568
34	Patient Care/	9388
35	treatment outcome/	890843
36	outcome*.ti,ab,kw.	1510672
37	health status*.ti,ab,kw.	53242
38	health service* utili?ation.ti,ab,kw.	3245
39	((access* or visit* or utili*) adj3 (service* or care or health or treatment* or medical or department or emergency or hospital or clinic or prenatal or perinatal or maternal)).ti,ab,kw.	161452
40	(wellbeing or well-being).ti,ab,kw.	78047
41	morbidity*.ti,ab,kw.	355545
42	mortality*.ti,ab,kw.	689558
43	or/28-42	3152354

Study Design Filter

44	Non-Randomized Controlled Trials as Topic/	465
45	Randomized Controlled Trials as Topic/	122020
46	observational study/	59150
47	comparative study/	1824263
48	((design* or stud* or analy*) adj2 (cohort or cross-sectional or case-control or quasi-experimental or retrospective or prospective or observational)).ti,ab,kw.	1038636
49	(review adj2 (chart or patient record* or medical record* or health record*)).ti,ab,kw.	43832
50	epidemiologic studies/	7903
51	case-control studies/	261424
52	cohort studies/	236289
53	controlled before-after studies/	379
54	cross-sectional studies/	288642
55	historically controlled study/	149
56	interrupted time series analysis/	546
57	(random* or RCT* or controlled trial* or controlled stud* or controlled design or interrupted time series or "before-and-after" or (pretest or pre test or posttest or post test)).ti,ab,kw.	1326977
58	or/44-57	4179792

59	43 or 58	6184217
Human Filter		
60	exp animals/ not humans/	4558766
61	exp Veterinary Medicine/	24546
62	exp Animal Experimentation/	8997
63	(editorial or case report or in vitro).pt.	485315
64	or/60-62	4576866
65	20 and 27 and 59	1958
66	65 not 64	1958

Appendix 2. Title and Abstract Screening Form

Title and abstract criteria for screening articles

1. Is the article about humans?

- ☐ *If no, EXCLUDE.*
 - ☐ *If yes or unclear, go to next question.*
-

2. Is the article about immigrant and refugee populations?

- Do include articles about immigrants, refugees, asylum-seekers, refugee claimants, and other migrant populations intending to integrate within the host country or nation state.
- Do NOT include articles about populations born within the country of study.
- Do NOT include articles comparing outcomes between migrant and native populations.
- Do NOT include articles about temporary foreign workers or other temporary migrant populations due to a lack of intent to integrate in the host country or nation-state.

- ☐ *If no, EXCLUDE.*
 - ☐ *If yes or unclear, go to next question.*
-

3. Does the article compare how the expansions or restrictions of public health insurance interventions affect migrant populations?

- Do include articles that compare a migrant population before and after the expansion/restriction of a public health insurance intervention.
- Do include articles that compare a migrant population with health insurance to a migrant population without health insurance.
- Do NOT include articles that compare a non-migrant population with health insurance to a migrant population without health insurance or vice versa.

- ☐ *If no, EXCLUDE.*
 - ☐ *If yes or unclear, go to next question.*
-

4. Is the study setting in a country with a high-income economy as defined by the World Bank?

- ☐ *If no, EXCLUDE.*
 - ☐ *If yes or unclear, go to next question.*
-

5. Does the article report any of the following outcomes?

- Health status, death, morbidity, mortality, health services utilization, hospitalization rate, prenatal outcome, treatment outcome, perinatal outcome, maternal and child

health outcomes, emergency department visits, physician visits, clinic visits, community health centre utilization, specialist visits.

- ☐ *If no, EXCLUDE.*
 - ☐ *If yes or unclear, go to next question.*
-

6. Does the article employ quantitative research methodology?

- Do NOT include studies that employ a review methodology (systematic, critical interpretive synthesis, evidence synthesis, etc.) or that employ only qualitative methodology (grounded theory, ethnography, phenomenology, etc.).

- ☐ *If no, EXCLUDE.*
 - ☐ *If yes or unclear, INCLUDE.*
-

Appendix 3. Data Extraction Form

Data Extraction Form	
Study Title:	
Year of publication:	
Date of Extraction:	
Publication Type:	Journal article (peer-reviewed) ☐ Report (grey-literature) ☐ Other, please specify: _____
Funding Source:	Private (Industry) ☐ Private (Other) ☐ Public ☐ Other, please specify: _____
Conflict of Interest:	
Potential COI from funding or other source:	Yes ☐ Unclear ☐ No ☐ If yes or unclear, please specify: _____ —
Study aim or research questions:	
Data source(s):	
Data collection period:	
Data collection method(s):	
Study design:	Randomized Controlled Trial ☐ Cross-sectional ☐ Controlled Clinical Trial ☐ Case-control ☐ Controlled before-and-after ☐ Interrupted time series ☐ Uncontrolled before-and-after ☐ Cohort ☐ Other, please specify: _____
Population	

Migrant Population Category:	Immigrants ☐ Refugees ☐ Asylum-seekers ☐ Other, please specify: _____
General description of participants:	(e.g. 57 teenage women aged 13-19 in four hospitals in Nebraska) _____ _____
Was the intervention targeted at specific age or gender categories?	No ☐ Children ☐ Teenagers ☐ Adults ☐ Seniors ☐ Other, please specify: _____ No ☐ Men ☐ Women ☐ LGBTQ ☐ Other, please specify: _____
How were potential participants invited to participate or selected for inclusion in the study?	_____ _____
Sampling Strategy:	_____
Where were participants recruited from?	_____
Did the study provide details on baseline health status of participants?	Yes ☐ Unclear ☐ No ☐ If yes or unclear, please specify: _____ —
How many groups were assessed in total?	_____
Did the study include comparison or control group(s)?	Yes ☐ Unclear ☐ No ☐ If yes or unclear, please specify: _____ —
What was the comparison/control ?	_____

Intervention

Intervention Type:	Policy Expansion ☐ Policy Restriction ☐ Comparison ☐
--------------------	---

Name of Intervention:	Other, please specify: _____ _____
Goal or rationale of the intervention:	_____
What policy changes were implemented OR what policies (if any) contributed to an insured and uninsured population	_____
Who provided the healthcare coverage?	Private (Industry) ☐ Private (Other) ☐ Public ☐ Other, please specify: _____
Where did the intervention occur?	_____
When did the intervention occur?	_____
Were there any modifications of the intervention during the study?	_____
Outcomes	
Select the primary outcome(s) that were assessed:	Healthcare Utilization ☐ Health Outcome ☐ Healthcare Access ☐
Exact description of the outcome(s):	_____
How was the outcome assessed?	_____
Has the assessment tool or measurement	Yes ☐ Unclear ☐ No ☐ If yes or unclear, please specify: _____

method been
validated?

What were the time
points at which the
outcome was
measured?

What were the time
points at which the
outcome was
analyzed?

Description of
statistical methods
applied:

Narrative summary
of the results:

Does the study
mention adverse
events occurred?

Were there any
other limitations
discussed in the
study?

Appendix 4. Quality Assessment Tool

Appendix: Effective Public Health Practice Project (EPHPP) Quality Assessment Tool: Modified Version

A. Study information

1. Study ID:
2. Does the study use individual or ecological analyses? (Individual/Ecological)

Use data dictionary to rate some of the following sections:

https://merst.ca/wp-content/uploads/2018/02/quality-assessment-dictionary_2017.pdf

B. Study Design

1. Which type of design is used? Choose one from the following answers:

- ☐ *Randomized assignment (RCTs)*
- ☐ *Non-randomized assignment/trials studies using longitudinal panel data (including Difference-in-differences, time series and mixed-level structure data)*
- ☐ *Cohort studies using statistical matching (eg, propensity score matching, covariate matching)*
- ☐ *Cohort studies not using statistical matching*
- ☐ *Analytical cross-sectional study*
- ☐ *Descriptive cross-sectional study*

Rate this Section (see dictionary): STRONG MODERATE WEAK

Additional notes:

C. Selection bias

1. Are the individuals selected to participate in the study likely to be representative of the target population? *(Yes/No/Unclear)*
2. For studies using randomized assignment (RCTs)
 - a) Is the method used to generate a random allocation sequence described?
(Yes/No/Unclear)
 - b) Does the allocation mechanism generate equivalent groups? *(Yes/No/Unclear)*
 - c) Were study participants in different experimental conditions treated equally, except for receiving different treatments? *(Yes/No/Unclear)*
 - d) Is the unit of allocation based on a sufficiently large sample size to equate groups on average? *(Yes/No/Unclear)*

Rate this section: STRONG MODERATE WEAK

(Score "Strong" if questions 1 and/or 2(a-d) score "Yes"; "Weak" if question 1 score "No"; "Moderate" for otherwise)

Additional notes:

D. Selective outcome and analysis reporting biases

- a) There is NO evidence that outcomes are selectively reported (eg, all relevant outcomes in the methods section are reported in the results section). *(Yes/No/Unclear)*
- b) Do authors use and report multiple alternative specifications (eg, different models, measures of key predictors and/or outcomes)? *(Yes/No/Unclear)*
- c) Do authors explain, mention, or discuss study's limitations related to study's design and analytical methods? OR is it evident that authors elaborately discuss issues related to

variables' measurements and estimation procedure which may cause biases to the study (eg, data issues, measurement errors, etc.)? *(Yes/No/Unclear)*

- d) Are some important outcomes subsequently omitted from the results or the significance and magnitude of important outcomes not assessed? OR did authors use uncommon or less rigorous estimation methods (eg, failure to conduct multivariate analysis for outcomes equations where it has not been established that covariates are balanced/compared)? *(Yes/No/Unclear)*

Rate this Section: STRONG MODERATE WEAK

(Score "Strong" if question a to c scored "Yes"; "Weak" if question d scored "Yes"; "Moderate" for otherwise)

Additional notes:

E. Blinding

- a) Is the outcome likely to be affected by blinding? *(Yes/No/Unclear)*
- b) Was (were) the outcome assessor(s) aware of the intervention or exposure status of participants? *(Yes/No/Unclear)*
- c) Were the study participants blinded (to reduce detection bias or placebo effect)? *(Yes/No/Unclear)*

Rate this Section (see dictionary): STRONG MODERATE WEAK N/A

Additional notes:

F. Data Collection

- a) Were data collection tools shown to be valid (i.e. appropriate instrument use)?

(Yes/No/Unclear)

- b) Were data collection tools shown to be reliable (i.e. instrument used at different times or after different follow-up periods in treatment groups)? *(Yes/No/Unclear) N/A*

Rate this Section (see dictionary): STRONG MODERATE WEAK

Additional notes:

G. Withdrawals and drop-outs

- a) Were withdrawals and drop-outs reported in terms of numbers and/or reasons per group?

(Yes/No/Unclear)

- b) Indicate the percentage of participants completing the study (if it differs by groups, record the lowest).

- i. 80-100%
- ii. 60-79%
- iii. Less than 60%
- iv. Can't tell
- v. Not applicable (i.e. retrospective case-control)

Rate this Section (see dictionary): STRONG MODERATE WEAK N/A

Additional notes:

H. Other sources of bias

Important additional sources of bias may include: recall bias and social desirability bias or courtesy bias from outcomes collected through self-reporting; concerns about coherence of

results; data on the baseline collected retrospectively; concerns about non-response outcomes/missing values.

- a) Do you think that there are still any other sources of bias and possible threats to validity that may be present? *(Yes/No/Unclear)*
- b) Do you think possible sources of bias and threats to validity are still present but the authors fail to acknowledge and discuss them? *(Yes/No/Unclear)*
- c) Is it clear that these threats to validity are present and not controlled for?
(Yes/No/Unclear)

Rate this section: STRONG MODERATE WEAK

(Score "Strong" if question a to c score "No"; Score "Weak" if question a to c score "Yes"; "Moderate" for otherwise)

Additional notes:

I. Intervention Integrity

- a) What percentage of participants received the allocated intervention or exposure of interest?
 - i. 80-100%
 - ii. 60-79%
 - iii. Less than 60%
 - iv. unclear
- b) Was the consistency of the intervention measured? *(Yes/No/Unclear)*
- c) Is it likely that subjects received an unintended intervention (contamination or co-intervention) that may influence the results? *(Yes/No/Unclear)*

Rate this Section (see dictionary): STRONG MODERATE WEAK N/A

Additional notes:

J. Confounding and Analyses

1. Are statistical methods appropriate for the study design? *(Yes/No/Unclear)*
2. Were relevant confounders controlled for in the design or analysis? *(Yes/No/Unclear)*
3. For studies using random assignment (RCTs)
 - a) Are the baseline characteristics of the study and control/comparisons reported?
(Yes/No/Unclear)
 - b) Is overall similarity assessed using appropriate statistical tests? OR by controlling covariate differences using multivariate analysis? *(Yes/No/Unclear)*
 - c) Are issues that may reduce the validity of findings (eg, attrition, cross-overs, and dropouts, etc.) adequately discussed and addressed? *(Yes/No/Unclear)*
 - d) Are sufficient details provided on covariate differences or methods of adjustment?
(Yes/No/Unclear)
 - e) Is the sample size sufficient? AND does execution of the methods align with the randomization process? *(Yes/No/Unclear)*

Are analysis and confounding in the study addressed?

(Score "Yes" if question a to e (if apply) scored "Yes"; "No" if none of the questions scored "Yes"; "Unclear" for otherwise)

4. For studies using longitudinal/panel data analysis including DID and multi-level data

- a) Do authors use appropriate models given the structure of the data (eg, difference-in-differences or fixed effects multivariable estimation method)? *(Yes/No/Unclear)*

- b) Do authors include a comprehensive set of time-varying characteristics (for longitudinal data)? *(Yes/No/Unclear/Not applicable)*
- c) For pseudo panel/repeated cross-section, are all independent variables strictly exogenous? *(Yes/No/Unclear/Not applicable)*
- d) In the study that uses random effect model, do authors use appropriate statistical tests (eg, Haussman test) to determine the choice of the model? OR do authors run both models for specification/robustness check? *(Yes/No/Unclear/Not applicable)*
- e) In the case of DID design, do authors match treated and untreated participants based on all relevant characteristics? OR do authors demonstrate that treated and untreated participants are statistically similar prior to the interventions? *(Yes/No/Unclear/Not applicable)*

Are analysis and confounding in the study addressed?

(Score "Yes" if question a to e (if apply) scored "Yes"; "No" if none of the questions scored "Yes"; "Unclear" for otherwise)

5. For cohort studies using statistical matching (eg, PSM, covariate matching)

- a) Is matching either on baseline characteristics or time-invariant characteristics which cannot be affected by exposure of treatment and the variables used to match are relevant? *(Yes/No/Unclear)*
- b) Are the means of the individual covariates equated for treatment and comparison groups after matching (with the exception of Kernel matching)? *(Yes/No/Unclear)*
- c) For a study using PSM, does Rosenbaum's test suggest the results are not sensitive to the existence of hidden bias? *(Yes/No/Unclear/Not applicable)*

- d) Are relevant variables **NOT** included in the matching equation? OR is matching based on characteristics collected at end-line? OR are insufficient details provided on cluster controls?

Are analysis and confounding in the study addressed?

(Score "Yes" if question a to c scored "Yes"; No" if question a to c scored "No", and question d scored "Yes"; "Unclear" for otherwise)

6. For regression-based analytical studies using cross sectional data

- a) Does the study use appropriate model based on the nature of the outcomes' distribution (eg, probit or logit models for binary outcome, etc.)? *(Yes/No/Unclear)*
- b) Does the study controls for relevant confounders (eg, demographic and socioeconomic factors at individual and community level) using multivariate methods? *(Yes/No/Unclear)*
- c) For cluster-assignment, do authors control particularly for external cluster-level factors that might confound the impact of the program through multivariate analysis?
(Yes/No/Unclear/ Not Applicable)
- d) Are relevant confounders controlled but appropriate proxy variables or statistical tests **NOT** reported or discussed? OR are insufficient details provided on model specifications and cluster controls? *(Yes/No/Unclear)*

Are analysis and confounding in the study addressed?

(Score "Yes" if question a to c scored "Yes"; "No" if questions a to c scored "No" and/or question d scored "Yes"; "Unclear" for otherwise)

Rate this Section: STRONG MODERATE WEAK

(Score "Strong" if question 1,2 and 3(or 4-6) scored "Yes"; "Weak" if question 1,2 and 3(or 4-6) scored "No"; "Moderate" if otherwise)

Additional notes:

Global Rating

Please transcribe the information from the component ratings onto this page. (See dictionary)

Study Design	1	2	3	N/A
Selection Bias	1	2	3	N/A
Selective outcome and analysis reporting biases	1	2	3	N/A
Blinding	1	2	3	N/A
Data Collection	1	2	3	N/A
Withdrawals and Drop-outs	1	2	3	N/A
Other Biases	1	2	3	N/A
Intervention Integrity	1	2	3	N/A
Confounding and Statistical Analyses	1	2	3	N/A

Global Rating for this Paper (circle one):

- 1 STRONG (no WEAK ratings)
- 2 MODERATE (one WEAK rating)
- 3 WEAK (two or more WEAK ratings)

With both reviewers discussing the ratings:

Is there a discrepancy between the two reviewers with respect to the component (B-J) ratings?

(Yes/No)

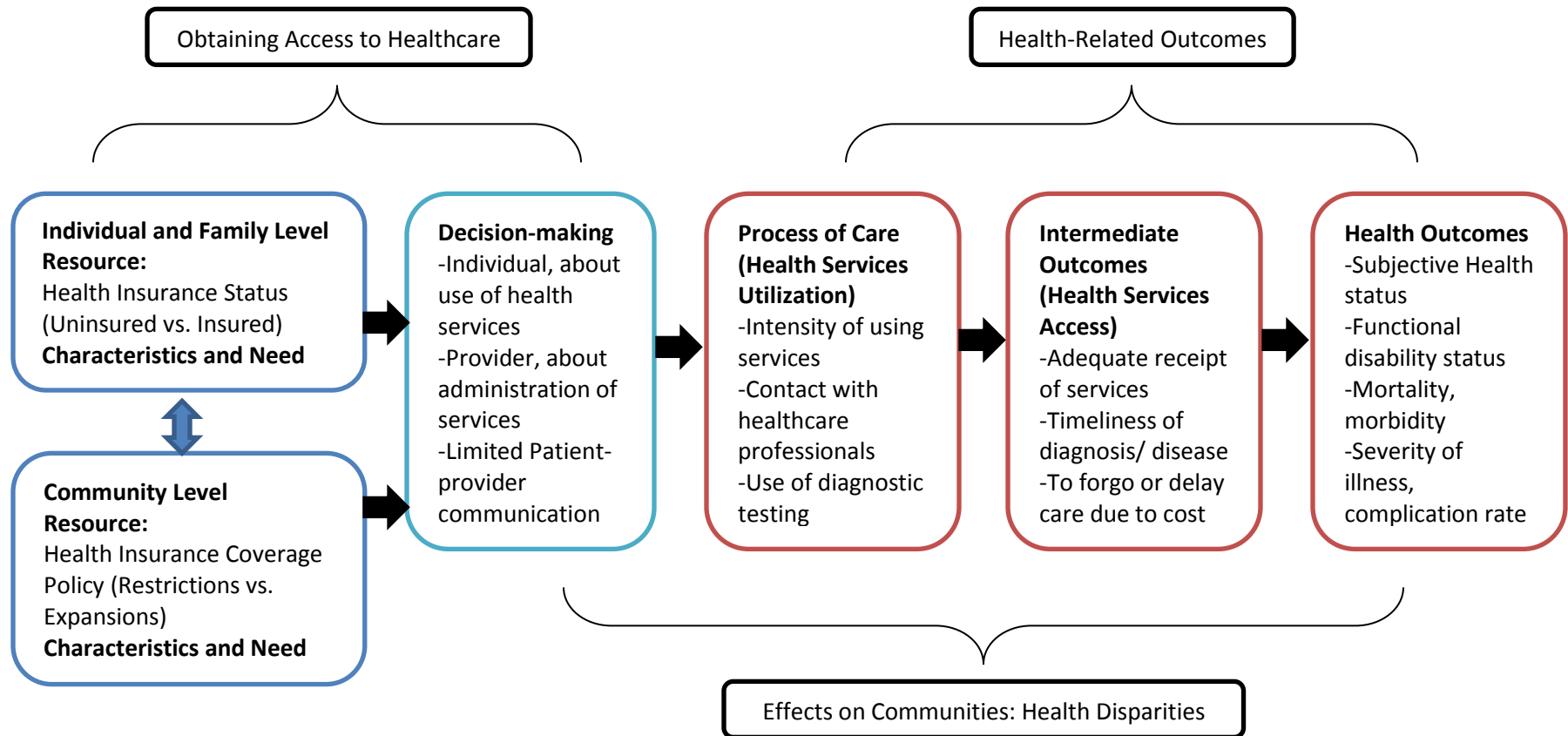
If yes, indicate the reason for the discrepancy

(Oversight/ Differences in interpretation of criteria/ Differences in interpretation of study)

Final decision of both reviewers (circle one):

- 1 STRONG
- 2 MODERATE
- 3 WEAK

Appendix 5. A conceptual framework for assessing the effect of health insurance on health-related outcomes adapted from Institute of Medicine (US) Committee on the Consequences of Uninsurance (2002).



Appendix 6. Risk of Bias Assessment

Table S1. Overall Risk of Bias Judgement

Author, Year, Country	Study Design Quality	Selection Bias Quality	Selective Outcome and Analysis Reporting Bias Quality	Data Collection Method Quality	Other Sources of Bias Quality	Confounding and Analysis Quality	Global Rating ^a
Atkins et al. 2017 USA	3	1	1	2	2	3	3
Atkins et al. 2018 USA	2	1	1	2	2	2	1
Bakewell et al. 2018 Canada	3	2	1	2	2	2	2
Bustamante et al. 2018, USA	3	1	1	1	2	1	2
Cheng & Guo 2018 USA	3	1	1	1	3	2	3
Claassen et al. 2018 Germany	3	2	1	3	3	2	3
Drewry et al. 2015 USA	2	1	1	2	2	2	1
Evans et al. 2014 Canada	3	2	3	2	2	3	3
Gagnon et al. 2013 Canada	3	1	1	1	2	2	2
Kaushal & Kaestner. 2007, USA	2	1	1	1	2	1	1

Author, Year, Country	Study Design Quality	Selection Bias Quality	Selective Outcome and Analysis Reporting Bias Quality	Data Collection Method Quality	Other Sources of Bias Quality	Confounding and Analysis Quality	Global Rating^a
Lebrun 2012 Canada/USA	3	1	1	1	2	1	2
Lee et al. 2012, USA	3	2	2	1	2	2	2
Mestres et al. 2018 Spain	2	2	2	1	1	1	1
Mullerschön et al. 2019 Germany	3	3	1	1	2	1	3
Rousseau et al. 2013 Canada	3	2	3	2	3	3	3
Sadarangani et al. 2019, USA	3	1	1	1	2	1	2
Shakya et al. 2018 Japan	3	3	1	1	2	1	3
Sharif et al. 2019, USA	3	1	1	1	2	1	2
Siddiqi et al. 2009 Canada/USA	3	1	1	1	2	1	2
Swartz et al. 2017, USA	2	1	1	1	2	1	1
Swartz et al. 2019 USA	2	1	1	1	2	1	1
Torres-Cantero et al. 2007, Spain	3	3	3	3	3	3	3

Author, Year, Country	Study Design Quality	Selection Bias Quality	Selective Outcome and Analysis Reporting Bias Quality	Data Collection Method Quality	Other Sources of Bias Quality	Confounding and Analysis Quality	Global Rating^a
Unuigbo 2017, USA	2	1	1	1	3	2	2
Vignier et al. 2017 France	3	2	1	1	3	3	3
Wherry et al. 2017 USA	2	1	1	2	1	2	1
Yeo 2017 USA	2	1	1	1	2	1	1

a- If two or more components are rated weak (3) then overall risk of bias judgement is rated weak (3); if one component is rated weak (3) then overall risk of bias judgement is rated moderate (2); if no component is rated weak (3) then overall risk of bias judgement is rated strong (1); strong (1) indicates high quality, moderate (2) indicates moderate quality and weak (3) indicates low quality.

Table S2. Component 1: Study Design Quality

Author, Year, Country	Study Design Quality	Justification
Atkins et al. 2017, USA	3	Uncontrolled before-after study with cross-sectional design; weak (3)
Atkins et al. 2018, USA	2	Controlled before-after study with quasi-experimental design; moderate (2)
Bakewell et al. 2018 Canada	3	Uncontrolled before-after study with cross-sectional design; weak (3)
Bustamante et al. 2018 USA	3	Controlled before-after study with cross-sectional design; weak (3)
Cheng & Guo 2018 USA	3	Cross-sectional study design; weak (3)
Claassen et al. 2018 Germany	3	cross-sectional study design; weak (3)
Drewry et al. 2015, USA	2	Quasi-experimental study design; moderate (2)
Evans et al. 2014, Canada	3	Uncontrolled before-after study with cross-sectional design; weak (3)
Gagnon et al. 2013 Canada	3	Cross-sectional study design; weak (3)
Kaushal & Kaestner. 2007 USA	2	Quasi-experimental study design; moderate (2)
Lebrun 2012 Canada/USA	3	Cross-sectional study design; weak (3)
Lee et al. 2012 USA	3	Cross-sectional study design; weak (3)

Mestres et al. 2018, Spain	2	Quasi-experimental study design; moderate (2)
Mullerschön et al. 2019 Germany	3	Cross-sectional study design; weak (3)
Rousseau et al. 2013 Canada	3	Cross-sectional study design; weak (3)
Sadarangani et al. 2019 USA	3	Cross-sectional study design; weak (3)
Shakya et al. 2018 Japan	3	Cross-sectional study design; weak (3)
Sharif et al. 2019, USA	3	Controlled before-after study with cross-sectional design; weak (3)
Siddiqi et al. 2009 Canada/USA	3	Cross-sectional study design; weak (3)
Swartz et al. 2017, USA	2	Quasi-experimental study design; moderate (2)
Swartz et al. 2019, USA	2	Quasi-experimental study design; moderate (2)
Torres-Cantero et al. 2007 Spain	3	Cross-sectional study design; weak (3)
Unuigbo 2017 USA	2	Quasi-experimental study design; moderate (2)
Vignier et al. 2017 France	3	Cross-sectional study design; weak (3)
Wherry et al. 2017 USA	2	Quasi-experimental study design; moderate (2) Individual observations were aggregated to create state-level measures
Yeo 2017 USA	2	Quasi-experimental study design; moderate (2)

Table S3. Component 2: Selection Bias Quality

Author, Year, Country	Selection Bias Quality	Justification
Atkins et al. 2017, USA	1	Used administrative data collected by the Nebraska Department of Health and Human Services, included all individuals identified as undocumented from 2007-2011; strong (1)
Atkins et al. 2018, USA	1	Used administrating birth certificate records collected by Nebraska and South Carolina Departments of Health, included all individuals identified as undocumented from 2007-2011; strong (1)
Bakewell et al. 2018, Canada	2	Used emergency department records from two tertiary hospitals in Ottawa, not representative of all refugees seeking care, excludes those who had IFH revoked and still visited ED as self-pay patients; moderate (2)
Bustamante et al. 2018, USA	1	Used the National Health Interview Survey (NHIS) with multistage stratified sampling frame; strong (1)
Cheng & Guo 2018, USA	1	Used the National Health and Nutrition Examination Survey (NHANES) with complex multistage sampling frame of population; strong (1)
Claassen et al. 2018, Germany	2	Survey sampled asylum-seekers in 14 different community camps, but unclear how these were selected and whether it was representative of asylum-seeker populations in North Rhine-Westphalia; moderate (2)
Drewry et al. 2015, USA	1	Live births of foeign-born Latinas collected from the National Center for Health Statistics (NCHS) and National Association for Public Health Statistics Information Systems (NAPHSIS) representative of foreign-born sample; strong (1)
Evans et al. 2014, Canada	2	Used emergency room administrative data, but study sample is unlikely to represent all target population, selection bias towards those that use ER; moderate (2)
Gagnon et al. 2013, Canada	1	Complex sampling frame, described in Childbearing Health and Related Services Needs of Newcomers (CHARSNN) study, representative of target population; strong (1)
Kaushal & Kaestner 2007, USA	1	Used the National Health Interview Survey (NHIS) with multistage stratified sampling frame; strong (1)

Lebrun 2012, Canada/USA	1	Used the National Health Interview Survey (NHIS) and Canadian Community Health Survey (CCHS) with multistage stratified sampling frame; strong (1)
Lee et al. 2012, USA	2	Used the New Immigrant Survey, some selection bias present in the inclusion of mostly recent immigrants who had reported complete length of stay information; moderate (2)
Mestres et al. 2018, Spain	2	Use of mortality registry in Spain to obtain data provides a representative sample, however selection bias exists because while undocumented immigrants are the target population, there are no measures of legal status – instead ethnicity of immigrants is used to determine status; moderate (2)
Mullerschön et al. 2019, Germany	3	Use of convenience sampling; trained peer researchers recruited participants through outreach; weak (3)
Rousseau et al. 2013, Canada	2	Recruitment occurred at hospital, selection bias excludes those who seek care from community health centres and newcomer clinics; moderate (2)
Sadarangani et al. 2019, USA	1	Used the National Health and Nutrition Examination Survey (NHANES) with complex multistage sampling frame of population; strong (1)
Shakya et al. 2018, Japan	3	Use of convenience sampling; key informants helped identify language schools, professional training colleges, Indo-Nepali restaurants and other workstations in the study area where most Nepalese migrants study and work; weak (3)
Sharif et al. 2019, USA	1	Used the National Health Interview Survey (NHIS) with multistage stratified sampling frame; strong (1)
Siddiqi et al. 2009, Canada/USA	1	Used the Joint Canada/United States Survey of Health with multi-country stratified sampling frame; strong (1)
Swartz et al. 2017, USA	1	Used Medicaid claims data from the Oregon Health Authority's Department of Health Analytics to determine representative sample of target population; strong (1)
Swartz et al. 2019, USA	1	Used Medicaid claims data from the Oregon Health Authority's Department of Health Analytics to determine representative sample of target population; strong (1)
Torres-Cantero et al. 2007, Spain	3	Use of convenience sampling by two trained surveyors who approached participants in the streets or at health services; weak (3)

Unuigbe 2017, USA	1	Survey of Income and Program Participation (SIPP) – employed multistage stratified sampling of US population; strong (1)
Vignier et al. 2017, France	2	Selection bias from hospital recruitment as they are more sick and less likely to have no insurance than those with chronic Hepatitis B living in the community; moderate (2)
Wherry et al. 2017, USA	1	Nativity and period linked birth-infant death data files with collected by the National Center for Health Statistics were used, and representative of target population; strong (1)
Yeo 2017, USA	1	Used the National Health Interview Survey (NHIS) with multistage stratified sampling frame; strong (1)

Table S4. Component 3: Selective Outcome and Analysis Reporting Bias Quality

Author, Year, Country	Selective Outcome and Analysis Reporting Bias Quality	Justification
Atkins et al. 2017 USA	3	Authors use less rigorous estimation methods (did not conduct multivariate analysis for outcomes where it has not been established that covariates are balanced); weak (3)
Atkins et al. 2018 USA	1	There is no evidence that outcomes are selectively reported, all relevant outcomes in the methods section are reported in the results section, authors report multiple alternative specifications, authors discuss study's limitations related to study's design and analytical methods, no outcomes were omitted from the results and the significance and magnitude of outcomes were assessed; strong (1)
Bakewell et al. 2018 Canada	1	There is no evidence that outcomes are selectively reported, all relevant outcomes in the methods section are reported in the results section, authors report multiple alternative specifications, authors discuss study's limitations related to study's design and analytical methods, no outcomes were omitted from the results and the significance and magnitude of outcomes were assessed; strong (1)
Bustamante et al. 2018 USA	1	There is no evidence that outcomes were selectively reported, all relevant outcomes in the methods section are reported in the results section, authors report multiple alternative specifications through multivariable modelling and marginal effects analysis. Authors discuss study's limitations related to study's design and analytical methods, no outcomes were omitted from the results and the significance and magnitude of outcomes were assessed; strong (1)
Cheng and Guo. 2018 USA	1	There is no evidence that outcomes were selectively reported, all relevant outcomes in the methods section are reported in the results section, authors report multiple alternative specifications for three different outcome measures. Authors discuss study's limitations related to study's design and analytical methods, no outcomes were omitted from the results and the significance and magnitude of outcomes were assessed; strong (1)
Claassen et al. 2018 Germany	1	There is no evidence that outcomes were selectively reported, all relevant outcomes in the methods section are reported in the results section, authors report multiple alternative specifications. Authors discuss study's limitations related to study's design and analytical methods, no outcomes were omitted from the results and the significance and magnitude of outcomes were assessed; strong (1)

Drewry et al. 2015 USA	1	There is no evidence that outcomes are selectively reported, all relevant outcomes in the methods section are reported in the results section, authors report multiple alternative specifications, authors discuss study's limitations related to study's design and analytical methods, no outcomes were omitted from the results and the significance and magnitude of outcomes were assessed; strong (1)
Evans et al. 2014 Canada	3	Authors report descriptive analysis of outcomes, and use less rigorous estimation methods (did not conduct multivariate analysis for outcomes where it has not been established that covariates are balanced); weak (3)
Gagnon et al. 2013 Canada	1	There is no evidence that outcomes were selectively reported, all relevant outcomes in the methods section are reported in the results section, authors report multiple alternative specifications through multivariable modelling. Authors discuss study's limitations related to study's design and analytical methods, no outcomes were omitted from the results and the significance and magnitude of outcomes were assessed; strong (1)
Kaushal and Kaestner. 2007 USA	1	There is no evidence that outcomes were selectively reported, all relevant outcomes in the methods section are reported in the results section, authors report multiple alternative specifications through multivariable modelling. Authors discuss study's limitations related to study's design and analytical methods, no outcomes were omitted from the results and the significance and magnitude of outcomes were assessed; strong (1)
Lebrun 2012 Canada/USA	1	There is no evidence that outcomes were selectively reported, all relevant outcomes in the methods section are reported in the results section, authors report multiple alternative specifications through multivariable modelling. Authors discuss study's limitations related to study's design and analytical methods, no outcomes were omitted from the results and the significance and magnitude of outcomes were assessed; strong (1)
Lee et al. 2012 USA	2	There is no evidence that outcomes are selectively reported, all relevant outcomes in the methods section are reported in the results section and authors report multiple alternative specifications. However the associations of the covariates are not reported and model specifications for examining insurance status on the receipt of preventative measures are unclear; moderate (2)
Mestres et al. 2018 Spain	2	There is no evidence that outcomes are selectively reported, all relevant outcomes in the methods section are reported in the results section and authors report multiple alternative specifications. However, authors do not discuss study's limitations related to study's design and analytical methods; moderate (2)

Mullerschon et al. 2019 Germany	1	There is no evidence that outcomes were selectively reported, all relevant outcomes in the methods section are reported in the results section, authors report multiple alternative specifications through multivariable modelling. Authors discuss study's limitations related to study's design and analytical methods, no outcomes were omitted from the results and the significance and magnitude of outcomes were assessed; strong (1)
Rousseau et al. 2013 Canada	3	Authors use less rigorous estimation methods (did not conduct multivariate analysis for outcomes where it has not been established that covariates are balanced); weak (3)
Sadarangani et al. 2019 USA	1	There is no evidence that outcomes were selectively reported, all relevant outcomes in the methods section are reported in the results section, authors report multiple alternative specifications through multivariable modelling. Authors discuss study's limitations related to study's design and analytical methods, no outcomes were omitted from the results and the significance and magnitude of outcomes were assessed; strong (1)
Shakya et al. 2018 Japan	1	There is no evidence that outcomes were selectively reported, all relevant outcomes in the methods section are reported in the results section, authors report multiple alternative specifications through multivariable modelling. Authors discuss study's limitations related to study's design and analytical methods, no outcomes were omitted from the results and the significance and magnitude of outcomes were assessed; strong (1)
Sharif et al. 2019 USA	1	There is no evidence that outcomes were selectively reported, all relevant outcomes in the methods section are reported in the results section, authors report multiple alternative specifications through multivariable modelling. Authors discuss study's limitations related to study's design and analytical methods, no outcomes were omitted from the results and the significance and magnitude of outcomes were assessed; strong (1)
Siddiqi et al. 2009 Canada/USA	1	There is no evidence that outcomes were selectively reported, all relevant outcomes in the methods section are reported in the results section, authors report multiple alternative specifications through multivariable modelling. Authors discuss study's limitations related to study's design and analytical methods, no outcomes were omitted from the results and the significance and magnitude of outcomes were assessed; strong (1)
Swartz et al. 2017 USA	1	There is no evidence that outcomes are selectively reported, all relevant outcomes in the methods section are reported in the results section, authors report multiple alternative specifications, authors discuss study's limitations related to study's design and analytical methods, no outcomes were omitted from the results and the significance and magnitude of outcomes were assessed; strong (1)

Swartz et al. 2019 USA	1	There is no evidence that outcomes are selectively reported, all relevant outcomes in the methods section are reported in the results section, authors report multiple alternative specifications, authors discuss study's limitations related to study's design and analytical methods, no outcomes were omitted from the results and the significance and magnitude of outcomes were assessed; strong (1)
Torres-Cantero et al. 2007 Spain	3	Authors selectively report analysis - they do not mention what statistical analysis is conducted. Authors use less rigorous estimation methods (did not conduct multivariate analysis for outcomes where it has not been established that covariates are balanced); Selective reporting of outcomes: indicate multivariate analysis in results section but only report results on education level and health use; weak (3)
Unuigbo 2017 USA	1	There is no evidence that outcomes are selectively reported, all relevant outcomes in the methods section are reported in the results section, authors report multiple alternative specifications, authors discuss study's limitations related to study's design and analytical methods, no outcomes were omitted from the results and the significance and magnitude of outcomes were assessed; strong (1)
Vignier et al. 2017 France	1	There is no evidence that outcomes were selectively reported, all relevant outcomes in the methods section are reported in the results section, authors report multiple alternative specifications through multivariable modelling. Authors discuss study's limitations related to study's design and analytical methods, no outcomes were omitted from the results and the significance and magnitude of outcomes were assessed; strong (1)
Wherry et al. 2017 USA	1	There is no evidence that outcomes were selectively reported, all relevant outcomes in the methods section are reported in the results section. Authors report multiple alternative specifications through three different multivariable models. Authors discuss study's limitations related to study's design and analytical methods, no outcomes were omitted from the results and the significance and magnitude of outcomes were assessed; strong (1)
Yeo 2017 USA	1	There is no evidence that outcomes were selectively reported, all relevant outcomes in the methods section are reported in the results section, authors report multiple alternative specifications through bivariate and multivariable modelling. Authors discuss study's limitations related to study's design and analytical methods, no outcomes were omitted from the results and the significance and magnitude of outcomes were assessed; strong (1)

Table S5. Component 4: Data Collection Method Quality

Author, Year, Country	Data Collection Method Quality	Justification
Atkins et al. 2017 USA	2	Unclear whether birth certificate registry is a valid data collection tool as authors assume that individuals who do not have a recorded social security number are undocumented; moderate (2)
Atkins et al. 2018 USA	2	Unclear whether birth certificate registry is a valid data collection tool as authors assume that individuals who do not have a recorded social security number are undocumented; moderate (2)
Bakewell et al. 2018, Canada	2	Used chart review to collect data, unclear if valid and reliable tool; moderate (2)
Bustamante et al. 2018, USA	1	The National Health Interview Survey (NHIS) is a valid and reliable data collection tool
Cheng and Guo. 2018, USA	1	The National Health and Nutrition Examination Survey is a valid and reliable data collection tool.
Claassen et al. 2018, Germany	3	Survey tool validity or reliability was not tested or discussed by authors; weak (3)
Drewry et al. 2015 USA	2	Unclear whether birth certificate data is valid or reliable given some variables were recategorized over time leading to measurement error; moderate (2)
Evans et al. 2014 Canada	2	Used chart review to collect data, unclear if valid and reliable tool; moderate (2)
Gagnon et al. 2013 Canada	1	Childbearing Health and Related Services Needs of Newcomers (CHARSNN) study questionnaires were tested for validity and reliability; strong (1)
Kaushal & Kaestner 2007, USA	1	The National Health Interview Survey (NHIS) is a valid and reliable data collection tool; strong (1)
Lebrun 2012 Canada/USA	1	The National Health Interview Survey (NHIS) and the Canadian Community Health Survey (CCHS) are valid and reliable data collection tools; strong (1)

Lee et al. 2012 USA	1	Newl Immigration Survey is a valid and reliable data collection tool: see information at: https://nis.princeton.edu/index.html ; Strong (1)
Mestres et al. 2018 Spain	1	Death Statistics by Cause of Death dataset provided by the Spanish National Institute of Statistics registers all deaths occurred in Spain, strong validity and reliability to capture mortality data; strong (1)
Mullerschon et al. 2019 Germany	1	Community based participatory research; The questionnaire was developed by an expert group consisting of representatives from HIV/STI clinics and specialists, misSA community members and researchers, survey tool validity and reliability were tested; strong (1)
Rousseau et al. 2013 Canada	2	Used chart review to collect data, unclear if valid and reliable tool, especially considering migratory status is not always available or recorded; moderate (2)
Sadarangani et al. 2019 USA	1	National Health and Nutrition Examination Survey is a validated and reliable data collection tool. CVD risk computed using the American College of Cardiology and American Heart Association 2013 Pooled Cohort Risk Equation for Atherosclerotic Cardiovascular disease; strong (1)
Shakya et al. 2018 Japan	1	Used Multi-dimensional Scale of Perceived Social Support (MSPSS). Its Cronbach's alpha was 0.97 for this study, high reliability and valid; strong (1)
Sharif et al. 2019 USA	1	The National Health Interview Survey (NHIS) is a valid and reliable data collection tool
Siddiqi et al. 2009 Canada/USA	1	The Joint Canada/United States Survey of Health is a valid and reliable data collection tool based on content from the NHIS and CCHS; strong (1)
Swartz et al. 2017 USA	1	Oregon Medicaid claims data is valid and reliable (See Evans et al., 2017); strong (1)
Swartz et al. 2019 USA	1	Oregon Medicaid claims data is valid and reliable (See Evans et al., 2017); strong (1)
Torres-Cantero et al. 2007, Spain	3	Survey tool validity or reliability was not tested or discussed by authors; weak (3)

Unuigbe 2017 USA	1	SIPP instrument was shown to be valid and reliable, repeated in 1996, 2001 and 2004; strong (1)
Vignier et al. 2017 France	1	Childbearing Health and Related Services Needs of Newcomers (CHARSNN) study questionnaires were tested for validity and reliability; strong (1)
Wherry et al. 2017 USA	2	Linked birth and infant death registry data from NCHS has good validity but uncertain reliability (see Northam and Knapp, 2006); moderate (2)
Yeo 2017 USA	1	The National Health Interview Survey (NHIS) is a valid and reliable data collection tool; Strong (1)

Table S6. Component 5: Other Sources of Bias Quality

Author, Year, Country	Other Sources of Bias Quality	Justification
Atkins et al. 2017 USA	2	Other sources of bias include confounding bias; moderate (2)
Atkins et al. 2018 USA	2	Unclear whether parallel trends assumption was met; moderate (2)
Bakewell et al. 2018, Canada	2	Other sources of bias include confounding bias, observer bias and no discussion of missing values; moderate (2)
Bustamante et al. 2018, USA	2	The use of cross-sectional survey data suggests recall bias and social desirability bias may be present, no discussion of missing values; moderate (2)
Cheng & Guo, 2018, USA	3	Unclear whether the authors controlled for confounders. The use of cross-sectional survey data suggests recall bias and social desirability bias may be present, no discussion of missing values; weak (3)
Claassen et al. 2018, Germany	3	The use of cross-sectional survey data suggests there was recall bias, social desirability bias; non-response bias; omitted variable bias; weak (3)
Drewry et al. 2015 USA	2	Unclear whether parallel trends assumption was met - no exploration of outcomes between enacting and non-enacting states before intervention - states that enacted policy expansion reported more births, larger percentage of Mexican births and slightly higher education levels; moderate (2)
Evans et al. 2014 Canada	2	Other sources of bias include confounding bias, observer bias and no discussion of missing values; moderate (2)
Gagnon et al. 2013 Canada	2	Non-response bias as suggested by missing data, omitted variable bias – inclusion of some variables in model depended on if they were statistically significant during preliminary analyses; moderate (2)
Kaushal & Kaestner 2007 USA	2	The use of cross-sectional survey data suggests recall bias and social desirability bias may be present; moderate (2)

Lebrun 2012 Canada/USA	2	The use of cross-sectional survey data suggests recall bias and social desirability bias may be present; moderate (2)
Lee et al. 2012 USA	2	The use of cross-sectional survey data suggests recall bias and social desirability bias may be present; moderate (2)
Mestres et al. 2018 Spain	1	Little to no other sources of bias and possible threats to validity were detected, given time and region fixed effects were controlled for, parallel trends assumption was met and no other changes affecting undocumented populations were implemented during that time period were discerned; strong (1)
Mullerschön et al. 2019, Germany	2	Other sources of bias include recall, social desirability, and non-response bias; moderate (2)
Rousseau et al. 2013, Canada	3	Other sources of bias include confounding bias, observer bias, misclassification bias of immigrant and uninsured status and no discussion of missing values; weak (3)
Sadarangani et al. 2019, USA	2	The use of cross-sectional survey data suggests recall bias and social desirability bias may be present; grouping of all racial and ethnic groups together may have introduced a misclassification bias; moderate (2)
Shakya et al. 2018 Japan	2	The use of cross-sectional survey data suggests recall bias and social desirability bias may be present; moderate (2)
Sharif et al. 2019 USA	2	The use of cross-sectional survey data suggests recall bias and social desirability bias may be present, no discussion of missing values; moderate (2)
Siddiqi et al. 2009 Canada/USA	2	The use of cross-sectional survey data suggests recall bias and social desirability bias may be present; moderate (2)
Swartz et al. 2017 USA	2	County and time fixed effects accounted for but there is misclassification bias due to input errors and omissions, omitted variable bias, and women ineligible for EMP would pay for care – this is not recorded in the claims database; moderate (2)
Swartz et al. 2019 USA	2	County and time fixed effects accounted for and covariates controlled for but there is misclassification bias due to input errors and omissions, women ineligible for EMP would pay for care – this is not recorded in the claims database; moderate (2)

Torres-Cantero et al. 2007, Spain	3	The use of cross-sectional survey data suggests recall bias and social desirability bias may be present; non-response bias and confounding bias; moderate (2)
Unuigbo 2017 USA	3	Unclear whether parallel trends assumption was met; health use and outcome patterns for sample population were not explored; sources of bias and possible threats to validity may be present, such as other policy influences. Notably, coverage choices made by California, New York and Texas demonstrate variation across states and over time; while California covered migrant parents for health care since 1996, New York did not until 2001; weak (3)
Vignier et al. 2017 France	.3	The use of cross-sectional survey data suggests recall bias and social desirability bias may be present; confounding bias and no discussion of missing values; weak (3)
Wherry et al. 2017 USA	1	Little to no other sources of bias and possible threats to validity were detected, given time and region fixed effects were controlled for, parallel trends assumption was met and no other changes affecting undocumented populations were implemented during that time period were discerned; strong (1)
Yeo 2017 USA	2	The use of cross-sectional survey data suggests recall bias and social desirability bias may be present; omitted variable bias - no language proficiency variable, but imputations for missing data was performed with MCMC procedure; moderate (2)

Table S7. Component 6: Confounding and Analysis Quality

Author, Year, Country	Confounding and Analysis Quality	Justification
Atkins et al. 2017 USA	3	Descriptive statistics analysis did not control for any relevant confounders, less rigorous analysis for cross-sectional study design employed; weak (3)
Atkins et al. 2018 USA	2	Unclear whether authors matched treated and untreated participants and demonstrate that treated and untreated participants are statistically similar prior to the interventions; moderate (2)
Bakewell et al. 2018 Canada	2	Some logistic regression analyses controlled for no confounders; unclear what confounders are controlled for in multivariable analysis; moderate (2)
Bustamante et al. 2018, USA	1	Logistic models were used for binary outcomes, with multivariable modelling to control for relevant confounders, sufficient details provided on model specification; strong (1)
Cheng and Guo. 2018, USA	2	Logistic models were used for binary outcomes, but insufficient details provided on model specification - unclear if confounders are controlled for in the regression analysis; moderate (2)
Claassen et al. 2018 Germany	2	Unclear which confounders are controlled for in the regression analysis, low powered study; hierarchical cluster analysis was not used despite asylum seekers being surveyed from different municipalities; moderate (2)
Drewry et al. 2015 USA	2	Statistical analysis based on multivariable regression models, difference-in-differences analysis: unclear whether authors demonstrated that treated and untreated participants are statistically similar prior to the interventions; adjusted for state fixed effects and state-specific time trends; moderate (2)
Evans et al. 2014 Canada	3	Descriptive statistics analysis did not control for any relevant confounders, less rigorous analysis for cross-sectional study design employed and sample size is low; weak (3)
Gagnon et al. 2013 Canada	2	Logistic models were used for binary outcomes, but insufficient details provided on model specification - Unclear what confounders are controlled for in multivariable analysis; moderate (2)

Kaushal & Kaestner 2007, USA	1	Statistical analysis based on multivariable regression models, difference-in-differences analysis: demonstrated that treated and untreated participants are statistically similar prior to the interventions; adjusted for state fixed effects and state-specific time trends; strong (1)
Lebrun 2012 Canada/USA	1	Logistic models were used for binary outcomes, with multivariable modelling to control for relevant confounders, sufficient details provided on model specification; strong (1)
Lee et al. 2012 USA	2	Logistic models were used for binary outcomes, but insufficient details provided on model specification - Unclear what confounders are controlled for in some multivariable analysis models; state-level cluster analysis was not employed; moderate (2)
Mestres et al. 2018 Spain	1	Statistical analysis based on multivariable regression models, difference-in-differences analysis: demonstrated that treated and untreated participants are statistically similar prior to the interventions (Figure 1 & 2A); adjusted for time and region fixed effects; strong (1)
Mullerschön et al. 2019, Germany	1	Logistic models were used for binary outcomes, with multivariable modelling to control for relevant confounders, sufficient details provided on model specification; strong (1)
Rousseau et al. 2013 Canada	3	Descriptive statistics analysis did not control for any relevant confounders, less rigorous analysis for cross-sectional study design employed; weak (3)
Sadarangani et al. 2019 USA	1	Logistic models were used for binary outcomes, with multivariable modelling to control for relevant confounders, sufficient details provided on model specification; strong (1)
Shakya et al. 2018 Japan	1	Logistic models were used for binary outcomes, with multivariable modelling to control for relevant confounders, sufficient details provided on model specification; strong (1)
Sharif et al. 2019 USA	1	Logistic models were used for binary outcomes, with multivariable modelling to control for relevant confounders, sufficient details provided on model specification; strong (1)
Siddiqi et al. 2009 Canada/USA	1	Logistic models were used for binary outcomes, with multivariable modelling to control for relevant confounders, sufficient details provided on model specification; strong (1)

Swartz et al. 2017 USA	1	Statistical analysis based on regression models, difference-in-differences analysis: demonstrated that treated and untreated participants are statistically similar prior to the interventions; adjusted for time and county fixed effects; strong (1)
Swartz et al. 2019 USA	1	Statistical analysis based on multivariable regression models, difference-in-differences analysis: demonstrated that treated and untreated participants are statistically similar prior to the interventions; adjusted for time and county fixed effects; strong (1)
Torres-Cantero et al. 2007, Spain	3	Descriptive statistics analysis did not control for any relevant confounders, less rigorous analysis for cross-sectional study design employed; weak (3)
Unuigbo 2017 USA	2	Unclear whether authors matched treated and untreated participants and demonstrate that treated and untreated participants are statistically similar prior to the interventions; moderate (2)
Vignier et al. 2017 France	3	Descriptive statistics analysis did not control for any relevant confounders, less rigorous analysis for cross-sectional study design employed; weak (3)
Wherry et al. 2017 USA	2	Statistical analysis based on multivariable regression models with fixed effects, difference-in-differences analysis, triple difference-in-difference analysis; unclear whether parallel trends assumption was met; moderate (2)
Yeo 2017 USA	1	Statistical analysis based on multivariable regression models, difference-in-differences analysis: simple slope regression analysis used to meet parallel trends assumption; strong (1)

Appendix 7. PRISMA Checklist

Section/topic	#	Checklist item	Reported on page #
TITLE			
Title	1	Identify the report as a systematic review, meta-analysis, or both.	57
ABSTRACT			
Structured summary	2	Provide a structured summary including, as applicable: background; objectives; data sources; study eligibility criteria, participants, and interventions; study appraisal and synthesis methods; results; limitations; conclusions and implications of key findings; systematic review registration number.	58
INTRODUCTION			
Rationale	3	Describe the rationale for the review in the context of what is already known.	60
Objectives	4	Provide an explicit statement of questions being addressed with reference to participants, interventions, comparisons, outcomes, and study design (PICOS).	62
METHODS			
Protocol and registration	5	Indicate if a review protocol exists, if and where it can be accessed (e.g., Web address), and, if available, provide registration information including registration number.	66
Eligibility criteria	6	Specify study characteristics (e.g., PICOS, length of follow-up) and report characteristics (e.g., years considered, language, publication status) used as criteria for eligibility, giving rationale.	63
Information sources	7	Describe all information sources (e.g., databases with dates of coverage, contact with study authors to identify additional studies) in the search and date last searched.	63
Search	8	Present full electronic search strategy for at least one database, including any limits used, such that it could be repeated.	105
Study selection	9	State the process for selecting studies (i.e., screening, eligibility, included in systematic review, and, if applicable, included in the meta-analysis).	91
Data collection process	10	Describe method of data extraction from reports (e.g., piloted forms, independently, in duplicate) and any processes for obtaining and confirming data from investigators.	65
Data items	11	List and define all variables for which data were sought (e.g., PICOS, funding sources) and any assumptions and simplifications made.	64
Risk of bias in individual studies	12	Describe methods used for assessing risk of bias of individual studies (including specification of whether this was done at the study or outcome level), and how this information is to be used in any data synthesis.	65
Summary measures	13	State the principal summary measures (e.g., risk ratio, difference in means).	66

Synthesis of results	14	Describe the methods of handling data and combining results of studies, if done, including measures of consistency (e.g., I^2) for each meta-analysis.	N/A
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Section/topic	#	Checklist item	Reported on page #
Risk of bias across studies	15	Specify any assessment of risk of bias that may affect the cumulative evidence (e.g., publication bias, selective reporting within studies).	66-78
Additional analyses	16	Describe methods of additional analyses (e.g., sensitivity or subgroup analyses, meta-regression), if done, indicating which were pre-specified.	N/A
RESULTS			
Study selection	17	Give numbers of studies screened, assessed for eligibility, and included in the review, with reasons for exclusions at each stage, ideally with a flow diagram.	67
Study characteristics	18	For each study, present characteristics for which data were extracted (e.g., study size, PICOS, follow-up period) and provide the citations.	94-98
Risk of bias within studies	19	Present data on risk of bias of each study and, if available, any outcome level assessment (see item 12).	124-144
Results of individual studies	20	For all outcomes considered (benefits or harms), present, for each study: (a) simple summary data for each intervention group (b) effect estimates and confidence intervals, ideally with a forest plot.	99-104
Synthesis of results	21	Present results of each meta-analysis done, including confidence intervals and measures of consistency.	N/A
Risk of bias across studies	22	Present results of any assessment of risk of bias across studies (see Item 15).	124-144
Additional analysis	23	Give results of additional analyses, if done (e.g., sensitivity or subgroup analyses, meta-regression [see Item 16]).	N/A
DISCUSSION			
Summary of evidence	24	Summarize the main findings including the strength of evidence for each main outcome; consider their relevance to key groups (e.g., healthcare providers, users, and policy makers).	78
Limitations	25	Discuss limitations at study and outcome level (e.g., risk of bias), and at review-level (e.g., incomplete retrieval of identified research, reporting bias).	81
Conclusions	26	Provide a general interpretation of the results in the context of other evidence, and implications for future research.	83
FUNDING			
Funding	27	Describe sources of funding for the systematic review and other support (e.g., supply of data); role of funders for the systematic review.	66

Appendix 8. Characteristics of Excluded Studies in Peer-reviewed and Grey Literature (ordered by study ID)

Article Citation	Reason for Exclusion
<i>Peer-reviewed articles (n=68)</i>	
Afek, Arnon. “[Utilization of Healthcare Services by Groups in the Israeli Population as a Measurement Reflecting Equity in the Healthcare System].” <i>Harefuah</i> 147, no. 4 (2008): 309–74.	No retrievable full-text
Andre, Jean-Marie, and Fabienne Azzedine. “Access to Healthcare for Undocumented Migrants in France: A Critical Examination of State Medical Assistance.” <i>Public Health Reviews</i> 37 (2016): 5–5. https://doi.org/10.1186/s40985-016-0017-4 .	No quantitative data
Avery, K. T. “Dental Health of Migrant Agricultural Workers.” <i>Journal of Occupational Medicine</i> 16, no. 9 (1974): 606–7.	No assessment of health insurance intervention or insurance status comparison
Balakrishnan, A. “The Undocumented Elderly: Coverage Gaps and Low Health Care Use.” <i>Journal of Health Care for the Poor and Underserved</i> 30, no. 3 (2019): 891–98. https://doi.org/10.1353/hpu.2019.0062 .	No quantitative data
Bauhoff, Sebastian, and Dirk Gopffarth. “Asylum-Seekers in Germany Differ from Regularly Insured in Their Morbidity, Utilizations and Costs of Care.” <i>PloS One</i> 13, no. 5 (2018): e0197881–e0197881. https://doi.org/10.1371/journal.pone.0197881 .	No assessment of health insurance intervention or insurance status comparison
Beck, Teresa L, Thien-Kim Le, Queen Henry-Okafor, Megha K Shah, Beck T.L., Le T.-K., and Henry-Okafor Q. “Medical Care for Undocumented Immigrants: National and International Issues.” <i>Primary Care</i> 44, no. 1 (2017): e1–13. https://doi.org/10.1016/j.pop.2016.09.005 .	No quantitative data (review)
Bengiamin, Marlene I, John A Capitman, and Mathilda B Ruwe. “Disparities in Initiation and Adherence to Prenatal Care: Impact of Insurance, Race-Ethnicity and Nativity.” <i>Maternal and Child Health Journal</i> 14, no. 4 (2010): 618–24. https://doi.org/10.1007/s10995-009-0485-y .	No immigrant group counterfactual
Berchet, C. “[Health Care Utilisation in France: An Analysis of the Main Drivers of Health Care Use Inequalities Related to Migration].” <i>Le Recours Aux Soins En France : Une Analyse Des Mecanismes Qui Generent Les Inegalites de Recours Aux Soins Liees a l’immigration</i> . 61 Suppl 2, no. rst, 7608039 (2013): S69–79. https://doi.org/10.1016/j.respe.2013.03.001 .	No immigrant group counterfactual

Borgschulte, Hannah S, Gerhard A Wiesmuller, Anne Bunte, and Florian Neuhaus. "Health Care Provision for Refugees in Germany - One-Year Evaluation of an Outpatient Clinic in an Urban Emergency Accommodation." <i>BMC Health Services Research</i> 18, no. 1 (2018): 488–488. https://doi.org/10.1186/s12913-018-3174-y .	No assessment of health insurance intervention or insurance status comparison
Borjas G.J. "Welfare Reform, Labor Supply, and Health Insurance in the Immigrant Population." <i>Journal of Health Economics</i> 22, no. 6 (2003): 933–58. https://doi.org/10.1016/j.jhealeco.2003.05.002 .	No assessment of health insurance intervention or insurance status comparison
Brown, Henry Shelton, Kimberly J Wilson, and Jacqueline L Angel. "Mexican Immigrant Health: Health Insurance Coverage Implications." <i>Journal of Health Care for the Poor and Underserved</i> 26, no. 3 (2015): 990–1004. https://doi.org/10.1353/hpu.2015.0102 .	No assessment of health insurance intervention or insurance status comparison
Bustamante, Arturo Vargas, Ryan M McKenna, Joseph Viana, Alexander N Ortega, and Jie Chen. "Access-To-Care Differences Between Mexican-Heritage And Other Latinos In California After The Affordable Care Act." <i>Health Affairs (Project Hope)</i> 37, no. 9 (2018): 1400–1408. https://doi.org/10.1377/hlthaff.2018.0416 .	Immigrant population of interest may include native-born individuals
C., Sargent, C Sargent, L Kotobi, and Sargent C. "Austerity and Its Implications for Immigrant Health in France." <i>Social Science and Medicine. (No Pagination)</i> , 2017 187 (2017): 259–67. https://doi.org/10.1016/j.socscimed.2017.05.007 .	No quantitative data (qualitative)
Carrasquillo, Olveen, and Susmita Pati. "The Role of Health Insurance on Pap Smear and Mammography Utilization by Immigrants Living in the United States." <i>Preventive Medicine</i> 39, no. 5 (2004): 943–50.	No immigrant group counterfactual
Castaneda, Heide. "Illegality as Risk Factor: A Survey of Unauthorized Migrant Patients in a Berlin Clinic." <i>Social Science & Medicine (1982)</i> 68, no. 8 (2009): 1552–60. https://doi.org/10.1016/j.socscimed.2009.01.024 .	No quantitative data (qualitative)
Castano, Jenny, Jesus E Ospina, Joan A Cayla, and Scott L Greer. "Restricting Access to Health Care to Immigrants in Barcelona: A Mixed-Methods Study With Immigrants Who Have Experienced an Infectious Disease." <i>International Journal of Health Services : Planning, Administration, Evaluation</i> 46, no. 2 (2016): 241–61. https://doi.org/10.1177/0020731416637174 .	No assessment of health insurance intervention or insurance status comparison

Chase, L.E., Cleveland J., Beatson J., Liana E Chase, Janet Cleveland, Jesse Beatson, and Cecile Rousseau. “The Gap between Entitlement and Access to Healthcare: An Analysis of ‘Candidacy’ in the Help-Seeking Trajectories of Asylum Seekers in Montreal.” <i>Social Science & Medicine</i> (1982) 182 (2017): 52–59. https://doi.org/10.1016/j.socscimed.2017.03.038 .	No quantitative data (qualitative)
Cheng, I-Hao, Jacquie McBride, Miriam Decker, Therese Watson, Hannah Jakubenko, and Alana Russo. “The Asylum Seeker Integrated Healthcare Pathway: A Collaborative Approach to Improving Access to Primary Health Care in South Eastern Melbourne, Victoria, Australia.” <i>Australian Journal of Primary Health</i> , no. 101123037 (2019). https://doi.org/10.1071/PY18028 .	No assessment of health insurance intervention or insurance status comparison
Choi, Sunha. “Insurance Status and Health Service Utilization among Newly-Arrived Older Immigrants.” <i>Journal of Immigrant and Minority Health</i> 8, no. 2 (2006): 149–61	No immigrant group counterfactual
Correa-Velez, Ignacio, Vanessa Johnston, Joanne Kirk, and Angeline Ferdinand. “Community-Based Asylum Seekers’ Use of Primary Health Care Services in Melbourne.” <i>The Medical Journal of Australia</i> 188, no. 6 (2008): 344–48.	No assessment of health insurance intervention or insurance status comparison.
Cortes, Ernesto, Maria Mercedes Rizo-Baeza, Antonio Palazon-Bru, Maria Jose Aguilar-Cordero, and Vicente Francisco Gil-Guillen. “Influence of Immigration on Prematurity in the Context of a Free Healthcare System with Universal Coverage.” <i>Scientific Reports</i> 5, no. 101563288 (2015): 10586. https://doi.org/10.1038/srep10586 .	No immigrant group counterfactual
De Jonge, A., Rijnders M., Agyemang C., Van Der Stouwe R., Den Otter J., Van Den Muijsenbergh M.E.T.C., Ank de Jonge, et al. “Limited Midwifery Care for Undocumented Women in the Netherlands.” <i>Journal of Psychosomatic Obstetrics and Gynaecology</i> 32, no. 4 (2011): 182–88. https://doi.org/10.3109/0167482X.2011.589016 .	No assessment of immigrant status
Di Thiene, D, S Rahman, M Helgesson, M Wang, K Alexanderson, J Tiitonen, G La Torre, and E Mittendorfer-Rutz. “Healthcare Use among Immigrants and Natives in Sweden on Disability Pension, before and after Changes of Regulations.” <i>European Journal of Public Health</i> 28, no. 3 (2018): 445–51. https://doi.org/10.1093/eurpub/ckx206 .	No assessment of health insurance intervention or insurance status comparison.
Glauser, W. “Feds Stick with Decision Not to Fund Refugee Health Care.” <i>CMAJ: Canadian Medical Association Journal = Journal de l’Association Medicale Canadienne</i> 186, no. 2 (2014): E70–E70. https://doi.org/10.1503/cmaj.109-4689 .	No health-related outcomes reported

Gray, Bradford H, and Ewout van Ginneken. “Health Care for Undocumented Migrants: European Approaches.” <i>Issue Brief (Commonwealth Fund)</i> 33 (2012): 1–12.	No quantitative data (policy brief)
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CHAPTER 4. Health services utilization by prescription drug coverage and immigration category in Ontario: An Intersectional Analysis

Preface

This chapter focuses on a provincial drug coverage system and the health services disparities faced by individuals without prescription drugs and migrants. It examines the association between health services utilization and prescription drug coverage status among the working-age population residing in Ontario, Canada, and whether this association differs by gender/sex and immigration category. Exploring the intersectional relationship between prescription drug coverage, gender/sex and immigration status on the use of general practitioner, specialist and hospital services reveal the ways in which individuals, including immigrants, refugees and non-migrants alike, navigate the healthcare system when required to pay out-of-pocket for prescription drugs. I was responsible for conceptualizing the research question, design and conducting data analyses. The analysis was executed between July 2018 and July 2020 at the Research Data Centre, McMaster University, using confidential pooled components of the 2005, 2008, 2013-2014 Canadian Community Health Survey linked to the Longitudinal Immigrant Database, provided by Statistics Canada and the Ministry of Immigration, Refugees and Citizenship, Canada, respectively. Analyses were developed iteratively through conversations with Drs. Emmanuel Guindon and Arthur Sweetman. Interpretation of findings occurred through ongoing conversations with all co-authors. I drafted this chapter of the dissertation and Drs. E. Guindon, A. Sweetman, Olive Wahoush, Andrea Baumann, and Lisa Schwartz provided feedback on drafts, which were incorporated into the final version of the chapter. It has been submitted for publication.

Original Research Paper

Health services utilization by prescription drug coverage and immigration category in Ontario: An Intersectional Analysis

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Word count: 6,561 (including in-text citations)

Abstract word count: 384

Exhibits: 3 tables, 3 figures, 1 appendix

1. Health Policy PhD Program, McMaster University, Hamilton, Canada
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The authors would like to acknowledge Li Wang, Peter Kitchen and Mustafa Orneck at the Research Data Centre and members of Health Economics at McMaster for input on the analysis.

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Conflict of Interest: None identified.

Key words: prescription drug coverage, immigrants, refugees, health services utilization, intersectionality

Abstract

Background: Canada is the only high-income country with a universal healthcare system that does not provide prescription drug coverage for its citizens. The resultant patchwork arrangement of publicly funded drug coverage programs at the federal, provincial and territorial levels in Canada is complex, creating uneven and inequitable access to prescription drugs. This study examines the effect of prescription drug insurance status on health services utilization and determines whether this association differs by immigrant status and gender/sex.

Method: A cross-sectional study design informed by an intercategory intersectional approach was employed. To examine associations of drug insurance on use and non-use of health services, multivariable logistic regression models were estimated and the interaction effect between prescription drug coverage and immigration status was examined. Model estimates were used to generate predicted probabilities of each health service utilization outcome (use of GP services, specialist services, and hospitalizations) by drug insurance type and immigration status, stratified by sex and adjusted by demographic and need characteristics. To interpret the results, predicted probabilities and associated average marginal effects are reported. Linking data from the Canadian Community Health Survey and Longitudinal Immigrant Database generated a data sample of Ontario residents (n=39,792) aged 25-64 years old.

Results: Overall, prescription drug coverage is associated with improved use of general practitioner (GP) and specialist services. Our intersectional analysis revealed that while this is true for most non-migrants, some migrant cohorts who reported having public or private drug insurance had a higher probability of using specialist services, and not GP services, compared to their uninsured counterparts. Furthermore, family-class immigrant women who reported having public drug coverage had a lower probability of using GP services, compared to those without prescription drug coverage. There is no association between prescription drug coverage and being hospitalized in the previous year.

Interpretation: The study reveals important differences in the use of health services across prescription drug coverage status for non-immigrants, economic immigrants, family-class immigrants and refugees. While implementing universal pharmacare would improve the health services use of most migrants and non-migrants, some cohorts of immigrant women may experience additional barriers to access primary care services. Ongoing evaluation is needed to ensure that the implementation of pharmacare contributes equitable outcomes for all.

Funding: MacData Institute Fellowship, Canadian Research Data Centre Network (CRDCN) Emerging Scholar Grant, Ontario Drug Policy Research Network (ODPRN)

Introduction

Canada's healthcare system provides universal coverage of medically necessary hospital and physician services - but it excludes outpatient prescription drugs. Instead, prescription drug costs are covered through a mix of public and private insurance plans, or through out-of-pocket payments (OPPs) by patients (Daw et al., 2010). Canada is the only high-income country with a universal healthcare system that does not provide prescription drug coverage for its residents (Morgan et al., 2013). The complex arrangement of publicly funded drug coverage programs at the federal, provincial and territorial levels, accompanied by private drug insurance plans, creates uneven and inequitable access to medications.

Evidence suggests marginalized populations experience detrimental health effects when lacking access to prescription drug coverage (Lexchin & Grootendorst, 2004). Migrant populations in vulnerable situations, such as immigrant newcomers and refugees, have worse health outcomes in Canada (Beiser 2005; Gushulak et al. 2011; Glazier et al., 2004). Studies reveal they experience limited access to primary care services and their health status relative to Canadian-born individuals declines after resettlement (Sanmartin & Ross, 2006; Vang et al., 2016). Furthermore, migrants may have a greater likelihood of under-insurance due to gaps in the current patchwork of public and private drug coverage programs (Cheff, et al., 2019) and they are more likely than the Canadian-born population to be uninsured for prescription drugs (HQO, 2016). Limited access to comprehensive prescription drug coverage may contribute to the large health gap for immigrants and refugees. In order to understand their use of health services, migrant

populations should be considered according to their immigration category and prescription drug coverage status, to expose how these factors influence their health following resettlement.

1.1 Prescription Drug Coverage in Canada

Canada's federal, provincial and territorial governments have independently established prescription drug coverage programs to cover the cost of outpatient medications, each with substantial variability between jurisdictions in their drug formulary composition, cost-sharing mechanisms (deductible, copayment, premium, etc.) and coverage eligibility (Hurley, 2010). In Ontario, the provincial government regulates three main publicly funded outpatient prescription drug insurance programs: the Ontario Drug Benefit plan, OHIP+ and the Trillium Drug Program (Table 1). These public programs are complemented by thousands of private drug insurance schemes offered by employers, professional associations and unions that vary in many ways (Morgan and Boothe, 2016). This variation results in coverage gaps for some Canadians, leaving them uninsured if they are ineligible for public drug plans and cannot afford private insurance.

Approximately one in five Canadians report having no or inadequate coverage for their prescription drug costs (Law et al., 2018). Canadians without drug insurance are four times more likely to delay filling or renewing a prescription in the previous year, due to the cost of their medication (Law et al., 2012). There is evidence to suggest that patients' health may be compromised if they do not have access to prescription drugs, especially among vulnerable populations (Soumerai et al., 1991; Soumerai et al., 1994; Tamblyn et al., 2001; Lexchin and Grootendorst. 2004). In Canada, adverse health

effects following increases in public drug plan deductibles and copayments for beneficiaries in Quebec (1997) and British Columbia (2003) have been well-documented (Tamblyn et al., 2001; Dormuth et al., 2008). These studies reveal that without timely access to prescription drug treatments, a disease may progress to an acute level, resulting in an increased likelihood of adverse health outcomes and the use of more expensive secondary health services.

1.2 Health Services Utilization of Immigrants

The healthy immigrant effect is a widely studied phenomenon that suggests immigrants are initially healthier than the native-born population in the first years after arrival (Aldridge et al., 2018; Beiser, 2005; DesMeules et al., 2005; Gushulak et al., 2011; Hyman, 2004; McDonald & Kennedy, 2004; Ng, 2011). However, the initial health advantage fades over time and immigrant health resembles that of the Canadian population or worse after approximately ten years (Beiser, 2005; Dunn and Dyck, 2000; Newbold, 2005; Newbold, 2009; Ng et al., 2005). Compared to other immigrant cohorts, refugees are more likely to experience rapid declines in self-reported health status after their arrival in Canada (Pottie et al., 2011; Newbold, 2009; Fowler 1998).

These declines in self-reported health for immigrants and refugees have been partly attributed to post-migration stressors experienced during the resettlement and integration process, stressors such as poverty, unemployment, social isolation, discrimination, and language difficulties. For example, a longitudinal study by Ng et al., (2011) revealed that prolonged limited official language proficiency was strongly associated with an increase in the prevalence of poor self-reported health among recent

immigrants, regardless of sex. These stressors contribute to pronounced health consequences for immigrants over time, in part by limiting access to health services (George et al., 2015). Evidence suggests that immigrants are twice as likely to have difficulty accessing care than the Canadian-born population (Sanmartin and Ross, 2006). Moreover, newly arrived immigrants and refugees seek primary care less often than either established immigrants or their Canadian-born counterparts (McKeary and Newbold, 2010; Vang et al., 2016). Muggah et al. (2012) found that immigrants who attend fee-for-service practices in Ontario report fewer primary care visits and poorer access to health services than Canadian-born patients. The authors examined migrants' primary care access using the Primary Care Assessment Tool which measured the patient's usual source of care and access to a source of care during and after office hours.

1.3. Intersectional Approach

The theory of intersectionality posits that human experience is rooted in the intersection between aspects of social identity (as related to race, gender, class, sexuality, etc.) and forms of structural oppression (racism, classism, sexism, etc.) in ways that are complex and interdependent (Hankivsky and Cormier, 2009). Intersectionality theory has been incorporated into the design and data analysis of this study. In this study, intersectionality emphasizes the need to interrogate "configurations of inequality" in which gender/sex, drug insurance and migration intersect in a variety of ways within socioeconomic, historical and political contexts (Crenshaw, 1991; McCall, 2001, p.6). It is imperative to understand intersections between identity, power, policies and health outcomes to address health inequity (Kobayashi and Prus, 2011).

Intersectionality uncovers the multiple ways migration status affects health. Pre-migration stressors inflicted by conflict, war or rigorous travel as well as post-migration stressors instigated by changes in social roles, supports and location are all important factors that influence health. Gendered migration experiences upon resettlement, such as the changes to household roles and experiences of economic deprivation following downward social mobility or exposure to precarious work are embedded within systems of oppression, such as racism and other forms of discrimination, which contribute to some inequities experienced by migrants as determined by their immigration category (Spitzer et al., 2019). Intersectionality recognizes that in addition to one's social identity, structural factors, such as immigration policies, contribute to experiences of privilege and oppression by determining a migrants' entrance into the country, length of stay, family reunification prospects, employability, as well as access to and subsequent use of health services (Grosfoguel et al., 2015; Kapilashrami & Hankivsky, 2018; Spitzer et al., 2019). Immigration policies categorize migrants into temporary, permanent and undocumented groups which influence their exposure to stress, risks, resources and access to determinants of good health (Spitzer et al., 2019).

One structural factor that adds a layer of complexity to intersections of gender and migration is prescription drug coverage, which is inequitably distributed among Ontario residents aged 25 to 64 years old. Unlike Canada's health coverage system for physician and hospital care, prescription drugs are not covered for all, an unintended consequence elicited by the policy legacy of the 1966 Medical Care Act, which institutionalized the exclusion of medications from the public coverage plan (Boothe, 2013). As a result, some

individuals receive no drug insurance unless they can afford to pay out-of-pocket for private insurance through cost-sharing mechanisms or through employee wages.

Alternatively, other individuals may be eligible for select provincial drug coverage plans if they receive social assistance or experience high costs using the healthcare system. If these individuals are not poor enough to receive government supports, and not wealthy enough to afford private insurance, they are left without coverage for essential medications, creating an inequitable healthcare system.

1.4. Immigrant Health and Prescription Drugs

Prescription drug coverage is associated with improved patient health outcomes (Kesselheim et al., 2015). Although most recent immigrants and refugees obtain physician and hospital insurance within ninety days of resettlement, they may still lack access to prescription drug coverage for years. According to Health Quality of Ontario's (2016) report examining data from the 2014 Canadian Community Health Survey, nearly 60% more of those born in Canada reported having prescription drug insurance compared to recent immigrants.

Limited access to prescription drug insurance may reduce migrants' use of essential health services and medications, which may contribute to their deteriorating health outcomes relative to the Canadian-born population. Internationally, research suggests that immigrants use fewer medications than the native-born population on average (Fadnes and Diaz, 2016; Gimeno-Feliu et al., 2016; Mohanty et al., 2005). In Canada, a few qualitative studies reported that high medication prices are major barriers

that deter immigrants and refugees from accessing healthcare services (Daastjerdi et al., 2010; Poureslami et al., 2010; Woodgate et al., 2017).

The health services use disparities experienced by immigrants and refugees may derive from the limitations of Canada's patchwork prescription drug coverage system. Gaps in prescription drug coverage have disproportionate effects on vulnerable populations (Goldman et al., 2007; Lexchin and Grootendorst, 2004). However, there is a paucity of evidence examining the relationship between prescription drug coverage and health services use among the immigrant and refugee population in Canada. Given their experiences with post-migration stressors and depreciating health outcomes following resettlement, migrant populations may experience challenges using health services, which are associated with their prescription drug coverage status.

1.5 Study Objectives

The overall aim of our study is to determine how health services utilization differs among working-age individuals by their reported prescription drug coverage status and immigration category. First, we assess whether public, private or no prescription drug coverage is associated with the use of publicly funded health services, including general practitioner visits, specialist visits and hospital stays. Second, we examine whether being non-immigrants, economic immigrants, family-class immigrants or refugees is associated with health services use. Third, we aim to explore the intersection of migration- and gender/sex-related health equity by examining whether the association between prescription drug coverage status and health services use differs by gender/sex and immigration category.

Methods

2.1. Data Sources and Study Sample

Data were drawn from four cycles (2005, 2008, 2013 and 2014) of the Canadian Community Health Survey (CCHS) linked to the Longitudinal Immigrant Databases (IMDB). The CCHS is a nationally representative cross-sectional survey of individuals aged 12 years or over residing in the community. The survey is offered in English, French or the respondent's preferred language. It collects information pertaining to health, health behaviour and healthcare utilization using a multi-stage stratified sampling frame (Statistics Canada, 2020). It also collects information about sex, as determined by an interviewer who identifies the respondent as either male or female. While intending to designate biological sex, the survey may inadvertently capture gender as expressed by respondents, especially during telephone interviews. Given the ambiguity of sex data collected, this study will examine gender/sex differences for those identifying as men or women. Although sex and gender are not equated, research reveals sex and gender often interact, suggesting health service utilization differences between men and women might be due to a combination of sociocultural (gender) and biological (sex) factors (Krieger, 2003; Ridgeway & Smith-Lovin, 1999). It is acknowledged as a limitation that the lack of a specific question to identify respondents' gender excludes gender minority individuals who do not conform to social expectations based on sex (The GenIUSS Group, 2014).

The IMDB combines administrative files on permanent resident immigrant admissions from Immigration, Refugees and Citizenship, Canada (IRCC) with tax files. This administrative database collects migration-related sociodemographic information

from permanent residents who arrived in Canada since 1980. Verifying the number of observations following record linkage entailed a comparison of the number of CCHS respondents in each linked cycle to the IMDB with counts of observations recorded by Research Data Centre analysts (Decady, 2017).

Ontario's population of adults, including migrants and non-migrants, aged 25 to 64 years old were included in the sample (Appendix). Respondents who reside in Ontario were included not only because of data availability, but also due to large numbers of migrants living in the province. From 2004 to 2014, Ontario has been the top destination for resettlement, accommodating approximately 36-53% of all migrants arriving to Canada each year (Statistics Canada, 2016). Immigrant survey respondents who were not linked to the IMDB dataset because they arrived before 1980 or did not agree to link their data from the IMDB to the CCHS were excluded and survey weights were used to adjust for missing observations (Appendix). Less than 10% of immigrant respondents to the CCHS were not linked to the IMDB dataset of which approximately 80% arrived before 1980 and 20% may not have agreed to link their data. Children aged 12 to 24 years and adults over 65 years were excluded because the former are predominantly covered through their parents' drug plans and the latter are all eligible for public drug coverage in Ontario. Adults who did not report their prescription drug coverage status, health status or health service utilization were categorized as missing. Respondents with missing data comprised less than 10% of the dataset and were excluded from the sample for analysis.

2.2. Study Design

This research employs a cross-sectional study design which is informed by an intercategorical intersectional approach (McCall, 2001). The intercategorical approach acknowledges that there are relationships of inequity among already constituted social groups and explores these relationships by using categories. Intersectional categories were determined by the research question, classifying different groups of people who occupy different social positions and are influenced by societal structures in various ways: (1) Prescription drug insurance status as defined by one's formal employment, age and/or eligibility for governmental assistance, (2) the migrant identity as determined by immigration status, (3) Gender/sex as defined by the interviewer's identification of the respondent as either male or female.

2.3. Study Variables

2.3.1 Explanatory Variables

Prescription drug coverage status was extracted from the cross-sectional, self-reported data derived from four annual cycles of the CCHS. To determine survey respondents' insurance status, the following questions were asked, "Do you have insurance that covers all of part of the cost of your prescription medication?" and, "Is it a government-sponsored, employer-sponsored or private plan?" The responses from both questions were combined into a new variable called Drug Insurance to specify whether an individual had no drug insurance, public drug insurance or a private drug insurance plan. If the respondent indicated having both a private and public plan, they were categorized as having private insurance and they constituted a small proportion of the sample. A private insurance plan may be purchased through a private company or provided through

an employer and may or may not be accompanied by a public drug insurance plan.

Sex/Gender of the respondent was obtained from the CCHS questionnaire in which the interviewer identified the respondent as male or female. Immigration status was identified from both self-reported data derived from the CCHS and the administrative data collected in the IMDB. CCHS respondents were asked, “In what country were you born?” and, “were you born a Canadian citizen?” to determine if they were migrants or non-migrants. IMDB data were linked to respondents if they immigrated to Canada in 1980 or afterwards. Since 1980, immigrants have been admitted into the country under several different programs (Appendix). The highest level of immigrant category aggregation was used: economic immigrants, family-class immigrants and refugees. Combining survey with administrative data reduces social desirability bias by using the administrative dataset to identify individuals who have misclassified themselves in the survey. Alternatively, misclassification may have resulted from matching errors between these datasets.

2.3.2 Outcome Variables

Health services utilization was measured from the cross-sectional self-reported data derived from four annual cycles of the CCHS (2005, 2008, 2013 and 2014). Three categories of health services utilization outcome variables were analysed: (1) Hospital and tertiary care utilization, (2) Primary care utilization and (3) Specialist care utilization. To measure use of hospital services, survey respondents were asked, “In the past 12 months, have you been a patient overnight in a hospital, nursing home or convalescent home?” To measure use of services provided by general practitioners, survey respondents were asked, “In the past 12 months, have you seen, or talked to any of the following health professionals

about your physical, emotional or mental health: a family doctor, or general practitioner?” To measure specialist services utilization, survey respondents were asked, “In the past 12 months, have you seen, or talked to any other medical doctor or specialist such as a surgeon, allergist, orthopaedist, urologist/gynecologist or psychiatrist about your physical, emotional or mental health?” Respondents who refused to answer or reported not knowing the answer were categorized as missing and excluded from specific analyses to allow for the use of dichotomous outcome variables (Appendix).

2.3.3 Covariates and Health Behaviour Model

Andersen’s (1968, 1995) behavioural model of health services utilization was used to guide covariate selection. Andersen (1995) posits that access is influenced by decisions made by an individual, constrained by their social position in society and reliant on the availability of healthcare services, or knowledge thereof. The model assumes that a hierarchy of factors determines the utilization of health services: health systems policies and organization, the predisposition to use services, the ability to use services, and the need to use services.

Following the structure of Andersen’s model, independent variables were divided into five sets (Appendix). Final models are adjusted for (1) health system factors: drug insurance status, (2) intersecting categories: immigration status and gender/sex, (3) predisposing factors: age, length of stay in Canada, marital status and language proficiency, (4) enabling factors: access to a GP, income by household size ratio, household educational level, employment status and urbanicity, and (5) need factors: having COPD, asthma, high blood pressure, heart disease, diabetes, mood disorder,

anxiety disorder, cancer, general health status, general mental health status – and for women specifically – having given birth in the past five years and pregnancy status (Appendix).

2.4. Statistical Analysis

Multivariable logistic regression models compared health service utilization outcomes across insurance types, immigrant categories, and gender/sex. Theoretically based regression modelling (Kleinbaum et al., 2013) was conducted, using the health care utilization model proposed by Andersen (1968, 1995) to capture changes in the models' goodness-of-fit to health services utilization (Appendix). Akaike's information criterion (AIC) was calculated for each model to enable comparisons of goodness-of-fit and infer the relevance of added parameters (Aho et al., 2014). Multicollinearity was assessed using the Variance Inflation Factor (VIF), whereby the mean VIF for all variables was less than 5 (Gujarati, 2004). The interaction effect between prescription drug coverage status and migratory status in predicting health services use was examined.

Record linkage was performed using SAS 9.4 and statistical analyses were conducted using Stata/MP 16.1. Bootstrap survey weights were applied using Stata's svy commands to accommodate the complex survey design and nonresponse. To compare across logit models, predicted probabilities and average marginal effects (AME) were calculated. Marginal effects are used to express how the predicted probability of a binary outcome, such as the use and non-use of health services, changes with a one-unit change in a risk factor while holding all other explanatory variables constant (Norton et al., 2019). AME 95% confidence intervals were estimated using the delta method. The

inclusion of a variable that accounts for years since migration was considered, however the interpretation of the resulting coefficient would pose challenges given non-migrants are part of the sample. A sensitivity analysis was conducted with and without the variable to explore its influence on our findings (Appendix).

Results

The study sample (n=39,792) was primarily comprised of non-immigrants (n=35,451), followed by economic immigrants (n=2,066), family-class immigrants (n=1,409) and refugees (n=803). Approximately half of all respondents were women. Most commonly respondents reported private drug insurance; this was followed by reporting being uninsured and finally having public insurance (Table 2; Figure 1).

A clear gradient of decreasing attainment of private insurance and increasing proportions of uninsured individuals was observed across immigrant categories, from non-immigrants, to economic immigrants, family-class immigrants, and finally to refugees. Coverage-related gender/sex disparities were observed among three migrant cohorts only, where private and public insurance gaps between men and women increased sequentially from economic immigrants, to family-class immigrants and then to refugees, delineating the largest sex-related gaps. Overall, a higher proportion of men reported obtaining private insurance whereas a higher proportion of women relied on public insurance (Figure 1).

Nearly half of non-immigrants reported having high incomes relative to household size (decile 8-10), whereas approximately 15-23% of migrant cohorts reported high incomes (Table 2). Nearly 40% of refugees reported living with an income in the

two lowest decile brackets. Approximately, 94% of economic immigrants reported that a member in their household achieved the highest level of educational attainment, followed by 82% of non-immigrants, and approximately three-quarters of family-class immigrants and refugees. About three-quarters of non-immigrants and economic immigrants obtained full-time employment, compared to about two-thirds of family-class immigrants and refugees. More than two-thirds of family-class and economic immigrants arrived from South Asia, whereas nearly half of refugees immigrated from South/Eastern Europe, Africa and the Middle East. In terms of health status, non-migrant and migrant cohorts reported similar health status, heart disease rates, diabetes rates, high blood pressure rates, and healthcare utilization. Non-immigrants reported slightly higher levels of having a diagnosis of anxiety (8%), depression (10.5%) or asthma (9%). A higher proportion of refugees and economic immigrants reported having no regular healthcare provider compared to non-immigrants and family-class immigrants (Table 2).

Predicted probabilities and average marginal effects of health service utilization outcomes by drug insurance type and immigrant status, stratified by sex and adjusted by predisposing, enabling, and need characteristics, are presented in the following sections. Effects sizes and statistical significance levels are reported to guide the interpretation of the results. Multivariable logistic regression results summarizing average marginal effects, coefficients and odds ratios of all covariates are presented in tables in the Appendix.

3.1 Estimates of Health Services Use by Drug Insurance

In a multivariable logistic regression with results reported as average predicted probabilities (95% CIs), 82% (81%-83%) of Ontarians who reported being privately insured visited a GP in the last year compared with 79% (77%-80%) of individuals uninsured for prescription drugs. The percentage-point difference between privately insured and uninsured adults living in Ontario, or the average marginal effect, is 3% and is statistically significant (2%-5%). This difference remained following stratification by gender/sex, whereby 87% (86%-88%) of women and 76% (74%-77%) of men who reported holding private drug insurance used GP services compared with 85% (83%-86%) of uninsured women and 72% (69%-74%) of uninsured men, respectively (Figure 2; Table 3).

Overall, individuals who reported having public or private insurance had a higher probability of using specialist services than those uninsured for prescription drugs. First, regardless of gender/sex, those who reported having private insurance have a 4%-point higher probability of using specialist services compared to those uninsured (2%-6%). Moreover, women who reported having government insurance are 10% more likely to visit a specialist compared to women without drug insurance (4%-15%), while adjusting for whether they have given birth in the last five years and for pregnancy, among other covariates. Although women have a higher probability of using specialist services than men, there are no statistically significant differences in specialist service utilization across immigrant categories. There is also no association between having prescription drug insurance and the probability of being hospitalized in Ontario (Figure 2, Table 3).

3.2 Estimates of Health Services Use by Immigrant Category

Economic immigrants, regardless of gender/sex, have a 6%-point higher probability of visiting a GP compared to non-immigrants (3%-8%). Family-class immigrant men are also more likely to visit GPs compared to their non-immigrant counterparts: 81% (75%-85%) of family-class immigrant men visited their GP compared with 74% (72%-75%) of non-immigrant men. There were no statistically significant differences across immigrant categories for using specialist services (Figure 2; Table 3).

However, there is an association between immigrant category and having had at least one hospitalization in the previous year. Economic immigrants have a 3%-point lower probability of being hospitalized compared to non-immigrants, even following stratification by reported gender/sex (-4% to -2%) (Tables 10 and 11; Graph 14). Considering the average probability of being hospitalized is about 4% among those living in Ontario, this is a relatively large average marginal effect size (Figure 2; Table 3).

3.3 Estimates of Health Services Use by Intersectional Approach

To examine whether the association between drug insurance and GP use differs by immigrant category, a multivariable logistic regression model with an interaction term between drug insurance type and immigrant category was executed (Appendix). Among non-immigrants, those who reported having private and public insurance have a greater likelihood of visiting a GP than those without drug insurance: 81% (80%-82%) of adults who reported having private drug insurance and 81% (77%-84%) of those with public insurance used GP services in the last year compared with 77% (75%-79%) of uninsured adults. Across strata, men with either type of insurance and women with only private insurance have a 4%-point increased probability of visiting a GP compared with their

uninsured counterparts (2%-6%). Among economic immigrants a similar pattern is observed, where having insurance increases the probability of using services; however, the average marginal effect analysis reveals no statistically significant differences between predicted probabilities (Figure 3, Table 3).

In contrast, family-class immigrant women who reported having government insurance for prescription drugs have a 29%-point decreased probability of using GP services compared with their uninsured counterparts (-56% to -1%). Only 64% of government-insured family-class immigrant women visited their GP, compared with 91% of uninsured family-class immigrant women. This contradictory response is also observed among family-class immigrant men and refugee women. However, there are no statistically significant differences between the predicted probabilities of visiting a GP for these insured and uninsured individuals, which may be partly due to the small sample size (Figure 3, Table 3).

Among non-immigrants, there is a positive association between having private insurance and the probability of visiting a specialist. However, upon stratification by sex, a statistically significant 5%-point difference of using specialist services between those who reported having private insurance compared with no drug insurance remains for men only (2%-8%). A similar pattern is observed among economic immigrants. However, the differences between predicted probabilities of insured and uninsured are not statistically significant, except for government-insured economic immigrant women. 73% (49%-88%) of economic immigrant women with a government-sponsored drug insurance plan visited a specialist in the previous year compared with 31% (24%-39%) of uninsured

economic immigrant women. Those who reported having public insurance have a 39%-point increased probability of visiting the specialist at least once in the previous year compared to their uninsured counterparts (17%-61%) (Figure 3, Table 3).

Among family class immigrant women, a similar trend is observed, where 38% (20%-61%) who reported having government insurance and 33% (26%-40%) with private insurance use specialist services, compared with 30% (22%-39%) of those uninsured for prescription medications. However, there are no statistically significant differences between these probabilities. A similar pattern is observed among family-class immigrant men. Finally, among refugees, an overall positive association exists. Refugees who reported having a private insurance plan have a 12%-point increased probability of visiting a specialist compared to refugees uninsured for prescription drugs (2%-23%). Although the size of the marginal effect is the same across sexes, its statistical significance disappears when stratified, possibly due to the smaller sample size (Figure 3, Table 3).

Finally, the predicted probabilities of having at least one hospitalization for non-immigrants, economic immigrants, family-class immigrants and refugees were relatively similar across public, private and no prescription drug insurance categories and there were no significant differences. Only refugee women who reported having government insurance exhibited a higher probability of being hospitalized, at 16% (2%-68%), compared to their uninsured and privately insured counterparts, at 9% (4%-19%) and 5% (3%-10%), respectively. However, there were no statistically significant differences between these adjusted probabilities (Figure 3, Table 3).

Discussion and Conclusion

1.1 Principle Findings

This study examines the health service utilization of individuals across prescription drug coverage status, immigrant category and gender/sex. Our analysis reveals that privately insured working-age adults are more likely to use general practitioner services compared to those uninsured for prescribed medications. Moreover, public and private drug insurance is positively associated with the probability of using specialist services. However, drug insurance is not associated with the probability of reporting at least one hospitalization in the last year. These findings are consistent with other published studies which demonstrate that holding private insurance is associated with a greater likelihood of accessing physician services and a lower probability of reporting unmet healthcare needs (Allin and Hurley, 2009; Devlin, Sarma and Zhang, 2011; Stabile, 2001).

Secondly, our findings suggest that economic immigrant men and women have a higher probability of visiting a general practitioner and a lower probability of being hospitalized compared to their non-immigrant counterparts. Few studies have examined the use of health services across immigrant populations in Canada due to the lack of data that disaggregates immigrants into their admission categories and links to health information systems (Sanmartin, Ng, Brennan et al., 2016). As a result, most researchers have considered economic immigrants, family-class immigrants and refugees as a homogenous group in their analysis, often reporting that immigrants, in general, have

limited access to primary care (Kalich, Heinemann and Ghahari, 2016; Muggah et al., 2012; Sanmartin and Ross, 2006). This is one of the first studies to demonstrate that economic immigrants use general practitioner services slightly more than non-immigrants. This finding may be related to the higher level social determinants of health experienced by economic immigrants, where our cohort of economic immigrants report higher educational attainment and full-time employment levels than family-class immigrants and refugees.

This study demonstrates that economic immigrants have a lower likelihood of being hospitalized compared to non-immigrants. This finding is consistent with the limited literature that has examined differences in health service use by immigrant category in Canada (Ng et al., 2017; Ng et al., 2016b). This health advantage is often attributed to the “healthy immigrant effect,” in which the medical screening admission requirement in Canada plays a key role. However, the low hospitalization rates among economic immigrants may also be conferred by their increased use of primary and preventative care in Canada, as revealed in this study. Considering that the vast majority of immigrants admitted into Canada are economic immigrants, wherein approximately 150,000 applicants are accepted annually (IRCC, 2017), their lower use of hospital services contradicts negative media representations that depict migrants as costly and burdensome to health systems in Canada and other high-income countries (Antonipillai et al., 2020; Reitmanova, Gustafson and Ahmed, 2015; KhosraviNik, 2010).

One of the novel features of this study is its use of an intersectional approach to examine migration and gender/sex-related differences in the association between drug

insurance coverage and health services use. The findings reveal that the type of insurance coverage, gender/sex and immigrant category of an individual predicts different health service use trajectories for adults living in Ontario. Non-immigrant men with private drug insurance, economic immigrant women with public insurance and refugees with private insurance demonstrate a higher probability of using specialist services than their uninsured counterparts. Although having insurance was positively associated with using family physician services among non-immigrants (significant) and economic immigrants (non-significant), our findings suggest that family-class immigrant women with government drug insurance have a lower probability of visiting GPs than those who remain uninsured for prescription medications.

The migration and gender/sex-related disparity may suggest family-class immigrant with government insurance for prescription drugs may be facing a unique set of challenges to access primary care, compared to their economic immigrant and non-immigrant counterparts. Qualitative studies have uncovered that immigrant women in family-caregiving roles experience unique challenges with communication, unmet cultural/family/job expectations, family separation and isolation (Neufeld et al., 2002; Stewart et al., 2006; Anderson, Blue, Holbrook and Ng, 1993). Although not all family-class immigrant women assume family-care giving roles, these women enrolled in public drug insurance may be more vulnerable because they are either receiving social assistance due to low incomes or have drug costs that exceed their ability to pay for them. Furthermore, while this cohort of women have a lower probability of visiting the GP (significant), they are using more specialist services (non-significant), which could

suggest that they are delaying seeking primary care due to migration and caregiving-related barriers, until their condition has worsened to the point of requiring specialist attention.

1.4 Policy Implications

Our findings provide evidence in support of the implementation of universal pharmacare in Canada by demonstrating positive associations between reporting having drug insurance and primary and specialist services use. Pharmacare is currently a policy proposal that advocates for every Canadian resident to receive drug coverage by a public insurance plan for medically necessary prescription medications, just as residents of every province and territory are covered for medically necessary physician and hospital services (Health Canada, 2019). Our findings reveal that drug insurance facilitates use of primary care services for Ontarians, including most migrants, which could improve access to earlier detection of disease and prevention. Access to and use of primary care services can reduce use of more expensive secondary care, hospitalizations and decreased overall health costs (Friedberg, Hussey and Schneider, 2010; Starfield, Shi and Macinko, 2005). Drug insurance may also improve use of and adherence to specialists for immigrant and non-immigrant populations, which is important as these care providers also prescribe essential medications to treat and manage chronic diseases. The federal government appointed the Advisory Council on the implementation of National Pharmacare to review evidence for and against the implementation of this policy proposal, concurring that the implementation of a universal, single-payer public prescription drug system would reduce the price of prescription drugs and avoid

catastrophic costs associated with adverse events when patients forgo medications due to the expense (Health Canada, 2019).

Our analysis also provides sex/gender and equity considerations to improve the effectiveness of pharmacare throughout its implementation. By applying an intersectional lens, our study has found a gap in the healthcare system for immigrant women, as some family-class immigrant and refugee women may live in situations of vulnerability to the extent that having public drug coverage does not improve their use of primary care services. Supports for these immigrant women eligible for government-sponsored drug insurance plans are needed to educate and empower them on accessing primary care in Canada. This analysis of migration and gender illuminates the need to introduce targeted health system literacy programs in conjunction with the implementation of pharmacare. This would help ensure that the proposed drug coverage program meets its full potential in reducing catastrophic costs associated with the adverse events of cost-related non-adherence.

1.2 Strengths and Limitations

A key strength of this study is its intersectional analysis of the association between prescription drug coverage and health services use across men and women in different immigration categories. Very few studies have examined differences across non-immigrants, immigrants and refugees. To our knowledge, this is the first study that exposes differences in drug insurance coverage on health services use across immigrant categories and it is the first to outline primary and specialist service utilization patterns for migrants and non-migrants in Canada. Furthermore, our results are reported as

average marginal effects, rather than odds ratios, to demonstrate how the context of heterogeneous prescription drug coverage effects reveal differences across subgroups. Average marginal effects are also less sensitive to changes in the model specification than odds ratios and improve the interpretation and comparability of the effect size across models (Norton and Dowd, 2017).

The following limitations are acknowledged. First, health services utilization is measured using self-reported data, which may be subject to recall bias. Self-reported data might also underestimate levels of need among populations with impaired access to care. The examination of cross-sectional data limits the investigation of differences over time. Second, sample stratification may have limited the statistical power of the analyses. Moreover, the CCHS does not gather information on gender, which confines our analysis to those identified as male or female, assuming their sex aligns with their expressed gender. Furthermore, drug insurance coverage may be endogenous, primarily due to adverse selection, which suggests that those with an unobserved risk of becoming ill would purchase drug insurance. Factors that mitigate this endogeneity bias include the following: (1) Privately insured individuals have limited ability to choose to purchase insurance, given that the vast majority of those with private insurance obtain coverage for drugs through group plans that are provided by employers, whereas individuals who purchase private insurance may pay risk-adjusted premiums (Hurley and Guindon, 2008); (2) endogeneity bias is substantially reduced when regression models extensively control for measures of health status and demographic variables to account for any unobserved heterogeneity (Buchmueller et al., 2005).

Another limitation of the data pertains to the potential for respondents to misreport their prescription drug coverage status. Guo, Sweetman and Guindon (2020) reveal that a substantial number of adults over 65 years of age in Ontario have failed to report having public drug coverage. Factors that mitigate this limitation include the following: (1) This study does not include adults over 65 years and misreporting may occur to a lesser extent among working-age adults given limited options to obtain public drug insurance, and (2) Self-reported drug coverage status may reflect perceived access to health services, which capture respondents' health-seeking behaviours based on their perceived realities. Finally, non-linked immigrants were excluded from this analysis because they arrived before 1980 or did not agree to link their data from the IMDB to the CCHS.

1.3 Future Directions

First, an examination of gender-related disparities associated with health services use among family-class and refugee women is warranted. A community-based participatory exploration into the experiences of women who qualify for government drug insurance coverage may reveal ways to address their barriers to accessing primary care. Secondly, a longitudinal study that explores how different drug insurance plans affect the health outcomes of Canadians, immigrant and non-immigrant alike, should follow this research. Although drug insurance is not associated with the probability of having at least one hospitalization, examining whether experiences of being uninsured or under-insured is associated with avoidable hospitalizations or adverse health outcomes may elucidate the impact of drug insurance in Canada.

1.4 Conclusions

The study reveals important differences in the use of health services across prescription drug coverage status for non-immigrant, economic immigrant, family-class immigrant and refugee men and women. We found evidence that non-immigrant and economic immigrant men and women with insurance coverage for prescription drugs are more likely to use primary care and specialist services compared to their uninsured counterparts. By applying an intersectional lens, however, we found a gap in the healthcare system for immigrant women, an inequity calling for targeted programs that address the informational and social needs of refugee and family-class women with public drug insurance by educating and empowering them on accessing primary care in Canada. These findings have policy implications for any jurisdiction considering reforms to prescription drug coverage systems. Ongoing evaluation is needed to ensure that the implementation of pharmacare policies are responsive to these differences so that equitable advances in drug coverage can be made without lingering consequences for marginalized and gendered populations.

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Figure 1. Descriptive Statistics of Drug Coverage Status by Immigrant Category and Sex

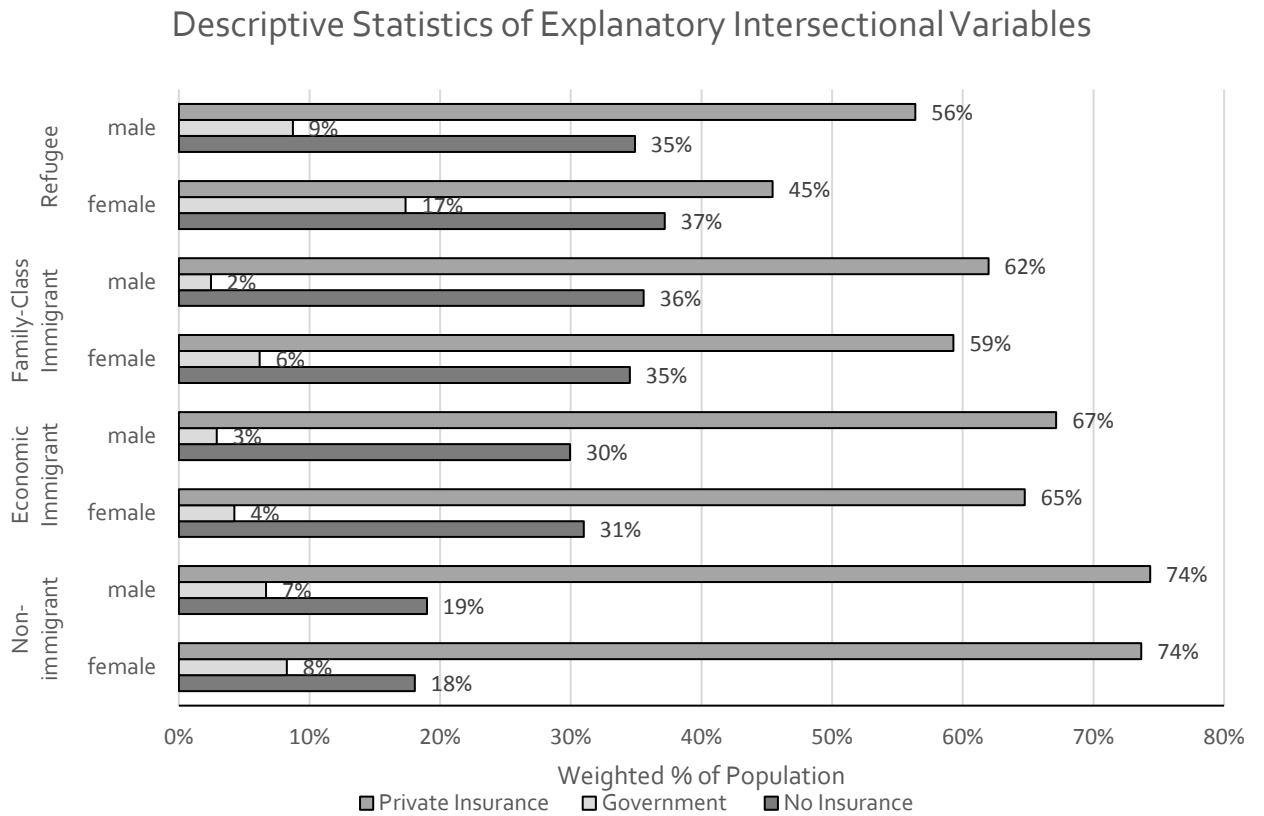


Figure 2. Predicted probabilities of health services utilization for working-aged adults by drug insurance status and immigrant category, separately, Ontario (2005, 2008, 2013, 2014)

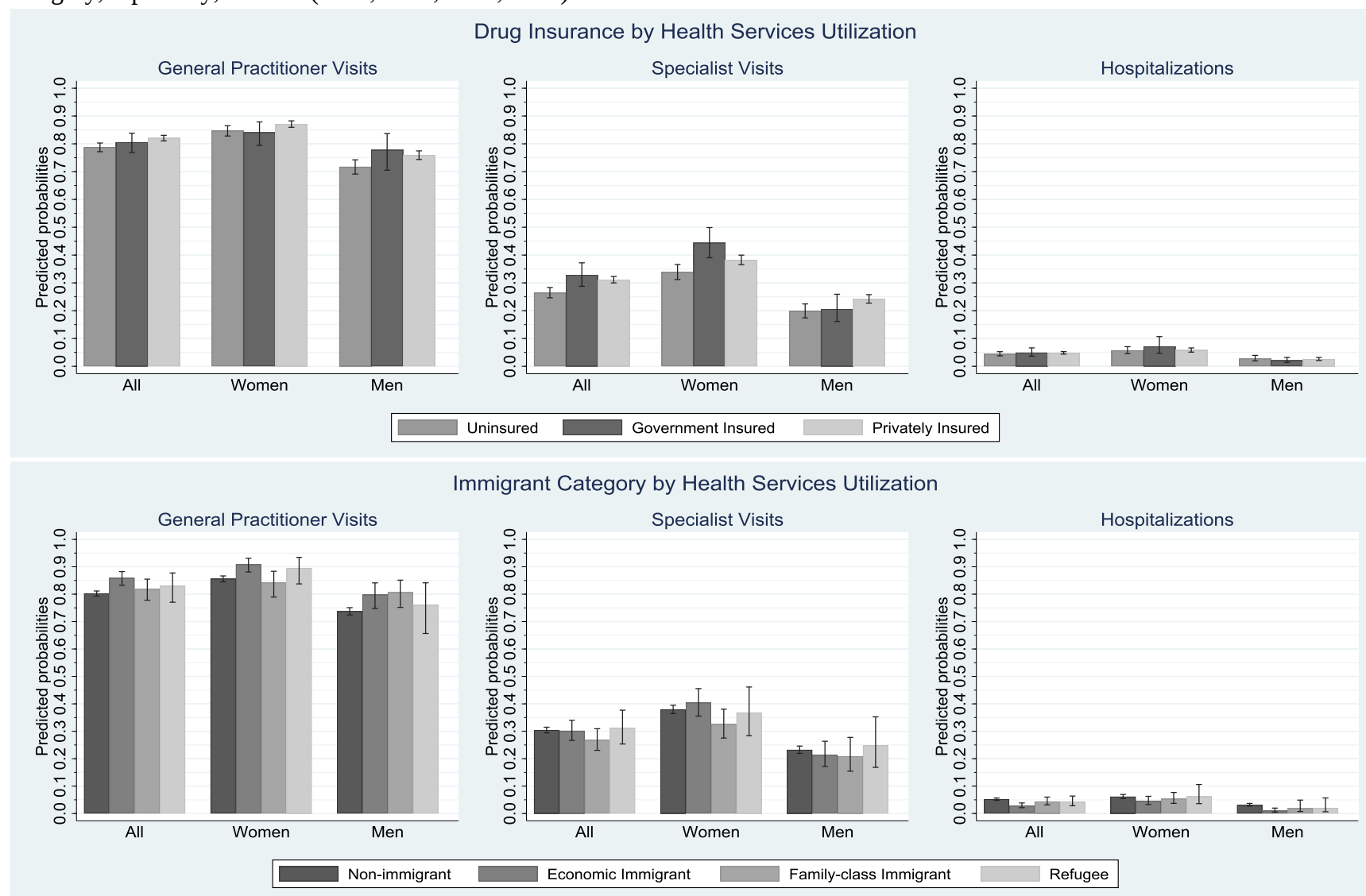


Figure 3. Predicted probabilities of health services utilization in working-aged adults by drug insurance, immigrant category and sex in Ontario (2005, 2008, 2013, 2014)

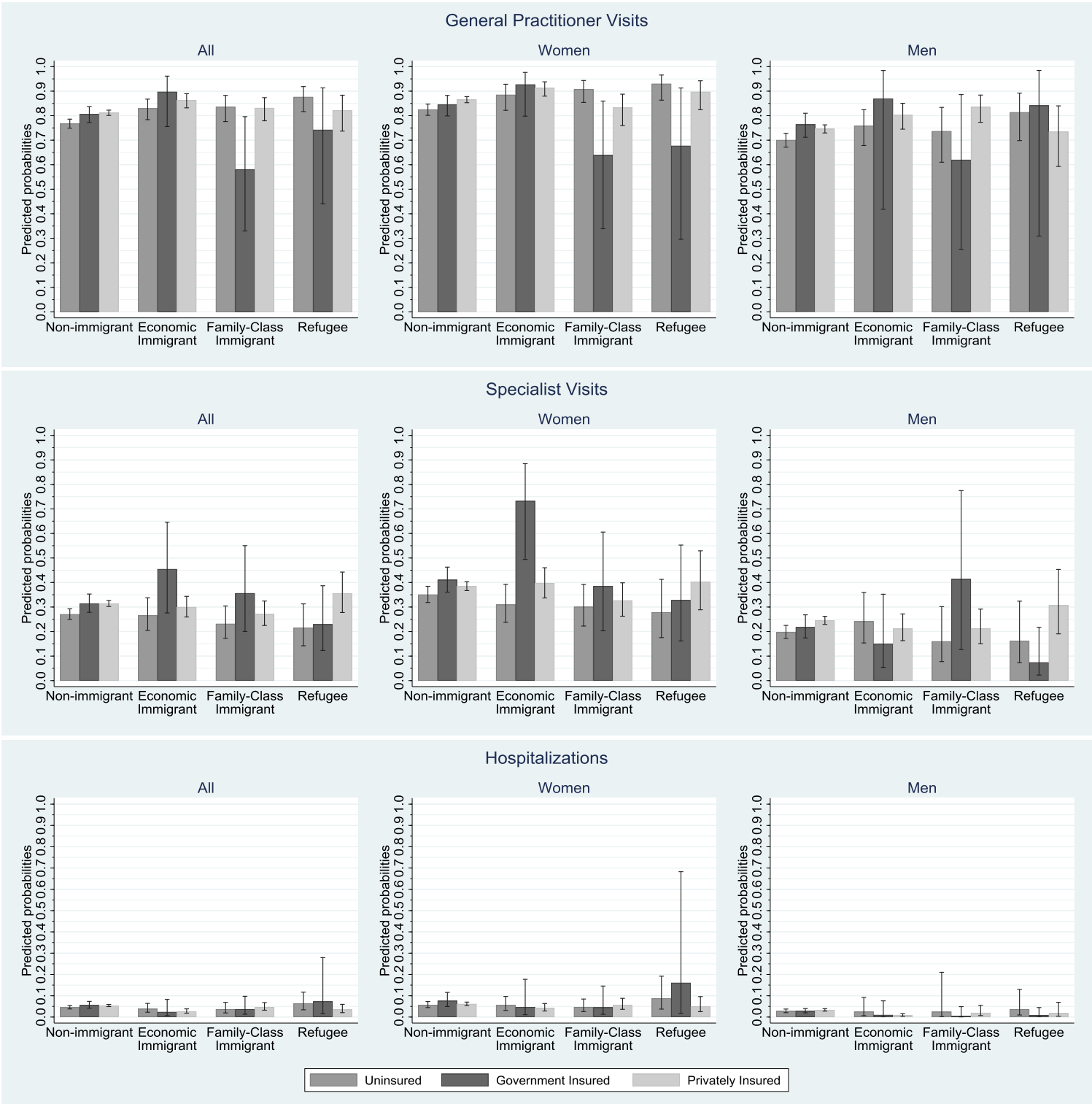


Table 1. Public Prescription Drug Coverage Plan Eligibility Criteria and Cost-sharing Mechanisms in Ontario

<i>Public Insurance</i>	<i>Category</i>	<i>Eligibility</i>	<i>Deductible</i>	<i>Copayment ^c</i>
Ontario Drug Benefit	Senior – A ^a	Single senior (≥ 65 years old) with income of \$19,300 or less	\$0	\$2.00
	Senior – B ^a	Senior couple (≥ 65 years old) with combined income of \$32,300 or less	\$0	\$2.00
	Senior - C	Single senior (≥ 65 years old) with income above \$19,300	\$100 ^b	\$6.11
	Senior - D	Senior couple (≥ 65 years old) with combined income above \$32,300	\$100 ^b	\$6.11
	Home and Community Care Recipients	Long-term care home, Community Home for Opportunity or special care home residents; enrolled to receive professional home and community care services	\$0	\$2.00
	Social assistance Recipients	Enrolled in Ontario Works/ Ontario Disability Support Program (ODSP)	\$0	\$2.00
OHIP+	Children and Youth	24 years of age or younger and not covered by a private insurance plan	\$0	\$0
Trillium Drug Program	High-cost users	Prescription drug costs are 4% or more of your after-tax household income and no insurance plan that pays for 100% of your drugs	~4% of household income after taxes	\$2.00

a - Seniors A and B earn low incomes and are eligible for the Senior Copayment Program implemented on August 1st, 2016; b – for the first year, the deductible may be lower than \$100, based on the month an individual turns 65 years old; c – all copayments are “up to” the indicated dollar value and may be lower, depending on the prescription drug purchased.

Table 2. Characteristics of Working-aged Adults from the Canadian Community Health Survey and Immigrant Longitudinal Database in Ontario (2005, 2008, 2013, 2014)

	Non-immigrant (n=35451)	Economic Immigrant (n=2066)	Family Class Immigrant (n=1409)	Refugee (n=803)
Characteristic	Weighted %			
Drug Insurance Status				
no insurance	18.5%	30.5%	34.9%	35.8%
government insurance	7.5%	3.6%	4.6%	12.9%
private insurance	74.0%	66.0%	60.3%	51.3%
Sex				
female	50.6%	48.9%	57.9%	45.0%
male	49.4%	51.1%	42.1%	55.0%
Age, yr				
25-34	25.3%	23.0%	32.6%	24.4%
35-44	26.9%	35.8%	37.4%	34.7%
45-54	27.1%	26.0%	21.3%	27.7%
155-64	20.7%	15.0%	8.7%	13.3%
Living with partner/ spouse				
no partner	28.7%	19.2%	23.6%	26.2%
partner	71.3%	80.8%	76.4%	73.8%
Language Proficiency				
English or French	83.8%	89.2%	89.0%	87.8%
Both	16.2%	8.5%	4.4%	4.4%
Other	0.1%	2.4%	6.7%	7.7%
Household Income Decile^a				
decile 1	6.2%	13.4%	16.7%	25.5%
decile 2	4.9%	10.1%	13.8%	13.7%
decile 3	6.1%	11.4%	13.3%	14.0%
decile 4	7.2%	12.5%	12.6%	10.7%
decile 5	8.3%	12.5%	10.3%	8.9%
decile 6	10.7%	8.8%	7.9%	7.4%
decile 7	11.9%	8.3%	8.7%	4.8%
decile 8	13.4%	8.9%	4.9%	5.2%
decile 9	15.3%	6.7%	7.4%	4.8%
decile 10	16.0%	7.4%	4.4%	4.8%
Employment Status (in the last week)				
full-time	72.7%	73.4%	68.5%	65.3%

	Non-immigrant (n=35451)	Economic Immigrant (n=2066)	Family Class Immigrant (n=1409)	Refugee (n=803)
part-time or working status unstated	9.3%	7.7%	8.2%	10.0%
permanently unable to work	3.5%	1.0%	1.5%	3.0%
no work	14.5%	17.8%	21.8%	21.8%
Household Education Level^b				
less than high school	3.5%	1.0%	5.4%	6.3%
high school graduate	10.8%	3.7%	14.4%	15.1%
some post-secondary	4.0%	1.3%	4.1%	5.2%
post-secondary graduate	81.7%	93.9%	76.2%	73.4%
Time since immigration, yr				
Recent 0-5		21.0%	14.9%	11.1%
Intermediate 5-10		22.7%	19.7%	16.2%
Established 10+		55.7%	64.6%	72.0%
Region of Origin				
North America/ Oceania/				
North/West/Central Europe		9.7%	13.8%	0.7%
Southern and Eastern Europe		12.0%	8.5%	19.2%
Africa		4.2%	3.6%	14.0%
Central America		1.5%	3.1%	9.6%
South America		5.3%	8.7%	12.2%
Middle East and Central Asia		10.0%	4.9%	13.7%
East Asia and Pacific		22.0%	20.3%	7.4%
South Asia		35.4%	37.2%	23.6%
Health Outcome:				
Self-reported Health Status				
Excellent	22.6%	23.9%	27.2%	22.1%
Very Good	42.5%	38.6%	36.2%	28.0%
Good	24.9%	30.5%	28.7%	38.7%
Fair	7.2%	5.6%	6.2%	8.5%
Poor	2.8%	1.3%	1.8%	3.0%
Self-reported Mental Health Status				
Excellent	36.4%	36.6%	42.3%	31.4%
Very Good	37.4%	39.8%	31.5%	33.6%
Good	19.2%	19.9%	21.3%	29.5%
Fair	5.4%	3.3%	3.6%	3.3%
Poor	1.7%	0.4%	1.3%	1.8%
Morbidity				
Reported having diabetes	4.7%	6.2%	4.4%	4.8%

	Non-immigrant (n=35451)	Economic Immigrant (n=2066)	Family Class Immigrant (n=1409)	Refugee (n=803)
Reported having heart disease	2.9%	2.7%	1.5%	3.0%
Reported ever having cancer	5.1%	1.8%	3.3%	1.8%
Reported having high BP	13.7%	12.9%	10.5%	11.4%
Reported having asthma	8.6%	3.0%	4.4%	4.1%
Reported having COPD	1.8%	0.3%	1.3%	0.7%
Reporting having depression	10.5%	2.7%	6.2%	5.5%
Reported having anxiety	8.1%	2.1%	3.3%	4.1%
Healthcare Access:				
Reported no regular HCP	8.6%	11.6%	8.2%	11.4%
Urbanicity				
rural	20.2%	3.1%	3.6%	1.5%
urban	79.8%	96.9%	96.4%	98.5%
Healthcare Utilization:				
Reported receiving ≥ 1 GP visit	77.8%	80.4%	78.5%	77.5%
Reported ≥ 1 specialist visit	32.9%	28.5%	26.2%	28.0%
Reported ≥ 1 hospitalization	6.8%	3.7%	6.2%	6.6%

Abbreviations: BP-blood pressure, COPD-Chronic Obstructive Pulmonary Disorder, HCP-health care provider, GP-general practitioner; ^aHousehold Income Decile represents the income adjusted by household size ratio which is calculated from the specific and positive household income of an individual in a given province divided by the low-income cut-off depending on the household and community (rural/urban) size.

^bHousehold education level refers to the highest level of education attained by any member of the respondent's household.

Table 3. Average marginal effects (AME) of reporting at least one visit to a general practitioner, specialist or hospital in the last year, Ontario (2005, 2008, 2013-14)

General Practitioner Visits	All			Women			Men		
	AME ^a	95% CI		AME ^a	95% CI		AME ^a	95% CI	
Drug Insurance Status – No insurance (ref)									
Government Insurance	0.01	(-0.02, 0.05)		-0.01	(-0.06, 0.03)		0.05 [^]	(-0.01, 0.12)	
Private Insurance	0.03**	(0.02, 0.05)		0.03*	(0.00, 0.05)		0.04**	(0.01, 0.07)	
Immigrant Category - Non-immigrant (ref)									
Economic Immigrant	0.06**	(0.03, 0.08)		0.06**	(0.03, 0.09)		0.06*	(0.01, 0.10)	
Family Class Immigrant	0.02	(-0.02, 0.06)		-0.02	(-0.07, 0.04)		0.06*	(0.01, 0.11)	
Refugee	0.03	(-0.03, 0.09)		0.04	(-0.01, 0.09)		0.02	(-0.07, 0.11)	
Interaction – Uninsured (ref)									
Government Insured									
Non-immigrant	0.04*	(0.00, 0.07)		0.02	(-0.03, 0.07)		0.06*	(0.01, 0.11)	
Economic immigrant	0.08	(-0.05, 0.20)		0.05	(-0.07, 0.18)		0.12	(-0.18, 0.41)	
Family Class immigrant	-0.25*	(-0.48, -0.02)		-0.29*	(-0.56, -0.01)		-0.11	(-0.46, 0.24)	
Refugee	-0.14	(-0.40, 0.11)		-0.27	(-0.61, 0.07)		0.03	(-0.35, 0.41)	
Privately insured									
Non-immigrant	0.04**	(0.02, 0.06)		0.04**	(0.02, 0.07)		0.04**	(0.01, 0.07)	
Economic immigrant	0.04	(-0.02, 0.09)		0.03	(-0.04, 0.10)		0.04	(-0.04, 0.13)	
Family Class immigrant	-0.01	(-0.08, 0.07)		-0.09 [^]	(-0.18, 0.00)		0.10	(-0.03, 0.24)	
Refugee	-0.06	(-0.16, 0.04)		-0.04	(-0.13, 0.05)		-0.08	(-0.24, 0.08)	
Specialist Visits	All			Women			Men		
	AME	95% CI		AME	95% CI		AME	95% CI	
Drug Insurance Status – No insurance (ref)									
Government Insurance	0.06**	(0.02, 0.10)		0.10**	(0.04, 0.15)		0.01	(-0.04, 0.06)	
Private Insurance	0.04**	(0.02, 0.06)		0.04**	(0.01, 0.07)		0.04**	(0.01, 0.07)	
Immigrant Category - Non-immigrant (ref)									
Economic Immigrant	0.00	(-0.04, 0.03)		0.02	(-0.03, 0.07)		-0.02	(-0.07, 0.03)	
Family Class Immigrant	-0.03 [^]	(-0.07, 0.00)		-0.05 [^]	(-0.10, 0.00)		-0.02	(-0.08, 0.04)	
Refugee	0.01	(-0.05, 0.07)		-0.01	(-0.09, 0.08)		0.02	(-0.07, 0.12)	
Interaction – Uninsured (ref)									
Government Insured									
Non-immigrant	0.04 [^]	(0.00, 0.08)		0.05 [^]	(0.00, 0.11)		0.02	(-0.03, 0.07)	
Economic immigrant	0.17 [^]	(-0.02, 0.35)		0.39**	(0.17, 0.61)		-0.08	(-0.23, 0.07)	
Family Class immigrant	0.11	(-0.06, 0.28)		0.08	(-0.14, 0.29)		0.22	(-0.13, 0.56)	
Refugee	0.01	(-0.13, 0.15)		0.04	(-0.18, 0.26)		-0.09	(-0.23, 0.06)	
Privately insured									
Non-immigrant	0.04**	(0.02, 0.06)		0.03 [^]	(0.00, 0.06)		0.05**	(0.02, 0.08)	
Economic immigrant	0.03	(-0.04, 0.10)		0.08 [^]	(-0.01, 0.17)		-0.03	(-0.13, 0.08)	
Family Class immigrant	0.04	(-0.04, 0.11)		0.02	(-0.08, 0.13)		0.04	(-0.07, 0.16)	
Refugee	0.12*	(0.02, 0.23)		0.11	(-0.05, 0.27)		0.13	(-0.04, 0.30)	
Hospitalizations	All			Women			Men		
	AME	95% CI		AME	95% CI		AME	95% CI	
Drug Insurance Status – No insurance (ref)									
Government Insurance	0.01	(-0.01, 0.03)		0.02	(-0.02, 0.06)		-0.01	(-0.02, 0.01)	
Private Insurance	0.01	(-0.01, 0.02)		0.00	(-0.02, 0.02)		0.00	(-0.01, 0.01)	
Immigrant Category - Non-immigrant (ref)									
Economic Immigrant	-0.03**	(-0.04, -0.02)		-0.02*	(-0.04, 0.00)		-0.03**	(-0.04, -0.01)	
Family Class Immigrant	-0.01	(-0.03, 0.01)		-0.01	(-0.04, 0.01)		-0.02	(-0.04, 0.01)	
Refugee	-0.01	(-0.03, 0.01)		0.01	(-0.04, 0.05)		-0.01	(-0.04, 0.01)	
Interaction – Uninsured (ref)									
Government Insured									
Non-immigrant	0.01	(-0.01, 0.03)		0.02	(-0.02, 0.06)		0.00	(-0.02, 0.02)	
Economic immigrant	-0.02	(-0.06, 0.02)		-0.01	(-0.10, 0.07)		-0.02	(-0.06, 0.03)	
Family Class immigrant	0.00	(-0.06, 0.06)		0.00	(-0.09, 0.09)		-0.02	(-0.08, 0.04)	
Refugee	0.01	(-0.12, 0.14)		0.07	(-0.25, 0.40)		-0.04	(-0.10, 0.03)	
Privately insured									
Non-immigrant	0.01 [^]	(0.00, 0.02)		0.01	(-0.01, 0.02)		0.01	(-0.01, 0.02)	
Economic immigrant	-0.01	(-0.04, 0.01)		-0.02	(-0.06, 0.03)		-0.02	(-0.05, 0.02)	
Family Class immigrant	0.01	(-0.02, 0.05)		0.01	(-0.04, 0.06)		-0.01	(-0.07, 0.06)	
Refugee	-0.03	(-0.08, 0.02)		-0.04	(-0.13, 0.05)		-0.02	(-0.09, 0.04)	

AME – Average marginal effect, CI – Confidence Interval, Interaction – Drug Insurance * Immigrant Category, [^]p<0.1, *p<0.05, **p<0.01; a – adjusted by drug insurance, sex, age, living with partner, language proficiency, household income decile, household education, self-reported health/mental health status, urbanicity, regular access to healthcare provider, having a comorbidity listed in Table 2

Appendix C. Health services utilization by prescription drug coverage and immigration category in Ontario Appendix

Figure S1. Participant Selection

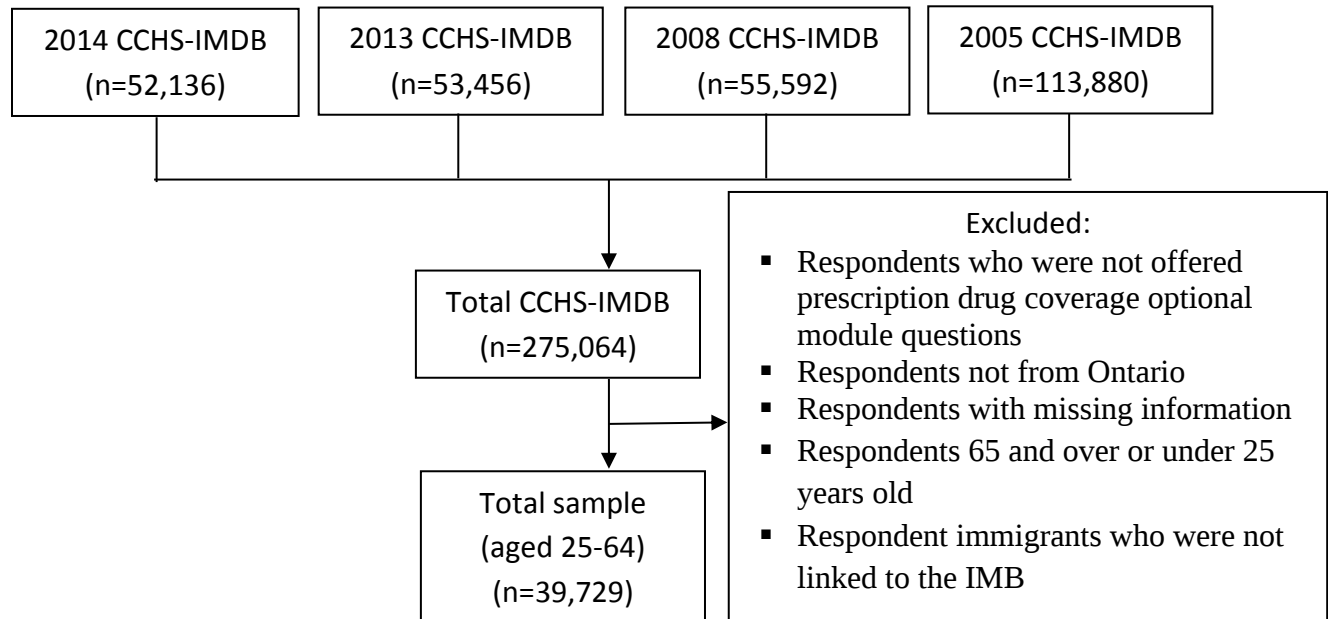


Figure S2. Covariate Selection based on Andersen's (1995) Health Behaviour Model

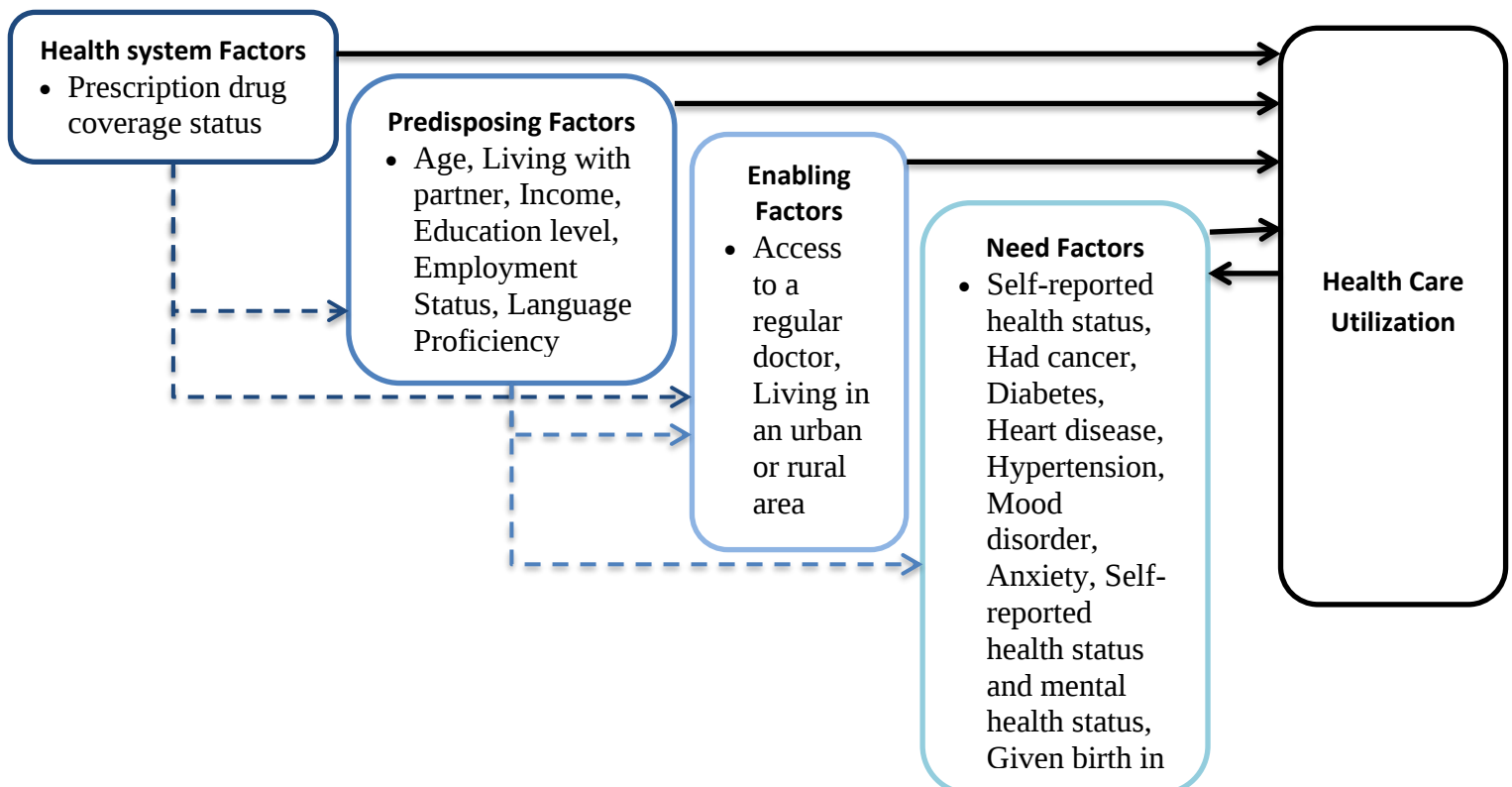


Table S1. Immigrant Population of Interest Definitions

Immigrant Population	Definition
Economic Immigrants	Economic immigrants are admitted based on their potential to contribute to the Canadian economy, under one of three broad programs: (1) Worker programs, (2) Business Programs and (3) Provincial and Territorial nominee programs. Individuals who apply through the worker program are admitted based on their ability to participate in the Canadian labour market. Following an appraisal of their professional credentials and/ or skills they are allowed entry under one of the following worker programs: (1) Skilled worker programs admit immigrants based on working in management or professional positions, in skilled trades or technical jobs. (2) Skilled tradespeople programs select immigrants based on their training and eligibility in a specific skilled trade which requires certification from a Canadian institution (3) Canadian Experience Class program selects immigrant from the skilled worker or skilled tradespeople program given their receipt of work experience in Canada (4) Live-in caregiver program admits immigrants and offers them permanent residency permits if they provide in home care in Canada for a specified period of time to children, the elderly, physically disabled persons or individuals suffering from a chronic illness. Individuals admitted under the business program are selected from three main categories: (1) Entrepreneurs are admitted based on their ability to own and manage a business (2) Investors who make significant investments in Canada to stimulate economic growth and create jobs are offered permanent residence status (3) Self-employed workers are admitted based on their ability to make a significant contribution to Canada's economy, such as an artist or professional athlete. Finally, immigrants admitted under the province or territory nominee program are offered permanent resident status because they can fill the local economic labour market needs of the region. Each participating province or territory has their own selection criteria.
Family Class immigrants	Family class immigrants are admitted to Canada to fulfill family reunification requirements, whereby Canadian citizens and permanent residents sponsor their family members who are provided with permanent residency permits if they are a spouse, partner, parent, grandparent or child of the sponsor.
Refugees	Refugees are individuals “who, owing to a well-founded fear of being persecuted for reasons of race, religion, nationality, membership of a particular social group or political opinion, are outside the country of his nationality and is unable or, due to such fear, are unwilling to avail him/herself of the protection of that country; or who, not having a nationality and being outside the country where he/she normally lives unable or, due to such fear, are unwilling to return to it” (UNHCR, 2010). These individuals are granted permanent resident status upon arrival to Canada. Government-assisted refugees (GAR) and privately sponsored refugees (PSRs) either arrive as permanent residents to Canada from overseas or become permanent residents after a brief waiting period in Canada (Goldring, Berinstein, and Bernhard, 2009). Refugee claimants, in-land refugee applicants whose claim has yet to be determined, are classified by Statistics Canada as temporary residents and are therefore, not included in the accessible IMDB datasets.

Table S2. Explanatory and Outcome Variable Survey Questions and Considerations

Domain	Variable	Survey question and considerations
Explanatory Variables	Prescription Drug Coverage Status	To determine survey respondents' insurance status, the following questions were asked, "Do you have insurance that covers all of part of the cost of your prescription medication?" and, "Is it a government-sponsored, employer-sponsored or private plan?" The responses from both questions were combined into a new dummy variable called Drug Insurance to specify whether an individual had no drug insurance, public drug insurance or a private drug insurance plan.
	Sex/ Gender	The CCHS does not collect data on gender, which is a key limitation of the data used in this study. However, respondents may be more inclined to express the option of sex which most closely reveals their socially constructed gender identity, given the self-reported nature of the data collected. Although sex and gender are not equated, it is acknowledged that sex and gender often interact; suggesting health service utilization differences between men and women might be due to a combination of sociocultural (gender) and biological (sex) factors.
	Immigrant Category	Survey respondents of the CCHS were asked the following questions, "In what country were you born?" and, "were you born a Canadian citizen?" to determine if they were immigrants or non-immigrants. IMDB data revealed immigrant admission categorizations that aligned with Statistics Canada's standard used in the Census of Population. based on three main objectives of Canada's immigration policy: economic development, family reunification and refugee protection. As such, each immigrant is categorized as economic immigrant, family-class immigrant and refugee.
Outcome Variables	Health service Utilization: General Practitioner Visits, Specialist Visits and Hospital Stays	To measure use of hospital or tertiary care, survey respondents were asked the following question, "In the past 12 months, have you been a patient overnight in a hospital, nursing home or convalescent home?" To measure use of primary care through general practitioner visits, survey respondents were asked the following question, "In the past 12 months, have you seen, or talked to any of the following health professionals about your physical, emotional or mental health: a family doctor, or general practitioner?" To measure use of specialist care, survey respondents were asked the following question, "In the past 12 months, have you seen, or talked to any other medical doctor or specialist such as a surgeon, allergist, orthopaedist, urologist/gynecologist or psychiatrist about your physical, emotional or mental health?" Responses for all three variables were recorded as either "yes," "no," "don't know," or "refuse to answer."

Table S3. Crude and Adjusted Model Description

#	Model Name	Variables
1	Health System Factor	Drug Insurance
2	Health System and Intersectional factors	Drug Insurance, Immigrant Category, Sex
3	Health System, intersectional and Predisposing Factors	Drug Insurance, Immigrant Category, Sex, Age, Marital/Civil Status, Language proficiency, Household Income Decile, Education, Employment Status
4	Health System, intersectional, Predisposing, Enabling factors	Drug Insurance, Immigrant Category, Sex, Age, Marital/Civil Status, Language proficiency, Household Income Decile, Education, Employment Status, Access to a regular doctor, Season, Urbanity, Year
5	Health System, intersectional, Predisposing, Enabling, and Need factors	Drug Insurance, Immigrant Category, Sex, Age, Marital/Civil Status, Language proficiency, Household Income Decile, Education, Employment Status, Access to a regular doctor, Season, Urbanity, Year, COPD, Asthma, HBP, Heart Disease, Diabetes, Cancer, Mood disorder, Anxiety, Physical Health Status, Mental Health Status
6	Health System, intersectional, Predisposing, Enabling and Need Factors with Interaction term	Drug Insurance, Immigrant Category, Sex, Age, Marital/Civil Status, Language proficiency, Household Income Decile, Education, Employment Status, Access to a regular doctor, Season, Urbanity, Year, COPD, Asthma, HBP, Heart Disease, Diabetes, Cancer, Mood disorder, Anxiety, Physical Health Status, Mental Health Status, Drug_Insurance*Immigrant_Category
7	Health System, intersectional, Predisposing, Enabling, and Need factors – Women Only	Drug Insurance, Immigrant Category, Sex, Age, Marital/Civil Status, Language proficiency, Household Income Decile, Education, Employment Status, Access to a regular doctor, Season, Urbanity, Year, COPD, Asthma, HBP, Heart Disease, Diabetes, Cancer, Mood disorder, Anxiety, Physical Health Status, Mental Health Status, Given Birth in the last 5 years, Pregnancy status
8	Health System, intersectional, Predisposing, Enabling and Need Factors with Interaction term – Women Only	Drug Insurance, Immigrant Category, Sex, Age, Marital/Civil Status, Language proficiency, Household Income Decile, Education, Employment Status, Access to a regular doctor, Season, Urbanity, Year, COPD, Asthma, HBP, Heart Disease, Diabetes, Cancer, Mood disorder, Anxiety, Physical Health Status, Mental Health Status, Given Birth in the last 5 years, Pregnancy status, Drug_Insurance*Immigrant_Category
9	Health System, intersectional, Predisposing, Enabling, and Need factors – Men Only	Drug Insurance, Immigrant Category, Sex, Age, Marital/Civil Status, Language proficiency, Household Income Decile, Education, Employment Status, Access to a regular doctor, Season, Urbanity, Year, COPD, Asthma, HBP, Heart Disease, Diabetes, Cancer, Mood disorder, Anxiety, Physical Health Status, Mental Health Status
10	Health System, intersectional, Predisposing, Enabling and Need Factors with Interaction term – Men Only	Drug Insurance, Immigrant Category, Sex, Age, Marital/Civil Status, Language proficiency, Household Income Decile, Education, Employment Status, Access to a regular doctor, Season, Urbanity, Year, COPD, Asthma, HBP, Heart Disease, Diabetes, Cancer, Mood disorder, Anxiety, Physical Health Status, Mental Health Status, Drug_Insurance*Immigrant_Category

Table S4. Akaike's Information Criteria (AIC) for Crude and Adjusted Logit Models

#	Model Name	General Practitioner Visits AIC	Specialist visits AIC	Hospitalizations AIC
1	Health System Factor	41541.19	49227.04	18671.45
2	Health System and Intersectional factors	40704.12	48379.22	18270.78
3	Health System, intersectional and Predisposing Factors	40214.76	47639.56	17761.63
4	Health System, intersectional, Predisposing, Enabling factors	38823.55	47431.61	17726.57
5	Health System, intersectional, Predisposing, Enabling, and Need factors	37607.00	45180.03	17180.65
6	Health System, intersectional, Predisposing, Enabling and Need Factors with Interaction term	37545.76	45151.51	17166.09
7	Health System, intersectional, Predisposing, Enabling, and Need factors – Women Only	17574.70	26322.52	10936.89
8	Health System, intersectional, Predisposing, Enabling and Need Factors with Interaction term – Women Only	17483.22	26288.59	10927.56
9	Health System, intersectional, Predisposing, Enabling, and Need factors – Men Only	19454.24	18778.25	5422.42
10	Health System, intersectional, Predisposing, Enabling and Need Factors with Interaction term – Men Only	19436.49	18741.56	5381.44

Table S5. Covariate Selection Description

Model	Variables	Coding	Analytic Considerations
1. Health System Factor	Drug Insurance Status	0= No drug insurance (ref) 1=Government-sponsored drug insurance 2=Privately-sponsored drug insurance	Individuals who self-report that they have privately sponsored drug insurance combines those who have employer-sponsored drug insurance and those who participate in other group insurance plans to cover part of their prescription drug costs
2. Intersectional variables Multivariable Analysis	Sex Immigrant Status	0=Male 1=Female 1=non-immigrant (ref) 2=economic immigrant 3=family class-immigrant 4=refugee	Sex and immigrant status are key components of this intersectional analysis. Results are stratified by sex and an interaction term between migration status and drug insurance status is included in final models. A key limitation of measuring sex from the using CCHS data is that the survey is designed to collect data pertaining to sex, not gender. As a result, the survey administers the question: Is [respondent's name] male or female, limiting choices to a dichotomous distinction, where other options such as “don't know” or “refuse to answer” are not allowed. However, due to the self-reported nature of the data, it may be plausible to use sex as a proxy for gender as respondents may be more inclined to choose an option delineating sex which is closely related to how they perceive their socially constructed gender identity. Using sex as a proxy to understand gender in this analysis may be sufficiently appropriate as sex and gender often interact, suggesting differences in health behaviours and subsequent health outcomes between men and women are due to a combination of sociocultural (gender) and biological (sex) factors.
3. Pre-disposing factors Multivariable Analysis	Age Living with a partner or spouse	Age category 1 = 25-34 Age category 2= 35-44 Age category 3= 45-54 Age category 4= 55-64 (ref) 0=Married, common-law (ref) 1=single, never married, divorced, widowed	Age was modeled in ordinal categories ranging from 25-34; 35-44; 45-54 and 55-64. Those under 25 and over 64 are excluded from the study as prescription drug coverage for children are dependent on their parents' coverage schemes and all of those over 64 years old receive coverage under Ontario Drug Benefit plans, which makes it difficult to examine the effects of different coverage schemes.

Model	Variables	Coding	Analytic Considerations
	Official Language Proficiency Education Level Year of interview	1=Proficient in either English or French 2=proficient in both English and French 3=Proficient in neither English or French (ref) 0=less than high-school (ref) 1=high school graduate 2=some post-secondary 3=completed post-secondary 1=2005 (ref) 2=2008 3=2013 4=2014	
4. Enabling Factors Multivariable Analysis	Employment Status Income adjusted by Household size Decile	1=employed in the past week (full-time) (ref) 2=employed in the past week (part-time) 3=Permanently not able to work 4=unemployed 5=status unstated 1= decile 1(ref) 2= decile 2 3=decile 3 4=decile 4 5=decile 5 6=decile 6 7=decile 7 8=decile 8 9=decile 9	Employment status assesses the nuances between part-time and full-time employment to capture the influence of precarious employment on obtaining drug insurance coverage and its association with health services utilization. This variable was constructed from two variables: the first asked, “Last week, did you work at a job or a business?” and the other was a derived variables indicating part-time and full-time employment based on the reported hours of work per week for each respondent. Income adjusted by household size ratios for every individual respondent are calculated and split into 10 groups, called deciles. Decile 10 represents the highest income group while decile 1 represents the lowest income group. The income adjusted by household size ratio is calculated from the specific and positive household income of an individual in a given province divided by the low-income cut-off depending on the household and community (rural/urban) size. This value represents the individual ratio of household income to the low

Model	Variables	Coding	Analytic Considerations
	Has access to a regular family doctor/ general practitioner Urban-Rural Classification Season in which interview was completed	10=decile 10 0=No (ref) 1=Yes 0=Rural (ref) 1=Urban 1=winter (ref) 2=spring 3=summer 4=fall	income cut-off corresponding to the size of the household and the size of the community. To determine access to a regular family doctor/GP, respondents were asked: “Do you have a regular medical doctor?”
5. Need Factors Multivariable Analysis	Has Asthma Has Hypertension Has Chronic Obstructive Pulmonary Disorder (COPD) Has Diabetes Has Heart Disease Had or Has Cancer	0= no asthma(ref) 1= asthma 0=no hypertension (ref) 1=has hypertension 0=no COPD (ref) 1=has COPD 0= no diabetes (ref) 1= has diabetes 0= no heart disease (ref) 1= has heart disease 0=no cancer (ref) 1= has or had cancer 0= no mood disorder (ref)	The following questions were asked to ascertain respondent answers for the variables in this section: (1) Do you have asthma?; (2) Have you ever been diagnosed with high blood pressure?; (3) Do you have diabetes?; (4) Do you have heart disease?; (5) Do you have cancer? Or (6) Have you ever been diagnosed with cancer?; (7) Do you have a mood disorder such as depression, bipolar disorder, mania or dysthymia?; (8) Do you have an anxiety disorder such as a phobia, obsessive-compulsive disorder or a panic disorder? The variables assessing current pregnancy status and having given birth in the last five years are included in the female only models which control for maternal reproductive healthcare utilization. The following questions were asked: (1) It is important to know when analyzing health whether or not the person is pregnant. Are you pregnant?; (2) Have you given birth in the past 5 years?

Model	Variables	Coding	Analytic Considerations
	Has Mood Disorder	1=has mood disorder	
	Anxiety disorder	0= no anxiety disorder (ref) 1=has anxiety disorder	
	Is currently pregnant	0= no (ref) 1=yes	
	Has given birth in the past 5 years	1=has not given birth in the past five years (ref) 2= has given birth in the past five years	
	Self-reported health status	1= Excellent 2=Very good 3=Good 4=Fair 5=Poor (ref)	
	Self-reported mental health status	1=Excellent 2=Very good 3=Good 4=Fair 5=Poor(ref)	

Table S6. Logistic regression coefficients of reporting at least one general practitioner visit in the last year, Ontario (2005, 2008, 2013-14)

Model: Analysis:	(1) Bivariate	(2) Multivariable	(3) Multivariable	(4) Multivariable	(5) Multivariable	(6) Multivariable	(7) Multivariable	(8) Multivariable	(9) Multivariable	(10) Multivariable
Variables added to model:	Health system factor	Intersectional factors	Pre- disposing factors	Enabling factors	Need factors Final model	Final model (no var added)	Final model	Final model	Final model	Final model
Interaction term:	No interaction	No interaction	No interaction	No interaction	No interaction	Yes	No interaction	Yes	No interaction	Yes
Strata (n)	All (39,729)	All (39,729)	All (39,729)	All (39,729)	All (39,729)	All (39,729)	Women (21,466)	Women (21,466)	Men (18,263)	Men (18,263)
Variables	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)
<i>Drug Insurance</i>										
<i>Status</i>										
No Insurance (ref)										
Government Insurance	0.51** (0.11)	0.50** (0.11)	0.32** (0.12)	0.27* (0.12)	0.04 (0.12)	0.23* (0.11)	-0.23 (0.18)	0.14 (0.17)	0.33* (0.17)	0.33* (0.16)
Private Insurance	0.33** (0.06)	0.36** (0.06)	0.32** (0.06)	0.23** (0.06)	0.19** (0.06)	0.27** (0.06)	0.16 (0.09)	0.31** (0.10)	0.22** (0.08)	0.23** (0.08)
<i>Sex Male (ref)</i>										
Female		0.71** (0.04)	0.71** (0.05)	0.64** (0.05)	0.65** (0.05)	0.66** (0.05)				
<i>Immigrant</i>										
<i>Category</i>										
Non-immigrant (ref)										
Economic Immigrant		0.22* (0.09)	0.21* (0.10)	0.26* (0.10)	0.38** (0.10)	0.39* (0.16)	0.48** (0.16)	0.49 (0.28)	0.32* (0.14)	0.29 (0.22)
Family Class Immigrant		0.04 (0.11)	0.11 (0.13)	0.07 (0.13)	0.17 (0.13)	0.43* (0.21)	-0.03 (0.19)	0.74* (0.29)	0.36* (0.17)	0.18 (0.31)
Refugee		0.08 (0.18)	0.10 (0.17)	0.14 (0.18)	0.25 (0.18)	0.76** (0.24)	0.29 (0.27)	1.04** (0.39)	0.21 (0.25)	0.63 (0.33)

Age, year

55-64 (ref)								
25-34	-0.61**	-0.52**	-0.30**	-0.29**	-0.07	-0.05	-0.52**	-0.51**
	(0.07)	(0.08)	(0.08)	(0.08)	(0.11)	(0.12)	(0.12)	(0.12)
35-44	-0.50**	-0.47**	-0.30**	-0.31**	-0.25*	-0.25*	-0.36**	-0.37**
	(0.07)	(0.07)	(0.08)	(0.08)	(0.11)	(0.11)	(0.11)	(0.11)
45-54	-0.29**	-0.27**	-0.20*	-0.20*	-0.21	-0.22	-0.17	-0.17
	(0.08)	(0.08)	(0.08)	(0.08)	(0.11)	(0.11)	(0.12)	(0.12)
<i>Living with partner/spouse</i>								
No partner (ref)								
Partner	0.11*	0.02	0.07	0.06	-0.07	-0.09	0.09	0.10
	(0.05)	(0.06)	(0.06)	(0.06)	(0.10)	(0.10)	(0.08)	(0.08)
<i>Language Proficiency</i>								
Other language (ref)								
English or French	-0.29	-0.15	-0.17	-0.10	-0.31	-0.19	-0.20	-0.17
	(0.32)	(0.32)	(0.34)	(0.32)	(0.49)	(0.43)	(0.54)	(0.56)
Both English and French	-0.14	0.06	0.03	0.11	-0.04	0.08	-0.04	-0.01
	(0.33)	(0.33)	(0.35)	(0.33)	(0.49)	(0.44)	(0.55)	(0.57)
<i>Income adjusted by household size</i>								
Decile 1 (ref)								
Decile 2	0.04	0.00	0.01	-0.02	0.27	0.16	-0.18	-0.21
	(0.14)	(0.15)	(0.15)	(0.15)	(0.20)	(0.20)	(0.21)	(0.22)
Decile 3	0.04	0.00	0.03	0.02	0.05	-0.00	0.07	0.05
	(0.15)	(0.15)	(0.15)	(0.15)	(0.20)	(0.20)	(0.22)	(0.22)
Decile 4	0.13	0.09	0.14	0.13	0.09	0.06	0.23	0.22
	(0.13)	(0.13)	(0.14)	(0.14)	(0.19)	(0.19)	(0.18)	(0.18)
Decile 5	-0.07	-0.10	-0.05	-0.05	0.19	0.15	-0.17	-0.18
	(0.15)	(0.15)	(0.16)	(0.15)	(0.21)	(0.20)	(0.20)	(0.20)
Decile 6	-0.17	-0.21	-0.10	-0.11	0.13	0.07	-0.19	-0.20
	(0.15)	(0.15)	(0.15)	(0.15)	(0.21)	(0.21)	(0.20)	(0.20)
Decile 7	-0.14	-0.19	-0.08	-0.10	0.36	0.31	-0.31	-0.32
	(0.14)	(0.14)	(0.14)	(0.14)	(0.20)	(0.19)	(0.19)	(0.20)

Decile 8	-0.01 (0.14)	-0.07 (0.14)	0.05 (0.14)	0.04 (0.14)	0.21 (0.20)	0.16 (0.20)	-0.02 (0.19)	-0.03 (0.19)
Decile 9	-0.00 (0.14)	-0.03 (0.14)	0.10 (0.15)	0.09 (0.14)	0.23 (0.20)	0.19 (0.20)	0.05 (0.20)	0.04 (0.20)
Decile 10	0.06 (0.14)	0.03 (0.14)	0.22 (0.15)	0.21 (0.15)	0.48* (0.20)	0.43* (0.19)	0.10 (0.21)	0.09 (0.21)
<i>Household education level</i>								
Less than high school (ref)								
High school graduate	-0.02 (0.13)	-0.02 (0.13)	0.01 (0.14)	0.02 (0.14)	0.01 (0.22)	0.05 (0.21)	0.10 (0.18)	0.10 (0.18)
Some post-secondary schooling	-0.16 (0.17)	-0.20 (0.18)	-0.09 (0.18)	-0.09 (0.18)	0.21 (0.28)	0.26 (0.26)	-0.22 (0.24)	-0.24 (0.25)
Post-secondary graduate	0.19 (0.11)	0.17 (0.11)	0.27* (0.12)	0.28* (0.12)	0.24 (0.20)	0.30 (0.19)	0.35* (0.15)	0.34* (0.15)
<i>Employment Status (in the last week)</i>								
Full-time (ref)								
Part-time	0.08 (0.09)	0.08 (0.10)	0.05 (0.10)	0.04 (0.10)	0.14 (0.10)	0.12 (0.10)	-0.06 (0.21)	-0.04 (0.21)
Permanently unable to work	0.86** (0.20)	0.86** (0.20)	0.00 (0.22)	-0.04 (0.21)	-0.01 (0.34)	-0.11 (0.34)	-0.03 (0.28)	-0.02 (0.28)
Unemployed	0.02 (0.07)	0.04 (0.08)	-0.08 (0.08)	-0.08 (0.08)	-0.03 (0.10)	-0.02 (0.10)	-0.15 (0.11)	-0.16 (0.11)
Status unstated	0.09 (0.33)	0.14 (0.35)	0.14 (0.37)	0.14 (0.37)	0.10 (0.57)	0.07 (0.58)	0.22 (0.54)	0.20 (0.53)
<i>Access to a healthcare provider</i>								
No regular access (ref)								
Regular access		1.42** (0.07)	1.42** (0.07)	1.42** (0.07)	1.41** (0.11)	1.41** (0.11)	1.42** (0.10)	1.42** (0.10)

<i>Season</i>							
Winter (ref)							
Spring	0.07	0.08	0.08	0.13	0.12	0.04	0.05
	(0.07)	(0.07)	(0.07)	(0.10)	(0.10)	(0.10)	(0.10)
Summer							
	0.06	0.07	0.07	0.04	0.05	0.09	0.09
	(0.06)	(0.07)	(0.07)	(0.09)	(0.09)	(0.09)	(0.09)
Fall							
	0.10	0.09	0.09	0.19	0.17	0.01	0.01
	(0.07)	(0.07)	(0.07)	(0.10)	(0.10)	(0.10)	(0.10)
<i>Urbanicity</i>							
Rural (ref)							
Urban	0.19**	0.20**	0.20**	0.26**	0.25**	0.15*	0.16*
	(0.06)	(0.05)	(0.05)	(0.08)	(0.08)	(0.07)	(0.07)
<i>Year</i>							
2005 (ref)							
2008	-0.02	-0.02	-0.02	-0.10	-0.10	0.03	0.03
	(0.06)	(0.06)	(0.06)	(0.09)	(0.09)	(0.07)	(0.07)
2013	-0.24**	-0.26**	-0.26**	-0.30**	-0.31**	-0.23**	-0.22**
	(0.06)	(0.06)	(0.06)	(0.09)	(0.09)	(0.08)	(0.08)
2014	-0.26**	-0.28**	-0.28**	-0.22*	-0.21*	-0.32**	-0.31**
	(0.06)	(0.06)	(0.06)	(0.10)	(0.10)	(0.09)	(0.09)
<i>Reported having COPD</i>							
No (ref)							
Yes		-0.27	-0.29	-0.48	-0.50	-0.06	-0.08
		(0.23)	(0.23)	(0.37)	(0.37)	(0.29)	(0.29)
<i>Reported having Asthma (ref)</i>							
No (ref)							
Yes		0.46**	0.47**	0.43**	0.44**	0.50**	0.50**
		(0.09)	(0.09)	(0.12)	(0.12)	(0.13)	(0.13)
<i>Reported having high blood pressure</i>							
No (ref)							
Yes		0.72**	0.72**	0.64**	0.67**	0.76**	0.76**
		(0.09)	(0.09)	(0.14)	(0.14)	(0.11)	(0.11)
<i>Reported having heart disease</i>							

No (ref)						
Yes	0.49*	0.50*	0.21	0.19	0.60*	0.63*
	(0.19)	(0.19)	(0.30)	(0.30)	(0.27)	(0.27)
<i>Reported having Diabetes</i>						
No (ref)						
Yes	0.51**	0.50**	0.49*	0.48*	0.53**	0.51**
	(0.14)	(0.14)	(0.23)	(0.23)	(0.18)	(0.18)
<i>Reported ever having cancer</i>						
No (ref)						
Yes	0.07	0.06	0.10	0.08	0.18	0.18
	(0.15)	(0.15)	(0.22)	(0.21)	(0.23)	(0.23)
<i>Reported having a mood disorder</i>						
No (ref)						
Yes	0.80**	0.79**	0.81**	0.77**	0.84**	0.84**
	(0.11)	(0.11)	(0.15)	(0.15)	(0.17)	(0.17)
<i>Reported having anxiety No (ref)</i>						
Yes	0.60**	0.60**	0.42*	0.39*	0.81**	0.81**
	(0.12)	(0.12)	(0.17)	(0.17)	(0.15)	(0.15)
<i>General Reported Health Status</i>						
Poor (ref)						
Excellent	-1.06**	-1.08**	-1.47**	-1.50**	-0.85	-0.85
	(0.32)	(0.32)	(0.36)	(0.37)	(0.48)	(0.48)
Very Good	-0.95**	-0.96**	-1.19**	-1.22**	-0.88	-0.88
	(0.31)	(0.32)	(0.35)	(0.36)	(0.47)	(0.47)
Good	-0.80**	-0.81*	-1.17**	-1.19**	-0.63	-0.63
	(0.31)	(0.32)	(0.36)	(0.36)	(0.47)	(0.47)
Fair	-0.33	-0.35	-0.37	-0.41	-0.39	-0.40
	(0.31)	(0.32)	(0.37)	(0.37)	(0.48)	(0.48)
<i>General Reported Mental Health Status</i>						
Poor (ref)						
Excellent	-0.17	-0.23	-0.43	-0.63	0.03	0.04

	(0.28)	(0.30)	(0.50)	(0.56)	(0.34)	(0.35)
Very Good	-0.22	-0.27	-0.55	-0.74	0.03	0.04
	(0.28)	(0.29)	(0.50)	(0.56)	(0.33)	(0.34)
Good	-0.17	-0.22	-0.28	-0.46	-0.07	-0.07
	(0.28)	(0.29)	(0.49)	(0.55)	(0.34)	(0.35)
Fair	-0.01	-0.04	-0.52	-0.66	0.44	0.45
	(0.30)	(0.31)	(0.53)	(0.58)	(0.35)	(0.36)
<i>Have given birth in the past five years</i>						
No (ref)						
Yes			0.17	0.16		
			(0.10)	(0.10)		
<i>Currently Pregnant</i>						
No (ref)						
Yes			0.37	0.42		
			(0.30)	(0.26)		
<u>INTERACTIONS:</u>						
No insurance*						
non-immigrant						
(ref)						
Government						
insurance *						
economic						
immigrant		0.36		0.36		0.43
		(0.57)		(0.69)		(1.17)
Government						
insurance *						
family class		-1.54**		-1.86**		-0.87
immigrant		(0.56)		(0.69)		(0.83)
Government						
insurance		-1.13		-2.00*		-0.13
*refugee		(0.71)		(0.89)		(1.30)
Private						
insurance *						

economic						-0.01		-0.00		0.03
immigrant						(0.20)		(0.32)		(0.28)
Private										
Insurance *						-0.30		-0.99**		0.37
Family class						(0.27)		(0.38)		(0.38)
Private										
insurance *						-0.70*		-0.73		-0.69
Refugee						(0.35)		(0.47)		(0.46)
_cons	1.01**	0.64**	1.09**	-0.20	0.39	0.33	1.58	1.56	0.17	0.13
	(0.05)	(0.05)	(0.35)	(0.37)	(0.54)	(0.54)	(0.85)	(0.86)	(0.76)	(0.78)

Standard errors in parentheses

* p<0.05, ** p<0.01

Table S7. Logistic regression coefficients of reporting at least one specialist visit in the last year, Ontario (2005, 2008, 2013-14)

Model: Analysis:	(1) Bivariate	(2) Multivariable	(3) Multivariable	(4) Multivariable	(5) Multivariable	(6) Multivariable	(7) Multivariable	(8) Multivariable	(9) Multivariable	(10) Multivariable
Variables added to model:	Health system factor	Intersectional factors	Pre- disposing factors	Enabling factors	Need factors Final model	Final model (no var added) Yes	Final model No interaction	Final model Yes Women	Final model No interaction Men	Final model Yes Men
Interaction term:	No interaction	No interaction	No interaction	No interaction	No interaction	Yes	No interaction	Yes Women	No interaction Men	Yes Men
Strata (n)	All (39,729)	All (39,729)	All (39,729)	All (39,729)	All (39,729)	All (39,729)	Women (21,466)	Women (21,466)	Men (18,263)	Men (18,263)
Variables	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)
<i>Drug Insurance Status</i>										
No Insurance (ref)										
Government Insurance	0.85** (0.08)	0.79** (0.09)	0.51** (0.09)	0.48** (0.10)	0.26* (0.10)	0.21* (0.11)	0.39** (0.13)	0.25 (0.13)	0.03 (0.15)	0.12 (0.16)
Private Insurance	0.32** (0.05)	0.29** (0.05)	0.30** (0.05)	0.26** (0.05)	0.23** (0.06)	0.21** (0.06)	0.19** (0.07)	0.15 (0.08)	0.25* (0.10)	0.28** (0.10)
<i>Sex Male (ref)</i>										
Female		0.62** (0.04)	0.60** (0.04)	0.57** (0.04)	0.59** (0.04)	0.59** (0.04)				
<i>Immigrant Category</i>										
Non-immigrant (ref)										
Economic Immigrant		-0.15 (0.09)	-0.09 (0.09)	-0.12 (0.09)	-0.03 (0.10)	-0.02 (0.19)	0.05 (0.11)	-0.19 (0.20)	-0.08 (0.15)	0.26 (0.31)
Family Class Immigrant		-0.32** (0.10)	-0.20* (0.10)	-0.24* (0.10)	-0.18 (0.10)	-0.21 (0.20)	-0.22 (0.13)	-0.23 (0.22)	-0.17 (0.19)	-0.25 (0.43)
Refugee		-0.18 (0.14)	-0.07 (0.15)	-0.11 (0.15)	-0.04 (0.15)	-0.30 (0.27)	-0.12 (0.18)	-0.33 (0.32)	0.03 (0.26)	-0.24 (0.47)

<i>Age, year</i>								
55-64 (ref)								
25-34	-0.27**	-0.22**	0.06	0.06	0.06	0.06	-0.31**	-0.31**
	(0.06)	(0.06)	(0.07)	(0.07)	(0.09)	(0.09)	(0.12)	(0.12)
35-44	-0.36**	-0.32**	-0.13	-0.13	-0.03	-0.03	-0.42**	-0.43**
	(0.06)	(0.06)	(0.07)	(0.07)	(0.09)	(0.09)	(0.11)	(0.11)
45-54	-0.18**	-0.15*	-0.09	-0.09	0.09	0.09	-0.31**	-0.32**
	(0.07)	(0.07)	(0.07)	(0.07)	(0.09)	(0.09)	(0.10)	(0.10)
<i>Living with partner/spouse</i>								
No partner (ref)								
Partner	-0.00	-0.01	0.06	0.05	0.00	-0.00	-0.07	-0.08
	(0.05)	(0.05)	(0.05)	(0.05)	(0.07)	(0.07)	(0.09)	(0.08)
<i>Language Proficiency</i>								
Other language (ref)								
English or French	0.31	0.31	0.32	0.25	0.14	0.08	1.02	1.02
	(0.28)	(0.28)	(0.29)	(0.29)	(0.34)	(0.34)	(0.59)	(0.60)
Both English and French	0.33	0.36	0.37	0.30	0.23	0.16	1.01	1.02
	(0.28)	(0.28)	(0.29)	(0.29)	(0.35)	(0.34)	(0.59)	(0.61)
<i>Income adjusted by household size</i>								
Decile 1 (ref)								
Decile 2	-0.02	-0.02	0.00	0.00	0.05	0.01	-0.08	-0.07
	(0.12)	(0.12)	(0.13)	(0.13)	(0.15)	(0.15)	(0.23)	(0.23)
Decile 3	0.21	0.22	0.26	0.25	0.40*	0.34*	0.02	0.02
	(0.13)	(0.13)	(0.14)	(0.14)	(0.16)	(0.16)	(0.27)	(0.27)
Decile 4	0.12	0.13	0.20	0.18	0.29	0.23	0.05	0.05
	(0.12)	(0.12)	(0.13)	(0.13)	(0.15)	(0.15)	(0.23)	(0.23)
Decile 5	0.10	0.10	0.17	0.15	0.19	0.13	0.17	0.17
	(0.12)	(0.12)	(0.13)	(0.13)	(0.16)	(0.16)	(0.22)	(0.22)
Decile 6	-0.02	-0.02	0.12	0.11	0.17	0.12	0.10	0.11

	(0.11)	(0.11)	(0.12)	(0.12)	(0.15)	(0.15)	(0.21)	(0.21)
Decile 7	0.10	0.11	0.25*	0.24	0.35*	0.30*	0.18	0.18
	(0.12)	(0.12)	(0.13)	(0.13)	(0.14)	(0.14)	(0.22)	(0.22)
Decile 8	0.09	0.09	0.24*	0.23	0.40**	0.35*	0.06	0.06
	(0.11)	(0.11)	(0.12)	(0.12)	(0.15)	(0.15)	(0.21)	(0.21)
Decile 9	0.09	0.11	0.28*	0.27*	0.36**	0.31*	0.21	0.21
	(0.11)	(0.11)	(0.12)	(0.12)	(0.14)	(0.14)	(0.21)	(0.21)
Decile 10	0.28*	0.30**	0.55**	0.54**	0.62**	0.57**	0.51*	0.51*
	(0.12)	(0.12)	(0.12)	(0.12)	(0.15)	(0.16)	(0.22)	(0.22)
<i>Household education level</i>								
Less than high school (ref)								
High school graduate	0.23	0.20	0.24	0.24	0.32	0.32	0.17	0.17
	(0.12)	(0.12)	(0.13)	(0.13)	(0.17)	(0.17)	(0.18)	(0.18)
Some post-secondary schooling	0.50**	0.50**	0.63**	0.64**	0.68**	0.68**	0.54*	0.55*
	(0.15)	(0.15)	(0.15)	(0.15)	(0.20)	(0.20)	(0.23)	(0.23)
Post-secondary graduate	0.41**	0.38**	0.51**	0.51**	0.66**	0.66**	0.34*	0.35*
	(0.10)	(0.11)	(0.11)	(0.11)	(0.15)	(0.15)	(0.15)	(0.15)
<i>Employment Status (in the last week)</i>								
Full-time (ref)								
Part-time	0.24**	0.25**	0.19*	0.20*	0.19*	0.19*	0.16	0.17
	(0.08)	(0.08)	(0.08)	(0.08)	(0.09)	(0.09)	(0.17)	(0.17)
Permanently unable to work	1.46**	1.45**	0.63**	0.65**	0.49**	0.51**	0.73**	0.72**
	(0.11)	(0.11)	(0.12)	(0.12)	(0.17)	(0.17)	(0.18)	(0.18)
Unemployed	0.22**	0.24**	0.08	0.08	0.11	0.13	-0.12	-0.12
	(0.06)	(0.06)	(0.06)	(0.06)	(0.08)	(0.07)	(0.11)	(0.11)
Status unstated	0.41	0.41	0.34	0.35	0.03	0.05	0.55	0.54
	(0.30)	(0.29)	(0.31)	(0.31)	(0.50)	(0.50)	(0.40)	(0.40)
<i>Access to a healthcare provider</i>								

No regular access (ref)							
Regular access	0.61** (0.08)	0.60** (0.08)	0.61** (0.08)	0.56** (0.12)	0.56** (0.12)	0.59** (0.12)	0.61** (0.12)
<i>Season</i>							
Winter (ref)							
Spring	-0.00 (0.06)	0.01 (0.07)	0.00 (0.06)	-0.03 (0.08)	-0.03 (0.08)	0.07 (0.10)	0.05 (0.10)
Summer	-0.01 (0.05)	-0.02 (0.06)	-0.02 (0.06)	0.02 (0.07)	0.01 (0.08)	-0.04 (0.09)	-0.04 (0.09)
Fall	-0.02 (0.06)	-0.05 (0.06)	-0.05 (0.06)	-0.07 (0.08)	-0.07 (0.08)	-0.01 (0.10)	-0.01 (0.10)
<i>Urbanicity</i>							
Rural (ref)							
Urban	0.14** (0.05)	0.18** (0.05)	0.18** (0.05)	0.20** (0.06)	0.20** (0.06)	0.14* (0.07)	0.14 (0.07)
<i>Year</i>							
2005 (ref)							
2008	0.09 (0.05)	0.09 (0.05)	0.08 (0.05)	0.10 (0.07)	0.09 (0.07)	0.06 (0.08)	0.06 (0.08)
2013	0.16** (0.05)	0.17** (0.05)	0.17** (0.05)	0.09 (0.07)	0.09 (0.07)	0.24** (0.08)	0.23** (0.08)
2014	0.27** (0.05)	0.28** (0.05)	0.28** (0.05)	0.27** (0.07)	0.27** (0.07)	0.28** (0.09)	0.28** (0.09)
<i>Reported having COPD</i>							
No (ref)							
Yes		0.13 (0.17)	0.13 (0.17)	0.37 (0.25)	0.38 (0.25)	-0.14 (0.22)	-0.15 (0.22)
<i>Reported having Asthma (ref)</i>							
No (ref)							
Yes		0.18* (0.07)	0.18* (0.07)	0.16 (0.09)	0.16 (0.09)	0.27* (0.12)	0.28* (0.12)
<i>Reported having</i>							

<i>high blood pressure</i>						
No (ref)						
Yes	0.10 (0.07)	0.10 (0.07)	0.14 (0.09)	0.13 (0.09)	0.05 (0.10)	0.06 (0.10)
<i>Reported having heart disease</i>						
No (ref)						
Yes	1.06** (0.13)	1.06** (0.13)	0.87** (0.17)	0.87** (0.17)	1.11** (0.18)	1.09** (0.18)
<i>Reported having Diabetes</i>						
No (ref)						
Yes	0.32** (0.11)	0.31** (0.11)	0.27 (0.15)	0.29* (0.15)	0.33* (0.15)	0.33* (0.15)
<i>Reported ever having cancer</i>						
No (ref)						
Yes	1.01** (0.09)	1.00** (0.09)	0.98** (0.12)	0.97** (0.12)	1.13** (0.15)	1.13** (0.15)
<i>Reported having a mood disorder</i>						
No (ref)						
Yes	0.64** (0.08)	0.64** (0.08)	0.58** (0.09)	0.58** (0.09)	0.78** (0.16)	0.80** (0.16)
<i>Reported having anxiety</i> No (ref)						
Yes	0.18* (0.08)	0.17* (0.08)	0.09 (0.10)	0.09 (0.10)	0.39** (0.14)	0.39** (0.14)
<i>General Reported Health Status</i>						
Poor (ref)						
Excellent	-1.34** (0.15)	-1.34** (0.15)	-1.29** (0.21)	-1.27** (0.21)	-1.48** (0.22)	-1.51** (0.22)
Very Good	-1.05** (0.15)	-1.05** (0.15)	-1.03** (0.21)	-1.01** (0.21)	-1.15** (0.22)	-1.17** (0.22)
Good	-0.72** (0.15)	-0.72** (0.14)	-0.65** (0.21)	-0.63** (0.21)	-0.85** (0.21)	-0.87** (0.21)
Fair	-0.31* (0.15)	-0.31* (0.14)	-0.30 (0.21)	-0.28 (0.21)	-0.32 (0.21)	-0.34 (0.21)

<i>General Reported Mental Health Status</i> Poor (ref)	(0.16)	(0.15)	(0.23)	(0.23)	(0.22)	(0.22)
Excellent	-0.04 (0.21)	-0.02 (0.21)	-0.29 (0.24)	-0.30 (0.25)	0.30 (0.36)	0.34 (0.37)
Very Good	-0.12 (0.21)	-0.11 (0.22)	-0.33 (0.24)	-0.34 (0.24)	0.16 (0.36)	0.20 (0.37)
Good	-0.08 (0.21)	-0.07 (0.21)	-0.25 (0.24)	-0.27 (0.25)	0.14 (0.35)	0.17 (0.36)
Fair	0.01 (0.21)	0.02 (0.21)	-0.08 (0.24)	-0.09 (0.25)	0.12 (0.36)	0.12 (0.37)
<i>Have given birth in the past five years</i> No (ref)						
Yes			0.44** (0.08)	0.44** (0.08)		
<i>Currently Pregnant</i> No (ref)						
Yes			0.83** (0.17)	0.84** (0.17)		
<u>INTERACTIONS:</u>						
No insurance* non-immigrant (ref)						
Government insurance * economic immigrant		0.62 (0.45)		1.55** (0.59)		-0.72 (0.66)
Government insurance * family class immigrant		0.40		0.12		1.19

						(0.45)		(0.52)		(0.90)
Government insurance *refugee						-0.13		-0.02		-1.01
						(0.47)		(0.59)		(0.79)
Private insurance * economic immigrant						-0.04 (0.21)		0.23 (0.24)		-0.45 (0.35)
Private Insurance * Family class						0.00 (0.24)		-0.02 (0.28)		0.07 (0.47)
Private insurance * Refugee						0.49 (0.32)		0.41 (0.43)		0.54 (0.58)
_cons	-1.07** (0.05)	-1.33** (0.05)	-1.99** (0.30)	-2.78** (0.31)	-2.36** (0.38)	-2.28** (0.38)	-1.73** (0.45)	-1.58** (0.44)	-2.66** (0.72)	-2.71** (0.74)

Standard errors in parentheses

* p<0.05, ** p<0.01

Table S8. Logistic regression coefficients of reporting at least one hospital stay in the last year, Ontario (2005, 2008, 2013-14)

Model: Analysis:	(1) Bivariate	(2) Multivariable	(3) Multivariable	(4) Multivariable	(5) Multivariable	(6) Multivariable	(7) Multivariable	(8) Multivariable	(9) Multivariable	(10) Multivariable
Variables added to model:	Health system factor	Intersectional factors	Pre-disposing factors	Enabling factors	Need factors Final model	Final model (no var added) Yes	Final model	Final model	Final model	Final model
Interaction term:	No interaction	No interaction	No interaction	No interaction	No interaction		No interaction	Yes	No interaction	Yes
Strata (n)	All (39,729)	All (39,729)	All (39,729)	All (39,729)	All (39,729)	All (39,729)	Women (21,466)	Women (21,466)	Men (18,263)	Men (18,263)
Variables	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)	Coef. (SE)
<i>Drug Insurance Status</i>										
No Insurance (ref)										
Government Insurance	0.88** (0.13)	0.77** (0.13)	0.33* (0.16)	0.33* (0.16)	0.13 (0.17)	0.21 (0.18)	0.29 (0.24)	0.31 (0.27)	-0.20 (0.21)	0.00 (0.22)
Private Insurance	0.02 (0.09)	-0.02 (0.09)	0.13 (0.10)	0.11 (0.10)	0.09 (0.10)	0.18 (0.11)	0.03 (0.13)	0.08 (0.14)	-0.01 (0.18)	0.17 (0.17)
Sex Male (ref)										
Female		0.79** (0.07)	0.72** (0.08)	0.69** (0.08)	0.72** (0.08)	0.72** (0.08)				
<i>Immigrant Category</i>										
Non-immigrant (ref)										
Economic Immigrant		-0.59** (0.15)	-0.65** (0.16)	-0.61** (0.16)	-0.57** (0.16)	-0.18 (0.29)	-0.30 (0.17)	-0.03 (0.33)	-0.91* (0.38)	-0.11 (0.70)
Family Class Immigrant		-0.16 (0.17)	-0.26 (0.17)	-0.24 (0.17)	-0.22 (0.17)	-0.22 (0.34)	-0.18 (0.19)	-0.20 (0.33)	-0.48 (0.60)	-0.13 (1.21)
Refugee		-0.05 (0.22)	-0.12 (0.21)	-0.07 (0.21)	0.01 (0.21)	0.36 (0.35)	0.28 (0.31)	0.46 (0.47)	-0.37 (0.37)	0.28 (0.69)

<i>Age, year</i>								
55-64 (ref)								
25-34	0.46**	0.50**	0.89**	0.89**	0.30	0.29	0.01	0.02
	(0.10)	(0.11)	(0.13)	(0.13)	(0.21)	(0.21)	(0.19)	(0.20)
35-44	-0.12	-0.11	0.19	0.18	-0.29	-0.30	-0.17	-0.16
	(0.11)	(0.11)	(0.13)	(0.13)	(0.20)	(0.20)	(0.18)	(0.18)
45-54	-0.28*	-0.27*	-0.15	-0.15	-0.19	-0.19	-0.04	-0.04
	(0.12)	(0.12)	(0.13)	(0.13)	(0.19)	(0.20)	(0.17)	(0.17)
<i>Living with partner/spouse</i>								
No partner (ref)								
Partner	0.35**	0.32**	0.36**	0.35**	0.16	0.15	-0.12	-0.13
	(0.09)	(0.09)	(0.09)	(0.09)	(0.13)	(0.13)	(0.14)	(0.14)
<i>Language Proficiency</i>								
Other language (ref)								
English or French	0.29	0.34	0.31	0.41	0.47	0.61	-0.76	-0.74
	(0.47)	(0.47)	(0.48)	(0.50)	(0.50)	(0.57)	(1.03)	(1.06)
Both English and French	0.41	0.47	0.44	0.55	0.56	0.70	-0.61	-0.58
	(0.47)	(0.47)	(0.48)	(0.49)	(0.50)	(0.57)	(1.04)	(1.07)
<i>Income adjusted by household size</i>								
Decile 1 (ref)								
Decile 2	-0.31	-0.32	-0.35*	-0.32	-0.36	-0.30	-0.26	-0.26
	(0.17)	(0.17)	(0.18)	(0.17)	(0.23)	(0.23)	(0.31)	(0.26)
Decile 3	-0.53**	-0.54**	-0.65**	-0.60**	-0.63*	-0.58*	-0.35	-0.31
	(0.17)	(0.17)	(0.19)	(0.19)	(0.25)	(0.25)	(0.29)	(0.28)
Decile 4	-0.27	-0.28	-0.28	-0.23	-0.18	-0.12	-0.29	-0.25
	(0.17)	(0.17)	(0.17)	(0.17)	(0.23)	(0.23)	(0.32)	(0.30)
Decile 5	-0.49**	-0.50**	-0.52**	-0.46*	-0.53*	-0.46*	-0.20	-0.16
	(0.18)	(0.17)	(0.18)	(0.18)	(0.23)	(0.24)	(0.32)	(0.33)
Decile 6	-0.46*	-0.46**	-0.43*	-0.39*	-0.22	-0.16	-0.55	-0.52
	(0.18)	(0.18)	(0.17)	(0.18)	(0.25)	(0.25)	(0.31)	(0.30)
Decile 7	-0.47*	-0.49**	-0.46*	-0.43*	-0.31	-0.26	-0.38	-0.36

Decile 8	(0.19) -0.50**	(0.19) -0.52**	(0.19) -0.48**	(0.19) -0.45*	(0.25) -0.43	(0.25) -0.38	(0.31) -0.20	(0.28) -0.17
Decile 9	(0.18) -0.62**	(0.18) -0.64**	(0.18) -0.58**	(0.19) -0.54**	(0.26) -0.38	(0.26) -0.34	(0.37) -0.45	(0.33) -0.43
Decile 10	(0.18) -0.49**	(0.18) -0.51**	(0.18) -0.42*	(0.18) -0.38*	(0.25) -0.17	(0.25) -0.13	(0.32) -0.22	(0.28) -0.19
	(0.19)	(0.19)	(0.18)	(0.19)	(0.27)	(0.26)	(0.31)	(0.29)
<i>Household education level</i>								
Less than high school (ref)								
High school graduate	0.02 (0.18)	0.04 (0.18)	-0.05 (0.19)	-0.06 (0.19)	0.01 (0.26)	-0.02 (0.26)	0.04 (0.27)	0.03 (0.27)
Some post-secondary schooling	0.40 (0.22)	0.40 (0.22)	0.45 (0.23)	0.43 (0.23)	0.55 (0.32)	0.51 (0.32)	0.32 (0.35)	0.30 (0.35)
Post-secondary graduate	0.20 (0.16)	0.21 (0.16)	0.26 (0.17)	0.24 (0.17)	0.50* (0.23)	0.46* (0.23)	0.04 (0.24)	0.02 (0.24)
<i>Employment Status (in the last week)</i>								
Full-time (ref)								
Part-time	0.20 (0.13)	0.21 (0.13)	0.18 (0.14)	0.18 (0.14)	-0.01 (0.16)	-0.01 (0.16)	-0.08 (0.38)	-0.04 (0.36)
Permanently unable to work	1.44** (0.16)	1.44** (0.16)	0.68** (0.17)	0.68** (0.17)	0.43 (0.24)	0.43 (0.24)	0.79** (0.24)	0.80** (0.23)
Unemployed	0.44** (0.09)	0.44** (0.09)	0.32** (0.09)	0.31** (0.09)	0.02 (0.11)	0.01 (0.11)	0.32 (0.18)	0.32 (0.19)
Status unstated	0.23 (0.59)	0.24 (0.59)	0.12 (0.63)	0.11 (0.62)	0.13 (0.94)	0.13 (0.94)	-0.59 (0.74)	-0.52 (0.70)
<i>Access to a healthcare provider</i>								
No regular access (ref)								
Regular access		0.55**	0.50**	0.51**	0.25	0.26	0.54**	0.55**

	(0.15)	(0.15)	(0.15)	(0.20)	(0.20)	(0.20)	(0.21)
<i>Season</i>							
Winter (ref)							
Spring	-0.03 (0.10)	-0.03 (0.10)	-0.02 (0.10)	0.01 (0.13)	0.02 (0.13)	-0.02 (0.18)	-0.02 (0.18)
Summer	0.02 (0.09)	0.02 (0.09)	0.02 (0.09)	0.11 (0.13)	0.11 (0.13)	-0.04 (0.15)	-0.03 (0.15)
Fall	-0.02 (0.11)	-0.04 (0.12)	-0.04 (0.12)	0.03 (0.14)	0.04 (0.14)	-0.02 (0.22)	-0.01 (0.21)
<i>Urbanicity</i>							
Rural (ref)							
Urban	-0.12 (0.08)	-0.07 (0.08)	-0.07 (0.08)	-0.02 (0.11)	-0.02 (0.11)	-0.13 (0.13)	-0.14 (0.13)
<i>Year</i>							
2005 (ref)							
2008	0.14 (0.08)	0.14 (0.08)	0.14 (0.08)	0.20 (0.10)	0.20* (0.10)	0.08 (0.15)	0.07 (0.15)
2013	-0.16 (0.09)	-0.17 (0.09)	-0.17 (0.09)	-0.21 (0.12)	-0.21 (0.12)	-0.22 (0.17)	-0.22 (0.16)
2014	-0.02 (0.09)	-0.03 (0.09)	-0.03 (0.09)	0.11 (0.11)	0.10 (0.11)	-0.22 (0.18)	-0.21 (0.17)
<i>Reported having COPD</i>							
No (ref)							
Yes		0.70* (0.29)	0.70* (0.29)	0.92* (0.42)	0.93* (0.41)	0.48 (0.29)	0.48 (0.28)
<i>Reported having Asthma (ref)</i>							
No (ref)							
Yes		-0.03 (0.12)	-0.02 (0.12)	0.14 (0.14)	0.15 (0.14)	-0.11 (0.22)	-0.12 (0.21)
<i>Reported having high blood pressure</i>							
No (ref)							
Yes		0.22* (0.11)	0.22* (0.10)	0.35* (0.15)	0.33* (0.15)	0.07 (0.13)	0.07 (0.12)
<i>Reported having</i>							

<i>heart disease</i>							
No (ref)							
Yes	1.01**	1.02**	0.68*	0.68*	1.22**	1.22**	
	(0.16)	(0.16)	(0.26)	(0.27)	(0.20)	(0.20)	
<i>Reported having Diabetes</i>							
No (ref)							
Yes	0.26	0.26	0.18	0.18	0.28	0.29	
	(0.14)	(0.14)	(0.22)	(0.22)	(0.18)	(0.17)	
<i>Reported ever having cancer</i>							
No (ref)							
Yes	0.77**	0.77**	0.67**	0.67**	1.34**	1.34**	
	(0.14)	(0.14)	(0.18)	(0.18)	(0.19)	(0.18)	
<i>Reported having a mood disorder</i>							
No (ref)							
Yes	0.19	0.19	0.25	0.26	0.32	0.33	
	(0.13)	(0.13)	(0.16)	(0.16)	(0.27)	(0.26)	
<i>Reported having anxiety</i>							
No (ref)							
Yes	0.07	0.08	0.07	0.08	0.26	0.27	
	(0.12)	(0.13)	(0.15)	(0.15)	(0.22)	(0.21)	
<i>General Reported Health Status</i>							
Poor (ref)							
Excellent	-1.15**	-1.15**	-0.98**	-0.98**	-1.87**	-1.88**	
	(0.22)	(0.22)	(0.28)	(0.28)	(0.35)	(0.35)	
Very Good	-1.11**	-1.11**	-1.04**	-1.03**	-1.53**	-1.54**	
	(0.20)	(0.20)	(0.25)	(0.26)	(0.31)	(0.30)	
Good	-0.89**	-0.89**	-0.83**	-0.81**	-1.15**	-1.15**	
	(0.19)	(0.19)	(0.23)	(0.24)	(0.29)	(0.28)	
Fair	-0.59**	-0.59**	-0.72**	-0.70**	-0.52	-0.52*	
	(0.19)	(0.19)	(0.24)	(0.24)	(0.27)	(0.26)	
<i>General Reported Mental Health Status</i>							
Poor (ref)							

Excellent	0.30 (0.31)	0.30 (0.31)	0.35 (0.39)	0.36 (0.39)	0.35 (0.49)	0.35 (0.49)
Very Good	0.10 (0.31)	0.09 (0.32)	0.02 (0.38)	0.02 (0.38)	0.23 (0.48)	0.23 (0.48)
Good	0.30 (0.30)	0.29 (0.30)	0.34 (0.38)	0.33 (0.38)	0.22 (0.45)	0.21 (0.45)
Fair	0.02 (0.31)	0.01 (0.31)	-0.01 (0.40)	-0.02 (0.41)	0.12 (0.45)	0.11 (0.44)

*Have given birth in
the past five years*
No (ref)
Yes

1.87**
(0.13) 1.88**
(0.13)

Currently Pregnant
No (ref)
Yes

-0.70
(0.49) -0.72
(0.46)

INTERACTIONS:

No insurance*
non-immigrant
(ref)

Government
insurance *
economic
immigrant

-0.70
(0.74) -0.49
(0.85) -0.94
(1.30)

Government
insurance *
family class
immigrant

-0.21
(0.63) -0.36
(0.76) -1.45
(1.50)

Government
insurance
*refugee

-0.06
(0.90) 0.38
(1.36) -1.42
(1.22)

Private

insurance *										
economic						-0.56		-0.36		-1.36
immigrant						(0.34)		(0.39)		(0.76)
Private										
Insurance *						0.07		0.11		-0.39
Family class						(0.38)		(0.39)		(1.31)
Private										
insurance *						-0.80		-0.69		-0.96
Refugee						(0.45)		(0.58)		(0.98)
_cons	-2.79**	-3.15**	-3.71**	-4.13**	-3.76**	-3.95**	-3.46**	-3.65**	-1.55	-1.75
	(0.08)	(0.10)	(0.53)	(0.56)	(0.63)	(0.64)	(0.77)	(0.81)	(1.24)	(1.26)

Standard errors in parentheses

* p<0.05, ** p<0.01

Table S9. Average marginal effects of reporting at least one general practitioner visit in the last year, Ontario (2005, 2008, 2013-14)

Model: Analysis:	(1) Bivariate	(2) Multivariable	(3) Multivariable	(4) Multivariable	(5) Multivariable	(6) Multivariable	(7) Multivariable	(8) Multivariable	(9) Multivariable	(10) Multivariable
Variables added to model:	Health system factor	Intersectional factors	Pre- disposing factors	Enabling factors	Need factors Final model	Final model (no var added) Yes	Final model	Final model	Final model	Final model
Interaction term:	No interaction	No interaction	No interaction	No interaction	No interaction		No interaction	Yes	No interaction	Yes
Strata (n)	All (39,729)	All (39,729)	All (39,729)	All (39,729)	All (39,729)	All (39,729)	Women (21,466)	Women (21,466)	Men (18,263)	Men (18,263)
Variables	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)
<i>Drug Insurance Status</i>										
No Insurance (ref)										
Government Insurance	0.09*** [0.05,0.12]	0.08*** [0.05,0.12]	0.06** [0.02,0.09]	0.04* [0.01,0.08]	0.01 [-0.03,0.04]	0.01 [-0.02,0.05]	-0.03 [-0.08,0.02]	-0.01 [-0.06,0.03]	0.06* [0.00,0.12]	0.06 [-0.01,0.13]
Private Insurance	0.06*** [0.04,0.08]	0.06*** [0.04,0.08]	0.05*** [0.03,0.07]	0.04*** [0.02,0.06]	0.03** [0.01,0.05]	0.03*** [0.02,0.05]	0.02 [-0.00,0.04]	0.03* [0.00,0.05]	0.04** [0.01,0.07]	0.04** [0.01,0.07]
<i>Sex Male (ref)</i>										
Female		0.12*** [0.10,0.13]	0.12*** [0.10,0.13]	0.10*** [0.09,0.11]	0.10*** [0.09,0.11]	0.10*** [0.09,0.11]				
<i>Immigrant Category</i>										
Non- immigrant (ref)										
Economic Immigrant		0.04* [0.01,0.06]	0.03* [0.00,0.06]	0.04** [0.01,0.07]	0.05*** [0.03,0.08]	0.06*** [0.03,0.08]	0.05*** [0.02,0.08]	0.06*** [0.03,0.09]	0.06* [0.01,0.11]	0.06* [0.01,0.11]
Family Class Immigrant		0.01 [-0.03,0.04]	0.02 [-0.02,0.06]	0.01 [-0.03,0.05]	0.02 [-0.01,0.06]	0.02 [-0.02,0.06]	-0.00 [-0.05,0.04]	-0.02 [-0.07,0.04]	0.06* [0.01,0.12]	0.07* [0.01,0.13]

Refugee	0.01 [-0.04,0.07]	0.02 [-0.04,0.07]	0.02 [-0.03,0.07]	0.04 [-0.01,0.09]	0.03 [-0.03,0.09]	0.03 [-0.02,0.09]	0.04 [-0.01,0.09]	0.04 [-0.05,0.12]	0.02 [-0.07,0.11]
<i>Age, year</i>									
55-64 (ref)									
25-34		-0.10*** [-0.12,-0.07]	-0.08*** [-0.10,-0.06]	-0.04*** [-0.07,-0.02]	-0.04*** [-0.07,-0.02]	-0.01 [-0.03,0.02]	-0.01 [-0.03,0.02]	-0.09*** [-0.13,-0.05]	-0.09*** [-0.13,-0.05]
35-44		-0.08*** [-0.10,-0.06]	-0.07*** [-0.09,-0.05]	-0.04*** [-0.07,-0.02]	-0.05*** [-0.07,-0.02]	-0.03* [-0.06,-0.01]	-0.03* [-0.06,-0.01]	-0.06** [-0.10,-0.03]	-0.06** [-0.10,-0.03]
45-54		-0.04*** [-0.06,-0.02]	-0.04*** [-0.06,-0.02]	-0.03* [-0.05,-0.01]	-0.03* [-0.05,-0.00]	-0.03 [-0.05,0.00]	-0.03 [-0.05,0.00]	-0.03 [-0.07,0.01]	-0.03 [-0.07,0.01]
<i>Living with partner/spouse</i>									
No partner (ref)									
Partner		0.02* [0.00,0.04]	0.00 [-0.01,0.02]	0.01 [-0.01,0.03]	0.01 [-0.01,0.03]	-0.01 [-0.03,0.01]	-0.01 [-0.03,0.01]	0.02 [-0.01,0.04]	0.02 [-0.01,0.04]
<i>Language Proficiency</i>									
Other language (ref)									
English or French		-0.04 [-0.13,0.05]	-0.02 [-0.12,0.07]	-0.03 [-0.12,0.07]	-0.02 [-0.11,0.08]	-0.04 [-0.14,0.06]	-0.02 [-0.12,0.07]	-0.03 [-0.22,0.15]	-0.03 [-0.22,0.16]
Both English and French		-0.02 [-0.11,0.07]	0.01 [-0.09,0.10]	0.00 [-0.09,0.10]	0.02 [-0.08,0.11]	-0.00 [-0.11,0.10]	0.01 [-0.09,0.11]	-0.01 [-0.20,0.18]	-0.00 [-0.20,0.19]
<i>Income adjusted by household size</i>									
Decile 1 (ref)									
Decile 2		0.01 [-0.04,0.05]	0.00 [-0.04,0.04]	0.00 [-0.04,0.05]	-0.00 [-0.05,0.04]	0.04 [-0.02,0.09]	0.02 [-0.03,0.07]	-0.03 [-0.10,0.04]	-0.04 [-0.11,0.04]
Decile 3		0.01 [-0.04,0.05]	0.00 [-0.04,0.04]	0.00 [-0.04,0.05]	0.00 [-0.04,0.05]	0.01 [-0.05,0.06]	-0.00 [-0.05,0.05]	0.01 [-0.06,0.09]	0.01 [-0.07,0.09]
Decile 4		0.02 [-0.02,0.06]	0.01 [-0.02,0.05]	0.02 [-0.02,0.06]	0.02 [-0.02,0.06]	0.01 [-0.04,0.06]	0.01 [-0.04,0.06]	0.04 [-0.02,0.10]	0.04 [-0.03,0.10]
Decile 5		-0.01 [-0.06,0.04]	-0.02 [-0.06,0.03]	-0.01 [-0.05,0.04]	-0.01 [-0.05,0.04]	0.03 [-0.03,0.08]	0.02 [-0.03,0.07]	-0.03 [-0.10,0.04]	-0.03 [-0.10,0.04]
Decile 6		-0.03 [-0.08,0.02]	-0.03 [-0.08,0.01]	-0.02 [-0.06,0.03]	-0.02 [-0.06,0.03]	0.02 [-0.04,0.07]	0.01 [-0.05,0.06]	-0.03 [-0.10,0.03]	-0.04 [-0.10,0.03]

Decile 7	-0.02 [-0.07,0.02]	-0.03 [-0.07,0.01]	-0.01 [-0.06,0.03]	-0.02 [-0.06,0.03]	0.05 [-0.01,0.10]	0.04 [-0.01,0.09]	-0.05 [-0.12,0.01]	-0.06 [-0.12,0.01]
Decile 8	-0.00 [-0.05,0.04]	-0.01 [-0.05,0.03]	0.01 [-0.04,0.05]	0.01 [-0.04,0.05]	0.03 [-0.03,0.08]	0.02 [-0.03,0.07]	-0.00 [-0.07,0.06]	-0.00 [-0.07,0.06]
Decile 9	-0.00 [-0.05,0.05]	-0.00 [-0.05,0.04]	0.02 [-0.03,0.06]	0.01 [-0.03,0.06]	0.03 [-0.02,0.08]	0.03 [-0.03,0.08]	0.01 [-0.06,0.08]	0.01 [-0.06,0.08]
Decile 10	0.01 [-0.04,0.05]	0.00 [-0.04,0.05]	0.03 [-0.01,0.08]	0.03 [-0.01,0.07]	0.06* [0.01,0.11]	0.05* [0.00,0.10]	0.02 [-0.05,0.09]	0.02 [-0.06,0.09]
<i>Household education level</i>								
Less than high school (ref)								
High school graduate	-0.00 [-0.05,0.04]	-0.00 [-0.05,0.04]	0.00 [-0.04,0.05]	0.00 [-0.04,0.05]	0.00 [-0.06,0.06]	0.01 [-0.05,0.07]	0.02 [-0.05,0.08]	0.02 [-0.05,0.08]
Some post-secondary schooling	-0.03 [-0.09,0.03]	-0.03 [-0.10,0.03]	-0.02 [-0.08,0.05]	-0.02 [-0.08,0.05]	0.03 [-0.04,0.10]	0.04 [-0.03,0.10]	-0.04 [-0.12,0.04]	-0.04 [-0.13,0.04]
Post-secondary graduate	0.03 [-0.01,0.07]	0.03 [-0.01,0.06]	0.04* [0.00,0.08]	0.04* [0.01,0.08]	0.03 [-0.02,0.09]	0.04 [-0.01,0.09]	0.06* [0.01,0.11]	0.06* [0.01,0.11]
<i>Employment Status (in the last week)</i>								
Full-time (ref)								
Part-time	0.01 [-0.02,0.04]	0.01 [-0.02,0.04]	0.01 [-0.02,0.04]	0.01 [-0.02,0.03]	0.02 [-0.01,0.04]	0.01 [-0.01,0.04]	-0.01 [-0.08,0.06]	-0.01 [-0.08,0.06]
Permanently unable to work	0.11*** [0.07,0.15]	0.11*** [0.07,0.15]	0.00 [-0.06,0.06]	-0.01 [-0.07,0.06]	-0.00 [-0.09,0.08]	-0.01 [-0.10,0.07]	-0.01 [-0.10,0.09]	-0.00 [-0.10,0.09]
Unemployed	0.00 [-0.02,0.03]	0.01 [-0.02,0.03]	-0.01 [-0.04,0.01]	-0.01 [-0.04,0.01]	-0.00 [-0.03,0.02]	-0.00 [-0.03,0.02]	-0.03 [-0.06,0.01]	-0.03 [-0.07,0.01]
Status unstated	0.01 [-0.09,0.12]	0.02 [-0.08,0.12]	0.02 [-0.08,0.12]	0.02 [-0.08,0.12]	0.01 [-0.12,0.14]	0.01 [-0.13,0.14]	0.04 [-0.15,0.22]	0.03 [-0.15,0.22]
<i>Access to a healthcare provider</i>								

No regular access (ref)							
Regular access	0.29*** [0.25,0.32]	0.27*** [0.24,0.31]	0.27*** [0.24,0.30]	0.24*** [0.20,0.29]	0.24*** [0.19,0.29]	0.25*** [0.22,0.28]	0.25*** [0.22,0.28]
<i>Season</i>							
Winter (ref)							
Spring	0.01 [-0.01,0.03]	0.01 [-0.01,0.03]	0.01 [-0.01,0.03]	0.02 [-0.01,0.04]	0.02 [-0.01,0.04]	0.01 [-0.03,0.04]	0.01 [-0.02,0.04]
Summer	0.01 [-0.01,0.03]	0.01 [-0.01,0.03]	0.01 [-0.01,0.03]	0.01 [-0.02,0.03]	0.01 [-0.02,0.03]	0.02 [-0.01,0.05]	0.02 [-0.01,0.05]
Fall	0.02 [-0.01,0.04]	0.01 [-0.01,0.03]	0.01 [-0.01,0.03]	0.02 [-0.00,0.05]	0.02 [-0.00,0.05]	0.00 [-0.03,0.04]	0.00 [-0.03,0.04]
<i>Urbanicity</i>							
Rural (ref)							
Urban	0.03*** [0.01,0.05]	0.03*** [0.01,0.05]	0.03*** [0.01,0.05]	0.03** [0.01,0.06]	0.03** [0.01,0.05]	0.03* [0.00,0.05]	0.03* [0.00,0.05]
<i>Year</i>							
2005 (ref)							
2008	-0.00 [-0.02,0.01]	-0.00 [-0.02,0.01]	-0.00 [-0.02,0.01]	-0.01 [-0.03,0.01]	-0.01 [-0.03,0.01]	0.00 [-0.02,0.03]	0.01 [-0.02,0.03]
2013	-0.04*** [-0.06,-0.02]	-0.04*** [-0.06,-0.02]	-0.04*** [-0.06,-0.02]	-0.04** [-0.06,-0.01]	-0.04*** [-0.06,-0.02]	-0.04** [-0.07,-0.01]	-0.04** [-0.07,-0.01]
2014	-0.04*** [-0.06,-0.02]	-0.04*** [-0.06,-0.02]	-0.04*** [-0.06,-0.02]	-0.03* [-0.05,-0.00]	-0.02* [-0.05,-0.00]	-0.06*** [-0.09,-0.03]	-0.06*** [-0.09,-0.03]
<i>Reported having COPD</i>							
No (ref)							
Yes		-0.04 [-0.12,0.03]	-0.05 [-0.13,0.03]	-0.07 [-0.18,0.05]	-0.07 [-0.19,0.05]	-0.01 [-0.11,0.09]	-0.01 [-0.11,0.08]
<i>Reported having Asthma</i> (ref)							
No (ref)							
Yes		0.06*** [0.04,0.09]	0.06*** [0.04,0.09]	0.05*** [0.03,0.07]	0.05*** [0.03,0.07]	0.09*** [0.04,0.13]	0.09*** [0.04,0.13]
<i>Reported having high blood pressure</i> No (ref)							
Yes		0.09*** [0.08,0.11]	0.09*** [0.08,0.11]	0.07*** [0.04,0.09]	0.07*** [0.05,0.09]	0.13*** [0.10,0.17]	0.13*** [0.09,0.17]

<i>Reported having heart disease</i>						
No (ref)						
Yes	0.07** [0.02,0.11]	0.07** [0.02,0.11]	0.02 [-0.04,0.09]	0.02 [-0.04,0.09]	0.11* [0.01,0.20]	0.11* [0.02,0.20]
<i>Reported having Diabetes</i>						
No (ref)						
Yes	0.07*** [0.04,0.10]	0.07*** [0.03,0.10]	0.05* [0.01,0.09]	0.05* [0.01,0.09]	0.09** [0.03,0.15]	0.09** [0.03,0.15]
<i>Reported ever having cancer</i>						
No (ref)						
Yes	0.01 [-0.03,0.06]	0.01 [-0.03,0.05]	0.01 [-0.04,0.06]	0.01 [-0.04,0.06]	0.03 [-0.05,0.11]	0.03 [-0.05,0.11]
<i>Reported having a mood disorder</i>						
No (ref)						
Yes	0.10*** [0.08,0.12]	0.10*** [0.08,0.12]	0.08*** [0.06,0.10]	0.08*** [0.06,0.10]	0.15*** [0.09,0.21]	0.15*** [0.09,0.21]
<i>Reported having anxiety</i>						
No (ref)						
Yes	0.08*** [0.05,0.11]	0.08*** [0.05,0.11]	0.05** [0.01,0.08]	0.04** [0.01,0.08]	0.14*** [0.09,0.19]	0.14*** [0.09,0.19]
<i>General Reported Health Status</i>						
Poor (ref)						
Excellent	-0.13*** [-0.19,-0.08]	-0.14*** [-0.20,-0.08]	-0.14*** [-0.18,-0.10]	-0.14*** [-0.18,-0.10]	-0.15 [-0.31,0.01]	-0.15 [-0.31,0.02]
Very Good	-0.12*** [-0.17,-0.06]	-0.12*** [-0.17,-0.06]	-0.10*** [-0.14,-0.06]	-0.10*** [-0.14,-0.06]	-0.15 [-0.32,0.01]	-0.15 [-0.32,0.01]
Good	-0.09** [-0.15,-0.04]	-0.09** [-0.15,-0.04]	-0.10*** [-0.14,-0.06]	-0.10*** [-0.14,-0.06]	-0.11 [-0.27,0.05]	-0.11 [-0.27,0.05]
Fair	-0.03 [-0.09,0.02]	-0.03 [-0.09,0.02]	-0.02 [-0.06,0.02]	-0.02 [-0.06,0.02]	-0.07 [-0.23,0.10]	-0.07 [-0.23,0.10]
<i>General Reported Mental Health</i>						

<i>Status</i>						
Poor (ref)						
Excellent	-0.02	-0.03	-0.05	-0.06	0.01	0.01
	[-0.10,0.05]	[-0.11,0.05]	[-0.14,0.05]	[-0.15,0.03]	[-0.11,0.12]	[-0.11,0.13]
Very Good	-0.03	-0.04	-0.06	-0.08	0.01	0.01
	[-0.11,0.04]	[-0.12,0.04]	[-0.15,0.03]	[-0.17,0.01]	[-0.11,0.12]	[-0.11,0.12]
Good	-0.02	-0.03	-0.03	-0.04	-0.01	-0.01
	[-0.10,0.05]	[-0.11,0.05]	[-0.12,0.06]	[-0.13,0.04]	[-0.13,0.10]	[-0.13,0.11]
Fair	-0.00	-0.01	-0.06	-0.07	0.08	0.08
	[-0.08,0.08]	[-0.09,0.08]	[-0.16,0.05]	[-0.17,0.03]	[-0.04,0.20]	[-0.05,0.20]
<i>Have given birth in the past five years</i>						
No (ref)						
Yes			0.02	0.02		
			[-0.00,0.04]	[-0.00,0.04]		
<i>Currently Pregnant</i>						
No (ref)						
Yes			0.04	0.05		
			[-0.02,0.10]	[-0.00,0.10]		

95% confidence intervals in brackets

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S10. Average marginal effects of reporting at least one specialist visit in the last year, Ontario (2005, 2008, 2013-14)

Model: Analysis:	(1) Bivariate	(2) Multivariable	(3) Multivariable	(4) Multivariable	(5) Multivariable	(6) Multivariable	(7) Multivariable	(8) Multivariable	(9) Multivariable	(10) Multivariable
Variables added to model:	Health system factor	Intersectional factors	Pre-disposing factors	Enabling factors	Need factors	Final model (no var added)	Final model	Final model	Final model	Final model
Interaction term:	No	No	No	No	No	Yes	No	Yes	No	Yes
Strata	All	All	All	All	All	All	Women	Women	Men	Men
(n)	(39,729)	(39,729)	(39,729)	(39,729)	(39,729)	(39,729)	(21,466)	(21,466)	(18,263)	(18,263)
Variables	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)
<i>Drug Insurance Status</i>										
No Insurance (ref)										
Government Insurance	0.19***	0.17***	0.10***	0.10***	0.05*	0.06**	0.08**	0.10***	0.01	0.01
	[0.15,0.23]	[0.14,0.21]	[0.06,0.14]	[0.06,0.14]	[0.01,0.09]	[0.02,0.10]	[0.03,0.14]	[0.04,0.15]	[-0.05,0.06]	[-0.04,0.06]
Private Insurance	0.07***	0.06***	0.06***	0.05***	0.04***	0.04***	0.04**	0.04**	0.04*	0.04**
	[0.05,0.09]	[0.04,0.08]	[0.04,0.08]	[0.03,0.07]	[0.02,0.06]	[0.02,0.06]	[0.01,0.07]	[0.01,0.07]	[0.01,0.07]	[0.01,0.07]
<i>Sex</i>										
Male (ref)										
Female		0.13***	0.12***	0.12***	0.11***	0.11***				
		[0.11,0.15]	[0.11,0.14]	[0.10,0.13]	[0.10,0.13]	[0.10,0.13]				
<i>Immigrant Category</i>										
Non-immigrant (ref)										
Economic Immigrant		-0.03	-0.02	-0.02	-0.00	-0.00	0.01	0.02	-0.01	-0.02
		[-0.06,0.00]	[-0.05,0.02]	[-0.06,0.01]	[-0.04,0.03]	[-0.04,0.03]	[-0.04,0.06]	[-0.03,0.07]	[-0.06,0.04]	[-0.07,0.03]
Family Class Immigrant		-0.07***	-0.04*	-0.05*	-0.03	-0.03	-0.04	-0.05	-0.03	-0.02

Refugee	[-0.10,-0.03] -0.04 [-0.09,0.02]	[-0.08,-0.00] -0.01 [-0.07,0.05]	[-0.09,-0.01] -0.02 [-0.08,0.04]	[-0.07,0.00] -0.01 [-0.06,0.05]	[-0.07,0.00] 0.01 [-0.05,0.07]	[-0.09,0.00] -0.02 [-0.10,0.05]	[-0.10,0.00] -0.01 [-0.09,0.08]	[-0.09,0.03] 0.01 [-0.08,0.09]	[-0.08,0.04] 0.02 [-0.07,0.10]
<i>Age, year</i>									
55-64 (ref)									
25-34		-0.06*** [-0.08,-0.03]	-0.05*** [-0.07,-0.02]	0.01 [-0.02,0.04]	0.01 [-0.02,0.04]	0.01 [-0.03,0.05]	0.01 [-0.03,0.05]	-0.05** [-0.09,-0.01]	-0.05** [-0.09,-0.01]
35-44		-0.08*** [-0.10,-0.05]	-0.07*** [-0.09,-0.04]	-0.02 [-0.05,0.00]	-0.02 [-0.05,0.00]	-0.01 [-0.04,0.03]	-0.01 [-0.04,0.03]	-0.07*** [-0.11,-0.04]	-0.07*** [-0.11,-0.04]
45-54		-0.04** [-0.07,-0.01]	-0.03* [-0.06,-0.01]	-0.02 [-0.04,0.01]	-0.02 [-0.04,0.01]	0.02 [-0.02,0.06]	0.02 [-0.02,0.06]	-0.05** [-0.09,-0.02]	-0.05** [-0.09,-0.02]
<i>Living with partner/spouse</i>									
No partner (ref)									
Partner		-0.00 [-0.02,0.02]	-0.00 [-0.02,0.02]	0.01 [-0.01,0.03]	0.01 [-0.01,0.03]	0.00 [-0.03,0.03]	-0.00 [-0.03,0.03]	-0.01 [-0.04,0.02]	-0.01 [-0.04,0.01]
<i>Language Proficiency</i>									
Other language (ref)									
English or French		0.06 [-0.04,0.16]	0.06 [-0.04,0.16]	0.06 [-0.04,0.15]	0.05 [-0.05,0.15]	0.03 [-0.11,0.17]	0.02 [-0.12,0.15]	0.17 [-0.02,0.36]	0.17 [-0.03,0.37]
Both English and French		0.06 [-0.04,0.16]	0.07 [-0.03,0.17]	0.07 [-0.03,0.16]	0.06 [-0.04,0.15]	0.05 [-0.09,0.19]	0.03 [-0.10,0.17]	0.17 [-0.03,0.36]	0.17 [-0.03,0.37]
<i>Income adjusted by household size</i>									
Decile 1 (ref)									
Decile 2		-0.00 [-0.05,0.04]	-0.00 [-0.05,0.04]	0.00 [-0.04,0.04]	0.00 [-0.04,0.04]	0.01 [-0.05,0.07]	0.00 [-0.06,0.06]	-0.01 [-0.09,0.06]	-0.01 [-0.09,0.06]
Decile 3		0.04 [-0.01,0.10]	0.04 [-0.01,0.10]	0.05 [-0.00,0.10]	0.05 [-0.01,0.10]	0.08* [0.02,0.15]	0.07* [0.01,0.13]	0.00 [-0.08,0.09]	0.00 [-0.08,0.09]
Decile 4		0.02 [-0.02,0.07]	0.03 [-0.02,0.07]	0.04 [-0.01,0.08]	0.03 [-0.01,0.08]	0.06* [0.00,0.12]	0.05 [-0.01,0.11]	0.01 [-0.07,0.08]	0.01 [-0.07,0.08]
Decile 5		0.02 [-0.03,0.07]	0.02 [-0.03,0.07]	0.03 [-0.01,0.08]	0.03 [-0.02,0.07]	0.04 [-0.02,0.10]	0.03 [-0.04,0.09]	0.03 [-0.04,0.10]	0.03 [-0.04,0.10]
Decile 6		-0.00	-0.00	0.02	0.02	0.03	0.02	0.02	0.02

Decile 7	[-0.05,0.04] 0.02	[-0.05,0.04] 0.02	[-0.02,0.06] 0.05*	[-0.02,0.06] 0.04	[-0.02,0.09] 0.07*	[-0.03,0.08] 0.06*	[-0.05,0.09] 0.03	[-0.05,0.09] 0.03
Decile 8	[-0.03,0.07] 0.02	[-0.03,0.07] 0.02	[0.00,0.09] 0.04*	[-0.00,0.09] 0.04*	[0.02,0.13] 0.08**	[0.00,0.12] 0.07*	[-0.04,0.10] 0.01	[-0.04,0.10] 0.01
Decile 9	[-0.02,0.06] 0.02	[-0.02,0.06] 0.02	[0.00,0.09] 0.05*	[0.00,0.08] 0.05*	[0.02,0.14] 0.07**	[0.01,0.13] 0.06*	[-0.06,0.08] 0.03	[-0.06,0.08] 0.03
Decile 10	[-0.02,0.06] 0.06*	[-0.02,0.06] 0.06**	[0.01,0.09] 0.11***	[0.01,0.09] 0.10***	[0.02,0.13] 0.13***	[0.01,0.12] 0.12***	[-0.03,0.10] 0.08*	[-0.03,0.10] 0.08*
	[0.01,0.11]	[0.02,0.11]	[0.06,0.15]	[0.06,0.15]	[0.07,0.19]	[0.06,0.18]	[0.01,0.15]	[0.02,0.15]
<i>Household education level</i>								
Less than high school (ref)								
High school graduate	0.04	0.04	0.04	0.04	0.06*	0.06*	0.03	0.03
Some post-secondary schooling	[-0.00,0.08] 0.10***	[-0.01,0.08] 0.10***	[-0.00,0.08] 0.11***	[-0.00,0.08] 0.12***	[0.00,0.12] 0.13***	[0.00,0.12] 0.13***	[-0.03,0.09] 0.09*	[-0.03,0.09] 0.09*
Post-secondary graduate	[0.04,0.15] 0.08***	[0.04,0.16] 0.07***	[0.06,0.17] 0.09***	[0.06,0.17] 0.09***	[0.06,0.21] 0.13***	[0.06,0.21] 0.13***	[0.02,0.16] 0.06*	[0.02,0.17] 0.06*
	[0.04,0.11]	[0.04,0.11]	[0.06,0.12]	[0.06,0.13]	[0.08,0.18]	[0.08,0.18]	[0.01,0.11]	[0.01,0.11]
<i>Employment Status (in the last week)</i>								
Full-time (ref)								
Part-time	0.05** [0.02,0.08]	0.05** [0.02,0.08]	0.04* [0.01,0.07]	0.04* [0.01,0.07]	0.04* [0.00,0.08]	0.04* [0.00,0.08]	0.03 [-0.03,0.08]	0.03 [-0.03,0.08]
Permanently unable to work	0.34***	0.33***	0.13***	0.13***	0.11**	0.11**	0.12***	0.12***
Unemployed	[0.29,0.38] 0.05***	[0.28,0.38] 0.05***	[0.08,0.18] 0.02	[0.08,0.19] 0.02	[0.03,0.18] 0.02	[0.04,0.19] 0.03	[0.06,0.18] -0.02	[0.06,0.18] -0.02
Status unstated	[0.02,0.07] 0.09	[0.03,0.07] 0.09	[-0.01,0.04] 0.07	[-0.01,0.04] 0.07	[-0.01,0.06] 0.01	[-0.00,0.06] 0.01	[-0.06,0.02] 0.09	[-0.06,0.02] 0.09
	[-0.04,0.22]	[-0.04,0.22]	[-0.06,0.20]	[-0.06,0.20]	[-0.20,0.21]	[-0.20,0.22]	[-0.04,0.22]	[-0.04,0.22]
<i>Access to a healthcare</i>								

<i>provider</i>								
No regular access (ref)								
Regular access	0.11***	0.10***	0.11***	0.11***	0.11***	0.10***	0.10***	
	[0.09,0.14]	[0.08,0.13]	[0.08,0.13]	[0.07,0.16]	[0.07,0.15]	[0.06,0.14]	[0.06,0.14]	
<i>Season</i>								
Winter (ref)								
Spring	-0.00	0.00	0.00	-0.01	-0.01	0.01	0.01	
	[-0.03,0.03]	[-0.02,0.03]	[-0.02,0.02]	[-0.04,0.03]	[-0.04,0.03]	[-0.02,0.04]	[-0.02,0.04]	
Summer	-0.00	-0.00	-0.00	0.00	0.00	-0.01	-0.01	
	[-0.02,0.02]	[-0.02,0.02]	[-0.02,0.02]	[-0.03,0.03]	[-0.03,0.03]	[-0.03,0.02]	[-0.03,0.02]	
Fall	-0.00	-0.01	-0.01	-0.01	-0.01	-0.00	-0.00	
	[-0.03,0.02]	[-0.03,0.01]	[-0.03,0.01]	[-0.05,0.02]	[-0.05,0.02]	[-0.04,0.03]	[-0.04,0.03]	
<i>Urbanicity</i>								
Rural (ref)								
Urban	0.03**	0.03***	0.03***	0.04***	0.04***	0.02*	0.02	
	[0.01,0.05]	[0.02,0.05]	[0.02,0.05]	[0.02,0.07]	[0.02,0.07]	[0.00,0.05]	[-0.00,0.05]	
<i>Year</i>								
2005 (ref)								
2008	0.02	0.02	0.02	0.02	0.02	0.01	0.01	
	[-0.00,0.04]	[-0.00,0.03]	[-0.00,0.03]	[-0.01,0.05]	[-0.01,0.05]	[-0.02,0.04]	[-0.02,0.04]	
2013	0.03**	0.03**	0.03**	0.02	0.02	0.04**	0.04**	
	[0.01,0.05]	[0.01,0.05]	[0.01,0.05]	[-0.01,0.05]	[-0.01,0.05]	[0.01,0.07]	[0.01,0.07]	
2014	0.06***	0.05***	0.05***	0.06***	0.06***	0.05**	0.05**	
	[0.03,0.08]	[0.03,0.07]	[0.03,0.07]	[0.03,0.09]	[0.03,0.09]	[0.02,0.08]	[0.02,0.08]	
<i>Reported having COPD</i>								
No (ref)								
Yes		0.02	0.03	0.08	0.08	-0.02	-0.02	
		[-0.04,0.09]	[-0.04,0.09]	[-0.03,0.19]	[-0.03,0.19]	[-0.09,0.05]	[-0.09,0.05]	
<i>Reported having Asthma (ref)</i>								
No (ref)								
Yes		0.04*	0.04*	0.03	0.03	0.05*	0.05*	
		[0.01,0.06]	[0.01,0.07]	[-0.00,0.07]	[-0.00,0.07]	[0.01,0.09]	[0.01,0.09]	
<i>Reported having high blood pressure</i>								
No (ref)								
Yes		0.02	0.02	0.03	0.03	0.01	0.01	

		[-0.01,0.04]	[-0.01,0.05]	[-0.01,0.07]	[-0.01,0.07]	[-0.02,0.04]	[-0.02,0.04]
<i>Reported having heart disease</i>							
No (ref)							
Yes		0.23*** [0.17,0.28]	0.23*** [0.17,0.28]	0.19*** [0.12,0.27]	0.19*** [0.12,0.27]	0.19*** [0.13,0.24]	0.18*** [0.13,0.24]
<i>Reported having Diabetes</i>							
No (ref)							
Yes		0.06** [0.02,0.11]	0.06** [0.02,0.11]	0.06 [-0.00,0.12]	0.06* [0.00,0.13]	0.06* [0.01,0.10]	0.06* [0.01,0.10]
<i>Reported ever having cancer</i>							
No (ref)							
Yes		0.22*** [0.18,0.26]	0.21*** [0.17,0.25]	0.22*** [0.17,0.27]	0.22*** [0.17,0.27]	0.19*** [0.14,0.24]	0.19*** [0.14,0.24]
<i>Reported having a mood disorder</i>							
No (ref)							
Yes		0.13*** [0.10,0.17]	0.13*** [0.10,0.17]	0.13*** [0.09,0.17]	0.13*** [0.09,0.17]	0.13*** [0.08,0.18]	0.13*** [0.08,0.18]
<i>Reported having anxiety</i>							
No (ref)							
Yes		0.03* [0.00,0.07]	0.03* [0.00,0.07]	0.02 [-0.02,0.06]	0.02 [-0.02,0.06]	0.07** [0.02,0.11]	0.06** [0.02,0.11]
<i>General Reported Health Status</i>							
Poor (ref)							
Excellent		-0.28*** [-0.35,-0.21]	-0.28*** [-0.35,-0.21]	-0.29*** [-0.38,-0.19]	-0.28*** [-0.38,-0.19]	-0.25*** [-0.32,-0.17]	-0.25*** [-0.32,-0.18]
Very Good		-0.23*** [-0.29,-0.16]	-0.23*** [-0.29,-0.16]	-0.23*** [-0.33,-0.14]	-0.23*** [-0.32,-0.14]	-0.19*** [-0.26,-0.12]	-0.19*** [-0.27,-0.12]
Good		-0.16*** [-0.23,-0.10]	-0.16*** [-0.23,-0.10]	-0.15** [-0.24,-0.06]	-0.14** [-0.24,-0.05]	-0.14*** [-0.21,-0.07]	-0.14*** [-0.21,-0.08]
Fair		-0.07* [-0.14,-0.00]	-0.07* [-0.14,-0.00]	-0.07 [-0.17,0.03]	-0.06 [-0.17,0.04]	-0.05 [-0.12,0.02]	-0.06 [-0.13,0.01]
<i>General Reported</i>							

*Mental Health
Status*
Poor (ref)

Excellent	-0.01 [-0.09,0.07]	-0.00 [-0.09,0.08]	-0.06 [-0.17,0.04]	-0.07 [-0.17,0.04]	0.05 [-0.07,0.17]	0.06 [-0.06,0.18]
Very Good	-0.02 [-0.10,0.06]	-0.02 [-0.10,0.06]	-0.07 [-0.18,0.03]	-0.07 [-0.18,0.03]	0.03 [-0.09,0.14]	0.03 [-0.09,0.15]
Good	-0.02 [-0.10,0.06]	-0.01 [-0.09,0.07]	-0.06 [-0.16,0.05]	-0.06 [-0.17,0.05]	0.02 [-0.09,0.14]	0.03 [-0.09,0.15]
Fair	0.00 [-0.08,0.08]	0.00 [-0.08,0.08]	-0.02 [-0.12,0.09]	-0.02 [-0.13,0.09]	0.02 [-0.10,0.14]	0.02 [-0.10,0.14]

*Have given
birth in the
past five years*
No (ref)
Yes

0.10***
[0.06,0.13]

0.10***
[0.06,0.13]

*Currently
Pregnant*
No (ref)
Yes

0.18***
[0.11,0.26]

0.19***
[0.11,0.26]

95% confidence intervals in brackets

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S11. Average marginal effects of reporting at least one hospital stay in the last year, Ontario (2005, 2008, 2013-14)

Model: Analysis:	(1) Bivariate	(2) Multivariable	(3) Multivariable	(4) Multivariable	(5) Multivariable	(6) Multivariable	(7) Multivariable	(8) Multivariable	(9) Multivariable	(10) Multivariable
Variables added to model:	Health system factor	Intersectional factors	Pre-disposing factors	Enabling factors	Need factors	Final model (no var added)	Final model	Final model	Final model	Final model
Interaction term:	No	No	No	No	No	Yes	No	Yes	No	Yes
Strata	interaction	interaction	interaction	interaction	interaction		interaction		interaction	
(n)	All (39,729)	All (39,729)	All (39,729)	All (39,729)	All (39,729)	All (39,729)	Women (21,466)	Women (21,466)	Men (18,263)	Men (18,263)
Variables	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)	Est. (95% CI)
<i>Drug Insurance Status</i>										
No Insurance (ref)										
Government Insurance	0.071*** [0.046,0.096]	0.060*** [0.037,0.083]	0.020* [0.001,0.039]	0.020* [0.000,0.039]	0.007 [-0.011,0.026]	0.007 [-0.011,0.026]	0.022 [-0.016,0.060]	0.019 [-0.017,0.056]	-0.007 [-0.022,0.008]	-0.006 [-0.022,0.010]
Private Insurance	0.001 [-0.009,0.011]	-0.001 [-0.011,0.009]	0.007 [-0.004,0.018]	0.006 [-0.004,0.017]	0.005 [-0.006,0.016]	0.005 [-0.005,0.016]	0.002 [-0.016,0.019]	0.002 [-0.016,0.019]	-0.001 [-0.013,0.012]	0.002 [-0.010,0.014]
Sex Male (ref)										
Female		0.045*** [0.036,0.053]	0.040*** [0.031,0.048]	0.038*** [0.030,0.047]	0.039*** [0.030,0.047]	0.039*** [0.030,0.047]				
<i>Immigrant Category</i>										
Non-immigrant (ref)										
Economic Immigrant		-0.029*** [-0.040,-0.017]	-0.031*** [-0.043,-0.019]	-0.029*** [-0.041,-0.017]	-0.027*** [-0.039,-0.015]	-0.029*** [-0.041,-0.017]	-0.020 [-0.040,0.001]	-0.021* [-0.042,-0.000]	-0.032* [-0.058,-0.006]	-0.039** [-0.063,-0.015]
Family Class Immigrant		-0.009	-0.015	-0.013	-0.012	-0.011	-0.012	-0.011	-0.017	-0.020

Refugee	[-0.028,0.009] -0.003 [-0.029,0.022]	[-0.032,0.003] -0.007 [-0.030,0.016]	[-0.031,0.004] -0.004 [-0.028,0.019]	[-0.029,0.005] 0.000 [-0.024,0.025]	[-0.028,0.007] -0.008 [-0.030,0.015]	[-0.036,0.012] 0.022 [-0.029,0.073]	[-0.036,0.014] 0.006 [-0.040,0.052]	[-0.058,0.024] -0.013 [-0.038,0.012]	[-0.054,0.014] -0.018 [-0.053,0.016]
<i>Age, year</i>									
55-64 (ref)									
25-34		0.031*** [0.018,0.045]	0.034*** [0.020,0.047]	0.057*** [0.042,0.073]	0.057*** [0.042,0.073]	0.023 [-0.008,0.055]	0.023 [-0.008,0.054]	0.000 [-0.013,0.014]	0.001 [-0.013,0.014]
35-44		-0.006 [-0.018,0.005]	-0.006 [-0.018,0.006]	0.009 [-0.003,0.021]	0.009 [-0.003,0.021]	-0.019 [-0.045,0.008]	-0.019 [-0.046,0.007]	-0.006 [-0.018,0.007]	-0.006 [-0.018,0.007]
45-54		-0.014* [-0.026,- 0.002]	-0.013* [-0.025,- 0.002]	-0.007 [-0.018,0.005]	-0.006 [-0.018,0.005]	-0.013 [-0.039,0.013]	-0.013 [-0.039,0.014]	-0.001 [-0.013,0.010]	-0.001 [-0.013,0.011]
<i>Living with partner/spouse</i>									
No partner (ref)									
Partner		0.019*** [0.010,0.028]	0.017*** [0.008,0.026]	0.019*** [0.010,0.028]	0.019*** [0.009,0.028]	0.011 [-0.006,0.028]	0.010 [-0.007,0.027]	-0.004 [-0.014,0.006]	-0.005 [-0.014,0.005]
<i>Language Proficiency</i>									
Other language (ref)									
English or French		0.015 [-0.027,0.056]	0.017 [-0.023,0.056]	0.015 [-0.026,0.056]	0.019 [-0.019,0.058]	0.028 [-0.021,0.077]	0.034 [-0.016,0.085]	-0.027 [-0.098,0.044]	-0.026 [-0.099,0.047]
Both English and French		0.022 [-0.020,0.063]	0.025 [-0.015,0.064]	0.023 [-0.018,0.064]	0.027 [-0.012,0.066]	0.034 [-0.016,0.084]	0.041 [-0.011,0.093]	-0.022 [-0.093,0.050]	-0.020 [-0.094,0.053]
<i>Income adjusted by household size</i>									
Decile 1 (ref)									
Decile 2		-0.022 [-0.047,0.003]	-0.023 [-0.048,0.003]	-0.024 [-0.047,0.000]	-0.021 [-0.044,0.002]	-0.027 [-0.063,0.008]	-0.023 [-0.057,0.012]	-0.009 [-0.030,0.012]	-0.009 [-0.027,0.009]
Decile 3		-0.034** [-0.058,- 0.011]	-0.036** [-0.060,- 0.012]	-0.039** [-0.063,- 0.015]	-0.036** [-0.059,- 0.012]	-0.044* [-0.081,- 0.007]	-0.040* [-0.076,- 0.004]	-0.012 [-0.033,0.008]	-0.011 [-0.030,0.009]
Decile 4		-0.019 [-0.044,0.005]	-0.020 [-0.045,0.004]	-0.019 [-0.043,0.004]	-0.016 [-0.039,0.008]	-0.014 [-0.052,0.023]	-0.010 [-0.046,0.027]	-0.010 [-0.032,0.012]	-0.009 [-0.030,0.012]
Decile 5		-0.032** [-0.057,-	-0.033** [-0.057,-	-0.033** [-0.056,-	-0.029* [-0.052,-	-0.038* [-0.074,-	-0.033 [-0.069,0.002]	-0.007 [-0.029,0.015]	-0.006 [-0.028,0.017]

Decile 6	0.008] -0.031* [-0.056,- 0.006]	0.009] -0.031* [-0.056,- 0.006]	0.009] -0.028* [-0.052,- 0.005]	0.006] -0.025* [-0.049,- 0.002]	0.002] -0.017 [-0.058,0.023]	-0.013 [-0.052,0.027]	-0.019 [-0.041,0.002]	-0.018 [-0.040,0.003]
Decile 7	-0.032* [-0.058,- 0.006]	-0.033* [-0.059,- 0.007]	-0.030* [-0.055,- 0.005]	-0.027* [-0.052,- 0.003]	-0.024 [-0.064,0.016]	-0.020 [-0.059,0.019]	-0.013 [-0.035,0.008]	-0.013 [-0.032,0.007]
Decile 8	-0.033* [-0.058,- 0.008]	-0.034** [-0.060,- 0.009]	-0.031* [-0.055,- 0.006]	-0.028* [-0.052,- 0.004]	-0.032 [-0.071,0.008]	-0.028 [-0.067,0.011]	-0.007 [-0.032,0.018]	-0.006 [-0.029,0.017]
Decile 9	-0.039** [-0.064,- 0.014]	-0.040** [-0.065,- 0.016]	-0.036** [-0.059,- 0.012]	-0.033** [-0.056,- 0.010]	-0.029 [-0.068,0.011]	-0.025 [-0.063,0.013]	-0.016 [-0.038,0.006]	-0.015 [-0.035,0.005]
Decile 10	-0.032* [-0.058,- 0.007]	-0.034** [-0.060,- 0.009]	-0.028* [-0.052,- 0.003]	-0.025* [-0.049,- 0.000]	-0.014 [-0.057,0.029]	-0.010 [-0.052,0.031]	-0.008 [-0.029,0.014]	-0.007 [-0.027,0.013]
<i>Household education level</i>								
Less than high school (ref)								
High school graduate	0.001 [-0.016,0.019]	0.002 [-0.015,0.019]	-0.002 [-0.019,0.015]	-0.003 [-0.020,0.015]	0.000 [-0.026,0.027]	-0.001 [-0.028,0.026]	0.001 [-0.017,0.020]	0.001 [-0.017,0.019]
Some post- secondary schooling	0.023 [-0.003,0.050]	0.023 [-0.004,0.050]	0.025 [-0.001,0.052]	0.024 [-0.002,0.051]	0.034 [-0.007,0.076]	0.032 [-0.010,0.074]	0.011 [-0.013,0.035]	0.010 [-0.013,0.034]
Post- secondary graduate	0.011 [-0.005,0.027]	0.011 [-0.004,0.027]	0.013 [-0.002,0.029]	0.012 [-0.003,0.028]	0.031* [0.007,0.055]	0.029* [0.004,0.053]	0.001 [-0.015,0.018]	0.001 [-0.016,0.017]
<i>Employment Status (in the last week)</i>								
Full-time (ref)								
Part-time	0.011 [-0.004,0.026]	0.011 [-0.004,0.026]	0.010 [-0.006,0.025]	0.010 [-0.006,0.026]	-0.001 [-0.022,0.020]	-0.001 [-0.022,0.020]	-0.003 [-0.029,0.023]	-0.001 [-0.026,0.024]
Permanently unable to work	0.132*** [0.091,0.174]	0.131*** [0.090,0.173]	0.046** [0.018,0.073]	0.046** [0.018,0.073]	0.034 [-0.007,0.075]	0.034 [-0.007,0.075]	0.028** [0.011,0.045]	0.028*** [0.012,0.044]
Unemployed	0.026*** [0.015,0.037]	0.026*** [0.015,0.037]	0.019*** [0.008,0.029]	0.018*** [0.007,0.029]	0.002 [-0.014,0.017]	0.000 [-0.015,0.016]	0.011 [-0.001,0.024]	0.011 [-0.002,0.024]

Status unstated	0.012 [-0.056,0.081]	0.013 [-0.057,0.083]	0.006 [-0.062,0.075]	0.006 [-0.062,0.074]	0.009 [-0.129,0.148]	0.009 [-0.129,0.148]	-0.021 [-0.072,0.031]	-0.018 [-0.067,0.030]
<i>Access to a healthcare provider</i>								
No regular access (ref)								
Regular access		0.026*** [0.015,0.037]	0.024*** [0.012,0.035]	0.024*** [0.013,0.035]	0.016 [-0.007,0.040]	0.017 [-0.007,0.040]	0.019* [0.004,0.033]	0.019* [0.004,0.034]
<i>Season</i>								
Winter (ref)								
Spring		-0.002 [-0.012,0.009]	-0.002 [-0.012,0.009]	-0.001 [-0.012,0.010]	0.000 [-0.017,0.018]	0.001 [-0.017,0.019]	-0.001 [-0.013,0.012]	-0.001 [-0.013,0.012]
Summer		0.001 [-0.009,0.011]	0.001 [-0.009,0.011]	0.001 [-0.009,0.011]	0.008 [-0.010,0.026]	0.008 [-0.010,0.026]	-0.001 [-0.012,0.009]	-0.001 [-0.011,0.009]
Fall		-0.001 [-0.014,0.011]	-0.002 [-0.015,0.010]	-0.002 [-0.015,0.010]	0.002 [-0.016,0.021]	0.003 [-0.016,0.021]	-0.001 [-0.016,0.014]	-0.000 [-0.015,0.014]
<i>Urbanicity</i>								
Rural (ref)								
Urban		-0.007 [-0.016,0.002]	-0.004 [-0.013,0.005]	-0.004 [-0.013,0.005]	-0.002 [-0.017,0.014]	-0.002 [-0.017,0.014]	-0.004 [-0.013,0.004]	-0.005 [-0.014,0.004]
<i>Year</i>								
2005 (ref)								
2008		0.009 [-0.001,0.018]	0.008 [-0.001,0.018]	0.008 [-0.001,0.018]	0.014 [-0.000,0.029]	0.015 [-0.000,0.029]	0.003 [-0.007,0.013]	0.002 [-0.008,0.013]
2013		-0.009 [-0.018,0.001]	-0.009 [-0.018,0.000]	-0.009 [-0.018,0.001]	-0.014 [-0.029,0.001]	-0.014 [-0.028,0.001]	-0.008 [-0.019,0.004]	-0.008 [-0.019,0.003]
2014		-0.001 [-0.011,0.009]	-0.002 [-0.012,0.009]	-0.002 [-0.012,0.009]	0.008 [-0.008,0.024]	0.007 [-0.009,0.023]	-0.008 [-0.020,0.004]	-0.007 [-0.019,0.004]
<i>Reported having COPD</i>								
No (ref)								
Yes			0.051 [-0.002,0.103]	0.051 [-0.001,0.103]	0.086 [-0.012,0.184]	0.087 [-0.011,0.185]	0.017 [-0.003,0.037]	0.017 [-0.003,0.037]
<i>Reported having Asthma</i>								
(ref)								
No (ref)								
Yes			-0.002	-0.001	0.010	0.011	-0.004	-0.004

		[-0.015,0.011]	[-0.014,0.012]	[-0.010,0.031]	[-0.010,0.032]	[-0.019,0.011]	[-0.019,0.010]
<i>Reported having high blood pressure</i>							
No (ref)							
Yes		0.013* [0.000,0.027]	0.013* [0.000,0.026]	0.027* [0.002,0.051]	0.025* [0.001,0.049]	0.002 [-0.007,0.011]	0.003 [-0.006,0.011]
<i>Reported having heart disease</i>							
No (ref)							
Yes		0.082*** [0.048,0.115]	0.082*** [0.048,0.117]	0.059* [0.005,0.113]	0.059* [0.004,0.114]	0.043*** [0.028,0.057]	0.043*** [0.029,0.057]
<i>Reported having Diabetes</i>							
No (ref)							
Yes		0.016 [-0.002,0.035]	0.016 [-0.003,0.034]	0.014 [-0.020,0.047]	0.013 [-0.020,0.047]	0.010 [-0.002,0.022]	0.010 [-0.002,0.022]
<i>Reported ever having cancer</i>							
No (ref)							
Yes		0.057*** [0.031,0.082]	0.056*** [0.031,0.081]	0.057** [0.022,0.091]	0.056** [0.021,0.091]	0.047*** [0.033,0.061]	0.047*** [0.033,0.060]
<i>Reported having a mood disorder</i>							
No (ref)							
Yes		0.011 [-0.005,0.027]	0.011 [-0.005,0.027]	0.019 [-0.006,0.043]	0.019 [-0.005,0.043]	0.011 [-0.007,0.030]	0.012 [-0.006,0.030]
<i>Reported having anxiety</i>							
No (ref)							
Yes		0.004 [-0.010,0.018]	0.005 [-0.010,0.019]	0.005 [-0.017,0.027]	0.006 [-0.016,0.028]	0.009 [-0.006,0.024]	0.009 [-0.005,0.024]
<i>General Reported Health Status</i>							
Poor (ref)							
Excellent		-0.089*** [-0.132,- 0.046]	-0.089*** [-0.133,- 0.046]	-0.091** [-0.150,- 0.032]	-0.090** [-0.149,- 0.030]	-0.066*** [-0.090,- 0.042]	-0.066*** [-0.090,- 0.041]
Very Good		-0.087***	-0.087***	-0.094***	-0.093**	-0.054***	-0.054***

Good		[-0.128,- 0.045]	[-0.129,- 0.045]	[-0.150,- 0.038]	[-0.150,- 0.036]	[-0.075,- 0.032]	[-0.075,- 0.033]
		-0.075***	-0.075***	-0.080**	-0.078**	-0.040***	-0.040***
		[-0.116,- 0.034]	[-0.117,- 0.034]	[-0.133,- 0.027]	[-0.132,- 0.024]	[-0.060,- 0.020]	[-0.060,- 0.020]
Fair		-0.055**	-0.055**	-0.071**	-0.069*	-0.018	-0.018*
		[-0.095,- 0.015]	[-0.095,- 0.015]	[-0.124,- 0.019]	[-0.123,- 0.015]	[-0.037,0.001]	[-0.037,- 0.000]
<i>General Reported Mental Health Status</i>							
Poor (ref)							
Excellent		0.016	0.016	0.024	0.025	0.012	0.012
		[-0.013,0.046]	[-0.013,0.046]	[-0.023,0.071]	[-0.022,0.071]	[-0.022,0.046]	[-0.021,0.046]
Very Good		0.005	0.004	0.001	0.001	0.008	0.008
		[-0.025,0.034]	[-0.025,0.034]	[-0.044,0.047]	[-0.045,0.047]	[-0.025,0.041]	[-0.025,0.041]
Good		0.016	0.016	0.024	0.023	0.008	0.007
		[-0.012,0.044]	[-0.013,0.044]	[-0.023,0.070]	[-0.024,0.070]	[-0.023,0.039]	[-0.023,0.038]
Fair		0.001	0.001	-0.001	-0.001	0.004	0.004
		[-0.028,0.030]	[-0.029,0.030]	[-0.049,0.047]	[-0.049,0.047]	[-0.027,0.035]	[-0.026,0.034]
<i>Have given birth in the past five years</i>							
No (ref)							
Yes				0.192*** [0.157,0.227]	0.192*** [0.159,0.226]		
<i>Currently Pregnant</i>							
No (ref)							
Yes				-0.039 [-0.080,0.002]	-0.040* [-0.078,- 0.002]		

95% confidence intervals in brackets

* $p < 0.05$, ** $p < 0.01$, *** $p < 0.001$

Table S12. Demographic, Household and Healthcare Utilization Characteristics of Adults by Sex, Ontario (2005, 2008, 2013, 2014)

Characteristic	Female (n=21466)	Male (n=18263)
	Weighted %	
Drug Insurance Status		
no insurance	21.8%	22.2%
government insurance	8.1%	6.1%
private insurance	70.2%	71.7%
Household Income Decile		
decile 1	10.5%	7.1%
decile 2	7.0%	6.2%
decile 3	8.9%	6.4%
decile 4	8.9%	7.9%
decile 5	9.1%	8.9%
decile 6	10.2%	10.0%
decile 7	10.0%	11.8%
decile 8	11.7%	12.1%
decile 9	11.9%	14.4%
decile 10	12.0%	15.2%
Employment Status (in the last week)		
full-time	62.2%	82.4%
part-time or working status unstated	13.2%	4.8%
permanently unable to work	3.4%	2.7%
no work	21.2%	10.2%
Living with a partner or spouse	71.0%	74.9%
Healthcare Utilization		
Reported receiving ≥ 1 GP visit	84.0%	72.2%
Reported receiving ≥ 1 specialist visit	38.2%	24.9%
Reported ≥ 1 hospitalization	8.7%	4.0%

Abbreviations: GP – general practitioner

Table S13. Predicted probabilities of reporting at least one visit to a general practitioner in the last year, Ontario (2005, 2008, 2013-14)

	All			Women			Men		
	Est. ^a	95% CI		Est. ^a	95% CI		Est. ^a	95% CI	
Drug Insurance Status									
No Insurance	0.79	0.77	0.80	0.85	0.83	0.86	0.72	0.69	0.74
Government Insurance	0.81	0.77	0.84	0.84	0.79	0.88	0.78	0.71	0.84
Private Insurance	0.82 ^b	0.81	0.83	0.87 ^b	0.86	0.88	0.76 ^b	0.74	0.77
Immigrant Category									
Non-immigrant	0.80	0.79	0.81	0.86	0.84	0.87	0.74	0.72	0.75
Economic Immigrant	0.86 ^c	0.83	0.88	0.91 ^c	0.88	0.93	0.80 ^c	0.75	0.84
Family Class Immigrant	0.82	0.78	0.85	0.84	0.79	0.88	0.81 ^c	0.75	0.85
Refugee	0.83	0.77	0.88	0.90	0.84	0.93	0.76	0.66	0.84
Interaction (Drug insurance by immigrant category)									
<i>Non-immigrant</i>									
Uninsured	0.77	0.75	0.79	0.83	0.80	0.85	0.70	0.67	0.73
Government-insured	0.81*	0.77	0.84	0.85	0.80	0.88	0.76*	0.71	0.81
Privately insured	0.81*	0.80	0.82	0.87*	0.85	0.88	0.75*	0.73	0.76
<i>Economic Immigrant</i>									
Uninsured	0.83	0.78	0.87	0.89	0.82	0.93	0.76	0.68	0.82
Government-insured	0.90	0.76	0.96	0.93	0.80	0.98	0.87	0.42	0.98
Privately insured	0.86	0.83	0.89	0.91	0.88	0.94	0.80	0.74	0.85
<i>Family-class immigrant</i>									
Uninsured	0.84	0.78	0.88	0.91	0.85	0.94	0.74	0.61	0.83
Government-insured	0.58*	0.33	0.80	0.64*	0.34	0.86	0.62	0.26	0.89
Privately insured	0.83	0.78	0.87	0.83	0.76	0.89	0.84	0.77	0.88
<i>Refugee</i>									
Uninsured	0.88	0.82	0.92	0.93	0.86	0.97	0.81	0.70	0.89
Government-insured	0.74	0.44	0.91	0.68	0.30	0.91	0.84	0.31	0.98
Privately insured	0.82	0.74	0.88	0.90	0.82	0.94	0.73	0.59	0.84

^a All estimates are statistically significant; ^b Significantly different from no insurance; ^c Significantly different from non-immigrant; *Significantly different from uninsured; p<0.05; CI – Confidence Interval;

Table S14. Predicted probabilities of reporting at least one visit to a specialist in the last year, Ontario (2005, 2008, 2013-14)

	All			Women			Men		
	Est. ^a	95% CI		Est. ^a	95% CI		Est. ^a	95% CI	
Drug Insurance Status									
No Insurance	0.26	0.25	0.28	0.34	0.31	0.37	0.20	0.17	0.22
Government Insurance	0.33 ^b	0.29	0.37	0.44 ^b	0.39	0.50	0.21	0.16	0.26
Private Insurance	0.31 ^b	0.30	0.32	0.38 ^b	0.37	0.40	0.24 ^b	0.23	0.26
Immigrant Category									
Non-immigrant	0.30	0.29	0.31	0.38	0.36	0.39	0.23	0.22	0.25
Economic Immigrant	0.30	0.27	0.34	0.40	0.36	0.46	0.21	0.17	0.26
Family Class Immigrant	0.27	0.23	0.31	0.33	0.28	0.38	0.21	0.15	0.28
Refugee	0.31	0.25	0.38	0.37	0.28	0.46	0.25	0.17	0.35
Interaction (Drug insurance by immigrant category)									
<i>Non-immigrant</i>									
Uninsured	0.27	0.25	0.29	0.35	0.32	0.38	0.20	0.17	0.23
Government-insured	0.31	0.28	0.35	0.41	0.36	0.46	0.22	0.17	0.27
Privately insured	0.31 [*]	0.30	0.33	0.39	0.37	0.40	0.25 [*]	0.23	0.26
<i>Economic Immigrant</i>									
Uninsured	0.27	0.20	0.34	0.31	0.24	0.39	0.24	0.15	0.36
Government-insured	0.45	0.28	0.65	0.73 [*]	0.49	0.88	0.15	0.05	0.35
Privately insured	0.30	0.26	0.34	0.40	0.34	0.46	0.21	0.16	0.27
<i>Family-class immigrant</i>									
Uninsured	0.23	0.17	0.30	0.30	0.22	0.39	0.16	0.08	0.30
Government-insured	0.36	0.20	0.55	0.38	0.20	0.61	0.41	0.13	0.77
Privately insured	0.27	0.22	0.32	0.33	0.26	0.40	0.21	0.15	0.29
<i>Refugee</i>									
Uninsured	0.22	0.14	0.31	0.28	0.18	0.41	0.16	0.07	0.32
Government-insured	0.23	0.12	0.39	0.33	0.16	0.55	0.07	0.02	0.22
Privately insured	0.36 [*]	0.28	0.44	0.40	0.29	0.53	0.31	0.19	0.45

^a All estimates are statistically significant; ^b Significantly different from no insurance; ^{*}Significantly different from uninsured: p<0.05; CI – Confidence Interval;

Table S15. Predicted probabilities of reporting at least one hospital stay in the last year, Ontario (2005, 2008, 2013-14)

	All			Women			Men		
	Est. ^a	95% CI		Est. ^a	95% CI		Est. ^a	95% CI	
Drug Insurance Status									
No Insurance	0.04	0.04	0.05	0.06	0.05	0.07	0.03	0.02	0.04
Government Insurance	0.05	0.04	0.07	0.07	0.05	0.11	0.02	0.01	0.03
Private Insurance	0.05	0.04	0.05	0.06	0.05	0.07	0.03	0.02	0.03
Immigrant Category									
Non-immigrant	0.05	0.05	0.06	0.06	0.05	0.07	0.03	0.03	0.04
Economic Immigrant	0.03 ^c	0.02	0.04	0.05 ^c	0.03	0.06	0.01 ^c	0.01	0.02
Family Class Immigrant	0.04	0.03	0.06	0.05	0.04	0.08	0.02	0.01	0.05
Refugee	0.04	0.03	0.06	0.06	0.04	0.11	0.02	0.01	0.06
Interaction (Drug insurance by immigrant category)									
<i>Non-immigrant</i>									
Uninsured	0.05	0.04	0.05	0.06	0.04	0.07	0.03	0.02	0.04
Government-insured	0.06	0.04	0.07	0.08	0.05	0.12	0.03	0.02	0.04
Privately insured	0.05	0.05	0.06	0.06	0.05	0.07	0.03	0.03	0.04
<i>Economic Immigrant</i>									
Uninsured	0.04	0.02	0.06	0.06	0.03	0.10	0.03	0.01	0.09
Government-insured	0.02	0.01	0.08	0.05	0.01	0.18	0.01	0.00	0.08
Privately insured	0.03	0.02	0.04	0.04	0.03	0.06	0.01	0.00	0.02
<i>Family-class immigrant</i>									
Uninsured	0.04	0.02	0.07	0.05	0.03	0.08	0.02	0.00	0.21
Government-insured	0.04	0.01	0.10	0.05	0.01	0.15	0.01	0.00	0.05
Privately insured	0.05	0.03	0.07	0.06	0.04	0.09	0.02	0.01	0.05
<i>Refugee</i>									
Uninsured	0.06	0.03	0.12	0.09	0.04	0.19	0.04	0.01	0.13
Government-insured	0.07	0.02	0.28	0.16	0.02	0.68	0.01	0.00	0.04
Privately insured	0.04	0.02	0.06	0.05	0.03	0.10	0.02	0.00	0.07

^a All estimates are statistically significant; ^c Significantly different from non-immigrant: p<0.05; CI – Confidence Interval;

Table S16. Sensitivity Analysis: Average marginal effects (AME) of reporting at least one visit to a general practitioner in the previous year, Ontario (2005, 2008, 2013-14) with and without “Years Since Migration” variable

General Practitioner Visits	Without Years Since Migration		With Years Since Migration	
	All		All	
	AME ^a	95% CI	AME ^a	95% CI
Interaction – Uninsured				
(ref)				
Government Insured				
Non-immigrant	0.04*	(0.00, 0.07)	0.04*	(0.00, 0.07)
Economic immigrant	0.08	(-0.05, 0.20)	0.08	(-0.05, 0.20)
Family Class immigrant	-0.25*	(-0.48, -0.02)	-0.24*	(-0.44, -0.04)
Refugee	-0.14	(-0.40, 0.11)	-0.15	(-0.37, 0.08)
Privately insured				
Non-immigrant	0.04**	(0.02, 0.06)	0.04**	(0.02, 0.06)
Economic immigrant	0.04	(-0.02, 0.09)	0.04	(-0.02, 0.10)
Family Class immigrant	-0.01	(-0.08, 0.07)	0.00 [^]	(-0.08, 0.07)
Refugee	-0.06	(-0.16, 0.04)	-0.06	(-0.16, 0.05)

AME – Average marginal effect, CI – Confidence Interval, Interaction – Drug Insurance * Immigrant Category, [^]p<0.1, *p<0.05, **p<0.01; a – adjusted by all covariates listed in Table 2 (see Appendix)

CHAPTER 5. Patient and provider perspectives on how migrants access prescription drugs in Ontario: Implications for health policy and practice

Preface

This chapter explores challenges and facilitators of migrants' access to prescription drugs in Ontario, Canada. Evidence suggests migrants experienced increased health outcome disparities following resettlement, use less health services and are less likely to have prescription drug coverage, compared to their Canadian-born counterparts. This chapter aims to generate theoretical insights about how political, social and economic determinants of health influence migrants' decisions to access medications from the perspectives and experiences of migrant patients and migrant-serving providers. By understanding these processes, this study aims to inform key policy and practices pertaining to migrant healthcare and prescription drug programs in Canada.

I was responsible for conceptualizing the research question and study design, following consultations with my supervisor, Dr. Lisa Schwartz. I drafted the initial study protocol and related materials with feedback from my supervisory committee and received ethics approval from the Hamilton Integrated Research Ethics Board (HiREB). I was responsible for all data collection and analysis, which took place from July 2019 to June 2020. The members of my supervisory committee each provided insights on preliminary findings. Drs. Lisa Schwartz, Andrea Baumann and Olive Wahoush each provided feedback on drafts of this chapter, which were incorporated into the final version. It is being prepared for submission to a journal.

Original Research Paper

Patient and provider perspectives on how migrants access prescription drugs in Ontario: Implications for health policy and practice

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Word count: 8,700 (including in-text citations)

Abstract word count: 198

Exhibits: 1 table, 2 figures, 1 appendix

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Conflict of Interest: None

Key words: prescription drug access, health providers, migrants, health policy, universal pharmacare

Abstract

Background: In Canada, migrant populations are less likely to use health services and obtain prescription drug coverage, compared to their Canadian-born counterparts. We explore how factors that impede migrants' access to essential medications influences their health and the mechanisms that in place to assist uninsured and underinsured migrant patients.

Method: Using constructivist grounded theory methodology, we interviewed 25 migrant patients and migrant-serving providers between July and December 2019 in Ontario, Canada.

Results: Participant perspectives on migrants' experiences accessing prescription drugs revealed four challenges: informational gaps, financial constraints, coverage inconsistencies and social differences. These impediments to medication access lead to refusals of care, medication anxiety, coverage unawareness, coping behaviours to manage the loss of access to prescription drugs and long-term health consequences. Supports identified include navigational aid, providers who are coverage knowledgeable and culturally sensitive, and short-term solutions such as funds, samples and compassionate programs. Gaps in short-term supports were perceived by participants who proposed key policy and practice recommendations, primarily in support of universal pharmacare.

Conclusion: Solutions to address barriers to medication access for migrant populations involves intersectoral policy approaches, combining pharmacare with educations, employment and drug monitoring supports to improve migrants' health.

Funding: None to disclose.

Introduction

Access to essential prescription drugs improves health, reduces suffering and saves lives. Approximately 40% of Canadians rely on at least one prescription drug to alleviate physical or mental health suffering (Rotermann, Sanmartin, Hennessey & Arthur, 2014). Prescription drug costs in Canada are not covered by a nationally instituted universal plan. Instead, the expenses of essential medicines are covered through a mix of provincially regulated public programs, private insurance schemes, or out-of-pocket payments (OPPs) by patients. The complex arrangement of publicly funded drug coverage programs at the federal, provincial and territorial levels, complimented by thousands of different private insurance plans, has created uneven and inequitable access to prescription drugs for millions of Canadians (Law et al., 2018). Approximately 20% of Canadians are uninsured or under-insured, by having no or inadequate prescription drug coverage (Hoskins, 2019). Reports of inadequate coverage arise from cost-sharing practices, such as deductibles, copayments, coinsurance plans or premiums, of which the expense exceeds the patient's affordability threshold.

Newcomers are more likely to be uninsured for prescription drugs than their Canadian-born counterparts (HQO, 2016). Furthermore, migration is a determinant of health as immigrants and refugees in Canada often experience health outcome disparities due to language barriers, changes to traditional social roles, precarious access to resources, discrimination, or trauma induced by forced migration (Spitzer et al., 2019). Our previous study suggests that prescription drug coverage improves use of health services for migrant and non-migrant patients. However, there are other barriers that limit

health services use by immigrant women, even in the presence of drug coverage (Antonipillai et al., unpublished). This study aims to identify what factors influence migrants' access to prescription drugs, how impediments to access are overcome and what policy and practice changes are necessary to improve their health and quality of care. With improved access to prescribed medications that treat and manage disease, migrant patients may have better health and have less need to visit the hospital or experience shorter stays, creating manageable workloads for healthcare providers by reducing demand, and decreasing associated costs for the healthcare system.

1.1 Ontario public drug programs and coverage gaps for migrants

In Ontario, the provincial government regulates three publicly funded prescription drug insurance programs: the Ontario Drug Benefit plan, OHIP+ and the Trillium Drug Program, for seniors, children and youth, and those with high OPP prescription drug costs, respectively. However, newly arrived non-refugee immigrants lack public health insurance due to mandates that delay their coverage for three months. As prescription drug access relies on encounters with prescribing health professionals, this gap in health coverage may deter immigrants from accessing necessary medications. Although most recent immigrants and refugees obtain physician and hospital insurance coverage within one year of resettlement, they may still lack access to prescription drug coverage for years. Newcomers are disproportionately uninsured for prescription drugs, nearly 60% more individuals born in Canada have prescription drug insurance compared to new immigrants (HQO, 2016).

Gaps in publicly funded federal drug programs for migrant patients have been introduced by cutbacks to refugees' prescription drug coverage through the Interim Federal Health program reforms from 2012 to 2016. These cutbacks eliminated prescription drug coverage for privately sponsored refugees and refugee claimants, including pregnant women and children, during the first two years of reform (Antonipillai et al., 2017). Following one year of arrival in Canada, refugee claimants whose asylum claims have not been heard, or were refused refugee status due to the loss of documents or other reasons, are no longer eligible for federally provided coverage and do not qualify for provincially provided drug coverage, leaving these individuals in a state of precarious access to prescription drugs (Goldring et al., 2009).

1.2 The “Healthy Immigrant Effect” and migrant’s prescription drug access

Although immigrants are initially healthier than their Canadian-born counterparts, this phenomenon, known as the healthy immigrant effect, diminishes over time (Ng, 2011). The foreign-born health advantage exists among recent immigrants who have resettled in Canada during their first ten years, and then recedes until immigrants' health is equivalent to or worse-off than that of individuals born in Canada (Vang et al., 2016). The rapid decline of immigrants' health may be linked to difficulties associated with accessing health services, including prescription drugs, to treat and manage their conditions.

A limited number of international studies demonstrate that immigrants use fewer medications than their native-born counterparts (Mohanty et al., 2005; Fadnes and Diaz, 2016; Gimeno-Feliu et al., 2016). In Canada, immigrants are two times more likely to have difficulty accessing care than the Canadian-born population. Moreover, newcomers seek primary care less often than either established immigrants or their Canadian-born counterparts (McKeary & Newbold, 2010; Sanmartin & Ross, 2006; Vang et al., 2016). In Ontario, Muggah et al. (2012) found that recent immigrants who attend fee-for-service practices report fewer primary care visits and poorer access than native-born patients. As primary care providers act as gatekeepers to prescription drugs in Ontario, a clearer understanding of migrant patients' health system encounters is necessary to reveal the factors that influence their decision-making processes. By understanding this process, we may uncover what factors contribute to delays in seeking care and under-utilization of primary care services, including prescription drug use.

Insurance coverage strongly increases access to health services and is associated with improved health status (McWilliams, 2009). Gaps in prescription drug insurance coverage have inequitable effects on the health of certain vulnerable populations, such as those with a lower socioeconomic status (Lexchin & Grootendorst, 2004). However, there is a lack of empirical evidence examining the relationship between prescription drug coverage and its effects on the immigrant and refugee population in Canada. Without access to essential medications following a lack of prescription drug insurance, migrants may experience significant health disparities, compounded by their depreciating health status, post-migration stressors, and limited access to primary healthcare services.

Immigrants with limited drug insurance coverage typically attempt to access care through emergency departments, where upfront payment is not required. This may unnecessarily increase health system costs that could have been avoided through the provision of affordable preventative medicine by primary care providers (Caulford & D'Andrade, 2012).

Given the steady rise of pharmacare options onto provincial and national agendas, this research aims to inform pharmaceutical policy decisions. Identifying ways to improve the health of immigrant and refugee communities and their use of services within the healthcare system is of utmost importance to facilitate their successful integration. Understanding the experiences of how immigrants and refugees' access essential medications through the current patchwork of prescription drug coverage programs will reveal necessary steps forward. Our qualitative study examines the experiences and perspectives of immigrant patients and care providers to uncover factors that influence immigrants' access to prescription drugs. This research explores factors that impede migrants' access to essential medications and the mechanisms that are in place to assist uninsured and under-insured immigrants and refugees. This study aims to inform key policies and practices pertaining to healthcare for immigrants and prescription drug programs in Canada.

Methods

A constructivist grounded theory methodology was employed to facilitate the development of an integrated set of theoretical concepts that synthesize, interpret and

display processual relationships (Charmaz, 2005). Simultaneous data collection and analysis was performed to refine the theoretical framework of the research focus, enabling a deeper analysis of how immigrants and refugees access prescription drugs in Ontario, understanding the challenges they faced during this process and the supports needed to help them acquire essential medications.

2.1 Sampling Procedure

We analyzed data gathered from individual interviews with 25 participants whose interests, actions and motivations are associated with prescription drug access for the immigrant and refugee patient community in Ontario (Schmeer, 1999). Purposive sampling was used to recruit key informants belonging to two categories: (1) immigrant and refugee communities and (2) care providers. Patients (n=13) were individuals who arrived in Canada as economic immigrants, family class immigrants, refugees or refugee claimants. Although this study examines commonalities across migrants, it acknowledges that the migrant participants are not one homogenous group, and their health experiences differ based on how their migration trajectory interacts with the determinants of health. Care providers (n=12) included physicians, social workers and other regulated professionals who provide services for migrant patients (Mattison & Lavis, 2016).

Potential care provider participants were identified and recruited directly through email or telephone invitation from private practices, clinics, hospitals and regions known to provide services for migrant populations. Migrant patients were contacted through settlement agencies within the patient's circle of contacts (Sutton et al., 2003).

Consenting migrant patients were met with by the researcher to provide more information about the study and schedule an interview with interested individuals. After completing a preliminary round of analysis, theoretical sampling was employed to fill analytical gaps, pursue identified leads and clarify uncertainties. The recruitment of a more diverse sample of care providers helped achieve this goal. Data collection proceeded until categories of the generated grounded theory were saturated to the point at which no new properties emerged (Glaser, 2001). Theoretical saturation was reached following the addition of five more interviews and through discussion with research team members.

2.2 Interview methods

Semi-structured interviews with participants (n=25) were audio-recorded, transcribed verbatim and conducted between July and December 2019. Interview guides were structured to explore the perspectives of diverse stakeholders knowledgeable about the experiences of migrants' access to prescription drugs. Stakeholder analysis guidelines developed by Schmeer et al. (1999) influenced the inclusion of some questions that assessed the social processes of how migrants accessed prescribed medications. Probing questions were asked to maintain a "conversation with a purpose" style of interview and obtain in-depth information on specific topics, including challenges of accessing medications, using an open-ended approach to gather data (Mason, 1996). On average, an interview lasted 24 minutes. While most interviews were conducted in English, a few were conducted in the participant's preferred language and translated into English during

the interview with the aid of professional interpreter services provided by settlement organizations where the interview was conducted.

An equivalent number of men and women were interviewed across participant categories, of varying ethnicities, ages, and migration experiences as determined by their immigration status or provider role (Table 1). The average age of the migrant patient was 56 years old (range 18-88). Almost half of the patients reported they arrived in Canada as family-class immigrants, the rest are economic immigrants, refugees and refugee claimants. Their average length of residence in Canada was 10 years, ranging from 3 months to 25 years. Nearly one third of patients interviewed arrived from India, and approximately half of the participants reported being a Canadian citizen. The average age of the care provider in the study was 48 years old (range 29-72). For providers, the average length of experience working with migrant populations was 14 years, ranging from 4 to 36 years. One third of the care providers interviewed were family physicians and two thirds of participants served migrants in an urban setting. Approximately, one third of providers self-identified as having immigrated to Canada. A formal letter of information and consent was provided to potential participants. Written consent was obtained from participants prior to interviews. This study was approved by the Hamilton Integrated Research Ethics Board. This research aligns with guiding principles for ethical research with individuals in situations of forced migration established by three leading refugee associations in Canada (Clark-Kazak, 2020).

(Insert Table 1)

3.1. Analytic strategy

Qualitative interview data collected from key informant interviews were analyzed using grounded theory techniques, starting with initial line-by-line coding processes to focused and theoretical coding (Charmaz, 2006). Initial coding of interview transcripts prompts the researcher to remain open to discovery, uninhibited by pre-conceived theories and identify implicit concerns with explicit statements (Charmaz, 2006). Codes were categorized and subcategorized through focused axial coding techniques whereby textual data are converted into concepts that specify the dimensions of larger categories (Strauss & Corbin, 1998). The technique of constant comparative analysis compared our data across themes, participants, categories of experience, and outcomes (Corbin & Strauss, 2008). Full interview transcripts were theoretically coded to gain a deeper understanding of the processual relationships between categories and subcategories to be integrated into a theory. Credibility of the findings was established through source triangulation, by gathering the perspectives of immigrant and refugee patients, as well as care providers (Patton, 1999). The use of NVivo 12 software for data management generated an audit trail that enabled a transparent, more flexible and trustworthy analytic process (Kaefer, Roper and Sinha, 2015).

Reflexive techniques were used to initiate data analysis and clarify the researcher's stance in relation to the participants and subject matter (Charmaz, 2006). Reflective memos were composed to extract comparisons and connections related to the research topic, identify further directions to pursue, and track the researchers' evolution of ideas over time, ensuring the subjective realities of the participants were not distorted.

Consistent with constructivist grounded theory methodology, these memos prompted the analysis of data and codes early in the research process and were reviewed and discussed with the entire team (Charmaz, 2006). The first author conducted all 25 interviews with patients and providers. The use of a reflective journal and memo-writing techniques such as free-writing and clustering during the data collection and analysis ensured that the analysis was not influenced by personal perspectives and stayed grounded in the data (Charmaz, 2006).

Results

The findings are categorized into three sections. The first section delineates challenges migrants encounter that deter access to prescription drugs. The second section identifies what supports help migrants access their medications, especially if they are lacking drug insurance coverage. The final section outlines recommendations to inform healthcare policies and practices to improve migrants' access to their medically necessary prescription drugs.

3.1 Prescription drug access impediments for migrants

Our findings suggest that migrant patients encounter four key challenges to accessing prescription drugs, which entail informational gaps, financial constraints, inconsistent coverage patterns and underlying social differences (See Figure 1).

(Insert Figure 1)

As can be seen in Figure 1, migrant patients are influenced by many factors that make it difficult to access the medications they need. These factors produce immediate impacts that limit access and induce certain behaviours, termed coping mechanisms, that patients employ in response to the challenges they encounter. The integration of these components results in long-term consequences to migrant health (Figure 1).

3.1.1 Informational gaps

There are four critical informational gaps that migrant patients encounter upon accessing medications: language barriers to communication, limited health prevention literacy, confusion navigating the health system and experiences where providers are unaware of their covered medications. Most providers and patients revealed that migrant patients' language barrier to communicating with the health provider limited access to prescription medications. Due to language limitations there is a need for interpretation services at every health encounter to help ensure prescribed medications are appropriately accessed and used. Without such services, immigrants and refugees lack the information needed to follow healthcare providers' instructions to improve their condition. Some patients and providers revealed that migrants were often confused about how to navigate the healthcare system, which left them with a lack of knowledge on how to access medications. Most providers also suggested that informational gaps also originated from the limited disease prevention literacy experienced by some migrant patients.

Finally, participants identified a key informational disparity experienced by providers is that sometimes, they lack awareness of the patient's drug coverage plan, a

limitation that impacts migrants' access to medications when they are prescribed a drug that is not covered. One provider shares that,

I think that it's not uncommon for patients who are on public drug coverage to get prescriptions for medicines that aren't necessarily covered by the Ontario Drug Benefits and I don't think that there's a good system in place to make sure that that doesn't happen. And I also don't think that there's a good system to feed that back to the clinicians ... I've had patients who will get those prescriptions, take them to the pharmacy and they're too expensive [so] they just won't get their medicines. (P6)

One patient related their difficulty accessing medications when a health provider prescribes an item that is not covered by their drug coverage plan:

I was [prescribed] medication for my allergies and I never got them, because they were not covered at all. Two or three times I had to go back and forth to the doctor [to get a prescription that was covered]. At least I am mobile but there are a lot of seniors who are not able to [walk], including my wife who has mobility issues, she can't walk that much, so for her going back and forth, that would have been impossible (M4).

3.1.2 Financial Constraints

In Ontario, patients experience constraints accessing medications due to the expense of the drug or their limited ability to afford the medication, a phenomenon that is not unique to migrants, but is exacerbated due to their immigration status and the lack of full-time employment.

Some medications in Canada are expensive, and without a coverage plan to help pay for all or part of the cost, migrants have difficulty purchasing them. Immigrants, who are non-refugees, have a particularly difficult time accessing medications, because, "the

immigrants have to live without Social Assistance for a period of time, they have to have the money, and it's expensive. Very expensive. Medication without benefits or something like that support is so expensive" (P11). Participants revealed that some migrant patients without coverage have limited budgets.

It is important to acknowledge that these financial constraints exist not only for migrants, but for those born in Canada as well, because low-income communities disproportionally suffer from inadequate access to medications when access depends on one's ability to pay for them. However, certain immigrant groups, such as family-class immigrants and secondary migrants (immigrants who move from one province to another province), are limited by institutional constraints that oppress their financial opportunities. As one participant explains,

[For] an immigrant who's come in here sponsored, it falls on the family [to pay for medications]. The family cannot access any money [in terms of assistance]. I'm talking from personal experience here. I sponsored my father and two sisters in the early 90's. The sponsorship at that time for a parent was 10 years and my father was 65. So even though I met the financial criteria, I was raising a family of five. He was going to be helping me take care of these kids, but I had no money, no extra money to buy some of the medications that he needed. So, we really had to scrape. (P1)

Some participants revealed that newcomers were less likely to find jobs that could provide them with larger incomes or drug coverage benefits through full-time employment, which prevented access to prescription drugs. A provider relayed that "if they're in Ontario [and] if they're old enough, young enough, or poor enough, they'll have access to the public drug plan. But there are a lot of people who are in none of

those categories who are working [as] driving taxis, cooks at restaurants, working as servers, working part-time jobs because they're not able to find full-time employment" (P8).

3.1.3 Inconsistent Coverage

Immigrants and refugees experience coverage limitations due to their undocumented status, gaps in the private or public coverage programs they have enrolled into, and systemic policy restrictions that intentionally deter migrants from accessing care. Migrants are 'undocumented' when they have not yet made a claim for refuge or their claim has been refused by the Immigration Refugee Board and they apply for an appeal through humanitarian and compassionate grounds, or they await deportation. Some migrants are categorized as undocumented if their visas or temporary work permits expire or their sponsorship plan has been rejected. These individuals experience limitations to obtain public coverage for health services because legislation does not permit their access to the provincial health card or federal health benefits. Providers also suggest that private plans present difficult challenges due to significant coverage variations:

Some of the private insurance plans still make it quite difficult for people to afford medicines administratively if they have to pay the entire amount upfront and then they get reimbursed... Or if they [have] the 80% coverage plan where paying the 20% could still be a substantial amount. So that can be a barrier. [It is] easier generally [for] people with public insurance because of the copayments being smaller. (P7)

Furthermore, although refugees have access to prescription drug coverage for one year following their arrival, these supports are unavailable in the second year. While some refugees transition to social assistance and retain similar levels of coverage, others may not. Finally, patient and provider participants recognize that policies which limit healthcare access by prohibiting the distribution or renewal of OHIP cards in Ontario severely restricts access to medically necessary prescription drugs for migrants, such as the 3-month waiting period that limits economic and family-class immigrants' access to any health services for their first 3 months in Canada.

3.1.4 Social Differences

There are three social factors that influence migrants' health-seeking behaviours and their decisions to access prescription drugs: gender differences, heavy workloads and cultural beliefs. These factors cut across the barriers (informational gaps, financial constraints and coverage inconsistencies) in ways that may exacerbate these challenges, depending on how these social factors interact with migrants' experiences.

Some participants observed differences between how men and women access prescription drugs. Immigrants may arrive from countries where health systems are organized according to patriarchal norms, which could influence decisions to seek medical care or disclose health information to a provider of the opposite gender. According to one provider, "I have [female] clients who if the doctor is male, [and] they need to do a pap [smear], they will not come, or they will refuse the pap. Sometimes the gender of the doctor plays a role, if they're going to number one diagnose and then

[prescribe] the medication” (P3). This gendered paradigm extends to reproduce the fear of being stigmatized associated with seeking mental health care within the current prescription drug coverage landscape:

A number of my female clients when they struggle with mental health, it’s that they will not tell their partners nothing.... [Those taking] depressive medication, [Selective Serotonin Reuptake Inhibitors] SSRIs, and they do not want their partner, who’s a male, to know for some reason... because of the stigma that comes with being depressed or having a mental health illness.... It might be barrier if suddenly the spouse started working and that medication would be covered by the spouse’s insurance (P3).

While participants recognized the role of gender in shaping women’s challenges to access medications, some also noted that gendered norms influenced men’s behaviours towards negating the existence of a health condition and the treatments with which to manage them: “Men, they have their own way of dealing with things, they believe in other things, like recreational things, pain medication or alcohol, and then they skip... their prescriptions.” (P9) Regarding mental health medications, such as “SSRIs, etc., sometimes some of my male clients do not believe in those. They think it’s not necessary.” (P3)

Participants also revealed that migrant patients struggle to integrate into society, especially as newcomers, during which time they may exert considerable efforts to successfully resettle, such as working multiple jobs or managing numerous responsibilities. The resultant heavy workloads lead migrant patients to delay seeking care, including the purchase of prescription drugs. Finally, cultural beliefs play a crucial role in the decisions migrant patients make regarding whether and how to access

prescription drugs. Religious faith or naturopathic remedies may be relied on as the first source of curative treatment, deterring access to prescription medications.

3.1.5 Immediate impacts and coping mechanisms of challenges

Participants revealed that migrant experiences with informational, financial, coverage-related and social challenges when trying to access prescribed medications may lead to one or more of three immediate consequences: refusal of care by a provider, patient unawareness about their drug coverage and increased anxiety about prescribed medications. For example, some providers identified that informational gaps in migrants' understanding of medication or coverage plans manifested into anxiety about taking medications, thereby limiting access:

Oftentimes patients come on medications from their own countries and navigating issues around continuing similar medications and not always having access to the exact same formulation [is challenging]... and I think sometimes it could be anxiety-producing for the patients because they have to change to something that might not be exactly the same. (P6)

Difficulties to obtain prescription drugs resulted in coping mechanisms, which led patients to ration, share or forgo medications, often delaying filling their prescription until they can travel overseas to access medications more easily. A patient revealed that they traveled “many times, [I go to Country X to get] full boxes of medicines from there like sleeping pills and calcium and Neurobion - these type of medicines - because it's not affordable here” (M5). Although it is important to note that not all migrants can afford to travel frequently, especially those forced to seek refuge from conflict and persecution.

The interactions between various challenges to prescription drug access, immediate

outcomes, and coping mechanisms lead to long-term consequences that affect patient health services use and health outcomes.

3.1.6 Long-term Consequences

When migrant patients experience challenges to access medications, they engage in coping mechanisms that have long-term consequences on their health, because without access to treatments, some providers explain that patients seek primary care services less often:

If you have a problem, and you go to the doctor, and they prescribe a medication you can't afford, why would you ever go back for that same problem? I think it does happen. It's part of the reason that people don't come back or are reluctant to come back, because they can't afford the treatment that's recommended so why go through the first part? (P7)

One provider witnessed deteriorating health effects following the lack of access to prescription drugs when legislative changes limited refugees' access to health care:

I think that [the health coverage cutbacks] has definitely influenced how people were accessing the system at the time.... I have anecdotal instances where people delayed care or weren't able to get their medications that led them to becoming acutely unwell.... there's one example of a paediatric patient who wasn't able to get their anti-seizure medication and ended up having a seizure coming into the emergency room. (P6)

3.2 Supports that enable migrant patients to access prescription drugs

Prescription drug insurance coverage was cited by most participants as a crucial support that helps migrant patients access medications. Our findings also uncovered what supports were available for migrant patients without insurance. Community navigational aids and certain healthcare provider traits eased patient's access to prescription drugs.

However, community organizations and healthcare providers employed short-term solutions in desperate situations, that are not beneficial in the long run.

3.2.1 Prescription Drug Insurance

Several participants suggested that having insurance coverage for prescription drugs was beneficial by improving the patients' ability to access medications. Refugees with federally funded coverage for the first year of arrival and those who qualify for government drug coverage programs are accessing medications:

I'm okay, no problem. When I feel any pain anything for me or my daughter, I called the clinic and we have an appointment and we go no payment everything is free. (M10)

Migrants with private insurance plans can also access medications:

The seasonal agricultural workers who came from Mexico they had third party insurance outside of OHIP. They had third party insurance - a private insurance provider - so they are covered [for medications]... Ever since I started engaging with that population, for them what I saw was that when they came to the pharmacy or with a prescription, we could actually do electronic billing... they did not have to pay anything for services, for their medications. For medications, it was 100% covered. (P4)

Insurance facilitates faster access to care, reducing the likelihood of delaying care. As one provider explains,

Well you know the asthmatic patients, if you see there are newer inhalers, they are \$100 plus and the cheaper one is always available for about \$10 or \$15 so they go with this [cheaper] one then that one. If they don't have a plan they will wait until it's really bad or really serious. If they have a plan these are prophylactics [and] these are long-acting medications and prevent the attacks so those who have the insurance plan will come faster. (P9)

3.2.2 Strategies to Support Uninsured or Underinsured Patients

For immigrants and refugees who are uninsured or under-insured, healthcare providers, community members and institutional supports help these patients access their medically necessary prescription drugs (Figure 2).

(Insert Figure 2)

As seen in Figure 2, community institutions and members provide navigational aids. Healthcare providers with supportive traits, such as cultural sensitivity and coverage competency, facilitate access to medications through improved patient care. Community organizations and healthcare providers provide short-term supports to ease the financial burden of purchasing drugs faced by migrants and non-migrants alike, which include charitable sources of funding, distribution of samples and the opportunity to apply to compassionate programs to access essential medication.

3.2.2.1 Community Navigational Aid

Many participants identified the value of settlement agencies, which are organizations in the community that have been particularly important to help newcomers navigate access to prescription medications. Patients highlight the importance of having a caseworker: “After I came to Canada, [Settlement Agency X provided] caseworker take us to Ontario Services and make health card and take the federal health card, the paper for it. I keep it with me for all my family. My kids and my mom, my sister also” (M8). Individual members of the community, such as private refugee sponsors, also help patients navigate access to care.

3.2.2.2 Healthcare Provider Traits

Healthcare providers facilitate access to medications when interacting with migrant patients through two traits: knowledge about coverage and cultural sensitivity. Providers who have experience serving uninsured patients have a skillset that enables them to interact with the patient in a way that optimizes their care. For example, one provider explains what it means for a health provider to be coverage competent:

Our doctors ask the right questions to clients when they are going to prescribe the medication. They ask, 'do you have insurance? Are you on social assistance? Do you think you can pay for this medication if they are on a small income?' the primary care provider [should] ask those questions, not just hand a prescription and let people go. It's finding out more about this person's ability to fill that prescription. (P1)

Patients have confirmed that their encounters with knowledgeable providers are positive experiences.

Migrant patients revealed that culturally sensitive providers, who could serve them according to their cultural values, were important facilitators to prescription drug access. One provider conveys her culturally sensitive actions during an instance where the patient refused to take medications in capsule form, because the gelatin ingredient was not supposed to be consumed according to their beliefs.

I had to call her father to get the people from the masjid to talk to her [and tell her] that the medication is not Haram and it's something which you need and your body needs. Then yesterday I got a call from her that, "oh they are giving it to me in a capsule and I'm not going to take capsules [because the gelatin is Haram]." I

have to then go around to find out what are the antidepressants that are only coming in the form of tablets and there were only two of them, so she was put on one of them. (P2)

3.2.2.3 Short-term Solutions

Several participants revealed that community organizations and groups of healthcare providers donate funds out of their own pocket to help patients, regardless of immigrant status, to access the medications they need:

We have something that is called the Jeans Fund. Basically, staff pay \$50 a year to give us the right to wear jeans on a Wednesday and that money goes into that pot that sometimes we will use for medication for some of our clients. (P1)

However, many providers engaged in these charitable activities expressed frustration that they could not provide financial supports for every patient facing the cost burden of purchasing medications.

The majority of providers, some of whom are part of community organizations, conveyed that uninsured patients in dire need of medications will often be given samples: “We have had clients who do require medication for serious conditions and they have come and approached the Health Centre and sometimes I know that the Health Centre if they have samples they will give samples to the clients” (P1).

There were a number of concerns that care providers identified with relying on drug company samples. Drugs are not always available as a sample for distribution: “From time to time we support them through our samples, it's not always possible because not all the drugs are available as a free sample” (P9). This is because “the range

of medications available is limited to whatever you have from the pharmaceutical company [and] it's a limited time so it's not an indefinite supply" (P6). Secondly, the distribution of samples to uninsured patients' places them and providers in an untenable situation:

Getting somebody started on a [sample] medicine then you have to problem solve on how you're going to get them continued access to it. And then I think the third aspect to that is that it does end up being mostly proprietorial drugs. It ends up being generally more high cost medicine. Then the issue becomes if you do start somebody on that then you want to try and continue that medicine and it's kind of a bit of a barrier that way. (P6)

In cases where medications are expensive or are required to treat specific diseases and are inaccessible to patients, providers apply to pharmaceutical companies through compassionate programs, calling on the charitable inclinations of the company to support patients in need: "If they have specific problem with the medication or very expensive medication we try to contact the company that is making the medication to apply for the compassionate program" (P11). Despite providing temporary relief for the patient, some participants have realized that these programs are problematic in and of themselves.

According to providers, compassionate programs are short-term solutions that "relies on having clinicians that know how to do that and are willing to go ahead and do that, and that's not always the case" (P6). Moreover, compassionate programs are "only for certain medications and these are generally patented products that are very expensive. Usually the supply is for a short period like a month or a few months and then you have to reapply. So, it doesn't usually help, principally because these programs often don't include the medications that we would be prescribing people" (P7).

3.3 Recommendations for Migrant Healthcare Policy and Practice

Finally, our results reveal recommendations to address the challenges faced by migrant patients accessing prescription drugs and the consequences of the current temporary solutions administered by health care providers and communities.

3.3.1 Health Policy – Drug Coverage Expansions

The majority of our participants conveyed a need to expand publicly funded drug insurance programs to all Ontarians, including migrants, through a universal coverage plan known as pharmacare, described as “a civil system where medications were included as a publicly funded system [that] would be simple, easier to understand, and would remove the financial barriers that sometimes get in the way of people taking the medication that they’re supposed to” (P7).

Expanding drug coverage to all patients would help those most vulnerable manage their illness, make living life easier, and help them get out of a difficult way of living:

I think it [expanding coverage] will help our clients who have chronic conditions and they have limited or no coverage of course.... we would like to have a universal pharmacare program.... It’s good to advocate for it because then we are covering the most vulnerable. Sometimes medication can make a difference between the progression of an illness or stalling an illness as well. (P1)

If you find someone like me [without access to healthcare], you can help them. It should be better. You let them get out of the situation because my situation, it was bad... I think we need more opportunities. I believe also the way will open, [and]

it's not going to stay the same. So, if you find someone without access to healthcare in my opinion help them get out. (M11)

3.3.2 Health Policy – Drug Monitoring System

Although most participants unanimously agreed a universal system is necessary to make a difference in patients' lives, some were wary of the opportunities to abuse a universal coverage plan and recommended the implementation of a drug monitoring system. As one provider described, the prescription drug monitoring system would enable “our systems talk to each other [so] we can in real time know what medication the patient has filled and where they filled it last and when they filled it last” (P4).

A drug monitoring system would prevent misuse of prescriptions by patients, which some providers have observed, recommending that,

The plan needs to be for everyone, it needs to be universal, but there are some monitoring systems in this advanced world and there needs to be monitoring of these things. (P9)

Monitoring systems would also prevent over-prescribing by physicians that some patients have expressed concerns about. As one patient explains,

When the doctors find out that you are getting free medication, they might prescribe something to you that you might not even need. For example, it happened with my father, he was prescribed sleep medication when he could just dose off on the couch. He didn't need those sleep medications. (M6)

3.3.3 Healthcare Practice - Educational and Informational Supports

Several participants identified educational needs for newcomers to help them navigate the system. Many concurred that ensuring patients have an understanding of the healthcare care system is essential, such as educating them about “[how] to make an appointment, go to your family doctor, [then how] the family doctor will see what you need and then give you a prescription, and then you go to the pharmacy” (P5). Moreover, the need for an adequate understanding of the preventative benefits of medicines and their side effects for newcomers was identified often by providers.

Formal informational supports are necessary in the community setting and during primary healthcare encounters to help newcomers navigate the prescription drug coverage system. One patient expresses their desire to obtain such information: “As a newcomer and a new immigrant and already I have a health card [but] I need to someone help me about that issue... I need to [know] what is covered or what there’s no cover[age for]. I need to understand that” (M9).

Providers suggest these supports are necessary upon arrival:

Once they come in, they should be told and explained to about what things there are to access so that they know from the very beginning what they can and what they cannot do or what they can and cannot get. Information sessions for immigrants is an important thing. (P2)

Timely information for immigrants could dispel rumors and myths about accessing prescription drugs, “because they believe on other person’s knowledge which is wrong” (P12).

3.3.4 Healthcare Practice – Clinical Practice Guidelines for the Un- and Under-insured

Finally, providers recognize the need to communicate with patients about their drug coverage plans to comprehensively understand how the prescribed medication will impact their health: “[We need to] tak[e] into account cost – making sure that they’re covered and the drugs that you’re prescribing are covered” (P6). The development of clinical practice guidelines to facilitate health providers awareness of patients’ coverage circumstances could optimize patient care for those who are uninsured or under-insured.

As one provider suggests,

All doctors or anybody providing primary care should put in the client’s chart or the client’s file that that person is either insured or not. Because depending on that, the doctor also will know if somebody is on Ontario Works. [with that information, they say,] “okay I know these medications are either covered or not.” You will ask those questions to the client, [such as] “if you need this medication how are you going to get it?” But if doctors just prescribe without asking the question – “do you have availability of insurance or do you have funds to buy?” – then I think a lot of clients will go without medications that are needed. (P1)

Furthermore, one provider recommends preventing over-prescribing patterns for mental health conditions is possible if alternate forms of mental health care, such as counselling, exist because,

A person is depressed because he’s being evicted. A person is depressed because they live in a situation of domestic violence. A person is depressed because they are separated from their family. A medication is not going to solve the problem. What is going to solve the problem is referring them to somebody who can help them with that problem to change those conditions. (P1)

Overall, working with uninsured and under-insured patients requires a unique set of interactive efforts to ensure they are accessing their medications, they are adhering to

their medications, and that those medications are working to improve their health and well-being.

Discussion

4.1 Interpretation of Findings

In this paper, some of the challenges migrant patients experience when accessing their prescribed medications are described, contributing patient and provider perspectives to inform relevant health policy and practice. Our participants highlighted several issues with medication access that stem from informational gaps, financial constraints, coverage inconsistencies and social differences, many of which result in an immediate aftermath that exacerbates patients' experiences to access medications and compel patients to cope with these stressors in ways that harm their health in the long-term. These findings are consistent with quantitative studies that demonstrate native-born individuals in Canada engage in similar coping mechanisms of cost-related non-adherence if they have no drug coverage (Law et al., 2018; Law et al., 2012; Lee & Morgan, 2017; Rotermann et al., 2014; Zheng et al., 2012) or encounter financial barriers such as expensive medications (Campbell et al., 2014; Hennessey et al., 2016; Tamblyn et al., 2014; Zheng et al., 2012) and low-incomes (Law et al., 2012; Law et al., 2018; Lee & Morgan, 2017). Rationing medications and forgoing treatments due to cost have subjected many individuals across provinces to deteriorating health conditions that require emergency attention, regardless of migration status (Campbell, 2014; Tamblyn, 2014). It is therefore important to

recognize that migrants face similar coverage and financial barriers as non-migrants in the current prescription drug landscape.

Where migrants differ from non-migrants is through their experiences of structural inequities that influence their limited access to full-time employment and healthcare, created and reinforced by policies such as the three-month waiting period. Moreover, the additional strategy to travel back to countries of origin to purchase less expensive and more accessible prescription drugs is unique to the immigrant population. However, it places them at increased risk of poor health if medications obtained are of substandard quality (Newton et al., 2010; Ozawa et al., 2018).

Finally, our study has identified informational gaps as a central component to the difficulties migrants experience when accessing prescribed medications. This study is novel in its finding that healthcare providers are sometimes unaware of patients' drug coverage status due to the complexities of the existing coverage system. This occurrence is not unique to the migrant population as economists have aptly acknowledged the existence of informational asymmetries in the provision and receipt of medical care for the general population. Arrow (1963) asserts that the product of medical care is uncertain, where the information pertaining to the consequences and benefits of treatments are greater for the physician than the patient. This informational asymmetry is inherently accepted by both parties and influences their relationship. The power dynamics of the provider-patient relationship widen informational gaps for all patients in the context of a complex prescription drug system because the patient trusts the physician will prescribe a

medication that follows best practices to treat the patient, even if that medication is not covered.

However, this informational asymmetry is transformed into an injustice for marginalized migrant patients because additional gaps place them at a further disadvantage in comprehending or getting others to comprehend an experience – termed an epistemic injustice (Fricker, 2017). Some migrant patients are denied access to resources they need to understand and convey their own experience due to informational gaps that stem from language barriers, confusion about the health system and limited health literacy. When the receipt of an epistemic or informational good is unfairly limited, patients can be negatively perceived which further marginalizes them in society (Fricker, 2017). This process, compounded by the complexity of the prescription drug coverage system, renders some migrant patients vulnerable to being silenced during medical care interactions due to unequal opportunities, placing them at a higher risk of contending with medications that are not covered by their plan. Fricker (2017) suggests that this injustice can be mitigated through epistemic and communicative conduct by listeners, which aligns with our findings that reveal healthcare providers who are culturally sensitive and coverage competent can engage in meaningful conversations with migrant patients by empowering them to contribute more to their medication interaction, so that accessible and appropriate treatment can be prescribed.

In addition to health provider traits, this study outlines that some practical supports exist for patients with limited coverage for prescription drugs through the distribution of samples and applications to compassionate programs. While these

solutions mitigate the short-term financial constraints for patients, they do not provide an adequate supply of medication for a patient who relies on a long-term treatment regimen to manage their disease. They are unsustainable solutions not only because they are provided over the short-term, but also because their administration relies on the inclinations of pharmaceutical companies, whether it is in their marketing interests to allocate specific drug samples to some providers or their charitable interests to supply a patient with the necessary drug through the compassionate program. Some patients may be fortunate enough to be accepted to a compassionate program, while others are not. Some patients may access a drug through samples provided by their family doctors, while others cannot. Therefore, these temporary supports cannot be considered durable solutions to the problem of access to essential medications.

4.2 Policy and Practice Implications

The findings provide support for the implementation of a universal pharmacare plan to address the challenges migrant patients face to access prescription drugs, mitigate their non-adherent coping behaviours and improve their health in the long-term. The recommendation for a provincially regulated plan that covers all Ontario residents, including all migrants, for medically necessary prescription drugs aligns with the proposal submitted by the Advisory Council appointed by the federal government of Canada (Hoskins et al., 2019).

The experiences of migrant patients and migrant-serving providers in Ontario suggest that the implementation of a provincial drug monitoring program should

accompany universal pharmacare to enhance patient care by preventing the misuse of drugs, safeguarding against drug interactions, promoting cost-effective use of drugs and offering health providers with information needed to ensure high quality care. For example, British Columbia operates PharmaNet, which is a drug monitoring system that records all prescriptions dispensed by community pharmacies. An evaluation of the PharmaNet system revealed that the rates of potentially inappropriate prescriptions for opioids and benzodiazepines significantly decreased six months after the centralized network was implemented (Dormuth, 2012). Although the province of Ontario has implemented the Narcotics Monitoring System in 2012, other medications that are often misused or overprescribed are not monitored, which may present challenges if universal pharmacare is implemented.

While debates about the implementation of pharmacare continue to unfold, the introduction of guidelines to currently facilitate optimal care for uninsured patients is a key recommendation expressed by patients and providers in this study. Clinical practice guidelines for uninsured and underinsured patients should be developed by using literature reviews and stakeholder engagement strategies. Through this process clinical preventative actions and key questions can be identified to engage patients and empower them to partake in active discussions about their health and ways to access medically necessary prescription drugs. The guidelines should summarize evidence and tailor clinical actions to uninsured populations in vulnerable situations as determined by their experience with financial constraints, coverage inconsistencies, social differences or informational gaps.

Finally, informational gaps continue to pervade the social fabric of migrants' lives despite navigational aids provided by community members and institutions, such as settlement agencies. Patients and providers in this study unanimously called for increased educational and informational supports to address patients' concerns about navigating the health system, inform them of interpreter and translation services to request and educate them about disease prevention, health promotion, their coverage options and how medications treat and manage health conditions when adhered to as recommended by prescribers.

4.3 Strengths and Limitations

This study is one of the first empirical qualitative examinations of migrants' experiences with accessing prescription drugs. To our knowledge, it is the first publication detailing migrants' and migrant-serving professionals' experiences with the prescription drug system in Canada. Given the policy window that has placed prescription drug policy reform on the governmental agenda, this research has timely implications to guide changes to health policies and practices.

This analysis represents the thoughts, beliefs and lived experiences of migrants who use the healthcare system and care providers who serve migrant patients. Although migrant participants ranged widely by age, length of stay, immigration category and country of origin, these patients were mostly Canadian citizens and reported lower individual earnings than the average immigrant to Canada. Care providers were of various ages, diverse ethnic backgrounds and different roles in the community, but predominantly

worked in an urban setting. As a result, the participant views are shaped by their individual demographics and experiences and are not intended to be representative of all populations or those living in rural areas. Despite efforts to capture the rich experiences of migrant patients in different immigrant categories, the factors that influence their access to prescription drugs may not have been fully explored. Immigrants represent a heterogeneous group where experiences significantly differ by culture, language social networks and values, some of which we attempted to consolidate in the findings. The use of interpreter services for gathering the perspectives of some migrant patients may limit the trustworthiness of the results and affect its interpretation. Prescription drug policies and programs described by participants in the study are specific to the Ontario context. Other jurisdictions may regulate prescription drug coverage programs in a different way, resulting in a different set of considerations for migrant patients intending to access prescription drugs.

4.4 Future Directions

Future research should incorporate patient engagement and participatory action research methods to identify resources migrant patients require to access medications, aligning the research approach with priorities of the migrant patient community. Patient engagement methods that provide formal education and facilitate a guided deliberation about how to address the challenges identified by this study would empower communities through the research process.

Given the current challenging circumstances posed by COVID-19, many individuals have become unemployed (CBC News, 2020), subsequently losing their employer-provided drug insurance coverage. Understanding the implications of the loss of coverage for prescription drugs during crisis situations like COVID-19 may help researchers and policymakers develop sustainable solutions to ensure that medications are readily accessible at a time when keeping all populations healthy is of paramount importance.

Conclusion

This qualitative analysis explored migrant patients' and care providers' perspectives to elicit an understanding of the factors that influence migrants' access to prescription drugs. There were many challenges identified by participants that impede access to essential medications and place some migrant patients in situations of vulnerability, inducing behaviors to cope with the loss of access and producing detrimental health outcomes. Community and healthcare provider support involved navigational aid, drug coverage and cultural understanding, and short-term supports to mitigate the financial burden of accessing medications through temporary funds, samples and compassionate programs. However, the unsustainability of these short-term solutions calls for the implementation of more viable policy options such as universal pharmacare, complimented by drug monitoring system safeguards and informational supports, to alleviate difficulties migrant patients experience to access the medications they need.

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Table 1. Characteristics of participants (n=25)

ID	Immigrant status	Length of residence in Canada	Gender	Age Range	Country of Origin
Patient 1 (M1)	Family-class immigrant	4 months	F	18-39	Ukraine
Patient 2 (M2)	Economic Immigrant	5 years	F	40-59	China
Patient 3 (M3)	Family-class immigrant	11 years	M	80+	India
Patient 4 (M4)	Family-class immigrant	--	M	60-79	India
Patient 5 (M5)	Economic Immigrant	20 years	F	60-79	India
Patient 6 (M6)	Family-class immigrant	22 years	F	60-79	India
Patient 7 (M7)	Family-class immigrant	14 years	M	18-39	China
Patient 8 (M8)	Refugee	3 months	M	40-59	Syria
Patient 9 (M9)	Refugee Claimant	8 months	F	40-59	Palestine
Patient 10 (M10)	Refugee	7 months	M	18-39	Iraq
Patient 11 (M11)	Refugee Claimant	2 years	M	40-59	Caribbean
Patient 12 (M12)	Economic Immigrant	25 years	F	40-59	Sri Lanka
Patient 13 (M13)	Family-class immigrant	23 years	M	80+	Sri Lanka
ID	Care provider role	Length of experience with immigrants	Gender	Age Range	
Provider 1 (P1)	Social worker	32 years	F	60-79	--
Provider 2 (P2)	Family Physician	36 years	F	60-79	--
Provider 3 (P3)	Social worker	17 years	F	40-59	--
Provider 4 (P4)	Pharmacist	10 years	M	40-59	--
Provider 5 (P5)	Settlement supervisor	4 years	F	18-39	--
Provider 6 (P6)	Specialist Physician	14 years	M	40-59	--
Provider 7 (P7)	Family Physician	8 years	M	18-39	--
Provider 8 (P8)	Family Physician	5 years	M	18-39	--
Provider 9 (P9)	Family Physician	20 years	M	40-59	--
Provider 10 (P10)	Settlement worker	4 years	F	18-39	--
Provider 11 (P11)	Mental health peer- support worker	10+ years	F	60-79	--
Provider 12 (P12)	Social worker	9 years	F	40-59	--

Figure 1. The process of how challenges to access medication influence migrant health

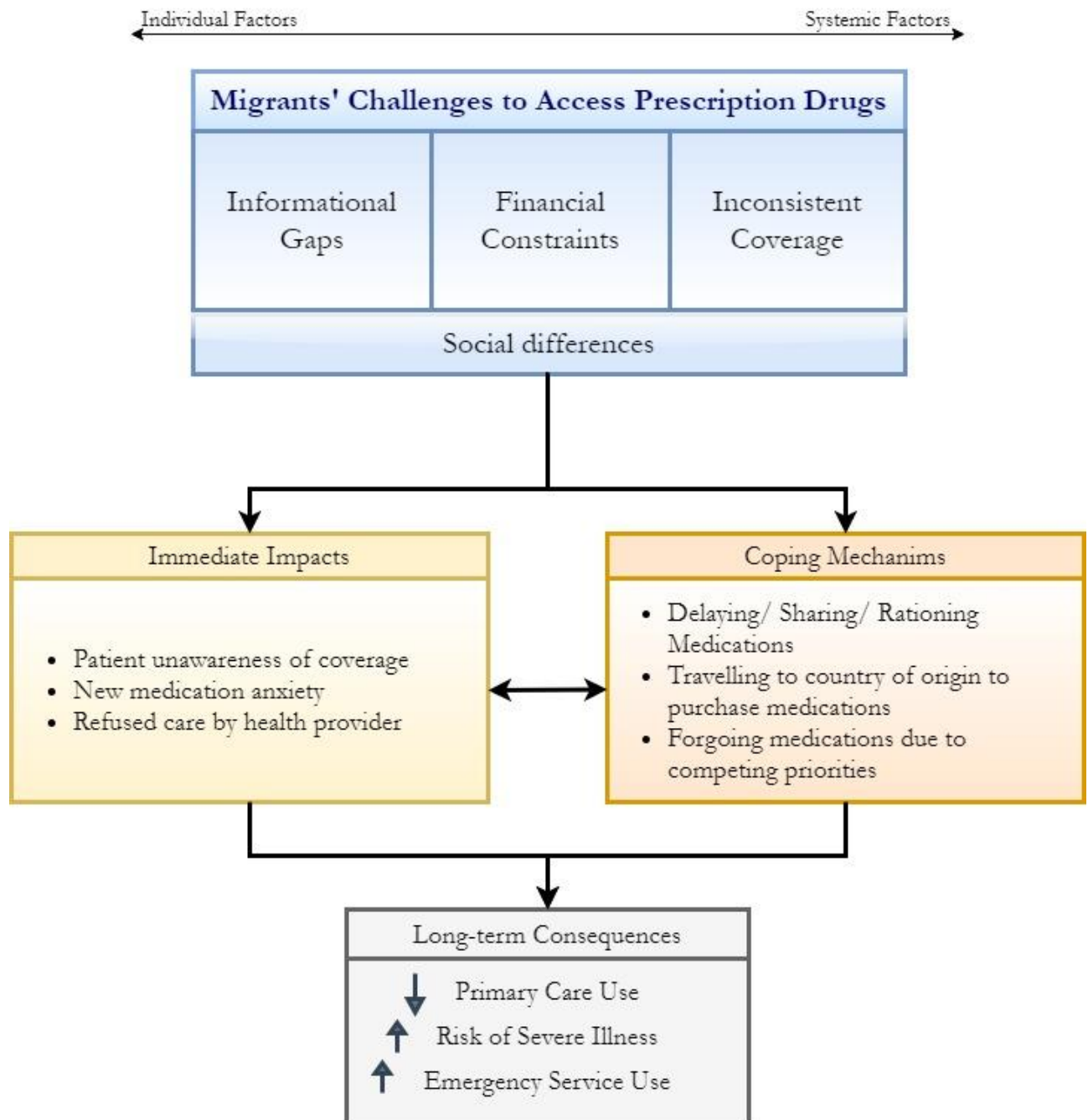
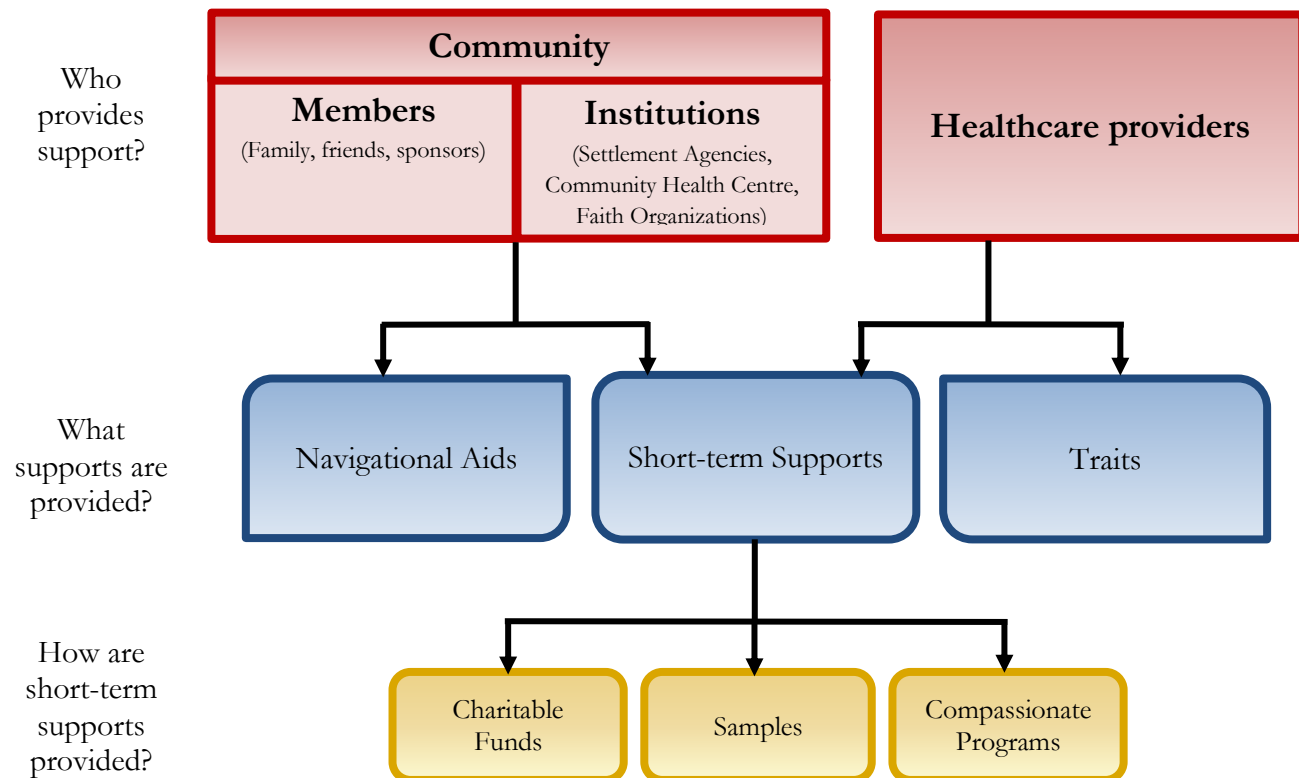


Figure 2. Existing community and healthcare provider support to improve prescription drug access for uninsured and underinsured migrant patients



Appendix D. Patient and provider perspectives on how migrants access prescription drugs in Ontario Appendices 1-3

Appendix 1. Recruitment Email Script

EMAIL SCRIPT - INVITATION TO POTENTIAL KEY INFORMANTS

Subject line: How immigrants and refugees access prescription drugs and the impacts on their health in Canada - invitation to participate in research.

Message

We invite you to take part in a research study about the effects of prescription drug insurance coverage on healthcare use and access to prescription medications for immigrants and refugees in Canada. Identifying ways to improve access to healthcare for newcomers is of utmost importance to facilitate their successful integration. By examining the current coverage system, we hope to reveal the necessary steps to move forward in this direction. This research is conducted by Valentina Antonipillai, Health Policy PhD student at McMaster University under the supervision of Dr. Lisa Schwartz. This study has received Hamilton Integrated Research Ethics Board approval.

If you would like to take part in this study and share your point of view, please contact the principal investigator, Valentina Antonipillai at antoniv@mcmaster.ca or 416 460 1451; or Dr. Lisa Schwartz at schwar@mcmaster.ca or 905-525-9140, extension 22987.

Participation in the project is voluntary and confidential. The in-person or telephone interview will approximately last 30 to 60 minutes, and will be audio-recorded. Your name will not be identified with the information you provide. Identifying information will be blurred so that it will be difficult to identify you in the final report. We hope you will contribute your valuable opinions to this study as an important stakeholder interested in or impacted by the current prescription drug coverage system in Canada.

Thank you very much for your help! Your collaboration is essential to generate and overview of stakeholder perspectives through which you all may influence prescription drug coverage in Canada and contribute to strategies for improving access to healthcare for immigrants in Canada. Your contribution to this research is most valuable and deeply appreciated!

Valentina Antonipillai
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Appendix 2. Patient and Provider Interview Guides

Patient Stakeholder Interview Guide

Introduction:

I am a PhD student in the Health Policy Program at McMaster University. I am conducting a study exploring how access to medicines impacts the health of immigrant and refugee patients in Ontario and the way in which they use healthcare services. The interview aims to learn about your opinions and experiences regarding accessing prescribed medications within the current prescription drug system.

General questions:

1. How long have you resided in Canada as an immigrant/refugee/claimant?
2. Can you tell me about a time when you or your family member ever needed to use healthcare services (hospital or doctor visits) in Canada?
 - a. How did you access the care you needed?
3. If you needed to take medications to help treat your condition, how did you fill that prescription? With coverage? Paying out-of-pocket? Family assistance?

Prescription Drug Access:

4. In general, how have you been able to access the medications you (or your family members) need?
 - a. Can you remember a time and tell me about when you could not access the medications you need?
 - b. If any, what are the reasons why you cannot access the medications you need?
5. What is your understanding of your prescription drug insurance/coverage in Canada?
6. Do you think having insurance affects your access to the medications you need? Why or why not?

Stakeholder Analysis:

7. What are the challenges you experience when trying to access your medications?
8. What helps you access the medications you need?
9. In your perspective, do you think your access to medications affects your health? Why or why not?

10. What conditions or supports do you think you and other immigrants or refugees need to help them access prescription drugs in a timely way?

Final Comments:

11. Do you have any additional comments you would like to add?
12. Is there anyone/stakeholder you would recommend that I interview for purposes of this study?

Demographic Information:

1. What is your gender?
2. What is your year of birth?
3. What country did you emigrate from?
4. What year did you immigrate to Canada?
5. What is your current immigration status?
6. What is your approximate yearly income range?

Thank you for your participation!

Care Provider Stakeholder Interview Guide

Introduction:

I am a PhD student in the Health Policy Program at McMaster University. I am conducting a study exploring how prescription drug access impacts the health use and health outcomes of immigrants and refugees in Ontario by examining the perspectives of key stakeholders. The intent of this interview is to seek your opinions and experience regarding the effects of Canada's patchwork prescription drug system experienced by the immigrant community.

General questions:

1. What is your involvement with the immigrant and refugee community and your role as _____?
2. How long have you worked with immigrant and refugee communities?
3. In general, what are your experiences with medication use and adherence among your immigrant and refugee patients?

Prescription Drug Access:

4. What is your understanding of the prescription drug insurance system in Canada?
5. Do you think prescription drug insurance affects access to and/or adherence to medications for your patients within the immigrant and refugee community? Why or why not?
6. Among your patients within the immigrant and refugee community, how do those with no drug insurance, access their prescribed medications?
7. How do those with private or public insurance access their medications?
8. Do you observe differences between their access to and adherence to medications based on their coverage scheme?
 - a. If so, can you provide some examples?
 - b. If not, why do you think these differences are not observed?

Stakeholder Analysis:

9. What is your perspective of the challenges immigrant and refugee patients face when trying to access their prescribed medications?

10. What is your perspective on the reasons why immigrant or refugee patients may not access or adhere to their medications as prescribed?
11. What is your perspective of the facilitators that help immigrants and refugees when trying to access their prescribed medications?
12. In your perspective, does prescription drug access influence how immigrant and refugees use the healthcare system? Why or why not?
13. In your perspective, have different insurance coverage schemes affected the healthcare use and health outcomes of your refugee and immigrant patients?
 - a. If so, how? Can you provide some examples?
 - b. If not, why do you think these differences are not observed?
14. What conditions or supports do you think are necessary to improve prescription drug access and adherence for the immigrant and refugee population?

Final Comments:

15. Do you have any additional comments you would like to add?
16. Is there anyone/stakeholder you would recommend that I interview for purposes of this study?

Demographic Information:

17. What is your gender?
18. What is your approximate age range?

Thank you for your participation!

Appendix 3. Ethics Approval



Jan-15-2019

Project Number: 5682

Project Title: The impacts of prescription drug coverage on access to and use of medications, health services and health outcomes of immigrants and refugees in Canada

Principal Investigator: Dr. Lisa Schwartz

This will acknowledge receipt of your letter dated December 24, 2018 which enclosed revised copies of the Information/Consent Form, Email Script and the Application Form along with a response to the additional queries of the Board for the above-named study. These issues were raised by the Hamilton Integrated Research Ethics Board at their meeting held on December 5, 2018. Based on this additional information, we wish to advise your study had been given *final* approval from the full HiREB.

The following documents have been approved on both ethical and scientific grounds:

Document Name	Document Date	Document Version
Consent_form_Prescription_drug_project Version 2	Dec-12-2018	2
EMAIL SCRIPT Version 2	Dec-12-2018	2
Interview Guide Prescription drug access care provider	Nov-12-2018	1
Interview Guide Prescription drug access_patient	Nov-12-2018	1
Protocol_Prescription_Drug_Access_ls_va	Nov-12-2018	1

The following documents have been acknowledged:

Document Name	Document Date	Document Version
tcps2_core_certificate L. Schwartz	Feb-22-2016	1

Please Note: All consent forms and recruitment materials used in this study must be copies of the above referenced documents.

We are pleased to issue final approval for the above-named study for a period of 12 months from the date of the HiREB meeting on December 5, 2018. Continuation beyond that date will require further review and renewal of HiREB approval. Any changes or revisions to the original submission must be submitted on a HiREB amendment form for review and approval by the Hamilton Integrated Research Ethics Board.

PLEASE QUOTE THE ABOVE REFERENCED PROJECT NUMBER ON ALL FUTURE CORRESPONDENCE

Sincerely,

A handwritten signature in black ink, appearing to read "Frederick A. Spencer".

Dr. Frederick A. Spencer, MD
Chair, Hamilton Integrated Research Ethics Board

The Hamilton Integrated Research Ethics Board (HiREB) represents the institutions of Hamilton Health Sciences, St. Joseph's Healthcare Hamilton, Research St. Joseph's-Hamilton, and the Faculty of Health Sciences at McMaster University and operates in compliance with and is constituted in accordance with the requirements of: The Tri-Council Policy Statement on Ethical Conduct of Research Involving Humans; The International Conference on Harmonization of Good Clinical Practices, Part C Division 5 of the Food and Drug Regulations of Health Canada, and the provisions of the Ontario Personal Health Information Protection Act 2004 and its applicable Regulations; For studies conducted at St. Joseph's Healthcare Hamilton, HiREB complies with the Health Ethics Guide of the Catholic Alliance of Canada

CHAPTER 6. Conclusion

The four original research studies presented in this dissertation (Chapters 2-5) address questions about the inclusion of migrants in health coverage programs and the expansion of prescription drug coverage for all, which aims to inform national decision-making processes pertaining to the adoption of Universal Health Coverage (UHC). Chapter 2 contributes insights into the policy-making process related to healthcare for migrants through the application of Stone's political science framework (1989, 2012), while Chapter 3 synthesizes quantitative evidence to examine the effects and associations of health coverage on migrant population health. Chapters 4 and 5 explore the influence of having prescription drug insurance on using health services and accessing essential medications, through quantitative and qualitative approaches, respectively. This chapter begins by summarizing the main findings of each study, followed by an examination of the dissertation contributions as a whole, and its implications for policy and practice.

Principle Findings

Chapter 2 employed a policy analysis of Canada's health coverage restrictions for refugees, known as the 2012 Interim Federal Health Program reforms. It examined how political actors on opposing sides of the issue defined the problem to enact policy change. The analysis revealed ways in which government actors defended the implementation of the reforms using intentional causal theory, negatively constructing refugees as bogus, assigning blame by portraying the negative consequences of high healthcare costs on the

allegedly fraudulent actions of those claiming refuge in Canada. Organized interests countered these causal stories by redefining the problem of the IFHP reforms using inadvertent causal theory, attributing the unintended effects of government policy action as the cause of suffering for refugees and the source of ethical conflicts for health professionals. These efforts restructured alliances among refugee-serving organizations and contributed to the mobilization of healthcare providers, advocacy groups, legal organizations, provincial governments and refugees, who challenged the reforms within legal and policy domains.

This research provides policymakers and advocates with a causal stories toolkit, demonstrating strategies to (re)define migrant policy problems by (1) altering the social constructions of migrants, (2) garnering public support through empirical and normative arguments structured around core community values, (3) and assigning accountability for the problem, in order to challenge or protect the existing social order. Inherently, Chapter 2 has uncovered how disputes over collective ideologies drive migrant health policy debates, articulated through relations of power and structures of governance. Ideologies contribute to policy decisions through a balanced *mélange* of values, knowledge and scientific evidence (Gauvin, 2014). Yet, migrant health policymaking has frequently relied on values and the tacit knowledge of health providers, as shown by this study, due to the limited evidence base on which policymakers can rely to make informed decisions about implementing effective health policies for migrants.

Chapter 3 moves from the broader understanding of the role of policy ideas in the migrant health policymaking process in Canada, to synthesize evidence on the effects and

associations of having health insurance on the health services use, access and health outcomes of migrant populations. A systematic review and narrative synthesis were conducted to assess the content and quality of quantitative research that established associations between health coverage and health-related outcomes for migrants resettling in high-income countries. This review contributes towards closing the gap between established research evidence and policy-making initiatives for migrants.

The findings of the systematic review demonstrate that expanding healthcare coverage for migrants in high-income nations improved their use of primary and prenatal care services. In contrast, restricting health coverage subjected older immigrants and vulnerable cohorts, to experience reductions in access to and use of primary care services. Moreover, those who were not covered for health services were less likely to access primary care and had lower odds of using primary and preventative care services compared to their insured counterparts. Although, there were no effects observed from expansions or restrictions of health insurance on migrants' health outcomes, when comparing migrant populations with and without health coverage, some immigrant cohorts presented with worse health outcomes compared to those who had coverage for health services. The findings suggest a lack of financial protection from the risks imposed by out-of-pocket payments deter migrants' access and use of health services, promote diagnostic and treatment delays, deteriorate health, and increase the need to use more expensive emergency and hospital care. It also suggests that the benefits of health insurance expansions and the harms incurred from health insurance restrictions may be more evident among migrants in vulnerable situations. These findings are relevant for

policymakers in high-income countries that admit migrants for resettlement and societal integration by strengthening the evidence base that informs their policymaking processes.

Globally, migrants are not the only individuals left behind from public health insurance plans. In Canada, millions of individuals lack comprehensive coverage for prescription drugs, many of whom rely on medications to alleviate physical and mental health suffering (Law et al., 2018; Rotermann, Sanmartin, Hennessey & Arthur, 2014). Chapter 4 narrows its focus towards the prescription drug coverage gap in the provincial health system of Ontario, Canada. It employs a cross-sectional study design informed by an intersectional intercategorical approach to examine the association between prescription drug coverage and health services utilization among working-age individuals, and whether this association differs by their immigration category and gender/sex.

Multivariable logistic regression models estimated that across the general population, reporting having private drug coverage was positively associated with the use of general practitioner (GP) services, and reporting having any prescription drug insurance was positively associated with the use of specialist services. When interacted with immigration category and stratified by gender/sex, the findings reveal most non-immigrants with private insurance have a higher probability of visiting a GP and specialist, compared with their uninsured counterparts. Economic immigrant women who reported having government insurance and refugees with private drug insurance also demonstrate an increased probability of using specialist services than their uninsured counterparts. While the overall trend indicates drug coverage is positively associated with

specialist use for migrants and non-migrants alike, family-class immigrant women who reported having public drug coverage have a decreased probability of visiting a GP than those who remain uninsured for prescription medications. Ultimately, Chapter 4 contributes to the literature by providing population-level estimates that indicate for most non-immigrants and economic immigrants drug insurance is associated with improved use of primary and specialist care services, implying reductions in delays to seek healthcare associated with cost-related non-adherence. Improved primary and preventative care utilization may reduce catastrophic costs incurred by patients and health systems related to adverse events from delayed healthcare-seeking behaviour, which support the expansion of health coverage to include prescription drugs. But this study also identified a gap in the healthcare system for a cohort of immigrant women that requires further investigation.

In Chapter 5, an initial exploratory investigation into the barriers and facilitators of migrants' access to prescription medications was conducted to complement the quantitative study in Chapter 4. A constructivist grounded theory methodology was employed to explore the processual relationships of how challenges and facilitators to medications access influenced migrant health. Interviews with migrant patients and migrant-serving providers revealed four challenges migrants encountered to access medicines: informational gaps, financial constraints, coverage inconsistencies and social differences. These barriers elicited immediate negative impacts for migrants that further impeded access to prescribed treatments because they were refused care by a provider, they were unaware of their own coverage, or they developed anxiety about newly

prescribed medications. When confronted with barriers, migrants rationed, shared or delayed filling their prescription. They forwent medications due to competing priorities such as rent, or they waited until they could travel overseas to purchase cheaper more accessible medications, if travel was an option. These coping mechanisms placed migrant patients at risk of forgoing primary care, developing worse outcomes and seeking emergency care following adverse health events.

Participants overwhelmingly conveyed that prescription drug coverage was a key facilitator to their medication access pursuits. Community members, organizations and healthcare providers facilitated access to prescription drugs for uninsured migrants through navigational aid, being knowledgeable about coverage plans, being culturally sensitive, and offering temporary supports through funds, samples, and compassionate programs. A number of key recommendations were abstracted from this empirical investigation that will be discussed in the following sections. Understanding the challenges and facilitators that influence migrants' access to prescription drugs have identified targeted policy and practice areas that require advancements to improve medication access for migrants in Ontario. This study suggests that there are political, economic and social determinants of health that intersect with migration and resettlement experiences which require further attention from researchers and policymakers, alike.

Study Contributions

Together, the original research studies presented in Chapters 2-5 of this dissertation strengthen the evidence base that reveal implications of excluding

populations and essential health system resources from nationally implemented health coverage plans. As a whole, this dissertation makes substantive, methodological and theoretical contributions which are discussed below.

Substantive Contributions

Chapters 2 and 3 contribute to the literature about health coverage policies that govern migrants' access to health services in host countries. In Chapter 2, the novel application of Stone's causal stories framework (1989, 2012) guides an interpretive analysis of the policy discourse that reveals how political actors develop causal theories to frame divergent problem definitions, which compete against each other to guide policy-making processes. The study also uncovers that evidence examining migrant health policy in Canada is limited. In Chapter 3, a systematic review of migrant health policies in high-income host nations begins to fill this gap. The synthesis of quantitative evidence reveals that health insurance improves access to and use of primary, preventative and prenatal care services, which are essential to address migrants' health outcome disparities observed in many high-income countries that admit thousands of migrants annually (DesMeules et al., 2005; Rechel et al., 2013).

Strengthening the evidence base to inform policymakers in host countries will contribute to the eventual erosion of divisive and restrictive policy regimes that have endured over decades. However, scientific evidence alone is not enough. As demonstrated by Chapter 2, collective values are manipulated by political actors to fuel anti-immigrant and populist ideologies that must be contested by organized interest

groups using similar strategies to advocate for inclusive migrant health policy. By raising political awareness and public concerns about migrant health equity, public health security and health system efficiency, advocates can instigate policy changes that have been shown to reduce migrant health disparities, according to the best available evidence.

Chapters 4 and 5 contribute to the literature examining how lacking comprehensive coverage for prescription medications affects population health. In Chapter 4, the examination of a novel linked dataset generated findings about the association between health services use and reported prescription drug coverage status for non-migrants, economic immigrants, family-class immigrants and refugees. The quantitative study demonstrated that non-migrants who reported having drug insurance were more likely to use GP and specialist services than uninsured non-migrants. Similarly, refugees and economic immigrant women with public or private drug insurance had higher probabilities of using specialist services than their uninsured counterparts. This finding suggests that once migrants visit GPs, their prescription drug coverage matters – as it is associated with the use of specialist services. Prescription drug coverage is not associated with GP use for most migrants, as it is for non-migrants, and it is negatively associated with GP visits for family-class immigrant women who report having public drug insurance. As a result, there are other factors limiting migrants' access to GP services, especially among family-class immigrant women.

In Chapter 5, a qualitative analysis of migrant patients and migrant-serving providers' perspectives was conducted to begin to address the gap for migrants identified in Chapter 4. Informational gaps, financial constraints, coverage inconsistencies and

social differences were identified as four key barriers that impede migrant's access to prescription drugs. A grounded theory of how these barriers to medication access influenced migrants' health was generated. The qualitative study contributes to the literature on expanding prescription drug coverage by identifying the gaps in current strategies to help uninsured migrants access their medications and proposes key recommendations for policy and practice. Together, Chapters 4 and 5 add to the evidence base on prescription drug coverage effects for migrants and non-migrants alike. All populations are at risk of impoverishment and poor health by catastrophic medication expenditures if they lack prescription drug coverage. However, the unique systemic and individual challenges migrants face as a result of the barriers identified in Chapter 5 may place them at greater risk, and further research is warranted.

Finally, Chapters 2 and 5 contribute to the literature on building resilience within health care systems, among both health provider and migrant patient communities, regarding their ability to adapt to adverse situations. In both cases of adversity, when refugee health coverage was restricted and when migrants lacked access to prescription drug coverage, migrants and providers demonstrated resilience. Migrant patients used coping strategies and sought supports when faced with the hardships of losing health coverage and lacking access to medications. Moreover, the resilience of the health provider community enhanced patients' resiliency to combat post-migration policy stressors in both cases. Strong collaborative relationships developed across health professions to adapt to the unstable health policy environment, such as launching clinics for newcomers, to meet migrant patients' needs. Health providers also worked across

sectors with pharmaceutical companies and settlement agencies to develop alternative strategies for underinsured and uninsured patients to access the medications they needed. Building patient and health system resilience is important to address health inequities that persist for vulnerable populations.

Methodological Contributions

This dissertation adds new methodological insights by applying Stone's causal stories framework (1989, 2012) in Chapter 2 to extract key policy ideas that influence policy debates and shape political discourses. Future research can apply Stone's framework following a similar methodology to understand the role of policy ideas in other policy-making processes.

Secondly, this dissertation adds a new methodological approach to the quality assessment of non-randomized studies by modifying the Effective Public Health Practice Project (EPHPP) Quality Assessment tool, using evaluation criteria derived from Waddington and colleagues' (2012) systematic review toolkit. In Chapter 3, the modified risk of bias assessment tool evaluated six criteria: (1) study design (2) selection bias (3) data collection method (4) confounding and analysis (5) selective outcome and analysis reporting (6) other sources of bias. The first four criteria were adopted from the EPHPP quality assessment tool. The confounding and analysis section was modified by incorporating questions based on concepts of confounding bias discussed by Waddington and colleagues (2012). Questions pertaining to the statistical analysis and control of confounding for specific quantitative study designs were developed and added to the

section. The EPHPP tool also assessed blinding, withdrawals, and intervention integrity. These sections were kept in the tool but were not applicable to the assessment of non-randomized study designs included in the systematic review. Instead, Waddington et al. (2012) identified that internal validity appraisals should consider selective outcome and analysis reporting bias and other biases (i.e. placebo effect, social desirability bias, etc.). Questions based on these two categories of bias were developed and added to the EPHPP tool. The modified version of the EPHPP quality assessment tool could prove useful for researchers intending to evaluate the quality of studies that report evidence on the effects of policies. Studies examining policies are seldom RCTs and typically constitute a myriad of study designs based on the available data.

Finally, this dissertation provides guidance for methodological pursuits in the area of intersectional quantitative research. Chapter 4 examined the intersections of gender/sex, immigration status and prescription drug coverage using interaction terms and stratification techniques, and their associations were analyzed using average marginal effects to enable comparisons across models. The unique theory, method and analysis combination can influence the exploration of other associations where intersecting social and structural factors are hypothesized to be associated with the outcome of interest.

Theoretical Contributions

This dissertation generates new theoretical insights in many ways. In Chapter 2, Stone's causal stories framework (1989, 2012) was expanded. By applying it to the

problem definition process of refugee health policy, it was revealed that causal stories played a role in the positive and negative constructions of migrants. Moreover, successful causal stories were found to form the bases of empirical and normative arguments based on collective values. The theoretical relationships between causal stories, social constructions and values should be examined further. In Chapter 5, experiences and perspectives of migrant patients and migrant-serving providers informed the generation of two grounded theories. The first revealed how challenges to prescription drug access influenced migrant health. It theorized how a culmination of informational, political, economic and social factors determined how migrants accessed essential medications and subsequently influenced their health through altering behaviours, immediate impacts and long-term consequences. The second portrayed interactions between under-insured or uninsured migrant patients with sources of support in community and healthcare organizations. It generated theory to describe available supports and identified gaps, addressed by policy and practices recommendations abstracted from participant perspectives.

Generating new theory was not the intention of Chapters 3 and 4, however these studies may contribute theoretical and empirical conceptualizations of how migration experiences intersect with social determinants of health. Chapter 4 employs intersectionality theory in quantitative methods and analysis, while Chapter 3 acknowledges intersectionality may explain the pronounced effect of health insurance on migrants in vulnerable situations. Ultimately, the combinations of factors constituting one's social identity and structural forces related to migration and resettlement intersect

in ways that privilege some migrants and oppress others. Intersectionality theory plays a crucial role in understanding migrant health and should continue to inform research within this field.

Strengths and Limitations

Together, the studies presented in this dissertation have three main strengths. First, compared to other scholarship in migrant health research, the studies taken together are the first to examine novel relationships between migration experiences and health policies in various ways. Chapters 4 and 5 are some of the first publications to empirically investigate the relationship between prescription drug coverage and health for migrant populations in Canada. Given the policy window that has placed prescription drug coverage policy reform on the governmental agenda, this research has timely implications to guide changes in health policies.

Chapters 2 and 3 empirically investigate migrant health policy at the problem definition stage and evaluation stage, respectively. Chapter 2 is the first study to examine the role of causal stories in the migrant health policy problem definition processes. Chapter 3 is the first systematic review to evaluate the effects and associations of health insurance on health-related outcomes for migrant populations. Migration is an ongoing phenomenon, even amidst pandemic restrictions, as global disparity and conflict continue to fuel population movements. These studies are relevant for prescription drug and migrant health policy-making processes in most high-income countries.

The second strength of the dissertation is the use of mixed methods across all four research studies. The policy analysis and systematic review follow constructivist and

post-positivist epistemologies, respectively. Together, these studies review the values and quantifiable evidence essential for informing migrant health policy. The mix of quantitative and qualitative approaches in the investigation of prescription drug coverage and health-related outcomes yields a more comprehensive and rich understanding of their associations and relationships for migrant populations in Canada.

The third strength is the transdisciplinary approach to analysis of the findings in the two final studies of this dissertation. Chapter 4 conducts a quantitative analysis using methods aligned with the economics and epidemiology disciplines, yet it is informed by intersectionality theory, derived from black feminist and critical race scholarship. The integration of discipline-specific approaches to examine the associations between health services use, prescription drug coverage, immigrant category and gender/sex has revealed novel insights to inform policy. Chapter 5 employs a qualitative analysis and applies a transdisciplinary approach in the interpretation of findings. In particular, the economic concept of informational asymmetry, theorized by Kenneth Arrow (1963) as an uncertainty that contributes, in part, to market failure in healthcare, is combined with Miranda Fricker's (2017) philosophical concept of epistemic injustice, depicting the ethical considerations of unfairness related to knowledge and inclusivity. The relationship between informational asymmetry and epistemic injustice is deconstructed in this dissertation to understand how informational gaps experienced by migrants transform into injustices within the healthcare setting.

There are also several limitations to the research studies presented in this dissertation that should be acknowledged. First, within the international literature

reviewed in Chapter 3, the restriction of articles to those conducted in high-income countries might have excluded relevant policy evaluations from LMICs, which are regions of the world that host the majority of refugee populations (Gottwald, 2014). Moreover, the heterogeneity observed across studies by outcome, population, outcome measure, among others, limited the meta-analysis of quantitative findings. Second, within the Canadian media sources examined in Chapter 2, the restriction of English language media sources excludes important perspectives covered by French-language news media. Third, the cross-sectional nature of data, use of self-reported measures and quality of data used in Chapter 4 limit causal inferences of the findings. Finally, the transferability of the qualitative findings are limited to contexts similar to the province of Ontario, given other jurisdictions may regulate prescription drug coverage systems in different ways.

Implications for Policy and Practice

This dissertation presents five main implications for policy and practice. First and foremost, the studies in this dissertation support the adoption of Universal Health Coverage (UHC), that includes comprehensive coverage for migrants and incorporates coverage of prescription drugs, in addition to physician and hospital care.

Migrant populations, including immigrants, refugees, asylum-seekers and undocumented migrants require health coverage that provides financial protection from catastrophic out-of-pocket expenditures and ensures high quality health services are accessible. Without coverage, this research demonstrates migrants have reduced access to health services, use less primary, preventative and prenatal care, and can experience worse health outcomes, especially amongst those in vulnerable situations of precarious

legal status, low incomes, or of older or younger age groups. With increased health disparities, more expensive emergency and hospital care may be used but further research is warranted.

Furthermore, our findings provide evidence in support of expanding health coverage plans to include prescription drugs for migrants and non-migrants through a single-payer Pharmacare plan in Canada. Individuals who report having drug insurance are associated with improved use of primary and specialist services, and patients and providers reveal that prescription drug coverage improves access to essential medications. Without adequate coverage for medications, migrant patients engage in risky behaviours choosing to defer prescription drug purchases or rely on short-term supports, both of which lead to negative health consequences in the long-term.

Secondly, migrant data collection and drug monitoring systems should be introduced alongside UHC plans, to gather information that can be used to assess and improve migrant and drug policies over time. Patients and providers concur that the implementation of a drug monitoring system alongside universal pharmacare would prevent the misuse of drugs, deter overprescribing, safeguard against adverse drug interactions and offer healthcare providers with relevant information that ensures improved quality of care.

Furthermore, the lack of reliable, comparable and nationally representative data on migrant health has stalled policy advancements and renders issues related to migrant health invisible within the policy sphere. Experts have acknowledged that long-standing systemic health and social inequities have placed migrant cohorts at increased risk of

morbidity and mortality upon resettlement. Yet, without the data to measure these disparities, how can we understand such a problem's extent? Qualitative data has been relied on extensively to provide evidence for migrant policy issues but are unable to assess the magnitude and direction of the policy problem at the population level without quantitative data. Therefore, the lack of quantifiable data limits policy change.

At the end of 2017, a few national health information systems have begun to disaggregate data in a way that permits quantitative analysis of migrant health issues (Mikaba, 2018). In Canada, to address the absence of migrant health data, immigrant databases have recently been linked to some administrative and survey health data. National statistics institutes should ensure more datasets that link immigrant, health and political, economic and social determinants of health data are accessible to researchers. This would expand the scope of research endeavors towards generating high-quality evidence to inform policies and practices that can reduce migrant health disparities.

Thirdly, educational supports and services are needed in Canada to address the epistemic injustice that deters migrants from accessing the essential medications. Some migrant patients are denied access to resources that help them understand and convey their own illness experiences to health professionals due to informational gaps derived from language barriers to communication, limited disease prevention literacy and confusion about navigating the healthcare system. These gaps, compounded by power dynamics present in typical relationships between patients and providers, places migrants at an unfair disadvantage because of limitations to convey their knowledge – termed an epistemic injustice. While settlement agencies provide essential services to mitigate these

barriers, more efforts are needed to improve healthcare interactions for all migrant cohorts and raise consciousness among care providers about how these impact health outcomes.

To increase access to health services and medications for migrants, first, informational materials about eligibility criteria, relevant benefit schemes and services or medications covered must be circulated to all healthcare providers, settlement workers and migrants to raise awareness of coverage and combat the spread of misinformation. Second, interpreter services should be readily available in all healthcare settings, including pharmacies. Third, navigational programs to help migrants effectively interact with the healthcare system should be implemented. For example, the Emergency Department (ED) Primary Connect initiative in Maryland linked low-income patients who used ED services with local primary care providers to reduce avoidable ED visits and improve continuity of care (Kim et al., 2015). In Ontario, 61.3% of refugees use the ED as their first point of contact to receive mental healthcare services (Saunders et al., 2018). Programs to help migrants navigate mental health services appropriately are needed to reduce their health disparities. However, limited funding may deter the implementation of these programs and resources.

To address knowledge gaps for patients, this study recommends initiating community-centered educational programs to inform patients about disease prevention, health promotion, coverage options, and how medications treat and manage one's health. Community-based participatory research endeavors could strive to include these sessions in future if these align with research goals and migrant community priorities. Finally, to

address providers' knowledge gaps about drug coverage, clinical practice guidelines for uninsured and underinsured migrant and non-migrant patients should be implemented in the current landscape. These guidelines could help practitioners adopt strategies to engage patients in meaningful discussions towards improving their access to medications.

Fourthly, positive social constructions of migrants should be used by policymakers and advocates of inclusive migrant policies. While advocates of the IFHP coverage expansion humanized refugees by constructing them as victims of forced migration and the healthcare cutbacks, they continued to "other" refugees framing them as powerless individuals. Negative constructions of some migrants as deviants who evade legal procedures or dependents who drain national resources are commonly employed by political actors disseminating anti-immigrant ideologies (Antonipillai et al., 2020). Positive constructions would empower refugees and migrants, legitimizing their role as healthcare users, while protecting them from fluctuating populist sentiment (Beatson, 2016). Healthcare providers should consider ways to empower migrant patients during medical encounters and when advocating for them.

Finally, this study reveals that in addition to health and drug coverage, other factors influence migrants' health during integration into a new country. Due to the lack of legal status, language, cultural barriers, limited full-time employment and low-income levels, migrants experience limitations to access primary health care services and medications. Economic deprivation and poverty among refugees can exacerbate adverse health outcomes already produced by trauma (Rasmussen, et al., 2007; Kirmayer et al., 2012). The psychological burden from post-migration stressors, such as worrying about

family left behind, poor living conditions, social isolation or unemployment contribute to migrants' mental health decline following resettlement (Giacco, Laxhman and Priebe, 2018; Hynie, 2018a).

Integration policies and programs can help migrants overcome economic, social, legal, language and cultural barriers to health by promoting their inclusion and participation. Integration policies refer to migrant settlement policies at the national and local level that influence their ability to socially and economically participate in society upon arrival in the host country (Hynie, 2018b). Migrants residing in countries with restrictive integration policies and programs, report poor health outcomes (Giannoni, Franzini, and Masiero, 2016; Ikram et al., 2015). A systematic review published in the *Lancet* by Juarez et al., (2019) reported that restrictive integration policies increase the odds of migrant mortality and self-reported poor health status, while decreasing their likelihood of using healthcare services. In the Canadian context, following one year after resettlement, Syrian refugees with employment and affordable housing had at least a 50% decreased odds of reporting an unmet healthcare need compared to their unemployed and unaffordably-housed counterparts (Tuck et al., 2020). As a result, integration policies and programs that address the social determinants of health such as housing and employment are necessary to combat the migrant health gap in Canada.

An intersectoral policy approach to improve the integration of migrants in Canadian society will subsequently improve their health outcomes. Policy advances targeted toward healthcare coverage and the social determinants of health including employment, housing, family reunification and refugee determination processes are

needed to improve the health of migrants, regardless of prior traumatic stressors. In Canada, integration services are typically provided at the local level through non-governmental organizations, devoid of provincial or federal involvement. A national strategy targeting migrant integration at all levels would contribute to the reduction of migrant health disparities in Canada.

Future Research Directions

While this dissertation fills gaps in the literature about migrant health policies, prescription drug insurance and universal health coverage, these studies have identified a number of areas that require future research. First, an examination of gender-related disparities associated with health services use among family-class and refugee women is warranted. This future research should incorporate patient engagement and participatory action research methods to identify resources patients require to access health services and medications, while aligning the research approach with the priorities of the patient community. This form of research would seek to empower migrant patients, especially those from marginalized or gendered populations, and could be used to uncover more pragmatic ways to address their challenges.

Secondly, examinations of the impacts of health policies on migrant health outcomes constitute an under-researched area, possibly due to the limitations of available longitudinal data. As migrant health information systems develop and new datasets between immigrant, political, social, economic and health information are linked, future research should endeavor to strengthen the evidence base on policy and practice strategies to reduce migrant health disparities.

Thirdly, the challenging circumstances posed by COVID-19 have rendered many individuals in Canada to be without employment. As a result, individuals and their families may be losing their employer-provided drug insurance coverage. Understanding the implications of the loss of coverage for prescription drugs during crisis situations like COVID-19 may help researchers and policymakers develop sustainable solutions to ensure that medications are readily accessible at a time when keeping all populations healthy is of paramount importance.

As the world shuts down to prevent the spread of disease, economic disparity and conflict continue to drive population movements. Even in times of COVID-19, migration persists. Research reveals that people still choose to uproot their lives in search of financial security. According to a survey administered by World Education Services (WES), COVID-19 has not affected the level of interest to immigrate to Canada for most respondents. The inequitable distribution of economic costs related to COVID-19 between countries around the globe serves as the impetus for choosing to migrate to Canada. Potential immigrants expect to endure less economic hardship in Canada than in their own country (WES, 2020). Moreover, people are still forced to flee their homes due to violence and destruction. The blast in Beirut, Lebanon has left thousands internally displaced (Reid, 2020). Conflict in Western Darfur has induced many families to seek refuge in Chad (UNHCR, 2020). Most recently, the UK has experienced a surge of migrants crossing the English Channel in the month of August, admitting a record-high of unaccompanied asylum-seeking children (BBC News, 2020; Hui, 2020).

While countries implement more restrictive policies to curb unwanted migration, these restrictions may promote negative attitudes towards migrants, augment stress related to integration and resettlement, and limit migrants' access to resources, including healthcare. Future research should examine the welfare of resettled migrants and newcomers following COVID-19, the extent of health disparities experienced by the migrant population and how inclusive or restrictive policy actions have influenced their health trajectories in their new homes.

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Appendix E. The Promise and Pitfalls of Ontario's Prescription Drug Coverage System

The provincial government of Ontario regulates three main publicly funded prescription drug insurance programs: the Ontario Drug Benefit plan, OHIP+ and the Trillium Drug Program. The Ontario Drug Benefit (ODB) program provides varying levels of coverage for seniors aged 65 years or older depending on their income (Table 1) (Ontario, 2020a). If their income exceeds a certain threshold, seniors pay a deductible amount of \$100 in drug costs and are responsible for copayments of up to \$6.11 per prescription. Low-income seniors are exempt from deductibles through the Senior Co-Payment Program but incur a copayment of up to \$2 for each prescription filled (Ontario, 2020b). The ODB also provides prescription drug coverage for those living in long-term care homes or special care homes, those enrolled in a home care program, or for individuals who receive social assistance through Ontario Works or the Ontario Disability Support Program (ODSP). These individuals are also exempt from deductibles and pay no more than a \$2 copayment per prescription (Ontario, 2020a).

A new plan, entitled OHIP+: Children and Youth Pharmacare was launched in January 2018 to cover the costs of medical necessary prescription drugs for babies, children and youth aged 24 years and under. Recipients must be covered by the province's health insurance plan and not already covered by a private plan, including those from their parents. For those who have private insurance coverage, the government would cover any remaining eligible prescription costs that the private plan does not cover (Ontario, 2020a). Recipients of the ODB and OHIP+ are covered for 4,400 prescription drugs under the provincial drug formulary. The Exceptional Access Program (EAP)

facilitates access for these recipients to drugs that are not included in the formulary or have no available alternative, which are determined on a case-by-case basis (Ontario, 2020a). If individuals do not meet the ODB or OHIP+ eligibility criteria and do not have full coverage through private insurance or employer-sponsored plans, they may enroll into the Trillium Drug Program (TDP). The TDP is a catastrophic drug insurance plan that aims to protect Ontarians with high drug costs from financial hardship (Ontario, 2020c). The TDP requires individuals to pay an annual deductible in prescription drug costs that equals about 4% of total household income after taxes, which is divided across each yearly quarter. Once the quarterly deductible is met, in which drug costs have exceeded the calculated income-based threshold for the first three months, patients have a \$2 copayment per prescription until the next quarter (Ontario, 2020c).

In addition to the three major drug coverage programs, the Ontario government manages a suite of specialized programs providing coverage for prescriptions that treat specific serious conditions (Ontario, 2020d). The Special Drugs Program provides individuals with full coverage of selected drugs to treat serious conditions such as end stage renal disease, thalassemia, cystic fibrosis, Gaucher's Disease and growth hormone deficiency, among others (Table 2) (Ontario, 2020d). The New Drug Funding Program covers the cost of newer and more expensive injectable cancer drugs that are administered in hospitals and cancer centers (Ontario, 2020d). Finally, some Ontarians are eligible for federally regulated, publicly funded prescription drug coverage plans. First Nation and Inuit Canadians can obtain prescribed medications free-of-charge under a coverage plan provided by Health Canada's Non-Insured Health Benefits Program

(Canada, 2020). Furthermore, patients who are refugees and refugee claimants obtain prescription drug coverage through the Interim Federal Health Program for up to one year following arrival in Canada (Canada, 2019).

Table 1. Public Prescription Drug Coverage Eligibility Criteria and Cost-sharing Mechanisms in Ontario

Public Insurance	Category	Eligibility	Deductible	Copayment ^c
Ontario Drug Benefit	Senior – A ^a	Single senior (≥ 65 years old) with income of \$19,300 or less	\$0	\$2.00
	Senior – B ^a	Senior couple (≥ 65 years old) with combined income of \$32,300 or less	\$0	\$2.00
	Senior - C	Single senior (≥ 65 years old) with income above \$19,300	\$100 ^b	\$6.11
	Senior - D	Senior couple (≥ 65 years old) with combined income above \$32,300	\$100 ^b	\$6.11
	Home and Community Care Recipients	Long-term care home, Community Home for Opportunity or special care home residents; enrolled to receive professional home and community care services	\$0	\$2.00
	Social assistance Recipients	Enrolled in Ontario Works/ Ontario Disability Support Program (ODSP)	\$0	\$2.00
OHIP+	Children and Youth	24 years of age or younger and not covered by a private insurance plan	\$0	\$0
Trillium Drug Program	High-cost users	Prescription drug costs are about 4% or more of your after-tax household income and no insurance plan that pays for 100% of your drugs	~4% of household income after taxes	\$2.00

a - Seniors A and B earn low incomes and are eligible for the Senior Copayment Program implemented on August 1st, 2016; b – for the first year, the deductible may be lower than \$100, based on the month an individual turns 65 years old; c – all copayments are “up to”

the indicated dollar value and may be lower, depending on the prescription drug purchased.

Table 2. Publicly funded coverage of certain prescription drugs for selected serious conditions in Ontario

Condition	Drug
Cystic fibrosis (a lung disease)	Anti-infectives, vitamins, nutritional and other products
Thalassemia (a blood disease)	Deferoxamine, hydrocortisone injections and other drugs
HIV infection (an immune system disease)	Zidovudine
Anemia (low red blood cell count) due to end-stage kidney disease	Erythropoietin
After organ or bone marrow transplant	Cyclosporine
Children with a lack or shortage of growth hormone	Biosynthetic human growth hormone
Treatment-resistant schizophrenia	Clozapine
Gaucher's disease (a genetic disorder)	Imiglucerase
Inherited Metabolic Diseases (e.g. cobalamin (B12) defect, bipterin deficiency, mitochondrial myopathy)	L-carnitine and other non-drugs (supplements, infant formula, etc.)
low age-related macular degeneration, pathologic myopia, presumed ocular histoplasmosis	Visudyne
Respiratory syncytial virus (RSV) prevention	Synagis
Cancer (enrolled in New Drug Funding Program)	injectable cancer drugs

Gaps in drug coverage arise for patients despite their eligibility for these targeted public programs. First, some patients may encounter financial hardship to meet the plan's cost-sharing requirements. For example, some Ontarians may not be able to consistently afford to pay the quarterly deductible for essential drugs required by the TDP. An individual earning \$30,000 annually would be expected to pay \$300 deductible every three months prior to receiving coverage for the rest of their drug expenditure with a \$2.00 copayment per prescription. The loss of \$300 in order to gain prescription drug coverage may impede their purchase of other basic necessities. According to Law et al.

(2018), an estimated 1.45 million Canadians reduce spending on food, heat and other healthcare expenses to pay for prescription drugs. Another gap in publicly funded drug programs stems from the retrenchments to refugee prescription drug coverage through the Interim Federal Health program reforms from 2012 to 2016. These cutbacks eliminated prescription drug coverage for privately sponsored refugees and refugee claimants, including for pregnant women and children during the first two years of the reform (Antonipillai et al., 2017). The instability and complexity of these past reforms may affect refugee patients' awareness of their eligibility for comprehensive drug coverage today (Chen et al., 2018). Finally, following one year of their arrival in Canada, refugee claimants whose asylum claim has not been heard, or have been refused refugee status due to the loss of documents or other reasons, are no longer eligible for federally provided coverage and do not qualify for provincially provided drug coverage, leaving these individuals in a state of precarious access to prescription drugs (Goldring et al., 2009).

Many Canadians are covered by private insurance plans, offered by employers, negotiated by unions or purchased from private insurers. In most provinces (except Quebec) private insurance is available on a voluntary basis and primarily obtained through supplementary health benefits as part of an employee's non-wage labour compensation negotiated between employers and unions (CIHI, 2019). Prescription drug insurance obtained from a private insurance company is available to Canadians who can afford to pay the premiums and other cost-sharing requirements. Private insurers or employers provide varying levels of prescription drug coverage privately financed by

some Canadians through different cost-sharing mechanisms, while others remain uninsured and purchase their prescription medications out-of-pocket (Hurley, 2010). Employees who work full-time, aged 25 years or over and earn over \$30,000 are more likely to have access to private insurance compared to part-time workers, those under age 25 and earn lower wages (Barnes and Anderson, 2015). A recent repeated cross-sectional analysis, conducted by Guo, Sweetman and Guindon (2020), revealed that individuals with a higher socioeconomic status had a higher odds of reporting having private drug insurance. In 2016, approximately two-thirds of Canadians were covered by private insurance schemes (Law et al., 2018). However, with increasing drug prices some private insurers and employers have opted to restrict drug formularies and increase cost-sharing measures to reduce expenditure (Law, Kratzer and Dhalla, 2014). In 2019, private plans financed approximately 37% of Canada's total prescription drug costs (CIHI, 2019).

In Ontario, approximately 63% of residents are covered by private insurance plans for prescription drugs, predominantly provided by employers to recipients aged 25 to 64 years old (Sutherland and Dinh, 2017). However, between 2006 and 2016, the number of social assistance recipients increased by 34.3%, while those working in poverty (ineligible for social assistance with low incomes) increased by 23% in Ontario (Stapleton, 2019). In 2015, nearly 45% of workers between the ages of 25 to 65 years were precariously employed in the GTA, and less than 10% received prescription drug coverage (Lewchuk et al., 2016). A significant portion of precarious or part-time work involves low wages, more frequent periods of unemployment and a lack of extended health benefits, such as prescription drug coverage (Lewchuk et al., 2013). The increasing

proportion of precariously employed workers coupled with the stagnant growth of household income leaves more Canadians unprotected from the financial burden of rising drug costs (Barnes, Abban and Weiss, 2015; Uguccioni, Sharpe, and Murray, 2016).

Newcomers, women and low-income families are less likely to possess workplace medical benefits and access to prescription drug plans (Barnes and Anderson, 2015). Nearly half (45%) of immigrant part-time workers do not have prescription drug coverage compared to 25% of non-immigrant part-time employees. Furthermore, 62% of recent immigrants who arrived in Canada within the past five years and work part-time remain uninsured for prescription drugs (Cheff, Hill and Iveniuk, 2019). In general, racialized immigrants and refugees face substantial barriers to finding secure jobs and livable earnings, entrenched in precarious employment with low wages, little autonomy and no health benefits, including a lack of drug insurance (Goldring and Jolie, 2014). The prevalence of private insurance coverage is higher among Canadian-born individuals than among landed immigrants and permanent residents (Bolatova and Law, 2019). Women are also less likely than their male-counterparts to have access to employer provided drug insurance, reflecting high numbers of women in part-time or precarious employment that lack health benefits (Ferrao, 2011). One in five working Ontarians, equivalent to 1.5 million employees, do not have prescription drug coverage (Cheff, Hill and Iveniuk, 2019). In 2015, 24% of Ontarians reported that they or a member of their family did not take medications as prescribed due to cost (Angus Reid, 2015).

This appendix was prepared to provide sufficient context about Ontario's prescription drug system for Chapters 4 and 5 of this dissertation.

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