UNDERSTANDING THE INDIVIDUAL, ORGANIZATIONAL, AND SYSTEM-LEVEL FACTORS SHAPING PREGNANT PEOPLE'S EXPERIENCES CHOOSING AND ACCESSING A MATERNITY CARE PROVIDER IN ONTARIO'S CHAMPLAIN REGION

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ABSTRACT

In Ontario, supporting "a system of care that provides women and their families with equitable choice in birth environment and provider," (PCMCH & MOHLTC, 2017, p.33) has been identified as one of the central objectives of the Provincial Council for Maternal and Child Health's Low Risk Maternal Newborn Strategy. In theory, pregnant people in Ontario can choose to seek maternity care from a midwife, a family physician, or an obstetrician; however, in practice, pregnant people's choice of provider remains constrained. Extant literature suggests that in order to afford pregnant people the opportunity to exercise autonomous choice of provider, health systems must ensure that an acceptable range of provider options is available and accessible within the local organization of maternity care, that pregnant people are made aware of and knowledgeable about the available provider options, and that pregnant people have the ability and resources to navigate access to their provider of choice (Mackenzie, 2014; Sutherns, 2004). As a result, I designed this thesis to fill a gap in the evidence base to determine whether or not provincial policies had translated into the levels of access, awareness, and resourcing required to afford pregnant people the opportunity, ability and propensity to exercise autonomous choice of provider within the local maternity care system in Ontario's Champlain Region. I sought to elicit the structural conditions that would be necessary to equitably support pregnant people's access to and choice of a maternity care provider. In the pursuit of these objectives, I adopted an integrated knowledge translation approach (Bowen & Graham, 2013), using an explanatory sequential mixed methods design (Creswell, 2014), which encompassed two complementary stages: (1) quantitative geospatial mapping to assess pregnant people's access to the full range of maternity care providers across the Champlain Region; and (2) qualitative focus groups and individual interviews with parents, providers, and policy-makers to explore the individual, organizational, and system-level factors that are enabling or restricting access and autonomy. Using a systems approach to the investigation of this locally-identified issue, I demonstrate in this thesis that pregnant people within the Champlain Region have inequitable opportunities to exercise autonomous choice of maternity care provider due to (1) system and organizational-level factors that are creating imbalances in the supply, distribution and mix of maternity care provider options, and (2) pregnant people's differential access to the enabling information and resources required to exercise autonomous choice of provider and to navigate access to their services.

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I would like to thank the parents, providers and policy-makers who chose to share their knowledge, expertise, and experiences with me. In all of our interactions, I was humbled by the honesty and generosity of participants in describing the barriers and enablers they experienced within our local system, and their aspirations for a future state of maternity care. I hope that this report does justice to your experiences, serves as an accurate reflection of our current state, and provides decision-makers with a clear vision of the actions required to fulfill your needs and uphold your choices.

I would also like to thank my thesis advisory committee, including Dr. Ivy Bourgeault, Dr. Agnes Grudniewicz, Dr. Elizabeth Kristjansson, and Dr. Wendy Peterson, and my external examiner, Dr. Saraswathi Vedam, for their invaluable contributions to this thesis. In particular, I would like to take this opportunity to acknowledge that this thesis was completed under the skilled supervision of Dr. Ivy Bourgeault. I can unequivocally state that my PhD experience was made worthwhile by her mentorship, sponsorship, and overwhelming support. Over the last eight years, she has provided me with countless opportunities to grow as a researcher, as a leader, and as a person. Whether it be bringing me into the rooms where decisions are made, developing new theoretical frameworks on long train rides, or sitting on my living room floor reading books to my son, I will be eternally grateful for her unending support. She has been instrumental in shaping my approach to research, demonstrating that as scientists we have a duty to study the persistent challenges plaguing our healthcare system, bring to the fore the gaps that are

preventing us from achieving optimal service delivery and outcomes, and advocate for evidence-informed improvements to the status quo.

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Chapter 1
Introduction

CHAPTER 1: INTRODUCTION

In Ontario, supporting "a system of care that provides women and their families with equitable choice in birth environment and provider," (PCMCH & MOHLTC, 2017, p.33) has been identified as one of the central objectives of the Provincial Council for Maternal and Child Health's Low Risk Maternal Newborn Strategy. In theory, pregnant people in Ontario can choose to seek maternity care from a midwife, a family physician, or an obstetrician[1]; however, in practice, pregnant people's choice of provider remains constrained. Extant literature suggests that in order to afford pregnant people the opportunity to exercise autonomous choice of provider, health systems must ensure that an acceptable range of provider options is available and accessible within the local organization of maternity care, that pregnant people are made aware of and knowledgeable about the available provider options, and that pregnant people have the ability and resources to navigate access to their provider of choice (Mackenzie, 2014; Sutherns, 2004). As a result, I designed this thesis to fill a gap in the evidence base to determine whether or not provincial policies had translated into the levels of access, awareness, and resourcing required to afford pregnant people the opportunity, ability and propensity to exercise autonomous choice of provider within the local maternity care system in Ontario's Champlain Region. I sought to elicit the structural conditions that would be necessary to equitably support pregnant people's access to and choice of a maternity care provider. Using a systems approach to the investigation of this locally-identified issue, I demonstrate in this thesis that pregnant people within the Champlain Region have inequitable opportunities to exercise autonomous choice of maternity care provider due to (1) system and organizational-level factors that are creating

[1] While all obstetricians in Ontario are trained as obstetrician/gynecologists, and some have additional training in subspecialties such as maternal-fetal medicine, I will refer to these providers as obstetricians throughout this thesis as this component of their scope of practice, which involves the provision of care during pregnancy and childbirth, is most relevant to its stated purpose.

imbalances in the supply, distribution and mix of maternity care provider options, and (2) pregnant people's differential access to the enabling information and resources required to exercise autonomous choice of provider and to navigate access to their services.

BACKGROUND & REGIONAL CONTEXT

The Champlain Region, which encompasses Ottawa, the national capital of Canada, and its surrounding communities, including Cornwall, Pembroke, Hawkesbury, Almonte, and Carleton Place, has a population of 1.3 million people (Champlain LHIN, 2018). This Region includes both urban and rural areas, and displays population densities, demographic profiles, and socioeconomic indicators that vary significantly across subregions. These variations highlight the importance of adopting comparative approaches that account for the distribution of workforce supply and pregnant people's needs across the Region. When I initiated this thesis in 2018, the Champlain Region constituted one of Ontario's Local Health Integration Networks. When the Government of Ontario instituted a series of health system reforms in 2019, including the dissolution of the Local Health Integration Networks, I chose to maintain the geographic boundaries of the Champlain Region as a planning geography for three reasons: 1) the need for this type of analysis within the Region remained; 2) the capacity planning initiatives that preceded this thesis had used these geographic boundaries; and 3) this planning geography encompassed urban, suburban and rural areas, representing an excellent case site for the methods I intended to develop.

The Champlain Maternal Newborn Regional Program (CMNRP) is a network of maternal-newborn care providers and organizations, which, through a secretariat, engage in an integrated program of initiatives aiming to improve perinatal care across Ontario's Champlain and South-East Regions. Through extensive consultation with families, healthcare providers, and

community organizations, CMNRP has identified variability in the availability of different healthcare providers as a barrier to optimal access to perinatal healthcare in the Champlain Region (CMNRP, 2017). Furthermore, while health workforce considerations were explicitly out of scope in CMNRP's first Capacity Planning Report, which was produced by KPMG in 2019, a number of the report's findings and recommendations pointed to the need for a more in-depth assessment of maternal health workforce capacity within the Region (see Textbox 1 on p.4 for a list of the relevant findings and recommendations).

TEXTBOX 1 - Relevant Findings from Phase 1 of CMNRP Regional Capacity Planning
Source: KPMG, 2019

- ***Finding 3 – Physician Capacity***: Physician capacity is an important consideration in planning future maternal newborn services, particularly in the lower volume hospitals in rural areas
- ***Finding 4 – Midwifery Capacity:*** Demand for midwifery services is increasing and appears to exceed existing capacity in certain areas within the [Region]
- ***Finding 7 – Maternal Care:*** Meeting the needs of the [Region]'s rural populations likely requires maintaining all existing obstetric programs; however, low expected growth implies a need to explore changes in the mix of provider types over time
- ***Recommendation 8 – Low Risk Birth Service:*** Recognizing that obstetricians, family physicians and midwives play a critical role in providing low risk maternal-newborn care, their respective roles should be considered in the context of each other's to promote appropriate access and care. This should be done by bringing stakeholders together to establish the appropriate provider mix for each community, now and in the future, while exploring innovative integrated models of care. In addition, given women in the region requested increased access to midwifery services, midwifery privileging processes at each hospital should be reviewed and opportunities to increase the number of midwifery-supported births at [the Ottawa Birth and Wellness Centre] should be explored.

As of 2018, 75.41% of births in Ontario were attended by Obstetricians, 10.82% were attended by midwives, and 6.73% were attended by family physicians (BORN Ontario, 2019). While midwives (11.66%) and family physicians (8.90%) in the Champlain Region attended a higher proportion of births than the provincial average as of 2018, obstetricians remained the principal providers of maternity care in the region, attending 68.39% of all births (BORN Ontario, 2019).

Evidence suggests that this distribution is not fully reflective of population needs or demand for these services (CMNRP, 2015). For instance, in fiscal year 2017/18, 109 pregnant people requesting midwifery care in the Champlain Region were initially unaccommodated, but were eventually cared for by a midwifery practice group; a further 269 pregnant people who requested midwifery care remained unaccommodated throughout their pregnancy (BORN Ontario, 2019). It should be noted, however, that as is reflected in Table 1 (p.5), unaccommodated cases appeared to be trending downward across the years at both the regional and provincial level. While data on unaccommodated requests reflect known rates of unmet demand for midwifery services, these rates exclude those who might have preferred midwifery services but did not seek care. For instance, barriers to access and lack of awareness could be serving as deterrents for care-seeking.

TABLE 1: Unaccommodated cases for midwifery care across the Champlain Region and the Province of Ontario *Total Number and Percent of all Births*		**Number of residents who requested midwifery care and remained unaccommodated throughout their pregnancy**					**Number of residents who requested midwifery care, were initially unaccommodated, but were eventually accommodated**				
		2013/14	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2013/14**	**2014/15**	**2015/16**	**2016/17**	**2017/18**
Champlain Region Total	#	703	423	333	295	269	310	168	115	96	109
	%	5.29%	3.20%	2.55%	2.29%	2.07%	2.33%	1.27%	0.88%	0.74%	0.84%
Ontario Provincial Total	#	5578	5387	5120	5113	4966	2181	2197	2230	2073	2206
	%	3.98%	3.84%	3.64%	3.62%	3.51%	1.56%	1.57%	1.59%	1.47%	1.56%

Local stakeholders within CMNRP recognized that this emerging evidence pointed to the need for more in-depth analysis of the system of factors enabling or restricting pregnant people's opportunity to choose and access a maternity care provider within the Champlain Region. In partnership with CMNRP, I successfully sought funding from the Women's College Hospital

$15K Challenge Grant and the Canadian Institutes of Health Research's Health System Impact Fellowship Program to explore this locally-identified issue.

RESEARCH QUESTIONS & OBJECTIVES

The objectives of this thesis were threefold. I first set out to understand how access to the full range of maternity care providers was distributed across the Champlain Region. Once I had described the distribution of access across the region, I sought to explore the individual, organizational, and system-level factors shaping access to the full range of maternity care providers and pregnant people's autonomy in choosing a maternity care provider. Finally, I sought to identify locally-relevant solutions that could be effective in alleviating gaps in access and autonomy.

To achieve these objectives, I adopted an integrated knowledge translation approach (Bowen & Graham, 2013), using an explanatory sequential mixed methods design (Creswell, 2014), which encompassed two complementary stages. In Stage 1, I employed a quantitative geospatial mapping exercise to assess pregnant people's access to the full range of maternity care providers across the Champlain Region. In Stage 2, I completed a series of focus group and individual interviews with parents, providers and policy-makers to explore the individual, organizational, and system-level factors that were enabling or restricting access and autonomy within the local maternity care system. Through this process, I sought to leverage the wealth of experience, knowledge and expertise available within the community to elicit information about the structural conditions that would be necessary to equitably support pregnant people's opportunity to choose and access a maternity care provider. In Textbox 2 (p.7), I provide a full list of the research questions used to frame this thesis.

TEXTBOX 2 - Research Questions

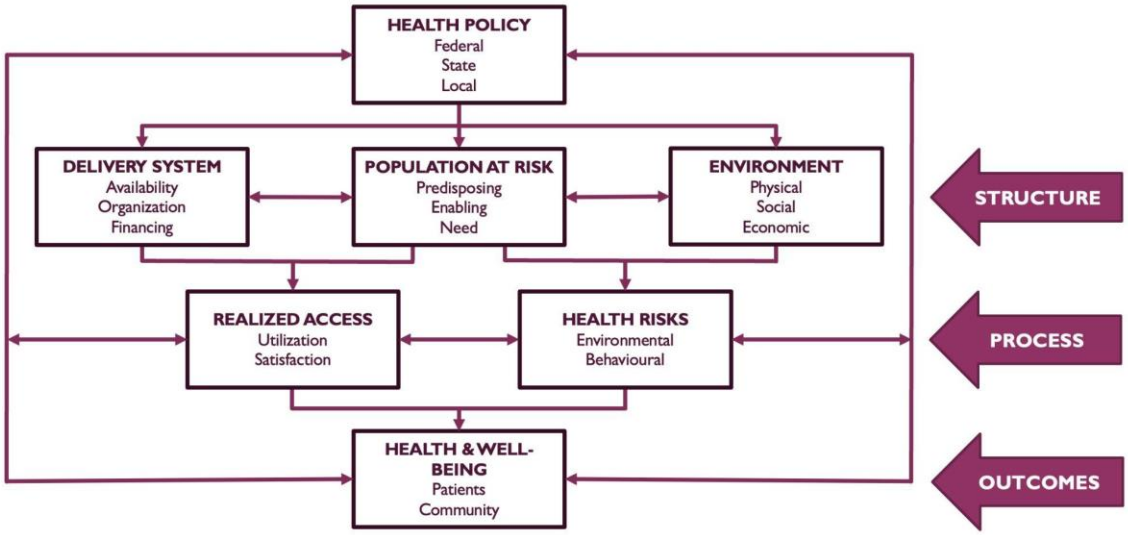
1. How is access to provider-specific maternity care distributed across the Champlain Region?
2. What individual, organizational, and system-level factors are shaping access to the full range of maternity care providers?
3. What individual, organizational, and system-level factors are shaping pregnant people's autonomy in choosing a maternity care provider?
4. What locally-relevant solutions could be effective in alleviating gaps in access and autonomy?

For the purposes of this study, I have defined access to the full range of maternity care providers as access to family physicians, midwives, and obstetricians who provide intrapartum care. The scope of this study is, therefore, restricted to the three groups of maternity care providers all residents of the Champlain Region can choose as their primary birth attendant. While Indigenous midwives play a critical role in providing Indigenous People in Ontario with access to culturally safe and acceptable care, the services they provide were outside of the scope of this study as access to these services is restricted to a defined subset of the population. I also acknowledge that by restricting the scope of this study to providers who can serve as primary birth attendants, this study does not reflect the workforce capacity and trends of a number of other health professionals vital to the provision of comprehensive maternity care, including nurses, anaesthetists, family physicians who provide prenatal and postpartum care, paediatricians, doulas, and lactation consultants. Most notably, nursing resources were acknowledged by many participants as a critical challenge within the region. While this issue was out of scope for this study, nursing capacity within the local maternity care workforce merits further investigation.

THEORETICAL FRAMEWORK

Leischow et al. (2008) proposed systems thinking methods as the most appropriate tools to model the complex adaptive behaviour of health systems. Accordingly, I employed Aday's (2004) Framework for Analysis of Equity - a more recent iteration of the Framework for the Study of Access to Medical Care originally proposed by Aday and Andersen in 1974 - to structure my understanding of the system of factors shaping access and choice within the local maternity care system. This framework was amenable to a systems thinking approach as it outlined the complex interplay between components of health system structures, their influence on the processes of realized access and the emergence of health risks, and their ultimate impact on health outcomes within target populations. As is illustrated in Figure 1 (p.9), this framework posits that health policy shapes the characteristics of the healthcare delivery system, of the population at risk, and of the physical, social, and economic environments within which they live. These factors, in turn shape the population's exposure to health risks and their realized access to care, including their utilization of and satisfaction with healthcare services. Finally, the health and wellbeing of patients and their communities are presented as the ultimate outcomes generated by the processes of realized access and exposure to risk. This version of the framework also integrates the three components of the Donabedian (1988) model for the assessment of quality of care: structure, process and outcomes.

FIGURE 1 - Framework for Analysis of Equity (Aday, 2004)



This framework posits that in systems that have achieved equitable access to care, most variance in use and outcomes can be attributed to the demographic and need characteristics of the population. In systems characterized by inequitable realized access to care, however, variance is shaped by:

- the characteristics of the healthcare delivery system, including financing, education, organization, and the availability and distribution of providers;
- the enabling characteristics that provide individuals with the means of accessing available services, including income and financial resources, knowledge of the system and available resources, insurance coverage, attachment to a healthcare provider, and transportation; and
- individuals' positionality within their physical, social, political and economic environments.

In other words, equitable access to care is only realized when the healthcare delivery system is equipped to provide acceptable care to all target populations, and when all pregnant people, regardless of their social identity within their environment, have the enabling resources necessary to avail themselves of the services that have been made available. By adopting a systems perspective, I aimed to capture the complexity of the organization of maternity care and develop a robust and dynamic representation of the multiple factors that interact at all levels of a given system to regulate pregnant people's opportunities to exercise autonomy in choosing a maternity care provider.

I also applied the feminist theory of relational autonomy (Mackenzie, 2014; Sherwin, 1998) as a cross-cutting lens of analysis to embrace complexity in my examination of a system's capacity to equitably support pregnant people's autonomy in choosing a maternity care provider, and to explicitly attribute value to the knowledge generated by pregnant people's lived experiences (Hesse-Biber, Leavy, & Yaiser, 2004; Morgan et al., 2016). Attending to issues of equity, diversity and inclusion, I integrated this analysis to account for the dynamic determinants of autonomy and choice within the target population, understand the inequities present within the system, and elucidate and address the social and structural drivers of these inequities. Relational autonomy recognizes that autonomy is both internally and externally derived (Oshana, 2006). Mackenzie (2014) presents three essential dimensions of relational autonomy: self-determination, self-governance, and self-authorization. *Self-determination* refers to the external or structural conditions that are required to enable individual autonomy; individuals must be free from social and political constraints that might interfere with exercising autonomy and must have access to opportunities to exercise that autonomy by choosing from an acceptable range of options. *Self-governance* refers to individuals' capacity to make these choices. Finally, *self-*

authorization refers to an individual's disposition to regard themselves as agents with the normative authority to make these choices. As was synthesized by Sutherns (2004), "Informed choice requires at least 3 elements: a range of options, knowing what they are, and being able to act on them" (p.243). I used these dimensions of relational autonomy to frame my understanding of the prerequisites required to enable pregnant people to exercise autonomous choice of provider.

In all, through theoretical triangulation (Guion, Diehl, & McDonald, 2011), I engaged in a comprehensive examination of the multi-tiered network of factors that regulate pregnant people's opportunity, ability and propensity to exercise autonomous choice of provider within a regional maternity care system. The individual, organizational, and system-level factors at play within this system are intertwined and cannot be understood discreetly. In each of the following chapters, which represent finite segments of the system dynamics I uncovered, I describe how system-level structures shape organizational-level policies and practices, which in turn shape the individual behaviours of both pregnant people and providers within the Champlain Region's local maternity care system.

STATE OF KNOWLEDGE

In this section, I provide an overview of the current state of knowledge. In an effort to describe the key trends in the organization of maternity care, I first discuss issues surrounding the provision of appropriate levels of maternity care before moving on to the scopes of practice and models of care that can be observed within the maternity care system, interprofessional collaboration in maternity care, and the effective integration of midwifery into formal health systems. I then provide an overview of extant evidence on the three prerequisites of autonomous choice: the availability and accessibility of a range of provider options, pregnant people's

knowledge and awareness of the available provider options, and pregnant people's ability to navigate access to their provider of choice.

Organization of Maternity Care

Providing Appropriate Levels of Maternity Care

With economic development come socioeconomic, demographic, epidemiological transitions (Graham et al., 2016). The combined effects of these shifts result in an obstetric transition - or a shift in reproductive health trends - through which countries achieve reduced fertility and maternal mortality rates, and lingering maternal mortality shifts from direct obstetrical to indirect causes (Graham et al., 2016). The obstetric transition coincides with trends towards facility-based births and the medicalization of birth. Under such circumstances, pregnant people increasingly receive specialty-care, regardless of need or evidence (Sakala, & Newburn, 2014). The obstetric transition also coincides with increased disparities within populations, leaving behind pregnant people who are vulnerable to barriers of access to quality care based on their income, race, ethnicity, geography, age, marital status, or migrant status (Koblinski et al., 2016).

Pregnant people in low-income settings, and marginalized populations in middle and high-income settings, are often subject to what Miller et al. (2016) qualify as *too little too late* or *"*care with inadequate resources, below evidence-based standards, or care withheld or unavailable until too late to help" (p.2176). On the opposite side of the spectrum, Miller et al. (2016) explain that high income countries, and many emerging or middle-income economies, along with upper wealth quintiles in low-income settings, are facing their own challenges regarding quality of care, which can be characterized as *too much too soon* or "the routine over-medicalisation of normal pregnancy and birth. [This] includes unnecessary use of non-evidence-

based interventions, as well as use of interventions that can be life-saving when used appropriately, but harmful when applied routinely or overused" (p.2176).

Facility-based intrapartum care has been promoted as an effective model to reduce maternal and neonatal mortality rates. In theory, this setting provides an enabling environment, including supportive supervision, to maternity care providers, with access to timely referral, transport, and management in the event of complications (Smith & Hyre, 2009). In practice, if facility-based approaches are not complemented by an adequate focus on the principles of comprehensive midwifery care, strong regulatory frameworks, and the implementation of evidence-based clinical guidelines, childbirth will be medicalized, leading to unnecessary and inappropriate intervention at increasingly untenable cost (Miller et al., 2016; Renfrew et al., 2014; Shaw et al., 2016). The vast majority of births take place in hospitals in high income countries. For instance, data released by BORN for the purposes of this thesis revealed that in fiscal year 2017-2018, 95.4% of all births in the Champlain Region, and 96.6% of births in the Province of Ontario, occurred in hospitals. While the timely access to obstetrical intervention offered by hospitals is of critical importance to high risk births, low risk births occuring in these highly medicalized contexts are more susceptible to experiencing expeditious and excessive intervention (Shaw et al., 2016). Fear of liability and high malpractice premiums are also drivers of increased rates of intervention (Shaw et al., 2016). Midwifery-led birthing units in hospitals, free-standing birthing units, and home births have been suggested as birth settings that are more optimized to the needs of low risk births (Sandall et al., 2016, Shaw et al., 2016).

Models of Maternity Care and Scopes of Practice

Diverging models of care between maternity care providers can influence trends toward the medicalization of birth. Models of care can be defined as *"the way healthcare services are*

designed and delivered" (Bourgeault & Merritt, 2015). Sandall and colleagues (2016) outline a typology of six principal models of care adopted in the provision of maternity care (Table 2 on p.14).

TABLE 2: Typology of models of maternity care (Sandall et al., 2016)	
Model of Care	**Definition**
Midwifery-led continuity model of care	*"The midwife is the lead professional in the planning, organization and delivery of care given to a woman from initial booking to the postnatal period"*. This model of care involves: *"continuity of care; monitoring the physical, psychological, spiritual and social well-being of the woman and family throughout the childbearing cycle; providing the woman with individualized education, counseling and antenatal care; attendance during labor, birth and the immediate postpartum period by a known midwife; ongoing support during the postnatal period; minimizing unnecessary technological interventions; and identifying, referring and coordinating care for women who require obstetric or other specialist attention".*
Team midwifery	*"[Midwives] provide continuity of care to a defined group of women through a team of midwives sharing a caseload".*
Caseload midwifery	*"[Midwives] aim to offer greater relationship continuity, by ensuring that childbearing women receive their ante-, intra- and postnatal care from one midwife or her/his practice partner".*
Obstetrician provided care	*"Obstetricians are the primary providers of antenatal care for most childbearing women. An obstetrician (not necessarily the one who provides antenatal care) is present for the birth, and nurses provide intrapartum and postnatal care".*
Family doctor provided care	*"Obstetric nurses [...] provide intrapartum and immediate postnatal care but not at a decision-making level, and a medical doctor is present for the birth".*
Shared models of care	*"Responsibility for the organization and delivery of care, throughout initial booking to the postnatal period, is shared between different health professionals".*

Models of practice also inform the ways in which health workers enact their roles within maternity care systems. Models of practice reflect *"how health professionals undertake their*

scope of practice. Attention to these different models of practice can make more apparent the unique ways in which different healthcare professionals provide the same service" (Bourgeault & Merritt, 2015). For instance, physicians and midwives adopt very different approaches to the provision of maternity care.

The midwifery model of care in Ontario (Mattison et al., 2018), and more broadly across Canada (Wilson & Sirois, 2010), has been associated with increased rates of satisfaction, compared to care provided by obstetricians. The model has a number of key features that appear to be driving demand for these services, including: access to 24 hour support by telephone, choice of birth setting, continuity of care, longer appointments with shorter wait times, comprehensive postpartum support, home care, and a philosophy of informed choice (Darling et al., 2019a). Individuals scoring higher on natural birth philosophy have also been identified as a population prone to choosing a midwifery model of care (Wilson & Sirois, 2010). Adjacently, previous studies within Ontario have highlighted pregnant people's concerns about the long wait times for and short length of appointments with physicians, which influenced pregnant people's care satisfaction, and limited providers' capacity to answer questions (Darling et al., 2019a; Jimenez et al., 2010). Midwifery clients also exhibit higher levels of autonomy than individuals who access physician care (Vedam et al., 2019).

A Cochrane review (Sandall et al., 2016) examined the morbidity and mortality, effectiveness and psychosocial outcomes of midwifery-led continuity of care models, as compared to other models of care, including obstetrician and family physician-provided care. This review found that pregnant people at low risk of obstetrical complication who had midwifery-led continuity of care models were less likely to experience a number of obstetrical interventions, and displayed higher rates of satisfaction, without incurring any additional risk of complication or adverse

maternal outcome (Sandall et al., 2016). This review also confirmed the cost-saving effects of midwifery-led continuity of care models.

Homer (2016) corroborated these findings, adding that midwifery-led continuity of care models present a number of benefits to systemically disadvantaged populations, and induce high levels of job satisfaction and decreased occupational burnout amongst midwives. Successful implementation of this model is challenging, however, and must be accompanied by systems reforms to promote widespread access, and facilitate interprofessional collaboration based on respect for midwifery (Homer, 2016).

Furthermore, in the United States, higher rates of midwifery integration into health systems have been associated with higher rates of physiological birth, fewer obstetric interventions, and fewer adverse neonatal outcomes (Vedam et al., 2018). The National Institute for Health and Care Excellence Guidelines on intrapartum care for healthy women and babies reinforce these findings, stating that midwifery-led units offer lower rates of interventions, without any difference in neonatal outcomes compared to obstetrical units (NICE, 2014). As a result, these guidelines recommend midwifery-led units as a particularly suitable setting for both nulliparous (i.e. has never birthed before) and multiparous (i.e. has birthed before) birthing people at low risk of complication (WHO, 2018). The 2018 WHO Recommendations for Intrapartum Care for a Positive Childbirth Experience affirm midwifery services as influencing positive childbirth experiences and recognize the midwifery workforce as effective professionals in maternal and child health programs.

A health profession's scope of practice refers to *"what health professionals can (and cannot) do, to whom, where, and how"* (Bourgeault & Merritt, 2015). As is represented in Table 3 (p.17),

health professions' scope of practice is shaped by a dynamic array of micro, meso, and macro-level factors (Nelson et al., 2014). These scopes of practice are often actively constrained as they move from what they are trained to perform, to what they are allowed to perform within regulatory structures, to what they are enabled to perform within organizational environments. As a result, both theoretical and actualized scopes of practice shape the different roles within models of maternity care.

TABLE 3: Barriers and enablers: optimal scopes of practice within collaborative care arrangements at the macro, meso, and micro levels (Source: Nelson et al., 2014)

Barriers		**Enablers**
Macro	*Health care professional accountability/liability concerns*	● Educating professionals and courts on changes to legislation that recognize the principles of shared care models
	Educational needs/requirements that inhibit professionals working to full or optimal scope	● Establishing practicums and residencies that foster inter-professional competencies ● Post-licensure credentialing for continued competency development over the course of a career
	Rigid legislation/ regulations	● Expanding adoption of more flexible legislative frameworks that can be interpreted at the local setting
	Payment models that do not support changes in scopes of practice	● Alternative funding (e.g., bundled or mixed payment schemes) to include all health care professionals and to be aligned with desired outcomes
Meso	*Communication across multiple care settings*	● Implementation and upkeep of electronic medical records essential for all respective health care professionals (and for patients themselves) to have timely access to the most up-to-date information on treatment and status
	Professional protectionism	● Representation of the interests of professions in the context of collaborative care arrangements and inter-professional standards/overlapping scopes of practice
	Accountability	● Broader application of collaborative performance measures and an overall quality assurance framework through involvement of accrediting bodies

	Availability of evidence	● Systematic monitoring and evaluation (with specific focus on inputs and outputs) to estimate cost incurred for introducing change and the long-term return on investments
Micro	*Professional hierarchies*	● Change management team: a designated role for managing changes in scopes of practice and models of care
	Professional cultures (lack of trust and role clarity; job protectionism, turf wars, task escalation)	● Continuing professional development to cultivate team thinking and develop levels of trust around relative competencies ● Team vision: to reinforce that the ultimate goal is the improved well-being of the patient; who provides the care is secondary to the quality and accessibility of services provided
	Communication among health care professionals	● Instilling group mentality: internalization of shared responsibility across health care professions ● Scheduling of regular meetings for health care team members to consult on appropriate care strategies and problem-solving strategies; integrating information communication technologies ● Co-location to have different types of health care professionals and services functioning in a shared space

Interprofessional Collaboration in Maternity Care

Interprofessional models of collaborative maternity care have frequently been highlighted as a key solution to address the shortage of maternity care providers, improve the work/life balance and retention of maternity care providers, adapt to evolving population needs in a cost-effective manner, enhance the quality of maternity care delivered to pregnant people, and promote better access to care in rural areas (King, Laros & Parer, 2012; Martin & Kasperski, 2010; Haque, Nigam & Sibbald, 2017; Malott, 2017; Iglesias et al., 2015; Sutherns & Bourgeault, 2008; Rogers, 2003; Sutherns, 2004; Klein et al., 2002; Peterson et al., 2007; Miller et al., 2012; Munro, Kornelsen & Grzybowski, 2013). Interprofessional collaboration can also enhance policy development, planning and problem-solving, prevent resource duplication and service fragmentation, and promote more effective service delivery (Psaila & Schmied, 2017). Other posited benefits of interprofessional maternity care for pregnant people include improved access to care, choice of provider, and appropriateness of care provider (Munro, Kornelsen &

Grzybowski, 2013). This is particularly salient, given that pregnant people are expressing a desire for hybrid models of care that enable them to benefit from access to the services of both physicians and midwives (Fawsitt et al., 2017).

Despite the recognized importance of interprofessional collaboration, existing literature has identified a number of persistent barriers that continue to impede the implementation of collaborative models of maternity care. These barriers, along with key enablers that are critical to successful interprofessional collaboration in maternity care, are summarized in Table 4 (p.20).

Interprofessional tensions stemming from competition between providers for a limited number of births in select communities has already been documented within the Ontarian context, and across Canada (Bourgeault & Darling, 2008; Behruzi et al., 2017; Peterson et al., 2007; Haque, Nigam & Sibbald, 2017). These tensions, which are more likely to arise in contexts where providers are remunerated fee-for-service (i.e. billing for each service provided over the course of a pregnancy, birth, and postpartum period) or per course of care (i.e. billing a single standard fee for all care provided across the pregnancy, birth, and postpartum period), emerge when a provider group feels that within current fee structures the presence of another group within the community is impeding on their ability to sustain an adequately sized call group and level of remuneration (Bourgeault & Darling, 2008). Existing studies have shown that these tensions are exacerbated in rural settings, where a small number of providers are covering small birth volumes, and the introduction of new providers, namely midwives, can constitute a perceived threat for existing maternity providers (Munro, Kornelsen & Grzybowski, 2013).

TABLE 4: Barriers & Enablers to Interprofessional Collaboration in Maternity Care

Barriers	*Enablers*
• different scopes of practice and philosophies of care	• recognition and valuation of each other's contribution to the provision of care
• lack of awareness about the skills, training and approach of other health professionals	• understanding each other's model of care • professional competence and expertise
• lack of clarity about roles and responsibilities	• clear roles and responsibilities
• lack of communication and respect between provider groups	• strong interprofessional communication, trust and respect
• rivalry and competition between provider groups • resistance to change	• a common orientation toward shared vision, values and goals (patient-centred care and addressing local maternity care challenges)
• lack of dedicated time, resources and space for collaboration	• availability of dedicated time, resources, and spaces to build relationships
• concerns surrounding liability and insurance	• conducive legislative, regulatory, liability environments
• concerns surrounding the threat to professional autonomy	• mechanisms to maintain professional autonomy
• inadequate, inequitable and incompatible funding arrangements and remuneration mechanisms	• funding and remuneration arrangements that alleviate competition and incentivize collaboration
• lack of organizational support for the full range of providers • lack of midwifery representation in hospital administration • challenges gaining privileges and being integrated into hospitals	• supportive national and organizational leadership, coordination and culture • shared power in coordination and decision-making
Sources: Behruzi et al., 2013; Behruzi et al., 2017; Bourgeault & Darling, 2008; Haque et al., 2017; Kirby, 2016; Martin & Kasperski, 2010; Mattison et al., 2020; Miller et al., 2012; Munro et al., 2013; Perdok et al., 2016; Peterson et al., 2007; Smith et al., 2009; Ratti et al., 2014	*Sources: Bourgeault & Darling, 2008; van Helmond et al., 2015; King et al., 2012; Malott, 2017; Martin & Kasperski, 2010; Munro et al., 2013; Perdok et al., 2016; Peterson et al., 2007; Psaila & Schmied, 2017; Smith, 2015, Smith, 2016*

Tensions arising from the importance placed on informed choice within the midwifery model of care have also been documented; the outcomes of cases where midwifery clients' choices introduce higher perceived levels of risk into the birthing process can impact physicians' and other providers' perceptions of midwives themselves (Bourgeault & Darling, 2008). Furthermore, midwives' support of homebirth, particularly in rural settings, can generate tensions due to physicians' concerns surrounding the safety of homebirth and liability in the event of transfer to hospital following complications (Munro, Kornelsen & Grzybowski, 2013). This, despite evidence that homebirths that occur more than 30-minutes away from a hospital are not associated with any increased risk of adverse neonatal outcomes when compared with planned homebirths within 30-minutes of a facility (Darling et al., 2019b).

Furthermore, effective interprofessional collaboration is constrained by fundamental differences in philosophies and attitudes between maternity care providers, and their lack of understanding of each other's roles within the organization of maternity care (Klein et al., 2009; Morrison, 2014; Munro, Kornelsen, & Grzybowski, 2012). Lack of common ground and competing institutional frameworks between maternity care providers can limit the effective integration of midwifery, and the achievement of optimal function within the organization of maternity care (Scott, 1994). Conducive regulatory, educational, and remuneration models, alongside appropriate interprofessional communication and favourable professional cultures, are considered to be essential enablers to the achievement of optimal scopes of practice within collaborative care arrangements (Nelson et al., 2014).

Researchers in this field have proposed a number of solutions to improve interprofessional relationships in maternity care (Ratti et al., 2014; Martin & Kasperski, 2010; Malott, 2017), including:

- interprofessional pre-registration education and continuing professional development;
- interprofessional working groups and inclusive participation in policy-making (including clear guidelines for shared care and transfers of care);
- increased opportunities for collaboration in patient care and exposure to each other's skills and model of care; and
- better communication, understanding, trust, and respect of each other's roles within the care team.

Interprofessional education, in particular, is described as an opportunity to expose professionals to the approaches of other professional groups, enhancing interprofessional communication, trust, and respect, and fostering mutual recognition and valuation of each other's roles and contributions within care teams (Psaila & Schmied, 2017; Peterson et al., 2007). Furthermore, a previous study that engaged with stakeholders within Ontario's maternity care system highlighted the need for system-level reform in order to enable workforce adaptation and self-organization to meet local needs (Martin & Kasperski, 2010). Stakeholders in this study noted that local flexibility in models of collaborative care should be accompanied by coordination and leadership at the provincial level to establish a common and consistent vision for the maternity care system (Martin & Kasperski, 2010).

Effective Integration of Midwifery

Despite the known benefits of midwifery integration into formal systems of care, successful implementation of midwifery-led continuity of care can present a number of challenges associated with establishing policy, regulatory, legal, and practice environments that support midwives' professional autonomy, and enable them to practice to optimal scope (Fauveau, Sherratt, De Bernis, 2008; Filby, McConville, & Portela, 2016; UNFPA, 2014). Furthermore,

gendered workforce dynamics and the dominance of medicine that is ingrained in the formal structures of health care systems limit the recognition, status, agency, and integration of midwifery within the organization of maternity care.

In 2014, the United Nations Population Fund and the World Health Organization released the State of the World's Midwifery report (UNFPA, 2014). The report presented Midwifery2030 as a strategy to promote the availability, accessibility, acceptability, and quality of midwifery personnel in support of the achievement of universal health coverage. The goals and actions proposed within the Midwifery2030 framework span all levels of the health system, including:

- Creating an *enabling system environment* through supportive public policy, planning, and funding;
- Creating an *enabling professional environment* through quality education, continuous professional development, and appropriate professional regulation and association; and
- Creating an *enabling practice environment* through effective resource management, supportive supervision, and seamless referral and collaboration between a team of health workers involved in the provision of person-centered maternity care.

Governments play a critical role in the provision and organization of maternity care by defining the package of maternity services that are provided, and the role of all stakeholders in the provision of this care (Benoit et al., 2015). Accordingly, political will, leadership, and support are of critical importance to the development of the enabling policy, regulatory, legal, and practice environments required to achieve effective integration of midwifery care and to allow midwives to practice to their full or optimal scope of practice (Fauveau, Sherratt, De Bernis, 2008; Filby, McConville, & Portela, 2016; UNFPA, 2014). Nevertheless, as a female-dominated

profession, whose productive role is relegated to the domestic domain, midwifery faces a constant struggle to gain and maintain respect and recognition within health care organizations, and broader health systems (Fauveau, Sherratt, De Bernis, 2008; Filby, McConville, & Portela, 2016).

A number of studies have demonstrated that despite public regulation and funding of midwifery, midwives have yet to be fully integrated into Canadian maternity care systems, and their relationships with other care providers remain strained (Ratti et al., 2014; Mattison et al., 2020; Behruzi et al., 2017). In a comparative study of eight high income countries, Malott et al. (2009) found that despite growth of midwifery in Canada, the profession makes a relatively small contribution to the total provision of maternity care in Canada. In all seven other high-income countries examined, midwives represent the primary caregivers for the majority of low risk pregnancies. The size of the Canadian midwifery workforce is also significantly smaller in comparison to those of other industrialized nations.

Midwifery is a regulated health profession in all Canadian provinces and territories. In many provinces and territories, the current workforce cannot meet demand for midwifery services (Butler, Hutton & McNiven, 2016; Malott et al, 2009; Mattison et al., 2020). Increasing public awareness means that most midwifery practice groups have accrued long wait lists for their services (Butler, Hutton & McNiven, 2016; AOM, 2015; Thiessen et al., 2016). The small size of the existing midwifery workforce not only limits the current availability of services but poses obstacles to the growth and sustainability of the profession by presenting barriers to self-regulation, and constraining the production capacity of midwifery education programmes due to the limited availability of preceptors and instructors (Thiessen et al., 2016, Morrison, 2014; Butler, Hutton & McNiven, 2016). These constraints on the expansion of midwifery are

particularly problematic given the growing shortage of maternity care providers, which is compounded by a declining proportion of family physicians opting to provide maternity care (Butler, Hutton & McNiven, 2016; Redding, 2015).

Benoit et al. (2010) contend that despite the integration of midwifery into public health systems in high income countries, neoliberal reforms have not unseated medical dominance in the provision of maternity care services, which is structurally embedded into the context, organization, and models of maternity care (Bourgeault & Mulvale, 2006; Kuhlmann et al., 2010). Medical dominance over the organization of maternity care tends to devalue midwifery knowledge and skills, and constrains the leadership and decision-making opportunities available to midwives (Sakala & Newburn, 2014; ICM, WHO, & WRA, 2016). Persistent power imbalances within hospitals mean that obstetricians continue to exert a disproportionate amount of influence on decision-making, and a considerable amount of control over other provider groups practicing within the organization, including family physicians, midwives and nurses who engage in intrapartum care (Behruzi et al., 2017, Bourgeault & Darling, 2008). In response to these challenges, a review published in 2018 by Thumm and Flynn highlights five attributes that characterize a supportive midwifery practice environment: effective leadership, adequate resources, collaboration, control of one's work, and support of the midwifery model of care.

In a system that continues to be dominated by the medical profession, midwifery is often overlooked in health policy and lacks representation at primary care decision-making tables, which limits its role and integration within Ontario's health system (Mattison et al., 2020). Overwhelmingly, the midwifery profession lacks power, agency and status in the organization of maternity care, and despite their potential insight into what measures should be undertaken to improve the quality of maternity care, the voices of midwives themselves are often excluded

from the process of change (ICM, WHO, & WRA, 2016). This exclusion, which is reflective of the gendered nature of the division of labour in maternity care, contributes to a lack of recognition of the importance of midwifery in the political realm, and by extension, inadequate investment in the development of the midwifery workforce and the establishment of enabling environments, including regulations and policies that support and protect midwives (Fauveau, Sherratt, De Bernis, 2008; Filby, McConville, & Portela, 2016). This lack of recognition, and the presence of gender inequity within the maternal health workforce, is most readily observed in the pay afforded to midwives, which is disproportionately low as compared to similar health professions that are not female-dominated (ICM, WHO, & WRA, 2016). This was confirmed in the Human Rights Tribunal of Ontario's September 2018 ruling that the differential treatment and remuneration of midwives in Ontario constitutes gender-based pay discrimination (Human Rights Tribunal of Ontario, 2018).

Prerequisites of Autonomous Choice of a Maternity Care Provider

Availability & Accessibility of a Range of Provider Options

Over the last 30 years, publications have described Canada's maternity care crisis, which introduces supply-side restrictions on pregnant people's self-determination by constraining the availability of an acceptable range of provider options. This shortage of maternity care providers has resulted from physicians' decreasing participation in maternity care, and the midwifery workforce's inadequate capacity to fill this emerging gap (Bourgeault & Darling, 2008; Bourgeault, 2001; Benoit, Carroll & Westfall, 2019).

The last decades have seen a steady decline in the proportion of family physicians providing intrapartum care (Hedden et al., 2019; Price, Lane & Klein, 2005). A recent study also suggests that this decline has been accompanied by a decline in the volume of obstetrical care provided by

family physicians who do participate in the maternity care sector (Hedden et al., 2019). A number of factors deter family physicians from providing intrapartum care, including issues surrounding challenging lifestyles and inadequate on-call arrangements, insurance costs, risks of liability and litigation, insufficient remuneration, and lack of exposure to obstetrics (Smith et al., 2009; Bourgeault & Darling, 2008; Bourgeault, 2001). In rural settings, family physicians are also deterred by the stressors and challenges associated with maintaining competence and confidence despite low birth volumes, keeping up with rapid technological advancements, practicing with limited access to specialist and surgical back-up, coping with the stress of demanding rural call schedules, and lacking access to on-call funding (Sutherns & Bourgeault, 2008; Grzybowski, Kornelsen & Cooper, 2007; Kornelsen, McCartney & Williams, 2016; Munro, Kornelsen & Grzybowski, 2013).

Adequate on-call arrangements, appropriate funding models, and the presence of obstetrical back-up have been identified by providers as key enablers to the initiation and continuation of intrapartum care provision (Smith et al., 2009; Price, Lane & Klein, 2005). Reducing risk of litigation appears to be an important motivator for physicians, while the presence of a respectful work environment has been identified as an important motivator for midwives (Smith et al., 2009).

Across Canada, demand for midwifery services exceeds supply, and knowledgeable consumers are aware that contacting a midwifery practice as soon as a pregnancy is confirmed is necessary in order to gain access to their services (Darling et al., 2019a; Jimenez et al., 2010; Behruzi et al., 2017). This presents a barrier of access for those who are not informed about midwifery care upon their first contact with the maternity care system (Darling et al., 2019a). A survey of Western Canadian midwives found that more than one third of participants had seriously

considered leaving the profession (Stoll & Gallagher, 2019). The negative impact of on-call schedules on their personal lives, mental health concerns, and physical health concerns, were all commonly cited reasons for considering a departure from the profession (Stoll & Gallagher, 2019). The most prevalent stressors identified by midwives in this study were heavy workloads accompanied by insufficient time off, interprofessional conflict, intraprofessional conflict, adverse patient outcomes, and challenges supporting physiological birth in hospital settings (Stoll & Gallagher, 2019).

Beyond availability, barriers of access can often impede optimal utilization of the available health workforce. Access to maternity care is shaped by a number of key dimensions (Campbell et al., 2013) including:

- *Spatial accessibility:* the geographic distribution of health workers, and the availability of appropriate transportation infrastructure;
- *Temporal accessibility:* the proportion of time that health facilities are open and appropriately staffed;
- *Physical accessibility:* the attributes of the physical infrastructure of health facilities, including whether they are disability-friendly;
- *Organizational accessibility:* the strength of referral networks to connect patients with appropriate health workers; and
- *Financial accessibility:* the formal and informal financial costs associated with the use of available services.

Quantitative shortages in the availability of health workers are often compounded by issues of geographic maldistribution, which impede access to quality care (Koblinski et al., 2016). Health provider geographic mobility can also result in maldistribution between and within health

systems (Bhutta et al., 2010). Health professional mobility often results in a relative oversupply of health workers in urban settings, and challenges in recruiting and retaining health workers in rural and remote areas (Gupta et al., 2011; UNFPA, 2014). Spatial definitions of access, therefore, account for both the availability and accessibility of health care services. Spatial access is contingent upon whether the available service capacity is sufficient to meet all health needs within a planning geography, and whether the dispersion of service capacity across the planning geography aligns with the spatial distribution of these health needs (Lewis, 2015). In the event that the distribution of health care services is considered to be misaligned with the distribution of needs, measures of access can serve to inform policies to promote a more equitable and efficacious distribution of resources (Lewis, 2015).

Proximity to care is positively correlated with care seeking behaviour and utilization of health care services (Murray & Grubesic, 2015). As the distance between patients and these services increases, their knowledge of available services declines, resulting in reduced care seeking behaviours (Cromley & McLafferty, 2012; Luo & Qi, 2009). Greater distances between patients and providers also introduce geographic impedance for care seeking due to the added time, resources and effort associated with accessing care (Cromley & McLafferty, 2012). These time-space constraints are particularly problematic for women whose activity spaces are constrained by the triple burden of their productive, reproductive, and domestic roles (Cromley & McLafferty, 2012; Fauveau, Sherratt & De Bernis, 2008; Filby, McConville & Portela, 2016).

As is reflected in the Society of Obstetricians and Gynaecologists of Canada's joint position paper on rural maternity care published in 2012 (Miller et al., 2012), there is consensus amongst policy-makers, clinicians, pregnant people and scientists alike that pregnant people should be offered the opportunity to birth as close to home as possible (Iglesias et al., 2015; Sutherns,

2004). In many rural settings across Canada, however, access to maternity care has been further compromised by the closure of maternity care programs at local hospitals. A number of factors contribute to rural program closures, including workforce shortages, recruitment and retention challenges, limited availability of specialist and surgical services, decreasing birth rates, concerns regarding the safety and quality of care in small facilities, concerns surrounding medico-legal liability, budgetary and financial constraints, and trends toward centralization of services to achieve economies of scale (Haque, Nigam & Sibbald, 2017; Iglesias et al., 2015; Kornelsen, Stoll & Grzybowski, 2011; Miller et al., 2012). Resulting gaps in service availability in rural areas result in decreased access to services, negative effects on maternal and neonatal outcomes, increased financial costs incurred by pregnant people to access care, additional challenges associated with employment disruptions and securing childcare, and heightened levels of stress for the pregnant person (Haque, Nigam & Sibbald, 2017; Sutherns & Bourgeault, 2008; Sutherns, 2004; Klein et al., 2002; Kornelsen & Grzybowski, 2005; Grzybowski, Stoll & Kornelsen, 2011; Iglesias et al., 2015). Notably, in a study of 52 communities across British Columbia, pregnant people who did not have access to intrapartum care close to home, and who were forced to travel outside of their communities to access care, were found to be 7.4 times more likely to experience moderate to severe stress, compared to those with local access to maternity services (Kornelsen, Stoll & Grzybowski, 2011). A separate study in British Columbia also found that longer distances to services are associated with adverse maternal and neonatal outcomes, increased rates of unplanned out-of-hospital births, and higher rates of obstetrical intervention, including inductions for logistical reasons (Grzybowski, Stoll, & Kornelsen, 2011). Furthermore, needing to travel outside their home community to give birth has been associated with lower levels of satisfaction amongst childbearing people in Ontario (Mattison et al., 2018).

Network models involving interprofessional teams of providers across smaller rural maternity care programs, regional referral, and tertiary care centres have been proposed as means of providing rural populations with better access to appropriate levels of maternity care (Iglesias et al., 2015). Evidence suggests no minimum number of births is necessary to maintain clinical competence, and that even small maternity care programs are capable of providing safe care to pregnant people who exhibit appropriate risk profiles, and allowing pregnant people to benefit from better outcomes and higher satisfaction at a lower cost to the system (Iglesias et al., 2015; Sutherns & Bourgeault, 2008; Kornelsen & Grzybowski, 2005; Miller et al., 2012). Mobile or rotating services have also been proposed as a means of increasing access to prenatal and postpartum care in rural settings (Sutherns & Bourgeault, 2008). Finally, on-call remuneration agreements have been proposed as means of incentivizing the recruitment and retention of family physicians into the provision rural maternity care (Kornelsen & Grzybowski, 2010).

Existing literature also describes a number of strategies that can be adopted by health professional education programs to facilitate rural recruitment and retention (Kornelsen, McCartney & Williams, 2016; Miller et al., 2012), including:

- establishing recruitment & admission policies that prioritize applicants who are predisposed to work in rural settings (e.g. rural residents);
- ensuring that curricula are relevant to the rural context;
- exposing students to rural practice learning experiences;
- ensuring that faculty values and attitudes support rural practice;
- providing students with the advanced skills required to practice in rural settings, and
- offering rural providers opportunities for professional development

However, low birth volumes and limited preceptor availability are recognized barriers to providing students with more obstetrical training in rural contexts (Grzybowski, Kornelsen & Cooper, 2007).

Knowledge & Awareness of Available Provider Options

Information also constitutes a critical enabling resource for access to care; the first prerequisite to care seeking is knowledge of the services available to meet your needs (Sutherns & Bourgeault, 2008). Information and education are foundational to the achievement of family-centered maternity care that empowers families to become active participants in the decision-making process (PHAC, 2017). Extant literature, however, recognizes lack of awareness of the range of available providers and birth settings amongst childbearing people, including those living in Canada, as a factor that continues to impede informed choice (Jimenez et al., 2010; Zadoroznyj, 2000).

Providers that serve as pregnant people's primary point of entry into the maternity care system, namely family physicians, do not consistently provide them with comprehensive information about the models of care and/or provider options available to them, including midwifery care (Darling et al., 2019a; Jimenez et al., 2010; Stevens et al., 2016; Zadoroznyj, 2000; Sutherns & Bourgeault, 2008). The barriers to interprofessional collaboration between maternity care providers described above are particularly problematic given that they can result in pregnant people experiencing barriers to obtaining the information required to navigate access to care (Psaila & Schmied, 2017). Studies have found that the knowledge and attitudes of family physicians toward midwifery care can influence the volume and nature of information they provide to pregnant people, and by extension impact pregnant people's access to midwifery care, either by omitting information on this provider option, or by suggesting that the individual is not

a suitable candidate for this type of care (Darling et al., 2019a). Improved interprofessional collegiality has been proposed as a necessary step toward improving pregnant people's access to timely and complete information, and to reducing barriers to referral (Sutherns, 2004).

Existing studies acknowledge word of mouth and social networks as important sources of knowledge and awareness about provider options (Darling et al., 2019a; Jimenez et al., 2010). A growing body of literature is also revealing the internet, including social media and applications, as a key source where pregnant people are seeking their pregnancy-related information (Alamer & Al-Edreese, 2021; Tizzard & Pezaro, 2019; Wright, Matthai & Meyer, 2019). In rural areas, limited social networks, combined with the rapid pace of change in the rural healthcare landscape, can result in a stronger reliance on the information provided by family physicians, and introduce limitations on pregnant people's awareness of the care options available to them (Sutherns & Bourgeault, 2008; Sutherns, 2004). First-time parents are also at a significant disadvantage in the exercise of choice given their limited knowledge of the options available to them, and the processes required to navigate access to care (Jimenez et al., 2010; Zadoroznyj, 2000).

A study in Australia found that despite strong desire for information on available models of care and to actively participate in decision-making, only one in four participants were aware of all available models of care. This study identified nine priority information needs as important to enabling comparison of available models and informed choice: cost, access to choice of mode of birth and care provider, after hours provider contact, continuity of carer in labour/birth, mobility during labour, discussion of the pros/cons of medical procedures, rates of skin-to-skin contact after birth, and availability at a preferred birth location (Stevens et al., 2016). Decision aids providing information about the full range of available options and their characteristics have

been raised as promising tools to improve access to information and enable informed decision-making (Stevens et al., 2016).

Past experiences, whether they be positive or negative, are also recognized as an important factor weighing on pregnant people's choice of provider, with unsatisfying experiences pushing them toward a different provider, and positive experiences encouraging continuity with the same provider (Darling et al., 2019a). Quality of care is, therefore, of vital importance as its effects on care seeking behaviors can amplify geographic barriers of access (Dogba & Fournier, 2009) When the quality or acceptability of the care provided at the nearest facility is perceived to be inadequate, birthing people will often bypass this facility in favor of a further facility that is perceived to provide more satisfactory service (Campbell et al., 2016, ten Hoope Bender et al., 2014; Sutherns & Bourgeault, 2008).

Ability to Navigate Access to Provider of Choice

At an individual level, pregnant people's identities shape differential access to knowledge and social capital and introduce significant disparities in the ability (self-governance) and propensity (self-authorization) to exercise autonomy (Christensen & Jensen, 2012) amongst socioeconomically disadvantaged groups, and amongst those with non-dominant racial, cultural and linguistic identities in settings where culture-matched care is not available. Such a context disproportionately constrains the opportunities to exercise autonomous choice afforded to socially, politically and economically marginalized groups (Thachuk, 2007).

For instance, while midwifery care is acknowledged as an acceptable and appropriate model of care to meet the needs and improve the health outcomes of individuals of low socioeconomic status, previous studies have demonstrated that individuals of low socioeconomic status face

increased barriers of access to midwifery care in Ontario, and are therefore less likely to utilize midwifery services (Darling et al., 2019a). These barriers include lack of knowledge of and misconceptions about midwifery. These barriers are compounded by limited awareness of midwifery services within their social networks and a tendency toward a more passive approach to care seeking, leading to a deference to the expertise of the referring physician within a system that favours medical models of care (Darling et al., 2019a).

Systemically disadvantaged populations experience reduced autonomy and barriers of access within the Canadian maternity care system (Vedam et al., 2019; Malott, 2017). Notably, individuals with medical or social risks, without postsecondary education, or who perceive racial discrimination by their provider exhibit lower levels of autonomy (Vedam et al., 2019). Indigenous People, ethnic minorities, people who have low income, people who face housing instability, people who have mental health disorders, and people who use substances have also been identified as populations who face barriers of access to acceptable maternity care (Bourgeault, 2001; Sutherns & Bourgeault, 2008). For pregnant people of low socioeconomic status who live in rural areas, geographic barriers of access are compounded by challenges associated with accessing transportation, taking time off work, and finding childcare in order to access services outside of their home community (Haque, Nigam & Sibbald, 2017).

Notably, federal medical evacuation policies in Canada have forced Indigenous pregnant people who live on reserve in rural and remote communities to travel outside of their communities at 36-38 weeks gestation to access intrapartum care in urban settings ill-equipped to provide them with culturally safe and appropriate care, negatively impacting their birth experiences and outcomes (O'Driscoll et al., 2011; Kolahdooz et al., 2016; Lawford & Giles, 2012). Indigenous People's higher risk of needing to travel long distances to access maternity care is particularly problematic

given the cultural and social importance of birthing on or near traditional lands, surrounded by family and community within this population (Smylie et al., 2021; Vang et al., 2018). The revitalization of Indigenous midwifery has emerged as a key strategy to decolonize birth, return birth to Indigenous communities, increase access to culturally safe and appropriate care for Indigenous pregnant people, and promote positive maternal outcomes and experiences within this population (Lawford & Giles, 2012; Olson & Couchie, 2013).

Similar studies from Europe, the United States, and New Zealand identify a number of subpopulations that are at higher risk of delayed care seeking or non-engagement with the maternity care system, including young people, people with higher parity (i.e. people who have birthed more children), people who are experiencing an unplanned pregnancy, ethnic minority groups, people with poorer educational attainment, people who are single, people with lower socioeconomic status, and people who use substances (Bartholomew et al., 2015). In New Zealand, a study found that young people, people of māori, pacific or asian ethnicity, and people living in more deprived households were less likely to experience choice of maternity care provider (Bartholomew et al., 2015). This study also found that pregnant people who had not accessed a maternity care provider at all were more likely to be under the age of 20 or over the age of 40, of māori, pacific or asian ethnicity, have poorer educational attainment, and live in more low resource households (Bartholomew et al., 2015).

Extant literature suggests that health systems that offer the opportunity to exercise choice of provider, may, in fact, increase inequities rather than maintaining equity (Bartholomew et al., 2015). In these systems, the individuals with access to enabling resources are most apt to exercise choice, limiting the availability of options for systemically disadvantaged populations (Bartholomew et al., 2015). Mitigation strategies that enable these populations to navigate choice

of and access to an appropriate provider are, therefore, necessary to prevent the perpetuation and amplification of existing inequities when policies of choice are implemented (Bartholomew et al., 2015).

SUMMARY

In sum, what is clearly known in the literature is that health policy, as well as the characteristics of health care delivery systems, populations, and environments interact to shape realized access to care (Aday, 2004). Within the current Canadian context, many maternity care systems are characterized by a shortage of maternity care providers that has emerged as a result of family physicians' decreasing participation in maternity care, and the current midwifery workforce's inadequate capacity to fill this emerging gap (Bourgeault & Darling, 2008; Bourgeault, 2001; Benoit, Carroll & Westfall, 2019). In rural settings, challenges with the recruitment and retention of maternity care providers and rural maternity program closures can amplify barriers of access, threaten pregnant people's opportunity to birth close to home, and adversely impact health outcomes and satisfaction (Haque, Nigam & Sibbald, 2017; Sutherns & Bourgeault, 2008; Sutherns, 2004; Klein et al., 2002; Kornelsen & Grzybowski, 2005; Grzybowski, Stoll & Kornelsen, 2011; Iglesias et al., 2015).

While access to maternity care has been examined by others, very few studies have compared access to provider-specific maternity care. Also, to our knowledge, no studies have employed geospatial analysis as a means of describing the geographic distribution of pregnant people's opportunity to exercise choice across a range of maternity care providers. This thesis contributes to knowledge by filling these two critical gaps in the literature on access to maternity care.

Furthermore, despite the recognized importance of interprofessional collaboration and a growing desire amongst pregnant people for integrated models of care, literature in this field has highlighted a number of persistent barriers that continue to impede the implementation of collaborative models of maternity care. In particular, while the benefits of midwifery integration into formal health systems are well established, existing studies have revealed that successful implementation of midwifery-led continuity of care can present a number of challenges associated with establishing policy, regulatory, legal, and practice environments that support midwives' professional autonomy and status, and enable them to be optimally integrated into the organization of maternity care (Fauveau, Sherratt, De Bernis, 2008; Filby, McConville, & Portela, 2016; UNFPA, 2014). Moving beyond the barriers and enablers to collaboration and integration within the organization of maternity care, the dynamics of how system-level policies and structures influence interprofessional dynamics, and in turn shape pregnant people's opportunity to choose from and navigate access to the full range of maternity care providers have yet to be fully elucidated in literature. As such, by adopting a systems approach in this thesis, I address this gap in the evidence base on interprofessional collaboration in maternity care.

Finally, because very few publicly-funded maternity care systems internationally offer pregnant people who are at low risk of obstetrical complication the opportunity to choose between primary and tertiary care providers, literature on the factors influencing pregnant people's opportunity to exercise autonomous choice of provider, and the factors influencing this choice, is scarce. The limited literature in this field suggests that in order to afford pregnant people the opportunity to exercise autonomous choice of provider, health systems must ensure that an acceptable range of provider options is available and accessible within the local organization of maternity care, that pregnant people are made aware of and knowledgeable about the available provider options, and

that pregnant people have the ability and resources to navigate access to their provider of choice. Lack of consistency and comprehensiveness in the information provided by health care providers, and the resulting reliance on word of mouth and past experience, can impede informed choice, particularly for first time parents, parents living in rural settings, parents with limited social networks, and parents who are socially, politically or economically marginalized (Darling et al., 2019a; Jimenez et al., 2010; Stevens et al., 2016; Zadoroznyj, 2000; Sutherns & Bourgeault, 2008). In systems that offer choice of provider, the achievement of equitable access to care requires the implementation of mitigation strategies to ensure that all populations are equipped with the enabling resources required to choose and navigate access to their preferred provider (Bartholomew et al., 2015). The mixed-methods I adopt in this thesis represent a unique opportunity to contribute to this nascent area of research by exploring the interaction between the geographic accessibility of provider-specific maternity care and pregnant people's differential access to the broader range of prerequisite knowledge and resources required to support their ability, opportunity and propensity to exercise autonomous choice of provider.

Building on the context and literature presented in this chapter, this thesis is organized as follows. In chapter 2, I present the methodological approach I adopted to describe the distribution of access to the full range of maternity care providers across the Champlain Region, elicit the individual, organizational and system-level factors shaping access and autonomy within the local maternity care system, and identify locally-relevant solutions to address the challenges identified. In chapter 3, I describe the distribution of access to the full range of maternity care providers across Ontario's Champlain Region and explore the geographic determinants of access present within this region. In chapter 4, I describe the system-level factors, including health policy and the characteristics of the healthcare delivery system, that are shaping access to

integrated maternity care within the region. In chapter 5, I explore the network of factors that are shaping pregnant people's ability, opportunity and propensity to exercise informed choice of a maternity care provider within this regional maternity care system. Finally, in chapter 6, I conclude with a discussion of the key findings of this thesis, grounding its theoretical, methodological, and practical contributions in a revised Framework for the Promotion of Equitable Access and Autonomy in Maternity Care Systems.

Throughout this thesis, I have chosen to use the gender-inclusive term "pregnant people" to recognize gender diversity within the birthing population. I have also chosen to use the term "parent" participant, rather than "patient" participant to acknowledge their broader social identities, unique needs, and potential contributions to the design and provision of care beyond the traditional unidirectional clinical interactions between patients and providers. Finally, I have chosen to use the provider-inclusive term "maternity care programs" rather than "obstetrical programs" to recognize the contributions of the full range of maternity care providers to care delivery. I have, however, maintained the original terminology used in direct quotations. Some of these quotations, therefore, refer to "women", "mothers", "patients", and "obstetrical programs".

Chapter 2
Methodology

CHAPTER 2: METHODOLOGY

In this thesis, I adopted an integrated knowledge translation approach (Bowen & Graham, 2013), using an explanatory sequential mixed methods design (Creswell, 2014), which encompassed two complementary stages:

- Stage 1: a quantitative geospatial mapping exercise to assess pregnant people's access to the full range of maternity care providers across the Champlain Region
- Stage 2: qualitative focus groups and individual interviews with parents, providers, and policy-makers to explore the individual, organizational, and system-level factors that are enabling or restricting access and autonomy

The University of Ottawa's Social Sciences and Humanities Research Ethics Board conferred ethical approval for both stages of this thesis (S-11-19-2363 and S-12-19-5320).

In keeping with systems thinking, adopting a mixed methods approach was conducive to a thorough and multi-leveled investigation of all proposed research questions. First, it enabled a description of the system's current capacity to equitably support pregnant people's access to the full range of maternity care providers and their opportunity to exercise autonomy in choosing a maternity care provider. It also fostered a more robust understanding of the structural conditions that shape the system's capacity to achieve this objective. Finally, this mixed methods approach allowed for the identification of strategies that could serve to remedy system imbalances identified.

I chose to adopt a social constructionist epistemological perspective throughout this thesis in order to garner a holistic, nuanced, and contextualized representation of the local maternity care system. Such a perspective recognizes that "all knowledge, and therefore all meaningful reality as such, is contingent upon human practices, being constructed in and out of interaction between

human beings and their world, and developed and transmitted within an essentially social context" (Crotty, 1998, p. 42). The social constructionist paradigm was relevant to the pursuit of my stated objectives given that health systems are inherently human systems shaped by social processes. A critical stance toward taken for granted knowledge incited a full exploration of the social, political, economic, and geographic determinants of the dynamics observed in the system at study (Burr, 2008; Crotty, 1998). In adopting a social constructionist approach, I sought to exercise reflexivity in my examination of this system within the local context.

Adopting an integrated knowledge translation approach, in which "research is designed to be a collaborative venture between researchers and knowledge users" (Bowen & Graham, 2013, p.17-18), was aligned with my desire to address an issue identified by the local community, to engage with community and knowledge user partners in all phases of the research process (including methodological design, data collection, analysis and interpretation, and dissemination), and to produce applicable knowledge equipped to inform evidence-based action toward the promotion of access and autonomy within the local maternity care system (Jull, Giles & Graham, 2017). In line with this approach, I completed this thesis in collaboration with an advisory committee composed of researchers, maternity care providers, and community organizations and policy-makers who have an intimate knowledge of, and are positioned to affect change within, the local system (Nguyen et al., 2020) (see Textbox 3 on p.44 for a full list of members). This advisory committee was initially formed as I was preparing my funding applications for the Women's xChange $15K Challenge Grant and Health System Impact Fellowship, and was refined to ensure appropriate representation when I entered into my fellowship with CMNRP. I met with the advisory committee at key points over the course of the thesis to define the research questions and objectives, validate the proposed approach, develop and operationalize our

recruitment and data collection strategy, and guide the interpretation of preliminary findings. Meaningfully integrating the expertise and experience of knowledge users, including providers, policy-makers, and parents, into all phases of this thesis was of critical importance to answering my guiding research questions and enabling their translation into evidence-based action within the local maternity care system.

While birthing people were not represented on my advisory committee, parents were engaged and consulted throughout the research process. First, the research questions guiding this thesis were in direct response to the challenges identified by CMNRP through extensive consultation with families, healthcare providers, and community organizations during phase 1 of their capacity planning work. I also frequently consulted with CMNRP's Advisory Committee and Family Advisory Committee, both of which include parent representatives. Finally, as is discussed in my description of my own positionality, throughout the implementation of much of this thesis, I was a pregnant person myself with lived experience of the phenomenon and context at study.

TEXTBOX 3 - Advisory Committee Membership

- Ivy Lynn Bourgeault (uOttawa/CHWN)
- Mari Teitelbaum (CHEO / CMNRP)
- Darlene Rose (CMNRP)
- Mark Walker (BORN Ontario / CMNRP Obstetrical Community of Practice)
- Daisy Moores (CMNRP Family Medicine Community of Practice)
- Rosemarie Parisien (CMNRP Midwifery Community of Practice)
- Elyse Banham (Ottawa Birth & Wellness Centre)
- Elizabeth Heller (Canadian Association of Midwives)

My ability to adopt an integrated knowledge translation approach (Bowen & Graham, 2013) was strengthened by the opportunity to complete this thesis as an embedded research project within

the Champlain Maternal Newborn Regional Program (CMNRP) through CIHR's Health System Impact Fellowship program. This embedded approach was crucial to the success of this thesis, supporting the mobilization of necessary funding, facilitating participant recruitment and data collection, and enabling engagement with key community stakeholders throughout the thesis' conceptualization and implementation. I participated in monthly meetings with the Regional Director of CMNRP to share progress updates, consult on interim reports of quantitative and qualitative findings, and elicit guidance for upcoming activities. I also provided regular updates to, and sought feedback from, CMNRP's perinatal consultants during team meetings. This partnership also enabled regular consultations with members of CMNRP's Advisory Committee, Network Council, Family Advisory Committee, and professional Communities of Practice.

STAGE 1

In stage 1, I used a geographic information system to understand how pregnant people's spatial access to the full range of maternity care providers was distributed across the Champlain Region. In doing so, I sought to identify underserviced areas where pregnant people's choice of maternity care provider may have been restricted by issues of service capacity and geographic access.

Data Collection

Multiple sources of data were required to populate layers of mapping and analysis, including:

- geographic boundary files delimiting both the Champlain Region and the aggregate dissemination areas that fall within its boundaries;
- network datasets simulating the transportation network within the Champlain Region;
- administrative billing data from the Canadian Institute for Health Information's (CIHI) National Physician Database on the maternity care service capacity generated by obstetricians and family physicians practicing within the Champlain Region;

- census survey data from midwifery practice groups on the maternity care service capacity generated by midwives practicing within the Champlain Region; and
- aggregate birth registry data from BORN Ontario on the maternity care service requirements of the population residing within each of the Champlain Region's constituent aggregate dissemination areas.

Geographic Files

To conduct this geospatial analysis, a number of geographic network and boundary files were required. Namely, the DMTI Network Data Set provided a comprehensive illustration of the transportation network in Ontario, and enabled travel time estimates through its inclusion of speed limits on roadways (DMTI™ Spatial, 2018). I used the Ministry of Health's 2011 Region Boundaries shapefile to outline the perimeter of the Champlain Region, and Statistics Canada's 2016 Census Digital Boundary File to outline the perimeter of each aggregate dissemination area within the Region's boundaries (Statistics Canada, 2017a). CIHI and BORN both used Canada Post's Postal Code Conversion File to attribute physicians to an aggregate dissemination area of practice using their postal code of practice, and parents to an aggregate dissemination area of residence using their postal code of residence.

I chose Statistics Canada's aggregate dissemination areas (ADAs) as the geographic unit of analysis for this thesis because they were the most granular level of geography that covered the entire planning area for which data could be released by stewards without encountering high levels of small cell data suppression. Where possible, ADAs have a population between 5,000 and 15,000 people, and were created in 2016 to enable the release of census data for all areas of Canada. I used ArcGIS ® (ESRI, 2020) to calculate a central point that fell within the boundaries of each ADA polygon. I then used ArcGIS's calculate locations tool to match this central point with its closest network location on the DMTI Network Data Set (i.e. route file).

Service Capacity

To gain access to the data required to estimate the service capacity generated by obstetricians and family physicians who provide intrapartum care within the Champlain Region, I submitted a data request to CIHI. Through this request, CIHI generated provider profiles for all physicians who met two inclusion criteria. First, their total number of births attended must have exceeded zero in any of the three most recent years for which data were available (FY2015/16-FY2017/18). Second, their postal code of practice location must have fallen within the Champlain Region's geographic boundaries in any of the three most recent years for which data is available. The provider profiles generated by CIHI included the following information:

1. scrambled physician identifier;
2. fiscal year;
3. ADA of practice location;
4. gender;
5. physician specialty;
6. physician subspecialty; and
7. total number of births attended as the principal care provider.

In order to collect the requisite data to estimate the service capacity generated by midwives who provide intrapartum care in the Champlain Region, I conducted a census survey of all midwifery practice groups serving the Champlain Region between October 2019 and February 2021. I designed the survey instrument to collect the data required to populate the accessibility index score calculations, and refined the instrument based on feedback from leadership at CMNRP. In addition to contact information, the survey instrument (see Appendix 1) encompassed a series of questions related to:

1. the number of midwives within the practice group by employment category;
2. the practice group's language(s) of service provision;

3. the postal code of practice office(s), and, if applicable, the proportion of their care that is delivered at each office;
4. the boundaries of the practice group's catchment area;
5. the hospitals where midwives within the practice hold privileges;
6. the yearly volume of births that midwives within the practice attend as the primary attendant (FY2013-14-FY2018-19);
7. the yearly volume of billable courses of care that midwives within the practice attend as the principal care providers (FY2013-14-FY2018-19);
8. the yearly proportion of the practice's total volume of care that is delivered to residents of the Champlain LHIN (FY2013-14-FY2018-19);
9. whether the midwifery practice group maintains a waitlist; and
10. the average number of requests for care that the practice is unable to accommodate on a yearly basis due to caseloads being at full capacity.

A key contact at each midwifery practice group identified through CMNRP's Midwifery Community of Practice received an email signed by the Regional Director of CMNRP, my thesis supervisor, and myself, asking them to coordinate the completion of a single survey within their practice group. I offered the midwifery practice groups the option of completing the survey online via Qualtrics, by email using a Word document, on paper using a printed version of the Word document, or in the form of an interview scheduled at the time and location of their convenience. I made the survey available to midwifery practice groups in both French and English. While some of our key contacts within the midwifery practice groups were quick to respond to the survey and were familiar with the reports they would need to pull from their administrative portals to answer the survey questions, I engaged in considerable amounts of follow-up and technical assistance in order to obtain accurate and complete data from other midwifery practice groups. For example, I completed a number of site visits to select midwifery practice groups to inquire about the status of their survey and offer my assistance in pulling the

required data. I also collaborated with BORN Ontario to offer practices a step-by-step technical guide to support pulling the required data from their BORN Ontario accounts. In the end, I was able to obtain the necessary information from all midwifery practice groups who have practice locations within the Champlain Region.

Service Requirements

Through a data request, BORN Ontario pulled birth records for all births that occurred between fiscal years 2015/16 and 2017/18 for which the maternal postal code of residence fell within the geographic boundaries of the Champlain Region, and released aggregate data on the yearly volume of births generated by residents of the Region.

Data Analysis

Estimating Service Capacity

Drawing on the census survey of midwifery practice groups and the data requested from the Canadian Institute for Health Information's National Physician Database, I first used ArcGIS ® (ESRI, 2020) software to map the service capacity generated by obstetricians, family physicians, and midwives providing intrapartum care across the Champlain Region.

Using the data provided by CIHI, I geolocated each provider using a representative point for their ADA of practice location, and calculated their service capacity using the average yearly volume of births they attended as the principal care provider (i.e., as the provider who attended the birth) over the three fiscal years (FY2015/16-FY2017/18).

Using the data collected through the census survey of midwifery practice groups, I calculated the service capacity for each geolocated midwifery practice group office by multiplying the average yearly volume of births the midwives within the practice attended as the principal care provider

(i.e., as the provider who attended the birth) over the three fiscal years (FY2015/16-FY2017/18) by the proportion of the midwifery practice group's total care that was delivered at the office in question. This adjustment was necessary as many midwifery practice groups provide services across multiple practice locations.

Estimating Service Requirements

I then added the distribution of maternity care service requirements as an additional layer of mapping, drawing on aggregate data from BORN Ontario, which houses records for all births that occur in Ontario. I used these aggregate data to map the distribution of maternity care service requirements, measured using the average yearly volume of births generated by residents of each ADA over three fiscal years (2015/16-2017/18). Whereas I included all births generated by residents in the service requirements for obstetricians, in the case of midwives and family physicians, I limited my estimate of service requirements to births classified as low risk according to the Provincial Council for Maternal and Child Health's (PCMCH) definition (see Appendix 2 for this definition).

Calculating Accessibility Index Scores

Using a variation of the Enhanced Two-Step Floating Catchment Area Method (Luo & Qi, 2009), I calculated a provider-specific accessibility index score for each census ADA within the Champlain Region. I produced accessibility indices using both 30-minute and 45-minute drive-time thresholds. In both cases, I weighted the service capacity and service requirements measures within these catchment areas based on the distance between population and provider locations.

There is great variability in the drive-time thresholds used by similar studies within existing literature. These are largely normative thresholds, in that by defining a threshold, you are stating

that within your system, this threshold is the maximum drive-time characterized as "acceptable" spatial access to a particular type of provider for a particular type of population. The only two studies I could identify that examined access to maternity care in a similar way (Gao et al., 2016; Vadrevu & Kanjilal, 2016) used thresholds that were considered to be either overly aggressive (15-minute drive-time threshold) or overly conservative (60-minute drive-time threshold) within our local context. The 30-minute threshold commonly-used in maternity care is, in fact, related to time from decision to birth (Darling et al., 2019b), but I did not find any literature on acceptable drive-time thresholds for prenatal and postpartum care, which rendered this the only threshold available within the evidence-base to inform my initial conversations with local stakeholders surrounding an appropriate normative threshold for access across the continuum of maternity care. I consulted the 30-minute threshold with CMNRP, and they agreed that this represented an acceptable threshold within their local context. They also requested the addition of the 45-minute threshold to better reflect the realities of the rural residents of the Region, and to explore this alternative threshold's impact on calculated accessibility index scores.

Luo and Qi (2009) propose a two-step process to measure geographic accessibility of care and to identify areas of workforce shortage. The fundamental measure upon which the original methodology is built is a provider-to-population ratio. Provider-to-population ratios are widely employed to measure workforce availability. The use of workforce-to-population ratios as thresholds to assess workforce sufficiency can present a number of benefits including their ease of use and understanding by decision-makers, their minimal data requirements, and their utility for cross-jurisdictional benchmarking and comparison. However, the use of normative provider-to-population ratios across geographies can be particularly problematic given that this approach leans on the assumption that population health needs, and the resulting workforce requirement,

are consistent across planning geographies and time (Dal Poz et al., 2010; ten Hoope-Bender et al., 2017). Furthermore, these ratios assume constant activity and participation rates amongst providers and do not reflect variability in workforce configurations or provider practice patterns (Dal Poz et al., 2010; Dreesch et al., 2005; Hongoro & McPake, 2004; McQuide, Stevens & Settle, 2008).

Alternatively, workforce sufficiency can be assessed by conducting more data-intensive health workforce planning exercises that assess the alignment between service capacity, and service requirements (McQuide, Stevens, & Settle, 2008; Tomblin Murphy et al., 2016). Beyond headcount, the service capacity of maternity care providers is shaped by the participation rates, activity rates, and practice patterns present within the workforce. As a result, the use of unadjusted headcounts can generate overestimates of available service capacity, since these estimates do not account for: (1) the presence of part-time work within the workforce; (2) the time maternity care providers dedicate to non-clinical tasks; (3) the time that maternity care providers dedicate to other sectors of care; or (4) variability within and between cadres of maternity care providers in the volume and types of services provided.

In order to build upon Luo and Qi's (2009) approach, and account for a more nuanced representation of the match between the service requirements generated by population health needs, and the service capacity generated by provider practice patterns, I replace provider-to-population ratios with service capacity-to-requirement ratios in my adapted methodology.

In the first step of this adapted methodology, once I had geolocated representative points for providers and populations, I identified all of the population locations that fell within a weighted

drive-time threshold from each practice location and computed a service capacity-to-requirement ratio for the defined catchment area.

Ideally, each geolocated provider's service capacity is measured using the average yearly volume of births they attended as the principal care provider, adjusted for the proportion of care delivered to residents of the Champlain Region and for the proportion of care delivered at the practice location at study. Unfortunately, due to data limitations and resource constraints, I was unable to apply an adjustment for the proportion of care delivered to Residents of the Champlain region for this exercise.

Therefore, the total service capacity attributed to a particular provider location represents the sum of the service capacity of all professionals within the provider group whose postal code of practice falls within a particular ADA. I used the service areas function in ArcGIS to create a catchment area with three equidistant breaks (i.e. travel time distances) for each provider location. When deploying the 30-minute drive-time threshold, these breaks were set at 10, 20, and 30 minutes. When deploying the 45-minute drive-time threshold, these breaks were set at 15, 30, and 45 minutes. Using ArcGIS's spatial join function, I calculated the total service requirement input into this step using the weighted sum of the service requirements attributed to each population location falling within the established drive-time threshold from the provider location in question. As is prescribed by Luo and Qi (2009), I calculated Gaussian weights for the mid-point of each break and applied them to the service requirements of population centres falling in the first, second, and third band of the catchment areas (0.9649; 0.7014; 0.2544). The calculations executed in this first step can be represented by the following equation:

$$R_j = \frac{\sum_{s \in \{gj\}} V_s}{\sum_{K \in \{d_{kj} \in D_r\}} B_k W_r}$$

Where:

- *R* represents the service capacity-to-requirement ratio for provider location *j;*
- *V* represents the average yearly volume of births provider *s* - who is a member of provider group *g* and practices at provider location *j* - attended as the principal care provider;
- *B* represents the average yearly volume of (low risk) births generated by residents of population location *k*, whose distance *d* from provider location *j* falls within band *r* of drivetime threshold *D;* and
- *W* represents the gaussian weight for band *r* of drivetime threshold *D*

In the second step of this adapted methodology, I produced a provider-specific accessibility index score for each population location, using the spatial join function in ArcGIS to calculate the weighted sum of the service capacity-to-requirement ratios of all provider locations that fall within the established drive-time threshold from the population location. I produced the catchment areas for population locations using the same procedures used to calculate the provider location catchment areas. I applied the same gaussian weights to adjust the service capacity-to-requirement ratios of provider locations falling in the first, second and third band of the population catchment areas. The calculations executed in this second step can be represented by the following equation:

$$A_{gk}^{F} = \sum_{K \in \{d_{kj} \in D_r\}} R_j W_r$$

Where:

- *A* represents the Accessibility Index Score for provider group *g* at population location *k;*
- *R* represents the service capacity-to-requirement ratio for provider g at provider location *j*, whose distance *d* from population location *k* falls within band *r* of drivetime threshold *D*; and
- *W* represents the gaussian weight for band *r* of drivetime threshold *D*

Following these steps, I was able to produce choropleth maps, which visually represent the provider-specific accessibility index scores calculated for each ADA, and allow us to compare relative accessibility within the region and across provider groups (see p.80). An accessibility index score of 0, which is represented in white in these maps, indicates that the population in this ADA has no access to the provider group in question within the established drive-time threshold. As scores increase and the shades of purple become darker, relative access to this provider group increases, accounting for the distance between population and provider centres, and the alignment between the service requirements generated by population and the service capacity generated by the workforce within a particular area. It should be noted that these scores are relative measures that allow us to compare levels of access within the Champlain Region and across provider groups, but no particular score is a normative threshold for adequacy of access. In other words, we can say that certain ADAs have more or less access to a particular provider group than others, but we cannot definitively determine whether access is considered to be adequate in any of these ADAs.

For some population locations, accessibility scores reflect combined access to multiple providers' capacity. For example, the pregnant population living in central Ottawa could likely reach multiple providers within a 30-minute drive-time. For others, such as some suburban populations, accessibility scores would only reflect access to the service capacity generated by a

single provider. Finally, some rural population locations would have absolutely no access to any providers within a 30-minute drive-time, resulting in an accessibility index score of zero. The weighted rings used in this methodology also allowed me to account for the distance between populations and providers in my measurement of access. This acknowledged that a provider whose practice location was within 5 minutes of an individual's residence would provide more access to them than a provider who practices 25 minutes away from this residence.

STAGE 2

In stage 2 of this explanatory sequential mixed methods design (Creswell, 2014), I conducted semi-structured individual and focus group interviews with parents, providers and policy-makers across the Champlain Region.

Recruitment

I used stratified purposive sampling (Patton, 2002) to promote maximum variation within each of the samples, and promote the capture of diverse perspectives and experiences across stakeholders and subregions for comparative analysis. Using targeted recruitment efforts, I endeavoured to promote equitable representation across subregions, hospitals, stakeholder groups, provider groups, and parent groups. For instance, once I had completed the provider and policy-maker focus groups, I completed a series of targeted individual interviews with representatives of hospital sites that were not represented in the original focus groups to ensure that all sites had the opportunity for their perspectives and experiences to be captured in these findings. Furthermore, during parent recruitment, I asked interested participants a series of screening questions - including when they had birthed their child, where they resided within the Champlain Region, and which type of provider attended their birth – to track the profile of participants recruited to date and inform targeted recruitment efforts to balance the sample. While I considered focus

groups my preferred form of data collection in this stage, targeted recruitment of individual interviewees was used as a pragmatic strategy to enable me to account for the challenging schedules of maternity care providers as I attempted to promote representation within my sample across provider groups and maternity care programs.

Focus groups were my preferred method of data collection in stage 2 for four principal reasons. First, I adopted a social constructionist epistemological perspective throughout this thesis. This perspective views knowledge as constructed through the interaction between human beings, and between human beings and their environment, which renders focus groups, where individuals interact in formulating their answers to interview questions, an ideal setting for knowledge generation. Second, I felt that participants may feel more comfortable engaging in a rich discussion about this relatively complex topic in a group setting, where they could feed off of each other and brainstorm, while affording them space to agree, disagree, and build upon what others were communicating. Third, the focus groups themselves were also in line with an integrated knowledge translation approach, granting participants the opportunity to share and discuss these issues and experiences with their peers, and identify locally acceptable interventions to address the challenges identified. Finally, from a purely practical perspective, focus groups enabled me to reach more participants more efficiently.

I recruited policy-maker participants through CMNRP's Advisory Committee and Network Council. Members of the Advisory Committee and Network Council were notified during one of their regular meetings, and through a follow up email, that their next meeting would involve a focus group on this topic. CMNRP's Network Council is composed of CMNRP leadership and an executive or director-level representative from each of CMNRP's signatory organizations. CMNRP's Advisory Committee is composed of CMNRP staff and leadership, clinical directors,

physicians, and midwives representing hospitals across the region, managers and supervisors from Public Health Units, executive directors from Community Health Centres, a family representative, and the chairs of CMNRP committees and workgroups. The vast majority of policy-maker participants were members of these groups; however, policy-maker representatives of maternity care programs who were not regularly represented within these groups were extended special invitations to attend the meetings within which I would be conducting the focus groups. Following the completion of the focus groups, I recruited representatives of maternity care programs who were unavailable to attend the focus group discussions to complete individual interviews. Through these activities, I was able to connect with policy-makers from all but one of the region's maternity care programs. The missing program chose not to participate in this study.

I recruited provider participants through CMNRP's Obstetrical Community of Practice, Family Medicine Community of Practice, and Midwifery Community of Practice. As was the case for policy-makers, members of these communities of practice were notified during one of their regular meetings, and through a follow up email, that their next meeting would involve a focus group on this topic. Once focus groups had been completed with the Obstetrical Community of Practice, the Family Medicine Community of Practice, and the Midwifery Community of Practice, respectively, I engaged in targeted recruitment of family physicians from maternity care programs that had not been represented during the initial focus group with family physicians, and of midwives from midwifery practice groups who had not been represented during the initial focus group with midwives. Obstetricians from all maternity care programs across the region identified by the head of the Obstetrical Community of Practice were offered the opportunity to engage in one of multiple scheduled focus groups, or in an individual interview scheduled at their convenience. Through these activities, I was able to connect with midwives from eight of

the nine midwifery practice groups active in the Region, family physicians from six of the seven maternity care programs where family physicians provide intrapartum care across the Region, and obstetricians from three of the eight maternity care programs where obstetricians provide intrapartum care across the Region.

Due to the emergence of the COVID-19 pandemic and the onset of my parental leave, recruitment of patient participants was postponed from Winter 2020 to Winter 2021. As the focus of this study was not the impact of COVID-19 on access and/or choice, when recruitment and data collection resumed in January 2021, I adjusted the parent inclusion criteria to capture the experiences of pregnant people who had chosen and accessed their maternity care provider prior to the emergence of the pandemic. Parent participants were therefore eligible to participate if they were residents of the Champlain Region who had birthed between January 2018 and September 2020. Parents who had birthed their children in September 2020 were chosen as the cutoff group because they had most likely completed their first trimester of pregnancy, and had presumably chosen and accessed their maternity care provider, before the emergence of the pandemic in March 2020. Following a consultation with CMNRP's Family Advisory Committee, I recruited parents through CMNRP's online platforms and dissemination channels, and through social media, including posts by partner organizations and targeted posts on local parent groups on Facebook. To promote diverse representation in parent participants, I reached out to administrators of Facebook groups for which I did meet inclusion criteria, and asked if they could post my recruitment materials on their page or grant me temporary access to the group to allow me to post the materials myself. I provided parents with an honorarium for their participation in the form of a $20 gift card.

Data Collection

Between February 2020 and August 2021, I completed 20 data collection activities with 69 participants, including 20 parents, 28 providers, and 21 policy-makers. In Table 5 (p.60), I present a full description of data collection activities and participants. I conducted two initial focus groups with policy-makers, a focus group with family physicians, and a focus group with midwives between February and March of 2020. Qualitative data collection was then suspended at the onset of the COVID-19 pandemic, and further delayed by my own parental leave. Recruitment and data collection resumed in January 2021.

TABLE 5: Qualitative Data Collective Activities and Participants

Stakeholder Group	Data Collection Activities	Participation	Stratified Purposive Sampling Criteria
Parents	• 6 English parent focus groups • 1 French parent focus group	20 parents: • 15 parents who had sought care from an obstetrician • 1 parent who had sought care from a family physician • 7 parents who had sought care from a midwife	Equitable representation of: •subregions •hospitals •stakeholder groups •provider groups •parent groups
Obstetricians	• 2 obstetrical focus groups	3 obstetricians (3/8 hospital sites represented)	
Family Physicians	• 1 family medicine focus group • 1 targeted interview with a family physician	6 family physicians (6/7 hospital sites represented)	
Midwives	• 1 midwifery focus group • 3 targeted interviews with midwives	19 midwives (8/9 midwifery practice groups represented)	
Policy-Maker	• 2 policy-maker focus groups • 3 targeted interviews with policy-makers	21 policy-makers (7/8 hospital sites represented)	
Total	• 20 data collection activities	69 participants	

I conducted all provider and policy-maker focus groups in English. I offered providers and policy-makers participating in individual interviews the option of completing this interaction in either French or English, but all interviewees requested an English interview. I offered the parent participants the option of completing a focus group in French or in English; one parent focus group was completed in French and six parent focus groups were completed in English.

During these semi-structured focus groups and individual interviews, I adopted the interview guide approach described by Patton (2002). This approach prescribes the creation of an interview guide outlining a series of questions and topics that should be addressed over the course of each interview, while affording the researcher the freedom to adapt the structure and style of conversations, and to use probes in order to explore emerging topics. In my interview guide, I asked participants to engage in:

1. the validation and interpretation of the maps produced in stage 1;
2. the exploration of individual, organizational, and system-level factors that are shaping access and autonomy within the local maternity care system; and
3. the identification of locally-relevant policy recommendations.

After presenting the maps produced in stage 1, I asked participants whether or not the accessibility indices displayed in the choropleth maps were congruent with their experiences within the local maternity care system, whether they deemed access to be adequate and/or equitable, and whether they identified any areas in the Region as being either over or underserviced for provider-specific care. I then asked participants to discuss the individual, organizational, and system-level factors either enabling or restricting access within the local maternity care system. Throughout both focus group and individual interviews, I populated a matrix in real time for participants to see, which synthesized the factors identified by participants and served as a common visual reference point to guide further discussion. Once the discussion

of factors shaping access was complete, I presented a definition of the precursors to relational autonomy, and asked participants to supplement the existing matrix with factors that were either enabling or restricting autonomy within the local maternity care system. Finally, once the matrix was fully populated, I asked participants to identify key interventions that could serve to alleviate barriers and reinforce the enablers they had identified.

During the three focus groups that were conducted in-person prior to the emergence of the pandemic, I used color coded post-its to create the matrix on a wall. Following the emergence of the pandemic and the transition to virtual platforms, I converted the interview guide and matrix into a Microsoft PowerPoint format (see Appendix 3).

I audio-recorded all individual and focus group interviews and transcribed these recordings using Otter.ai software. I hired a transcription professional to transcribe the parent focus group that was conducted in French. Finally, prior to the initiation of data analysis, I reviewed all transcripts while listening to the audio recording to promote the accuracy of the transcribed records.

Data Analysis

I thematically analyzed (Braun & Clark, 2006) the interview and focus group transcripts using Nvivo 12 Pro to organize each coded excerpt. I first read through the entire dataset in order to familiarize myself with its content (Braun & Clarke, 2006). I then initially inductively coded a sample of 4 focus group transcripts. I reviewed these codes with my thesis supervisor and with the Regional Director of CMNRP, who both provided comments on potential thematic groupings. This initial coding was also used to produce an interim report for CMNRP, which was circulated internally for feedback. Following this consultative process, these initial codes were collated into initial themes to develop an inductive coding scheme, which was then applied to the

remaining transcripts (Braun & Clarke, 2006). Excerpts of text were assigned to all relevant thematic codes. In the event that a salient excerpt of text did not align with any of the thematic codes, an additional inductive code was added to the coding scheme. Through a subsequent review, I generated a thematic map that refined the themes, the interaction between themes, and the relationships between their constituent codes (Braun & Clarke, 2006) in order to develop a cohesive list of the factors affecting pregnant people's opportunity to exercise autonomy in choosing a maternity care provider within the Champlain region. The process of writing, and generating rich thick descriptions of the data, also assisted in my analysis. Synthesizing the quotes attributed to a particular code into a cohesive narrative enhanced my understanding of the theme itself, and of the relationship between themes, which in turn enabled the higher level of analysis described in my discussion.

POSITIONALITY

Throughout this thesis, I exercised reflexivity to recognize my positionality as a researcher and an individual. This was particularly important given that in many ways, I could have been considered the 70th participant in this study; I fit my own inclusion criteria as a parent participant. I was a resident of the Champlain Region, and during the final stages of thesis conceptualization, I became pregnant and was navigating the very process I was studying: choosing and accessing a maternity care provider. Despite my extensive knowledge of the options that were available to me, my understanding of the challenges associated with accessing care, and the wealth of resources at my disposal, I was on wait lists at four different midwifery practice groups for my first trimester, until I was eventually accepted into care. During many of my meetings with the Advisory Committee and during the first round of data collection with providers and policy-makers, I was visibly pregnant. In a climate of interprofessional tensions

and reluctance towards capacity planning work, I feared that my choice to access the care of any particular provider would be construed as proof of bias toward that provider group, and chose to keep my choice of provider private. When my son was born a month early at the height of the first wave of the pandemic, many of the care providers and administrators who were caring for us knew me because of their engagement with this thesis. During the second round of data collection, many parent participants were my peers; parents with children who had been born at the onset of the pandemic, or who had been parenting in a pandemic for over a year. In this round of data collection, providers would also share their experiences caring for pregnant people just like me during the pandemic.

While the findings presented in this thesis resonate with my own experience within the local maternity care system, in light of this unique confluence of my personal and professional life, I made a conscious effort to ensure that the themes and findings that emerged from this study were thoroughly grounded in the experiences and perspectives of study participants rather than my own. For example, after having completed the first draft of my findings, I reviewed the document – paragraph by paragraph – referring back to my dataset to confirm that I had sufficient evidence to support each statement. I do, however, acknowledge, that the common experience and understanding I shared with participants enabled me to embody the principles of empathetic interviewing prescribed by Fontana and Frey (2005), who describe interviews as collaborative creations during which "the interviewer becomes an advocate and partner in the study, hoping to be able to use the results to advocate for social policies and ameliorate the conditions of the interviewee" (p.117). This position is aligned with both the feminist perspective and integrated knowledge translation approach I assumed throughout this thesis.

I also completed this work as an embedded research project and was therefore required to balance a dual identity as both a fellow with CMNRP – internal to the organization – and an independent student researcher completing a thesis on this topic – a scientist who would adopt rigorous methods to explore this issue. CMNRP and I had framed this thesis as an extension of CMNRP's existing capacity planning work, which would enable the organization to delve deeper into the health workforce considerations that were outside the scope of their previous capacity planning report produced by KPMG. While this provided a clear impetus for my work, it also imbued this new exercise with the legacy of the previous report. The last round of capacity planning had been perceived by many providers as biased toward midwifery, generating significant resistance towards any new capacity planning work. This fear of bias amongst family physicians and obstetricians was compounded by local stakeholders' familiarity with my thesis supervisor, who is a well-known researcher on midwifery. As a result, I invested considerable time and effort into demonstrating the methodological rigor and impartiality of this exercise to gain the confidence and buy-in of local stakeholders, including members of the advisory committee. In addition to hosting consultations with CMNRP's Network Council, Advisory Committee, Family Advisory Committee, and Communities of Practice, I held a series of meetings with the leads and members of the Obstetrical Community of Practice, the Family Medicine Community of Practice, and the Midwifery Community of Practice prior to the initiation of data collection to ensure that all provider groups had the opportunity to provide input on the methodology.

From the thesis' inception, I aimed to recognize the contribution of all intrapartum care providers to our local maternity care system. My approach acknowledged that access to obstetricians is essential to providing appropriate care to pregnant people who are considered high risk, and that

pregnant people who are considered to be at low risk of complication require access to all three provider groups in order to be granted the opportunity to choose a maternity care provider. While this understanding of the conditions required to uphold pregnant people's right to reproductive autonomy and to equitable access to care is in line with provincial priorities within the Ontarian context, the assumption that pregnant people should have equitable access to the full range of providers was not apolitical, and was not universally accepted by stakeholders and participants who engaged with this study. As is described in the following chapters, the local maternity care system was characterized by competition between provider groups, which led certain providers to call into question equitable access to the full range of providers, and by extension equitable opportunity to choose a provider, as an achievable or desirable health system outcome.

Finally, I must acknowledge that my own experiences within the local maternity care system, and my interactions with participants in this study, are shaped by my privileged position within society. I am a white, cisgender female who is well-educated, well-resourced, and attached to a collaborative family practice while I was conducting this study. As such, I explicitly recognized the critical importance of capturing a diversity of perspectives in this study and made conscious efforts to incorporate the experiences of individuals with social identities that reflect intersecting forms of marginalization into its findings.

SUMMARY

In this chapter, I have presented the methodological approach I adopted to describe the distribution of access to the full range of maternity care providers across the Champlain Region, elicit the individual, organizational and system-level factors shaping access and autonomy within the local maternity care system, and identify locally-relevant solutions to address the challenges identified. In the next chapter, I will begin my presentation of the findings generated through this

methodological approach by describing the distribution of access to the full range of maternity care providers across Ontario's Champlain Region and exploring the geographic determinants of access present within this region.

Chapter 3

Stuck in the Middle: Mapping Access to the Full Range of Maternity Care Providers in Ontario's Champlain Region

CHAPTER 3 – Stuck in the Middle: Mapping Access to the Full Range of Maternity Care Providers in Ontario's Champlain Region

In this chapter, I first describe the full findings stemming from stage 1 of this study, including a profile of the local maternity care workforce, estimates of the maternity care needs of the local population, and choropleth maps reflecting the distribution of access to the full range of maternity care providers across Ontario's Champlain Region. I then move on to presenting relevant qualitative findings from stage 2 of this study that serve to enable the validation and interpretation of the maps produced in stage 1, and to deepen our understanding of the geographic determinants of access reflected in these same maps.

Physician Workforce Profile

The cohort of physicians with postal codes of practice within the Champlain Region who attended at least one birth between 2015/16 and 2017/18 included 104 obstetricians (63 female obstetricians, 41 male obstetricians) and 132 family physicians (83 female family physicians, 47 male family physicians, and 2 family physicians of unknown sex). While there are more family physicians than obstetricians in this cohort, obstetricians' level of participation in the maternity care sector and the volume of births they attend on a yearly basis exceeds that of family physicians. In other words, this cohort encompasses a high number of family physicians providing relatively lower volumes of maternity care. For instance, obstetricians in the cohort attended an average of 105 births per year (average among male obstetricians: 109.29; average among female obstetricians: 101.69), whereas family physicians attended an average of 12 births per year (average among male family physicians: 12.37, average among female obstetricians: 11.30). On average, of the 132 family physicians included in this cohort, 50 (37.88%) attended no more than one birth per year, and 83 (62.88%) attended no more than ten births per year.

These trends are clearly illustrated in the histograms presented in figures 2 and 3 (p.71). Additional descriptive statistics on the overall average yearly volume of births attended can be found in Table 6 (p.70).

Average service capacity varied across age groups, as is depicted in figures 4[2] (p. 71) and 5 (p.72), in addition to slight variations in service capacity generated by male and female physicians. Furthermore, this cohort demonstrated that not all obstetricians can be counted in the same way, with obstetricians engaging in variable levels of activity and participation in intrapartum care. Notably, obstetricians' average yearly volumes ranged from less than one to more than 300 births attended per year.

TABLE 6: Descriptive Statistics on Average Yearly Volume of Births Attended by Individual Physicians[3]

Statistic	Obstetricians	Family Physicians
Minimum	0.33	0.33
First Quartile[4]	15	0.67
Median[5]	120.67	3.5
Mean	104.83	11.99
Third Quartile[6]	164.83	18.92
Maximum	336.67	90.33

[2] Please note that the solid lines for male obstetricians and all obstetricians depicted in Figure 4 are superimposed for all years up to 1955 because the cohort did not include any female obstetricians born before 1956.
[3] Please note that some statistics in these tables indicate values of less that one birth per year because physicians were included in the dataset as long as they had attended at least one birth in at least one of the three years for which data were pulled. This means that the average yearly volume of births for certain individual physicians within the cohort is inferior to one. For instance, a physician who attended 1 birth in 2015/16 but no births in 2016/17 or 2017/18 would have an average yearly volume of births attended of 0.33.
[4] 25% of values are equal or inferior to the first quartile
[5] 50% of values are equal or inferior to the median
[6] 75% of values are equal or inferior to the third quartile

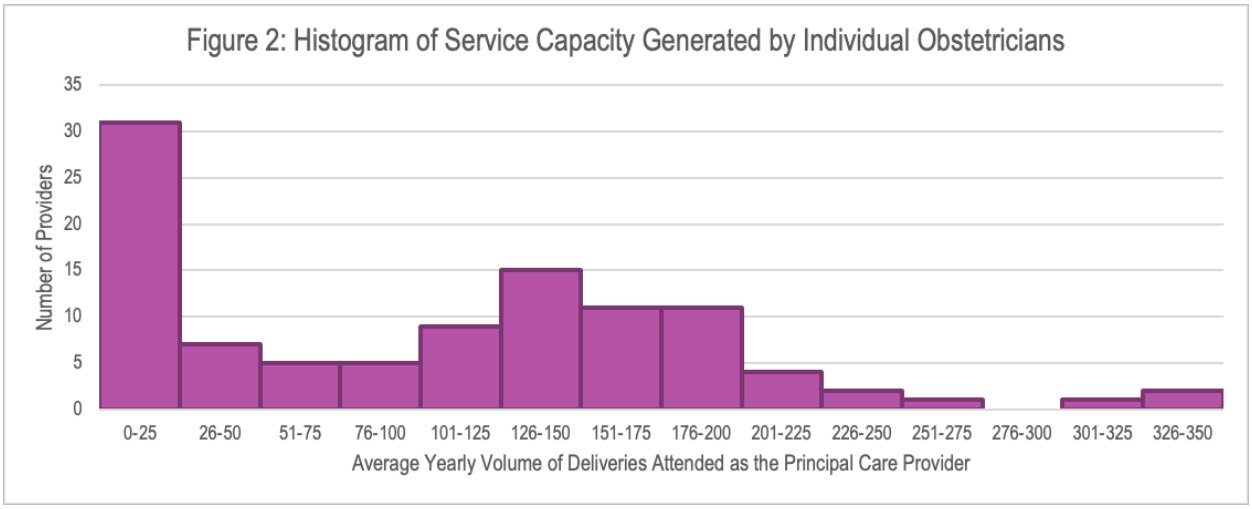


Figure 2: Histogram of Service Capacity Generated by Individual Obstetricians
Number of Providers
35
30
25
20
15
10
5
0
0-25
26-50
51-75
76-100
101-125
126-150
151-175
176-200
201-225
226-250
251-275
276-300
301-325
326-350
Average Yearly Volume of Deliveries Attended as the Principal Care Provider

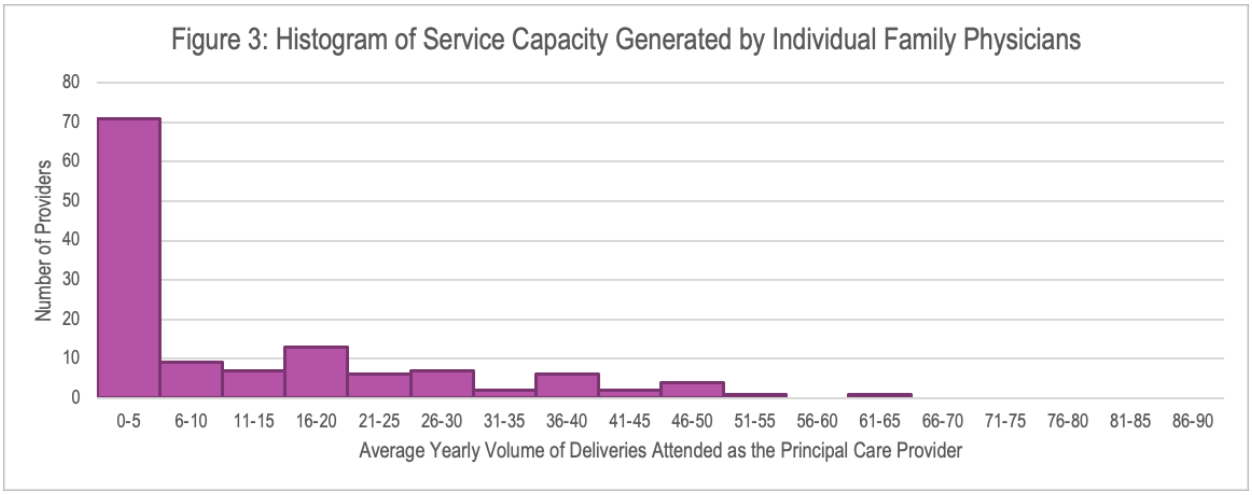


Figure 3: Histogram of Service Capacity Generated by Individual Family Physicians
Number of Providers
80
70
60
50
40
30
20
10
0
0-5
6-10
11-15
16-20
21-25
26-30
31-35
36-40
41-45
46-50
51-55
56-60
61-65
66-70
71-75
76-80
81-85
86-90
Average Yearly Volume of Deliveries Attended as the Principal Care Provider

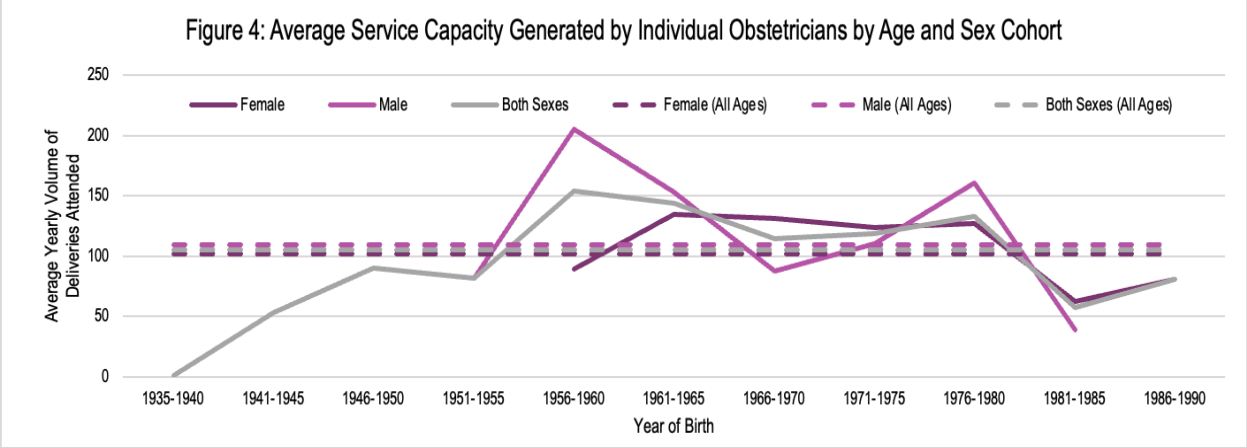
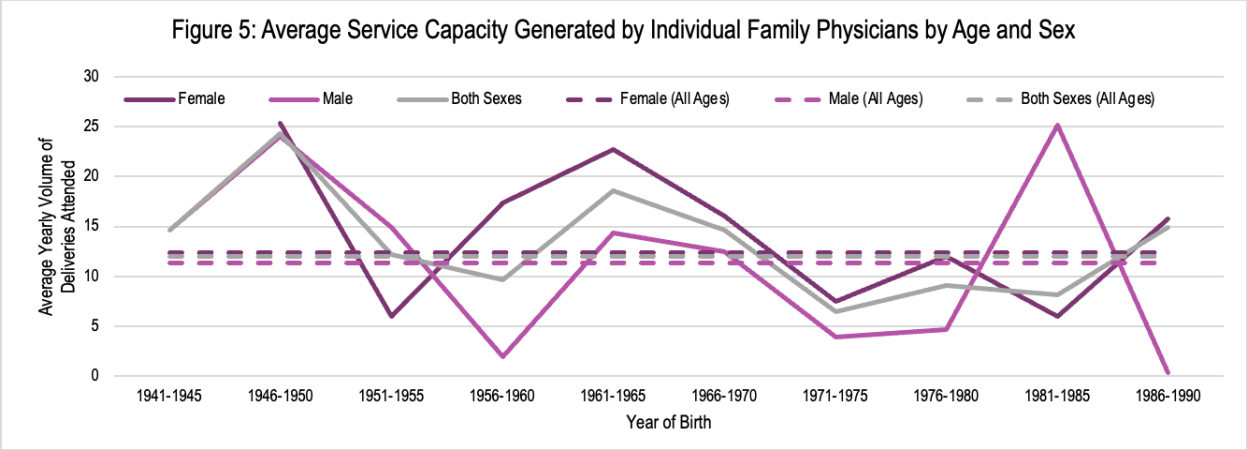


Figure 4: Average Service Capacity Generated by Individual Obstetricians by Age and Sex Cohort
Female
Male
Both Sexes
Female (All Ages)
Male (All Ages)
Both Sexes (All Ages)
Average Yearly Volume of Deliveries Attended
250
200
150
100
50
0
1935-1940
1941-1945
1946-1950
1951-1955
1956-1960
1961-1965
1966-1970
1971-1975
1976-1980
1981-1985
1986-1990
Year of Birth



Midwifery Workforce Profile

At the time of data collection, the midwifery practice groups included in this study encompassed a total of 91 midwives and midwifery students, of which 65 were permanent members practicing full time, 6 were permanent members practicing part time, 5 were locums, 5 were students, and 10 were on leave. On average, 9.5 licensed midwives practiced within each group, ranging from a minimum of 5 midwives to a maximum of 13 midwives within a single practice. The average yearly volume of births attended by each midwifery practice group ranged from a minimum of 99.67 to a maximum of 422.67, with a mean of 244.37 and a median of 277. Additional descriptive statistics related to the service capacity generated by midwifery practice groups in the region can be found in table 7 (p.73). This table includes descriptive statistics on the average yearly volume of births attended by midwifery practice groups, as well as the average yearly volume of courses of care billed, which also encompass the clients for whom midwives within the practice provided at least 12 weeks of care, but whose care was transferred to another maternity care provider before or during the birth. While the latter provides additional context around the average number of clients to whom midwifery practice groups provide care, the average yearly volume of births attended as the principal care provider was used to calculate

available midwifery service capacity in order to align these estimates with those produced for family physicians and obstetricians.

TABLE 7: Descriptive Statistics for Average Service Capacity Generated by Midwifery Practice Groups

Statistic	***Average Yearly Volume of Births Attended***	***Average Yearly Volume of Courses of Care Billed***
Minimum	99.67	106.00
First Quartile	129.33	141.33
Median	277.00	289.67
Mean	244.37	269.30
Third Quartile	329.67	352.67
Maximum	422.67	442.67

Service Capacity Generated by the Full Maternity Care Workforce

In aggregate, obstetricians generated an average yearly service capacity of 10,903 births, family physicians generated average yearly service capacity of 1,559 births, and midwives generated an average yearly service capacity of 2,199 births across the Champlain Region. Obstetricians' service capacity was spread across 30 of the 135 ADAs in the Champlain Region, while family physicians' service capacity was spread across 38 ADAs, and midwives' service capacity was spread across 15 ADAs.

Service Requirements Generated by the Population

The residents of the Champlain Region generated an average of 12,992 births per year as a service requirement, of which an average of 7,228 (55.6%) were classified as low risk as per the PCMCH definition used by the BORN Ontario database. Table 8 (p.74) provides descriptive

statistics on the service requirements generated by residents of individual ADAs across the Champlain Region.

TABLE 8: Descriptive Statistics for Population Service Requirements across ADAs			
Statistic	***Yearly Average Number of Births Generated by Residents of an ADA***	***Yearly Average Number of Low Risk Births Generated by Residents of an ADA***	***Percent of All ADA Resident Births Categorized as Low Risk***
Minimum	(1-5)[7]	0	0.00%
First Quartile	69.67	39.33	52.56%
Median	90.33	49.00	55.81%
Mean	96.24	53.54	55.34%
Third Quartile	115.17	65.50	58.19%
Maximum	302.33	157.33	72.09%

As is depicted in figures 7-9 (p.75-76), maternity care service requirements, for all levels of risk, were unevenly distributed across the Champlain Region, with some ADAs displaying a higher volume of demand for services than others (for ease of reference and geographic bearings, a base map of the Champlain Region is presented in figure 6 on p.75). For example, Barrhaven & Orleans, two of Ottawa's major suburbs, appeared to generate high volumes of demand for maternity care. One ADA in the Eastern Champlain Region, which encompasses the growing rural communities that line the highway 417, including Limoges, Casselman, The Nation & St-Isodore, also appeared to be generating significant demand for services. These figures also demonstrate that not all populations across the Champlain Region shared the same risk profile, with some ADAs displaying a greater proportion of births categorized as low risk than others.

[7]The yearly number of births generated by residents was suppressed by BORN Ontario for select ADAs in which this number ranged between one and five. For these ADAs, I assumed a yearly average number of births of three (the median of the range of possible values).

Figure 6: Map of Champlain Region
Source: Queen's Printer for Ontario, 2017

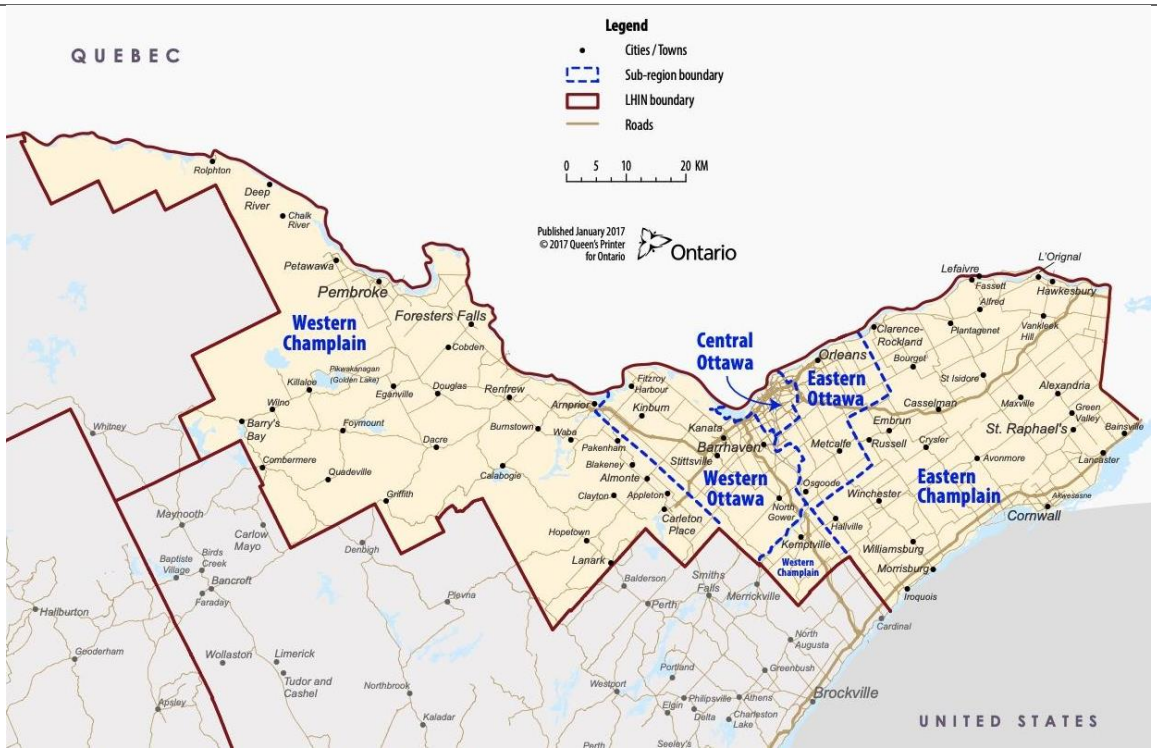


Figure 7: Yearly Average Number of Births Generated by Residents

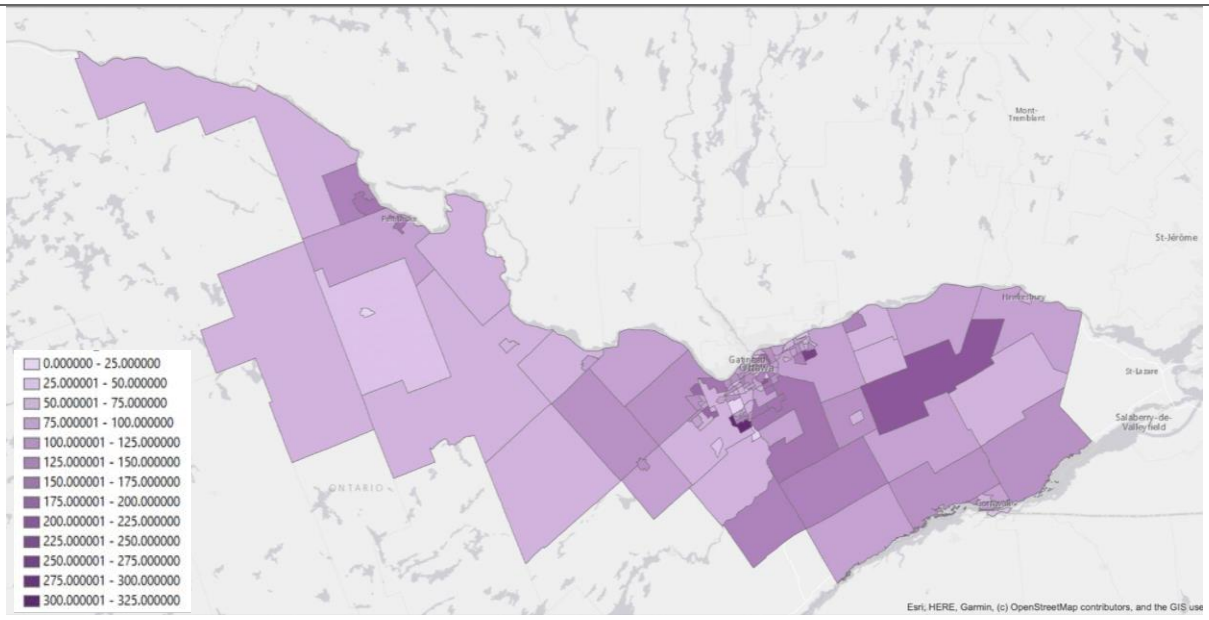


Figure 8: Yearly Average Number of Low Risk Births Generated by Residents

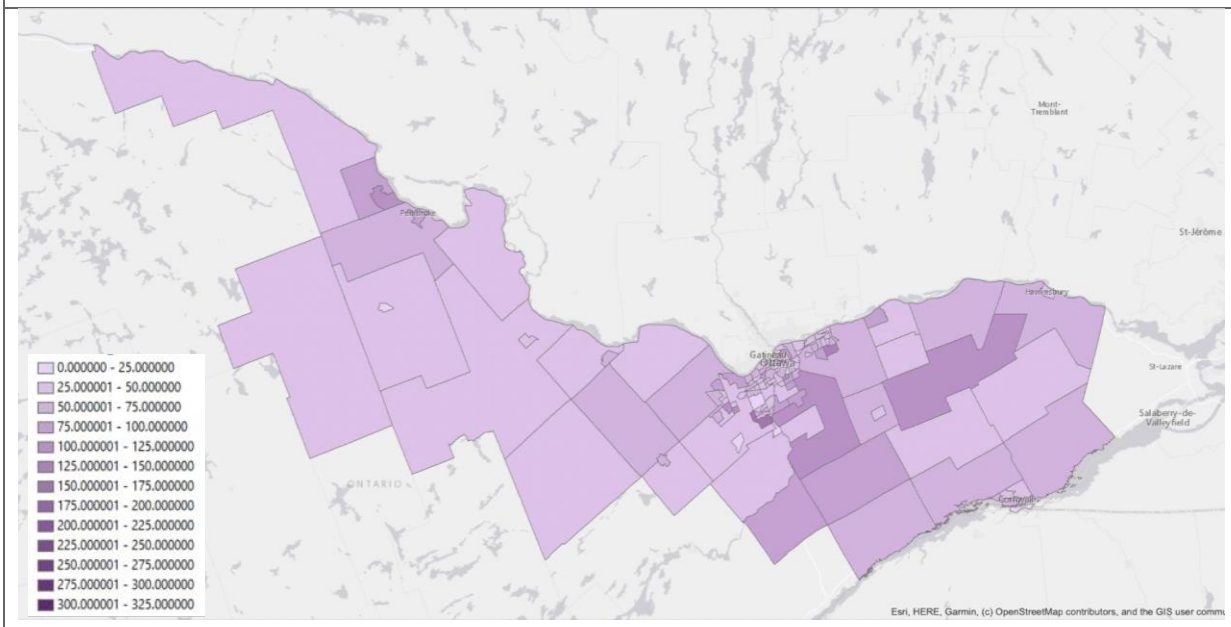
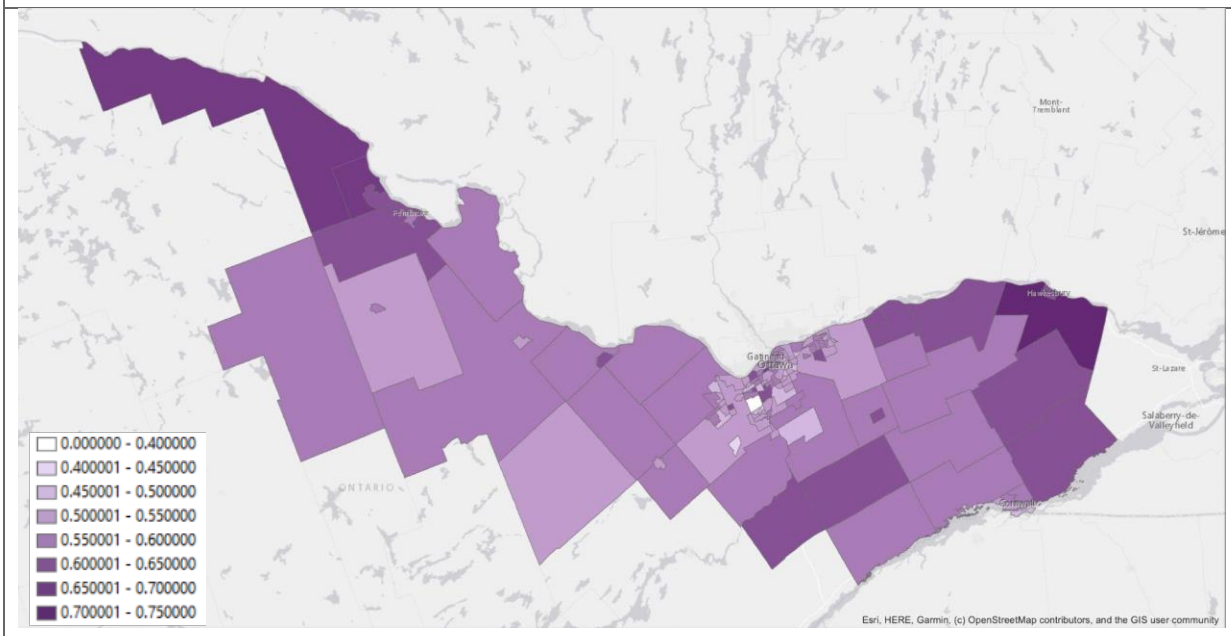


Figure 9: Percent of All Resident Births Categorized as Low Risk

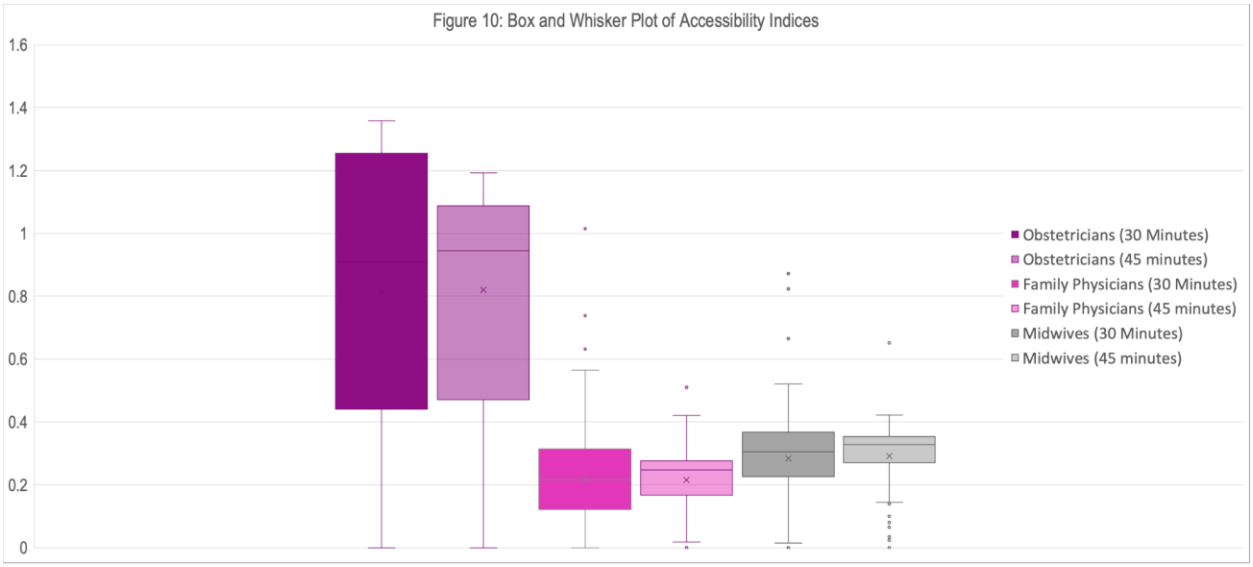


Accessibility Index Scores

When comparing relative accessibility across provider groups for a 30-minute drive-time distance threshold, the average accessibility index score for care provided by obstetricians (0.82) was significantly higher than the average accessibility index score for care provided by family physicians (0.22) or midwives (0.28). As is displayed in the descriptive statistics presented in table 9 (p.77), this trend remained consistent when applying a 45-minute drive-time distance threshold. There was, however, variability in the way that moving from a 30-minute and 45-minute drive-time threshold impacted the accessibility scores of individual ADAs, regardless of provider type. In some cases, accessibility index scores increased because population centres could access a larger number of providers as their acceptable drive-time increased from 30 minutes to 45 minutes. In other cases, however, accessibility index scores decreased, presumably because providers' catchment areas also became larger, encompassing a larger volume of population need for services, and decreasing their service capacity-to-requirement ratio. The distribution of provider-specific accessibility indices can also be observed in figures 10-12 (p.78-79).

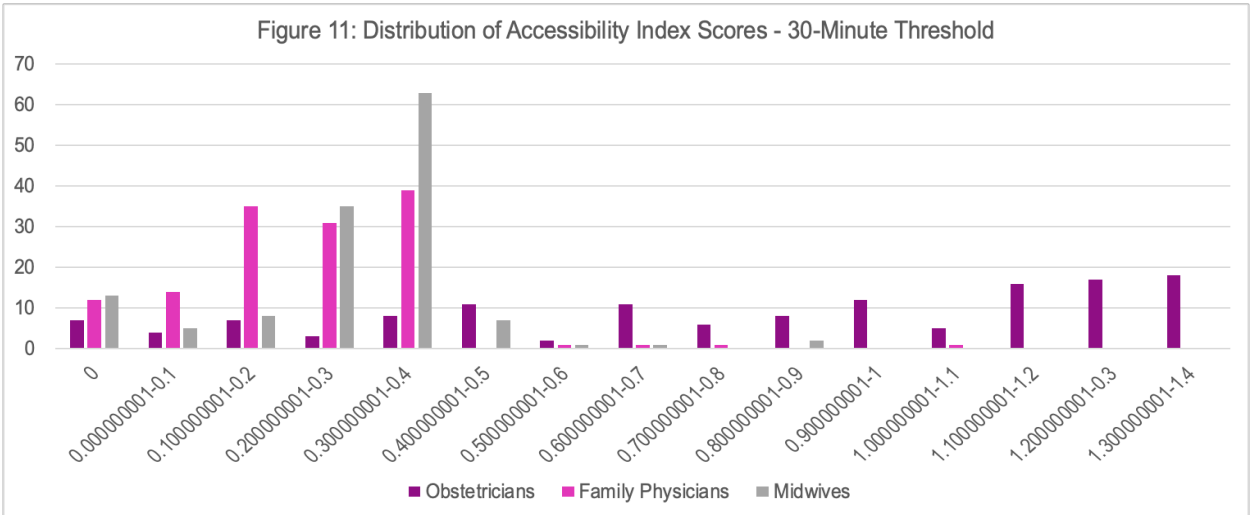
TABLE 9: Descriptive Statistics for Provider-Specific Accessibility Indices Calculated for ADAs

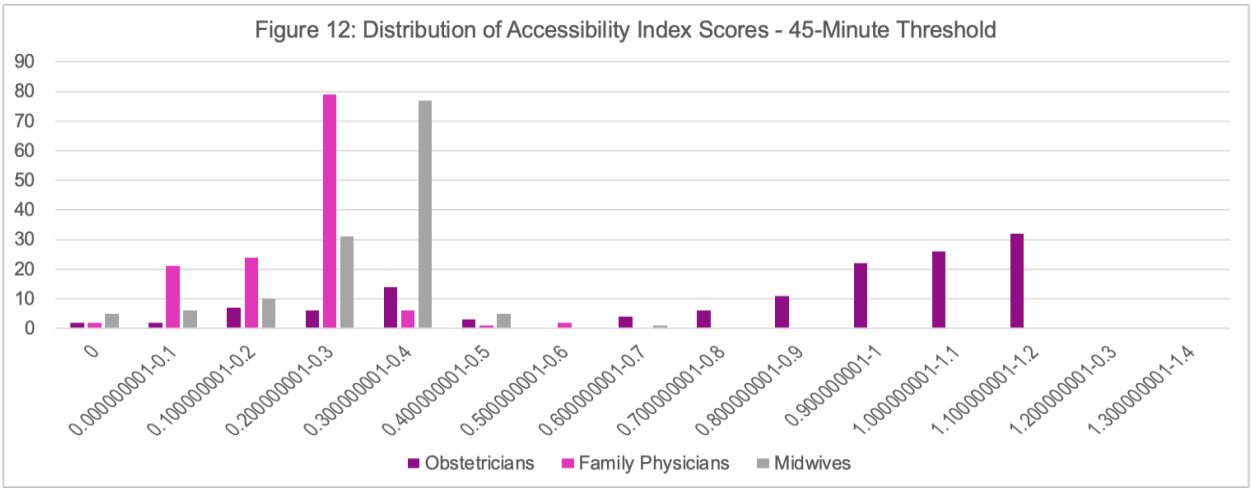
	Obstetricians (30-Minute)	**Obstetricians (45-Minute)**	**Family Physicians (30-Minute)**	**Family Physicians (45-Minute)**	**Midwives (30-Minute)**	**Midwives (45-Minute)**
Minimum	0.00	0.00	0.00	0.00	0.00	0.00
First Quartile	0.44	0.47	0.12	0.17	0.23	0.27
Median	0.91	0.94	0.22	0.25	0.31	0.33
Mean	0.82	0.82	0.22	0.22	0.28	0.29
Third Quartile	1.25	1.09	0.31	0.28	0.37	0.35
Maximum	1.36	1.19	1.02	0.51	0.87	0.65



For all three provider groups, the range of accessibility index scores calculated using the 30-minute threshold was wider than for those calculated using the 45-minute threshold, with the third quartile and maximum values being consistently higher and the first quartile values being consistently lower for the 30-minute threshold as compared to the 45-minute threshold. As is displayed in figure 10, the range of accessibility index scores for obstetricians (0-1.36) was significantly higher than for family physicians and midwives, who, with the exception of a select number of outlier ADAs, generally displayed accessibility index scores for the 30-minute threshold ranging from 0-0.56 and 0-0.52, respectively.

As is displayed in figures 11 and 12 (p.79), the accessibility index scores for obstetricians were more evenly distributed across the range of possible values, while both family physicians and midwives display more pronounced modes. Using the 30-minute threshold, the vast majority of ADAs displayed accessibility index scores of 0.1-0.4 for family physicians and 0.2-0.4 for midwives. Using the 45-minute threshold, these modes became even more pronounced, with more than half of all ADAs displaying accessibility index scores of 0.2-0.3 for family physicians and of 0.3-0.4 for midwives.





As is illustrated by the colour gradient displayed in figures 13-18 (p.80-83) access to all three provider groups was inequitably distributed across the Champlain Region. In some regions, access to one provider group was compensating for lack of access to others, allowing for access to care without necessarily affording pregnant people the opportunity to exercise choice of provider.

For example, the area surrounding Hawkesbury exhibited higher levels of access to family physicians, with minimal access to obstetricians, and no access to midwifery care. Focus group participants in stage 2 attributed this trend to the model of care that has been established at the

local hospital. Similarly, in the Barry's Bay and Killaloe area, pregnant people had relatively high access to midwifery care because of a satellite practice that had been established by one of the midwifery practice groups, but had no access to any other provider group. The effects of midwifery satellite practices on access to care in rural areas was also exemplified by the darker shades of purple displayed in the Southern Champlain Region, where another midwifery practice group had distributed their provision of services across three satellite practices.

Figure 13: Accessibility Index Scores for Intrapartum Care Provided by Obstetricians (30-minute drive-time distance threshold)

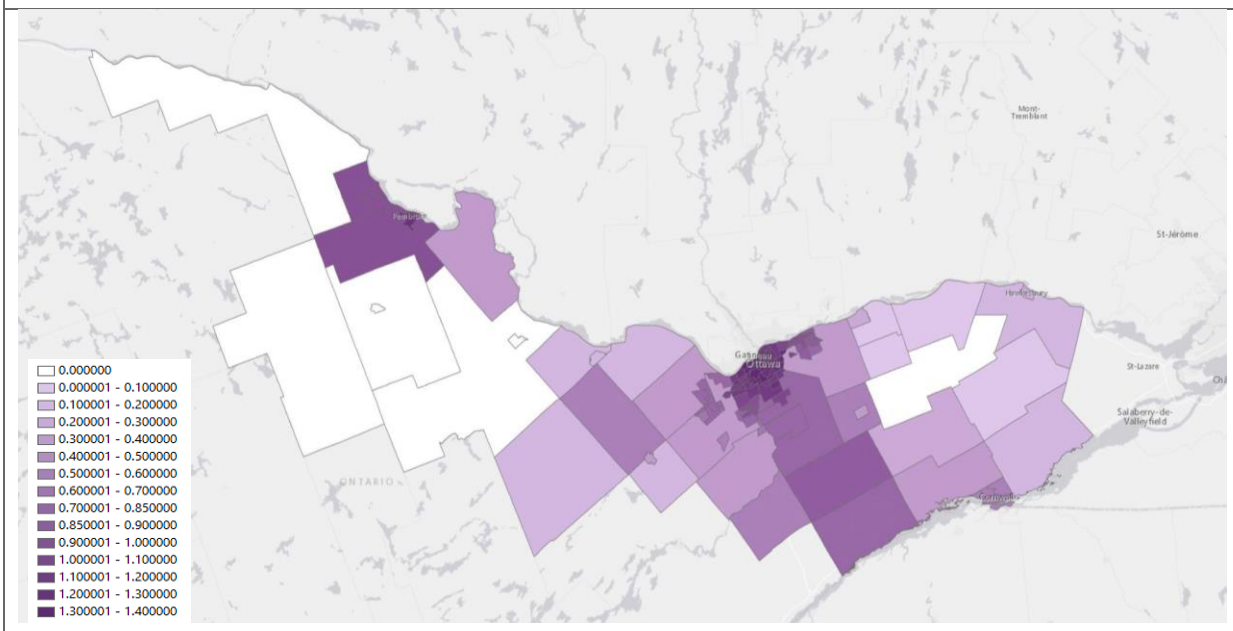


Figure 14: Accessibility Index Scores for Intrapartum Care Provided by Obstetricians (45-minute drive-time distance threshold)

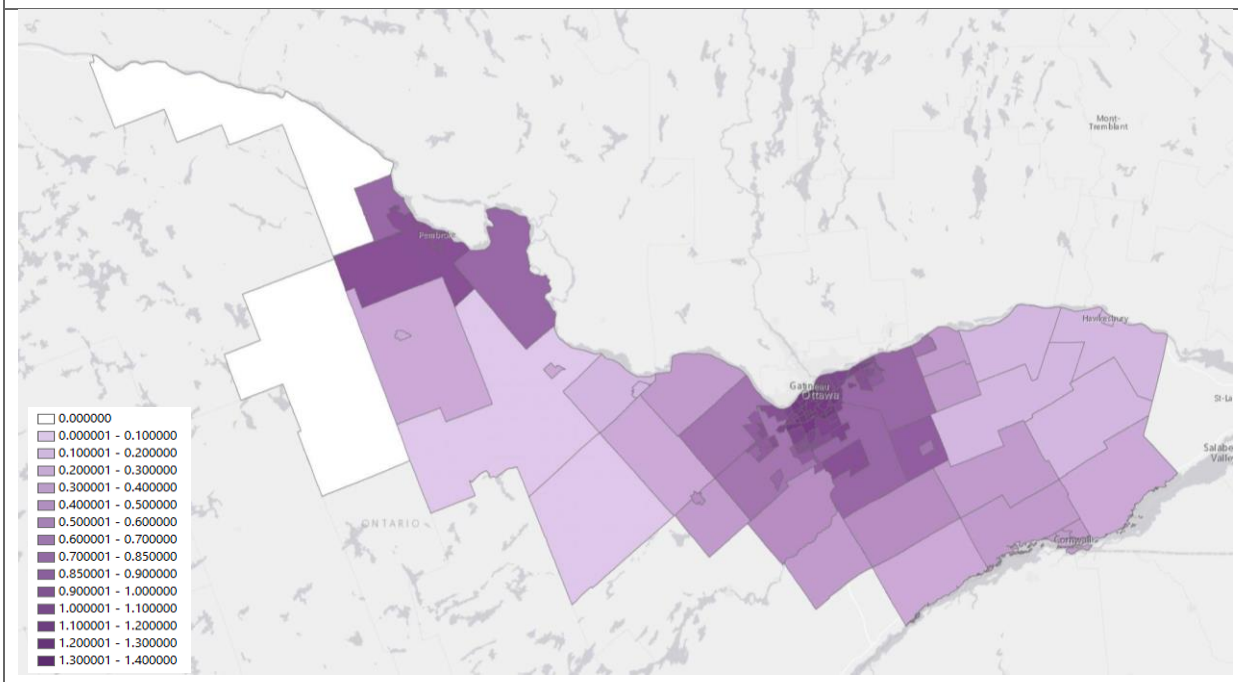


Figure 15: Accessibility Index Scores for Intrapartum Care Provided by Family Physicians (30-minute drive-time distance threshold)

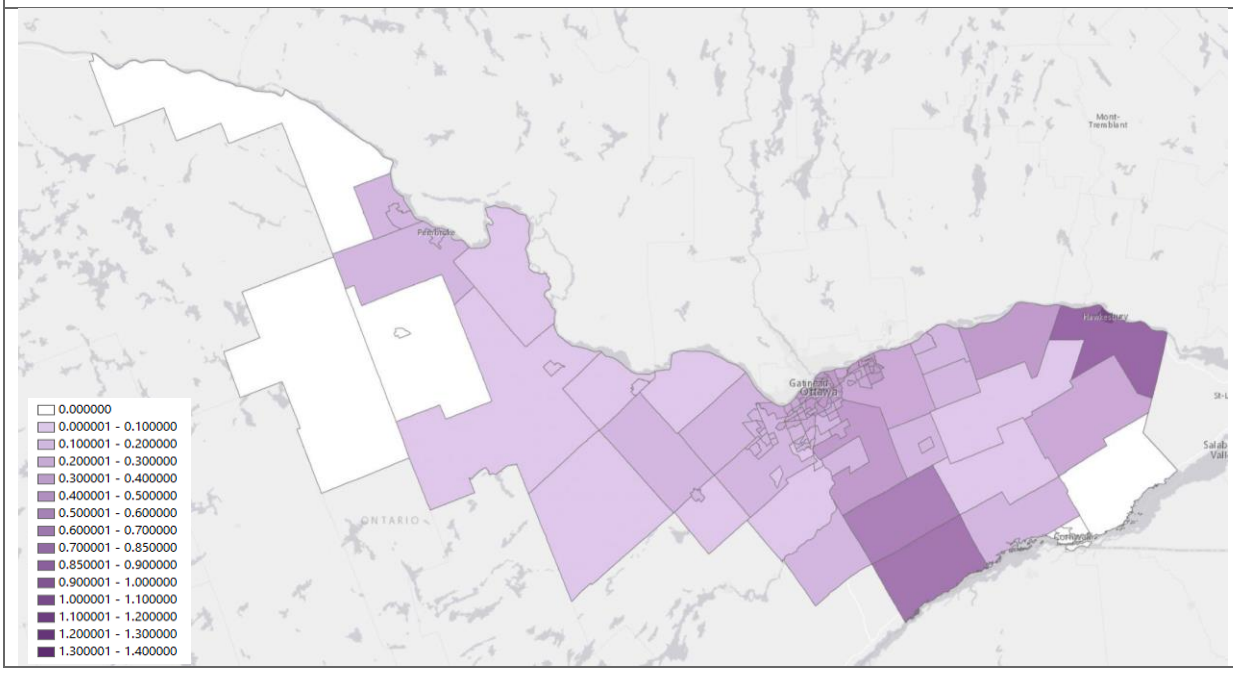


Figure 16: Accessibility Index Scores for Intrapartum Care Provided by Family Physicians (45-minute drive-time distance threshold)

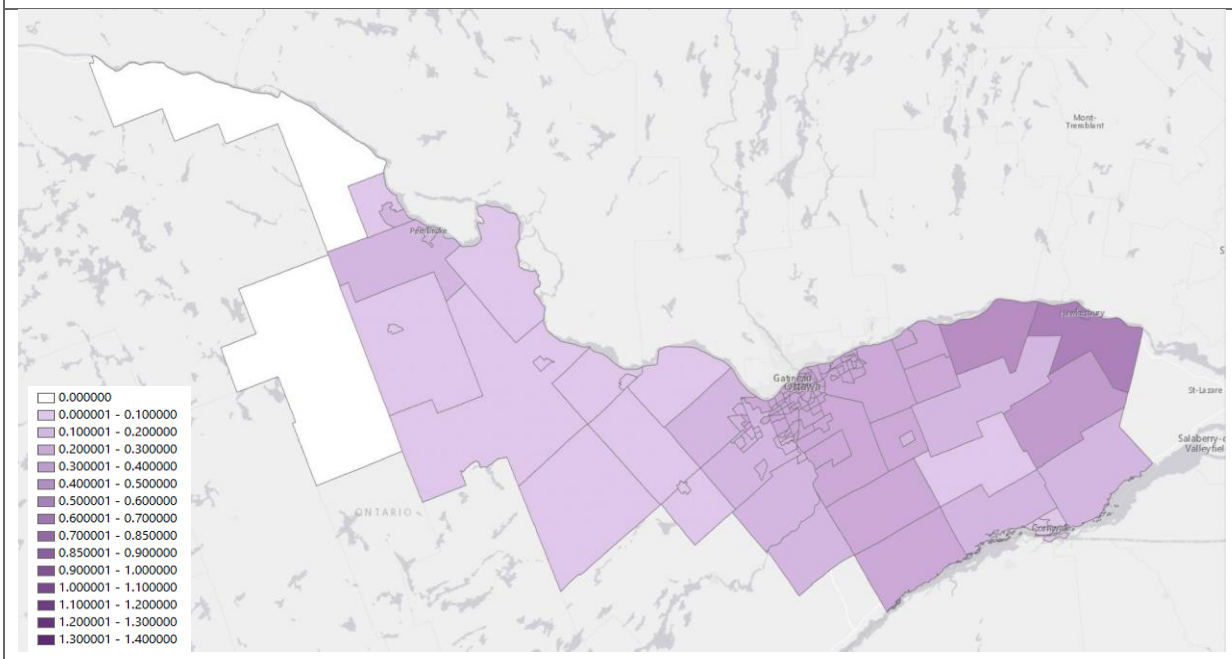


Figure 17: Accessibility Index Scores for Intrapartum Care Provided by Midwives (30-minute drive-time distance threshold)

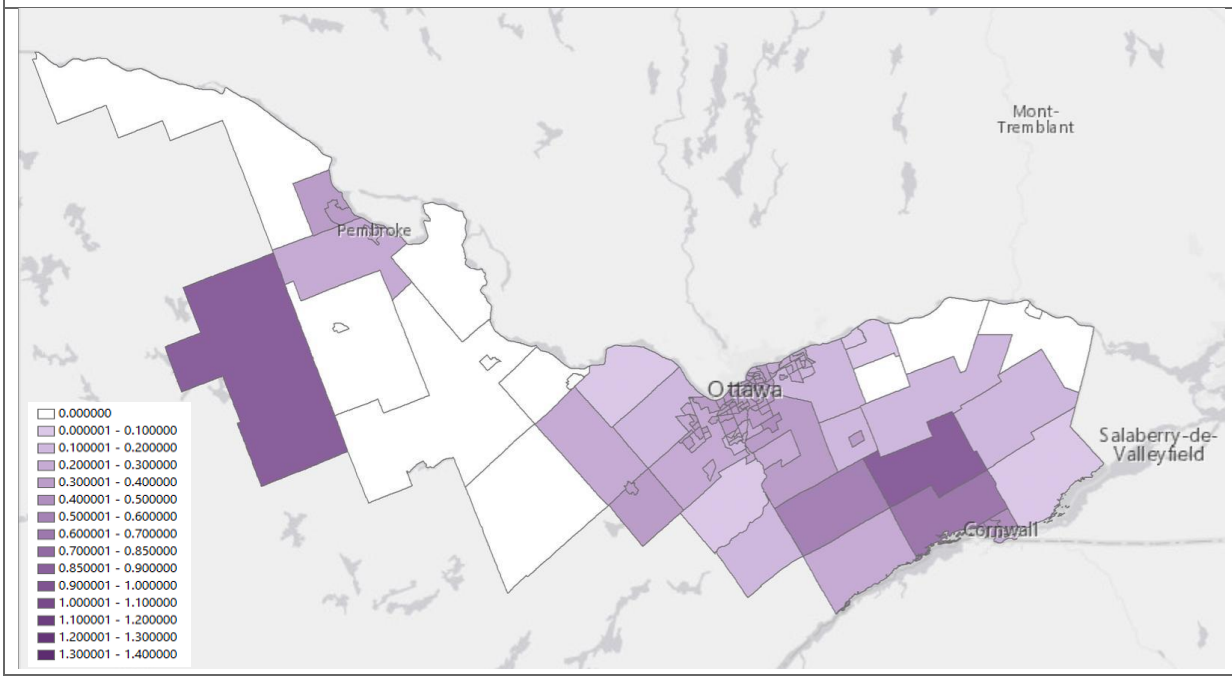
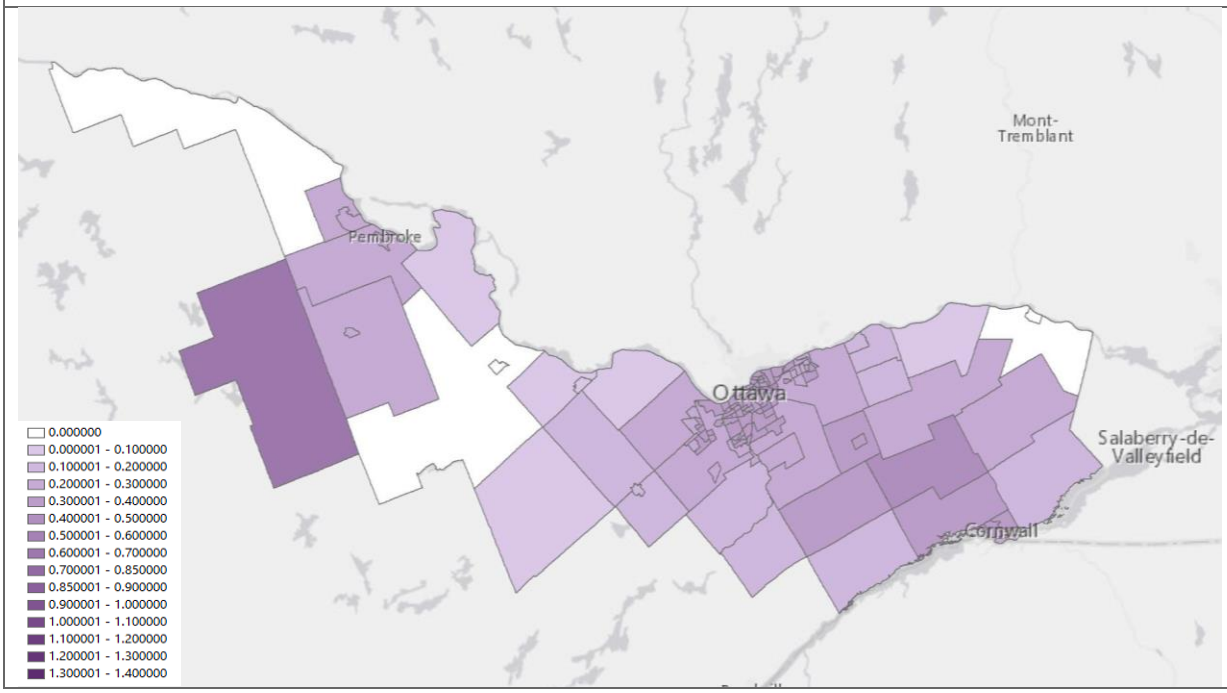


Figure 18: Accessibility Index Scores for Intrapartum Care Provided by Midwives (45-minute drive-time distance threshold)



This spatial analysis enabled the identification of underserviced areas where pregnant people's choice of maternity care provider may have been restricted by issues of service capacity and, or, geographic access. With access concentrated in urban centres, a number of smaller rural communities were left with little to no access to any provider group and forced to drive long distances and leave their community to access maternity care. Namely, the Ottawa Valley region appeared to be significantly underserviced for maternity care, consistently displaying low levels of accessibility across provider groups. Participants in subsequent qualitative consultations partially attributed this trend to the closure of the maternity care program at Renfrew Victoria Hospital in June 2014. Physician participants acknowledged that there was a complete absence of obstetricians and family physicians providing this type of care in the area, and that midwives providing home care were the only providers filling this gap. An ADA in the Eastern Champlain Region, which represented a source of concentrated demand for maternity care, also appeared to

be significantly underserviced, with low levels of access to family physicians and midwives, and no access to obstetricians. This area also appeared to be "stuck in the middle", forcing pregnant people residing within its boundaries to drive long distances in all directions to access facilities and providers. In contrast, Winchester and its surrounding area represented an example of a rural maternity care program that was providing relatively high levels of access to its local population across all three provider groups. This provides a clear example of the critical importance of rural maternity care programs and satellite practices to upholding access to care closer to home, and the effects that program closures can have on access to care.

Qualitative Validation & Interpretation

As a means of validating and interpreting the maps produced in stage 1, participants in stage 2 were asked whether the distribution of access reflected within these maps were congruent with their experience within the local maternity care system. Based on their experience within this system, and the maps produced, participants were also asked to assess whether access to each provider's care was adequate and/or equitable across the region, and to identify any areas that they would deem either over or underserviced for care delivered by each provider group. Overall, the 69 parents, providers and policy-makers who participated in focus groups and individual interviews in stage 2 confirmed that the accessibility maps produced reflected their experiences within the system, providing isolated examples where trends may have shifted since the data used were pulled. They generally regarded access to midwives and family physicians to be both inadequate and inequitably distributed across the Region. A number of physicians participants did, however, believe that access to midwifery care was adequate, often citing the need to maintain the practice viability of all provider groups. While participants agreed that access to obstetricians was also inequitably distributed across the region, they deemed it to be generally

adequate in urban centres, with some issues surrounding timely access to referrals and heavy workloads adopted by obstetricians to maintain this level of access.

Underserviced areas for family physicians who provide intrapartum care identified by participants in stage 2 include: the Ottawa Valley Region (i.e. Renfrew County), Deep River, Pembroke, Barry's Bay, Killaloe, Renfrew, White Lake, Clayton, Lanark County, Leeds and Grenville United Counties, and Cornwall. Areas that participants identified as particularly well serviced for family physicians who provide intrapartum care included Ottawa, Orleans, Winchester and Hawkesbury. Areas where trends may have changed since the data used in these maps were pulled include Almonte, where access has likely increased due to the emergence of a family medicine program at the local hospital, and Pembroke, where access has likely decreased due to the recent retirement of a family physician.

Underserviced areas for obstetrical care identified by participants in stage 2 include: the Ottawa Valley Region, Deep River, the rural areas surrounding Pembroke, Barry's Bay, Killaloe, Renfrew, Whitney and the outlying areas, Lanark, Richmond, Carleton Place, Kemptville, Smiths Falls, Russell, Casselman, Limoges, Vankleek Hill. Areas that participants identified as particularly well serviced for obstetrical care included Ottawa, Orleans, Pembroke, Almonte, Winchester and Cornwall. Areas where trends may have changed since the data used in these maps were pulled include Pembroke, where access has likely decreased as a result of the loss of two obstetricians, Hawkesbury, where access has likely increased as a result of new obstetricians establishing practice at the local hospital, and Almonte, where access has likely increased as a result of the growth of the obstetrical program at the local hospital.

Underserviced areas for midwifery care identified by participants in stage 2 include: the Ottawa Valley Region, Whitney and outlying regions of the valley, rural areas surrounding Almonte, Renfrew, Carleton Place, Smiths Falls, East of Orleans, the 417 corridor, Hawkesbury, and Vankleek Hill. It should be noted that participants explained that some pregnant people in the Hawkesbury area are accessing midwifery care through the Centre de Naissance across the provincial border in Blainville, Quebec. Almonte was identified by participants as an area that was particularly well serviced for midwifery care. It appears that Ottawa exhibits low accessibility index scores for midwifery care because the density of population and demand is exceeding the concentration of midwifery service capacity available within the area.

> "*it really feels like in the last 10 years interest in midwifery care has really exploded. And like demand really exceeds supply in the big population centers.*" – Parent

Geographic Determinants of Access

Qualitative consultations in stage 2 also allowed me to deepen my understanding of the geographic determinants of access that were reflected in the maps I produced in stage 1. Participants explained that providers are concentrated in population centers that offer high density of demand & proximity to hospitals with maternity care programs. Not all hospitals provide intrapartum care, further limiting access in rural areas. This results in an inequitable distribution of access to the full range maternity care providers and of choice of birth setting across the region, requiring rural populations to drive long distances to access care, which in turn influences the care options that are made available to them.

Long distances between pregnant people's residences and the closest hospital were identified by participants as sources of stress for both pregnant people and their maternity care providers, influencing care choices, and choice of setting. Parents described a number of examples of

circumstances when this distance influenced their care choices, including: going to the hospital sooner because of fears of a precipitous birth during the long drive to the hospital; meeting their midwives at the hospital rather than at home to perform checks during early labour; or choosing an epidural instead of other pain relief options that would have enabled them to labour at home.

> "*if you're a first time mom, or you don't know what's coming, you can't expect, you don't know how long your labor is going to be. My sister, as an example, babies, both of them came in hot and heavy and very early, she had to get to a hospital stat, because they were coming out. It was a little fearful for me. So knowing that I was far away, essentially, once my contractions started, I was a Nervous Nellie and wanted to go to the hospital, I feel like if I was a little bit closer, I would have stayed at home labored a bit more, just feeling confident that you know, access to care wasn't far away.*" – Parent

Participants noted that rural populations also have limited choice of birth setting because they are often far from hospitals and the birth centre, and comfort with home birth can be limited because of the distance from hospital in the event of an emergency.

My findings suggest that these geographic barriers of access for rural populations are attenuated by the presence of rural maternity care programs and satellite clinics, which are critical to bringing care closer to home for these populations and increasing the visibility and awareness of care options. Participants did, however, note that care teams require sufficient capacity to establish satellite practices, which can be challenging within a context of workforce shortages and demanding workloads.

Participants also highlighted that geographic barriers to access are attenuated by midwives' ability to uncouple access to care from the distribution of facilities and cover large geographic areas through their provision of home care. For instance, some rural midwifery practices have chosen to expand the reach of their service capacity by distributing their midwives across their

large catchment area. Finally, parent participants explained that the use of virtual care for a subset of prenatal appointments since the advent of COVID has attenuated some of these barriers.

On the other hand, participants identified a number of population subgroups for whom geographic barriers of access are compounded, including pregnant people who:

- had a risk profile requiring frequent visits to tertiary care centres;
- lacked access to transportation;
- had inflexible employment models that forced them to sacrifice income to attend appointments; and/or
- faced inclement weather.

Participants also noted that these challenges will be amplified as many of the rural communities in the region experience population growth without timely increases in service capacity within these communities. Parent participants identified increased access to home care (i.e. maternity care providers delivering care within clients'/patients' homes), drive programs (i.e. services that transport clients/patients from their homes to the clinics or hospitals where they need to access maternity services), and pop-up prenatal and postpartum clinics in underserviced areas (i.e. maternity care providers periodically travelling to a rural community and using local facilities to provide prenatal and postpartum care to the local population) as locally relevant interventions to improve access to care for rural and systemically disadvantaged populations.

Challenges with Rural Recruitment

One of the key drivers of the inequitable distribution of providers that is shaping these geographic barriers of access are persistent challenges with the recruitment and retention of providers in rural settings. Participants explained that these challenges stem from:

- a lack of exposure to, training for, and comfort in rural practice amongst graduating students;
- new graduates hesitating to take on the amplified challenges associated with building a new practice in a rural setting;
- lack of educational and professional development opportunities available in rural settings;
- large catchment areas and small practice teams resulting in demanding call schedules, challenging lifestyles, and compromised provider wellbeing; and
- rural facilities' difficulties generating sufficient volume to maintain the competence, ensure the financial viability, and justify the lifestyle of rural providers.

According to participants, the factors listed above reduce providers' preparedness to practice in rural areas because they learn to rely on greater access to resources available in urban tertiary care centres, including pediatricians, neonatal intensive care units, and maternal fetal medicine specialists. Many providers are uncomfortable with the broader scope of practice that is required of providers in the absence of these resources, deterring them from practicing in rural settings. As a result, a number of hospitals in the region described their efforts to recruit a pediatrician as a means of bolstering their ability to recruit other providers.

> *"the training of Obs and family medicine for the most part does not set people up to want to practice rurally, and having to potentially do a little bit more outside of your standard scope that you'd see at a tertiary care centre where the most of us trained. As a family doctor, I never thought I'd be resuscing a 33 weeker without pediatric or neonatal support. [Rural family physician] laughs, because he's done it too. I think there's a lack of training for rural positions. We're also mandating now that our Obs be [neonatal rescuscitation program] trained, which most Obs aren't exactly thrilled with, but when it's them and us as the only physicians available, we need all hands on deck."* – Family Physician

Lack of Training for Rural Practice

A number of participants explained that maternity care providers lack training for rural practice. Limited capacity to precept and train obstetricians, family physicians, and midwives in rural centres, combined with the challenges associated with providing trainees with sufficient volume of experience in these settings, means that many providers receive their training in urban tertiary care centres.

> "*It's tough, right, because we don't have the volume out in a rural centre to be able to give them the experience they need. I can go two months on call and not have anything, but I can also have a weekend where I've sent three babies to the city. It's really tough, but even just exposing people to outside of the city. I always swore I'd never deliver at a centre that didn't have a NICU, yet I'm somehow in [rural area] at a level one centre with no peds.*" – Family Physician

In the case of midwifery, this trend is set to worsen as the 2021 closure of Laurentian University's midwifery education program – one of only three programs in Ontario and the sole program that offered bilingual programming and was rurally located – increases the proportion of midwifery students trained in urban tertiary care centres.

> "*if more midwifery students are being trained in large urban centers, that means they're also being trained in large tertiary care hospitals. It also reduces skills, because when you can just ring a button and 62 people come in and swoop in and take over. Whereas when you work in a community hospital, it's a lot more work and a lot more responsibility, and you take on a lot more liability because you're it, there is not necessarily a pediatrician, or a NICU team or an obstetrician to swoop in in two minutes and save the day. So that's something that frightens new people from coming into small rural practices too, because if you've spent your lifetime as a midwifery student, or as a person working in a large urban center, coming to work at a level one community hospital with very little services is incredibly frightening.*" – Midwife

Limited Opportunities for Ongoing Training & Professional Development

For those who choose to practice rurally, participants identified limited opportunities for ongoing training and professional development as a barrier to retention. CMNRP was, however, identified as an enabler of access to these training opportunities. One participant suggested that intensive learning opportunities in urban centres could bolster rural providers' learning opportunities and enable them to build networks with their urban referral sites. This was seen as particularly beneficial given the difficulties associated with building collaborative relationships between rural and urban providers who do not know each other. CMNRP's outreach was highlighted as a useful exercise to establish and maintain those networks and connections. Provider participants also identified participating in the Acute Care of at-Risk Newborns Program (AcoRN) – a program that teaches neonatal stabilization to multidisciplinary teams – as a valuable tool to support these collaborative relationships.

Demanding Call Schedules

Participants identified primary call – where an individual provider is solely responsible for the prenatal, intrapartum, and postpartum care of their birthing patients, and therefore on-call to attend their births – a as a model that provides quality care to the pregnant person, but a particularly demanding lifestyle for the provider, whether it be adopted by midwives, family physicians, or obstetricians. This was identified as a significant barrier to recruitment and retention of professionals in rural settings, where small practice teams often result in demanding call schedules.

> *"We tend to be much smaller practices with a really shitty on-call system compared to large practices. Anything that has more than eight midwives, there's a lot of flexibility in how midwives can choose to work and set up their lives. Whereas, when you cover a very large geographical area with you know, currently there are three of us in this huge area. Everybody is on call 24/7 10 months*

> *of the year, so we don't have weeks on and weeks off and we don't get call coverage and so you're just on all the time. And you're delivering primary care […] there's no other way to figure it, we can't figure out another way to cover the entire area. [...] We have people who have left, people who live here who were midwives who've left the profession, because they just, it's not sustainable with small children and working partners to work this way for them. So we've lost two midwives, well, three midwives now because of that in the last four years. […] We have an ongoing revolving ad that keeps being posted. And we keep revamping the ad and reposting it and trying to find creative ways to attract people. But the moment people, we've had people hang up at interviews and say, "I'm sorry, the interview is over", because we can't, when they hear about our call system, they are not interested in that lifestyle.*" – Midwife

Participants explained that it is much more lucrative and attractive for providers to complete shift work in urban hospitals than to take on primary call in a rural hospital.

> *"Obstetrics in a major center are the golden handcuffs. The quantity of money you generate in one 12-hour call at the Queensway [Carleton Hospital], or let's say a 24-hour call Queensway is more than a rural obstetrician will make in a month. So yeah, they, all the women tend to be trying to get to those high-volume centers, where it's very lucrative to do obstetrics as opposed to a GP in a rural center."* – Obstetrician

Participants noted that it can be difficult to resolve inequities in access in rural areas because these areas do not necessarily generate sufficient demand to sustain the team of physicians that would be required to establish sustainable call schedules and provide backup coverage. Certain participants suggested that interprofessional call schedules could enable more even distribution of local caseloads and moderate all providers' time on call in these settings.

Sustainability of Remuneration

Many participants suggested that all rural providers should be on a salary model to promote the viability and sustainability of their practice in these settings. Participants noted that the obstetricians at one of the low volume centres in the region had moved to an alternative funding

plan to stabilize their workforce, but family physicians were not being remunerated the same way, which meant that the viability of their obstetrical practice remained a concern.

Financial incentives were identified by participants as enablers of rural recruitment and retention in rural settings. For example, the Northern and Rural Recruitment and Retention Initiative – an initiative offering financial incentives to attract physicians to establish full-time practice in specific eligible communities identified based their Rurality Index for Ontario scores (Ministry of Health, 2022a) - was identified as an enabler of physician recruitment, particularly for family physicians who are classified as in high demand. In the case of midwifery, the existing travel allowances that cover the costs associated with serving a large catchment area and the availability of funding to aid in the establishment of satellite practices were also recognized as enablers of access to care present within the current system. These system-level incentives are particularly important given that individual rural hospitals do not necessarily have the resources to offer the sign-on bonuses and other incentives that may be offered by larger centres.

Catchment Areas & Privileging

Participants also described how catchment exclusivity can constrain where providers can establish and expand their practices. For example, at select hospitals, the obstetricians have established exclusive catchment areas that constrain where new obstetricians would be allowed to practice. Furthermore, provincial approval processes prevent overlap between midwifery catchment areas, which limits the expansion of practices and the establishment of new offices to adapt to the needs of their clientele.

For midwifery practice groups serving large catchment areas, midwifery participants explained that holding privileges[8] at a single hospital can impede access by forcing clients to choose between accessing their provider of choice and accessing care closer to home. For example, midwifery clients may be forced to travel long distances to the hospital with which they have privileges if they have chosen a hospital birth, or if they require transfer to hospital in the event of complications during a home birth. At times these barriers result in transfers of care to hospitals where the midwife is not privileged or known, introducing significant barriers to care continuity and integration. Participants also explained that these large catchment areas can pose a significant challenge for midwives who are required to drive long distances to provide home care to their clientele. In some cases, midwifery practice groups reported not accepting clients from certain areas that are within their formal catchment because it is simply not feasible to provide them with home care given the distance that midwives would need to travel.

Finally, provider participants underlined the importance of recruiting local individuals into rural positions as an enabler of retention, explaining that providers who have no connection to their practice community are more prone to leaving their positions to move to other locations.

Precarity of Rural Maternity Care Programs

As a result of these challenges with recruitment and retention, rural programs are often in precarious situations, where one or two providers reducing or discontinuing their services can destabilize the program, leaving the remaining providers covering an excessive amount of work to keep the program running, or leading to temporary or permanent program closures.

[8] As independent health practitioners, most maternity care providers are not employees of the hospitals where they provide intrapartum care, but rather hold privileges to admit patients and practice their profession within the facility. In order to establish a practice within a particular community, maternity care providers, or their practice groups, must therefore apply for privileges at one or more local hospital that hosts a maternity care program. It is at the discretion of the hospital to determine the process through which privileges are granted and managed.

> "*If you're in a community where there is a small program, and hence a small number of providers, it just takes two people having some personal thing happen in their world to then all of a sudden cripple your program. Is that fair? And same with you guys who are doing newborn care, if two of you have to go off sick, or go away, or have a baby, or something, then all of a sudden there's two people taking care of your 600 babies*" – Family Physician

For example, participants explained that two programs across the region are occasionally required to close their programs because of lack of obstetrical or neonatal coverage, forcing birthing people to drive even further to access care. Participants noted that there is no provincial backup system to prevent these temporary closures. Participants also explained that permanent program closures can have negative impacts on access to maternity care close to home, and have ripple effects on other sectors of care, including pediatrics, family medicine, emergency medicine, and anesthesia, if the closure leads to an exodus of providers. In the case of the closure of the maternity care program at Renfrew Victoria Hospital, its strategic location in the middle of the Ottawa Valley has left a large area underserviced.

Furthermore, according to participants, provincial and national care guidelines are rendering the policy environment more difficult for rural maternity care programs. They explained that these guidelines are often urban-centric and prescribe expectations that cannot readily be met by rural level 1 centres. For example, in centres where providers remain off-site while on-call, it can be very difficult to meet prescribed timeframes for c-sections, or to require these providers to come in every time oxytocin needs to be initiated or discontinued.

SUMMARY

Overall, to address research question 1, I employed geospatial analysis of access to the full range of maternity care providers to describe how access to provider-specific maternity care is distributed across the Champlain Region. I found that access to care was inequitably distributed

across provider groups and geographic areas, raising important implications for pregnant people's opportunity to access and choose a maternity care provider across the region. This description enabled me to identify underserviced areas where pregnant people's choice of maternity care provider, care options, and birth setting may be restricted by issues of service capacity and, or, geographic access.

Complementing my maps of access with qualitative findings from stage 2, I also highlighted the critical importance of rural maternity care programs, satellite practices, and home care to upholding access to care closer to home, and underscored the negative effects that maternity care program closures can have on access to care. Finally, I explored the persistent challenges with recruitment and retention in rural settings that threaten the sustainability of rural maternity care programs and perpetuate the inequitable distribution of maternity care service capacity and access across the region.

The qualitative findings presented in this chapter also begin to answer research questions 2, 3, and 4, which I will continue to explore in the next chapter of this thesis, where I delve into the system-level factors that shape the integration of providers into the Champlain Region's local maternity care system.

Chapter 4

Competition & Attrition: Understanding the System-Level Factors Shaping Access to Integrated Maternity Care Provided by the Full Range of Maternity Care Providers in Ontario's Champlain Region

CHAPTER 4 – Competition & Attrition: Understanding the System-Level Factors Shaping Access to Integrated Maternity Care Provided by the Full Range of Maternity Care Providers in Ontario's Champlain Region

In this chapter, I describe findings from stage 2 of this thesis that help us understand the system-level factors, including health policy and the characteristics of the healthcare delivery system, which are shaping access to the full range of maternity care providers across the Champlain Region. In my analysis of the focus groups and individual interviews I conducted with parents, providers, and policy-makers, the following themes emerged regarding system-level factors enabling or constraining access. I begin by describing workforce trends that are constraining the maternity care service capacity available across all three provider groups. I then move on to exploring how current models of organizational funding and provider remuneration limit opportunities for interprofessional collaboration and constrain the sustainable integration of providers into the local maternity care workforce. Finally, I describe the conditions required to establish enabling environments for collaborative maternity care across facilities and provider groups.

Workforce Trends Constraining Potential Access

Across both rural and urban settings, workforce trends appeared to be constraining potential access by limiting the service capacity generated by all three provider groups. Participants described limits on the number of students trained, alongside organizational and system-level barriers to the equitable distribution and integration of available providers, which limited workforce supply within the region. A number of participants across all stakeholder groups indicated that current workforce availability restricted access to the full range of providers, and additional providers would be required to moderate existing workloads, improve provider lifestyles, enable alternative work arrangements, and increase access to care. This cycle leaves

providers adopting heavy workloads and demanding lifestyles to meet growing population needs with limited resources.

> "*Lifestyle is really very important. And burnout too, so you know, you don't have infinite time to be so active when you're opening your practice as we used to be before. So definitely, a competitive salary or alternative funding plan would make it easier. And yes, definitely, once you get alternative funding, you can have more staff come in, more personnel coming in to make the workload easier and more quality of life for everybody."* -Obstetrician

Participants explained that in this sector of care, the joy of birth work can constitute a strong source of motivation for providers, whose work with new families can be very rewarding. The heavy workloads and arduous lifestyle required by this sector of care were, however, described as unsustainable by participants, leading to burnout, leaves of absence, and attrition, even amongst early career practitioners. This was particularly true when providers were required to cover for various types of leaves of absence and to compensate for the lost capacity of providers transitioning into retirement, without the introduction of new resources. This unsustainable level of activity was leading to decreased participation in intrapartum care. Provider and policy-maker participants noted that all of these trends point to the need for a sufficiently large workforce and adequately resourced teams with strong intraprofessional collaboration to meet population needs while ensuring sustainable workloads and call schedules for providers. I will now discuss the workforce trends described by participants that were specific to family physicians, midwives, and obstetricians, in turn.

Family Physicians – Participants recognized that it can be particularly challenging for family physicians to balance the demands of intrapartum care, primary care, and the various other roles they fulfill within a community, in addition to their personal responsibilities. They explained that fewer family medicine graduates were interested in adopting the lifestyle required to provide

intrapartum care, and some of the providers who had the flexibility in their scope of practice to do so, including family physicians and obstetricians, were either suspending or decreasing their intrapartum activities and on-call work. Others who were choosing to continue their engagement in intrapartum work were restricting their engagement in other sectors of care. Participants expressed the opinion that the new generation of family physicians is no longer interested in the generalist "birth-to-death" model.

> "*It seems like it's almost a dying breed. People are not interested in being everything to everyone. And as a [family physician who provides intrapartum care], you're doing your clinic, you're delivering babies, you're looking after sick babies, you're possibly looking after patients on med surg, you might be doing a couple of emerg shifts. It really has to be…you're all in for this. If you're a specialist, you come in and do your OR time, you go home. You may be doing call once a month or whatever. But for GP Obs, it has to be a passion and a lifestyle. And it seems like people have moved away from that. We're finding that we don't have residents interested in doing that [...] It just seems like they're everything to everyone when they come to our hospitals. So I don't know if there's a way of being able to help with that work-life balance, because that's what seems to be the biggest issue with our GP Obs is that it's a work life balance type of thing. The ones that we've had here have been you know, workhorses. They want to work all day, all night, they do all the things. One just retired, she was on all of the [committees] [...] she was part of everything [...] from birth to death, she did deliveries all the way to palliative care, and that's what our GP Obs do here."* -Policy Maker

Under these conditions, participants reported that many family physicians were tightening their scope and choosing to serve a specific demographic. Participants explained that providers need to be passionate about obstetrics in order to adopt the arduous lifestyle, which involves a lot of time on-call, and often requires them to make up for a lost day of primary care clinic as a result of a birth, or to complete a full clinic day after an overnight birth to avoid further rescheduling.

> "*a few months ago, there were three family doctors, and now we're down to one. The one retired and the one just couldn't manage being a family doctor and an intrapartum provider as well. And so, I mean, it's an extremely demanding job, I think, being a family*

> *doctor who provides intrapartum care. And so in order for it to be sustainable in the long run, you need to have a team of family doctors, an adequate number of doctors who work together so that they have sufficient off-call time. So they have to be willing to work together as a team as well. Right?*" -Midwife

Beyond lifestyle, participants partially attributed family physicians' transition away from obstetrics to the prohibitive cost of their liability insurance. This added barrier rendered the financial viability of this activity even more tenuous given that the payments they receive for a number of the births they attend went directly to recovering the costs of liability insurance. Finally, participants explained that it can also be challenging for family physicians to meet the minimum birth requirements set by hospitals to ensure the maintenance of competence in intrapartum care while balancing their other roles and responsibilities.

Midwives – Parent, policy-makers, and midwifery participants expressed the opinion that the current supply of midwives within the region was inadequate to meet growing demand for their services; additional midwives would be required to increase capacity and reduce the number of unaccommodated cases. Within the context of shortage participants described, active midwives often had no choice but to remain full-time to accommodate requests for care and maintain their practice group's billable courses of care. Furthermore, challenges associated with lack of access to locums for leaves of absence or sudden departures meant that remaining midwives were required to absorb additional workload to cover the remaining caseload. Participants stated that in the case of permanent departures, this surge capacity had to be sustained over long periods due to the length of the process required to formally onboard a new midwife.

Midwife participants were also concerned that the high demands of midwifery education programs were limiting access to midwifery education and shaping the profile of the midwifery workforce. Midwifery training involves expenses such as maintaining a car to travel far to attend

the academic portion of the training and then again to complete various placements, without the opportunity to engage in any paid work because of their call schedule during placements. Midwife participants also noted that the entry of new midwives into the workforce was further constrained by obstacles to the integration of internationally trained midwives. Midwifery is not currently categorized as a profession in high demand by the federal government, limiting midwives' ability to immigrate as skilled workers. Furthermore, those who were able to immigrate did not necessarily have the wealth of resources necessary to complete Ontario's bridging program, which is not subsidized by the Government of Ontario. Midwifery participants noted that these economic and social barriers to midwifery education and bridging were shaping the profile of the midwifery workforce by limiting the economic and racial diversity of those who have the means to gain access into the profession.

Obstetricians – Physician and policy-maker participants noted that there continued to be strong interest in obstetrical residencies amongst medical students, but that they often moved away from Ottawa after their residency because the local hospitals do not have positions to offer them as a result of low levels of turnover in the current workforce, who continue to work late into their career. Participants noted that obstetrics as a profession generally maintained a higher supply of providers in order to limit individual providers' time on call. This trend emerged over time as new generations sought more work-life balance and the profession transitioned from primary call, to team practices, to 12-hour shifts to improve lifestyles and render workloads more sustainable.

> "*Oh, listen, everybody wants to do it. It's just, once they've done it for 10 years, the tank's empty, and even sometimes at the end of residency. So, you know, practices are, like at the [urban hospital] now they've gone to, they've gone to 12-hour shifts. When I started as a resident people covered their own practice individually. And then they went to team practices, lifestyle was better, now they're*

> *into 12-hour shifts. Because the demands are so high, and I think values have changed. And people are also cognizant of the fact that after 24 hours of sleeplessness, it's probably not a good idea to do another full day of surgery or practice. So, that has a lot of workforce implications, because although there's a lot more people, individuals are doing less*." – Obstetrician

Impact of Model of Remuneration on Care Integration

Many participants noted that pregnant people were expressing a desire for more integrated models of care, where they could avail themselves of the benefits of midwifery care, including continuity of provider, more extensive prenatal support, and home care, while still having access to the medical expertise of obstetricians to address any risk factors they exhibit.

> "*for me, really, in an ideal world, I would have liked to have a midwife and an OB. So, that's what I find really sad. There are countries in the world where you can do that. Right? I wanted to have the quality of service of a midwife or like the opportunity to call at any time, but also, with the more medical side"* – Parent (translated from French)

Despite this emerging desire, provider and policy-maker participants indicated that the current model of remuneration created competition for limited "market share" between and within provider groups. This competition impeded interprofessional collaboration by fostering tensions and disincentivizing interprofessional support, and led to suboptimal use and duplication of resources as a result of the absence of compensation mechanisms for integrated care. Participants also explained that this dynamic constrained choice by rendering it challenging for maternity care programs to generate sufficient volumes to maintain the financial viability of all three provider groups.

> "*If we look at [the] system level, I think it has to do with the contracts and agreements for remuneration for all levels of providers: obstetricians, family physicians, and midwifery. If we had a system that provided compensation on more of a collaborative model or some kind of an alternate funding plan where we did not have competition for market share, it would allow us to look at models of care that are more collaborative,*

> *more integrated, and better able to meet the preferences of patients, but then to more seamlessly transfer those patients to the next level of care, without necessarily losing the previous relationship, whether that's midwifery, or family physician, or general OB who need to go up to maternal fetal medicine specialists. I think that's one of the biggest restricting factors in driving our ability to change how we do business in the region. [...] I think it goes back to the first point that at the lowest level of the triangle; how we compensate providers drives how the providers practice, and that then spins into credentialing at organizations, where they deliver, what the insurance implications are, the capacity of an organization. […] Let's imagine a world where we have collaborative practices with midwives and obstetricians, and you have patients who come in who really want a midwife, but oops, they have whatever chronic health condition or previous obstetrical history and really should be followed – at least consulted – by an OB, and there should be a collaborative care model established. Well, if they're not competing to be paid for their work, and we all like to get paid for our work, so it's not a judgement statement, it's a fact. If we could get beyond that in a model that allows for compensation for the individual involved in the care, imagine a world where we have lots of credentialed midwives and lots of patients going home within six to 12 hours, who are getting their follow-up care in the community. Isn't that a good thing for the health system – reducing hospital exposure time, length of stay? You're using skills to a full scope of abilities, and you're not competing between classes of providers to allow patients to access a truly patient-centered model of care. Why can't we get there? Because of number one, the contracts and agreements, and perhaps it's the provincial and national guidelines and restrictions*". – Policy Maker

Participants explained that alternative remuneration and funding models could support pregnant people's access to the full range of maternity care providers by fostering innovative, person-centered models of collaboration that could provide appropriate levels of care to pregnant people at an appropriate cost to the system.

> "*I think the way forward is really looking at innovative collaborative models, which can decrease costs, decrease workload for the individual care providers, enhance the care experience for the client, and promote better options, more choice in terms of where they go to be seen, where they go to give birth, and who attends them."* -Policy Maker

The development of alternative remuneration and funding models, namely placing all maternity care providers on salary, was also seen by participants as an opportunity to ensure the financial viability of establishing and maintaining practice, particularly in rural low-volume centres, and to support flexible work arrangements and retention within the maternity care workforce.

> "*if we got away from the fee-for-service model, and you know had alternate funding plans at the appropriate level, it would become less territorial."* -Obstetrician

While participants acknowledged that resistance to alternative remuneration and funding models existed within the current physician workforce, they felt that the new generation of family physicians and obstetricians was no longer interested in the solo-practice fee-for-service model, preferring to practice in teams under alternative remuneration models, presenting a window of opportunity for the introduction of new models.

Midwifery participants conveyed enthusiasm with respect to the opportunities that alternative midwifery models could present. First, participants highlighted the potential of alternative models funded through Ontario's Expanded Midwifery Models to adapt service provision to better meet population needs and increase equity in access for systemically disadvantaged populations and underserved geographic areas. These models, participants expanded, could also enable midwives to reduce their engagement in on-call intrapartum care while remaining active within the workforce, which could enable them to sustain their practice over the long term. Within the traditional midwifery funding model, which tied remuneration to full courses of care[9], midwives explained that they were required to provide intrapartum care, and it could be

[9] In Ontario, in order to bill for a course of care under the traditional midwifery funding model, a midwife must either have attended a birth as the principal care provider, or provided at least 12 weeks of care to the client. Under the traditional funding model, midwives can only bill for full courses of care (i.e. prenatal, intrapartum and 6 weeks of postpartum care combined into a single fee), and not for finite portions of maternity care (e.g. separate fee for prenatal care, separate fee for intrapartum care, or separate fee for postpartum care)

challenging for them to adopt a part-time caseload. This lack of flexibility meant that midwives were prevented from adapting their practice to their personal needs and responsibilities, leading to unnecessary attrition within the profession.

> "*The demands for midwives, the constant on call nature of the work and if you as a midwife don't have any flexibility to say work part time, because there's no funding for that, or if there's no model or funding for you to work a different kind of midwifery model at a certain time in your life. Certainly, anyone who is struggling with a health issue, or maybe a personal situation at home, or even has young children, it's going to absolutely affect their ability to do the work as it's currently – as it exists to be able to be done. In terms of the amount of midwives who are out there who are working, and we do know there's quite a high attrition rate of midwives. I don't know how it compares to other professions in the healthcare field, but it's something kind of known that a lot of midwives wind up leaving practice after a relatively short amount of time*." -Midwife

The flexibility of alternative midwifery models was seen by participants as particularly beneficial for young parents and other midwives who have heavy personal and familial responsibilities, and late career midwives who are beginning their transition into retirement. The services to be included in the models proposed by participants included: well woman care (e.g., pap smears), well baby care, prenatal, postpartum and newborn care for unattached individuals (i.e. who do not have a consistent primary care provider), vaccinations, breastfeeding support, mental health support, contraception, and termination services. A number of participants highlighted promising examples of innovative models of care that have been funded to enable interprofessional collaboration and enhance the satisfaction of pregnant people, including the ORACLE program (midwives and maternal fetal medicine specialists offering collaborative perinatal care and outreach services to systemically disadvantaged populations), and the Montfort Postnatal Care at Home Program (midwives offering early hospital discharge and at-home postnatal care to parents whose births were attended by a family physician or obstetrician at the Montfort Hospital).

Participants acknowledged public funding of all three provider groups as an enabler of access and choice within the region. The Ministry of Health's financial support to cover the costs of liability insurance for all provider groups and the costs associated with maintaining a practice for midwives were also identified as enablers. Policy-maker participants also discussed the potential opportunity to enable better access through the establishment of Ontario Health – a central agency created upon the dissolution of the Local Health Integration Networks in 2019 with a mandate to administer, coordinate, and connect health care service delivery in Ontario (Ontario Health, 2020) – and Ontario Health Teams, in which providers and organizations within a community are funded to work collaboratively as a team to deliver coordinated care to an attributable population (Ministry of Health, 2022b). They did, however, acknowledge that this context of health system transformation was also creating reluctance to invest in new models and/or implement new initiatives other than the Ontario Health Teams, none of which have a maternity care focus despite having the discretion to do so. Furthermore, these participants noted that as the Ontario Health Teams were designed to address the primary care needs of the population – which include maternity care – the ministry should mandate that each OHT have an obstetrician, family physician, and midwife on their advisory boards.

Interprofessional Dynamics

Participants identified a number of interprofessional tensions between midwives, obstetricians, and family physicians. In some settings, tensions and resistance toward midwifery extended beyond obstetrics and family medicine to some members of the nursing profession and other medical specialties that contribute to maternity care. Policy-makers described that these tensions were longstanding, stemming from a legacy of critical events and incidents that continue to negatively influence health professionals' opinion of midwives in some centres. Some

obstetricians and family physician participants expressed that midwives were taking on too much risk, and that at times, they were choosing to transfer care too late. This perspective fostered increased animosity when providers who were already working with limited resources felt overstretched as a result of midwifery referrals or transfers of care. Physicians also communicated that midwives' provision of care to high risk individuals, combined with their model of care predicated on low volumes, was constraining access to midwifery care for the low risk pregnancies for whom this type of care was most appropriate, and leading to duplication of resources in the event that their high risk clients were receiving parallel care from an obstetrician, or even a maternal-fetal medicine specialist.

> "*the midwives are sometimes following higher risk pregnancies or women that are going to be elective repeat C-section, or those types of things, that aren't necessarily falling within a midwife's "mandate", and then so the true low risk women that could get the most benefit out of a low risk midwife care, aren't able to access that because they've been taken up by these higher risk women that are being followed by [a maternal fetal medicine specialist] or OB anyway."* -Family Physician

Some of these participants did recognize that some midwifery clients refuse to be transferred despite midwives' best efforts to inform them about the risk factors, and that midwives must respect pregnant people's choices and are not allowed by College of Midwives of Ontario regulations to abandon these clients. Participants explained that better mechanisms for care integration and collaboration could allow for more efficient use of public resources.

The historical origins of these tensions also appeared to be financial, with providers citing inequity in remuneration across provider groups, and lack of fee schedule transparency as sources of frustration. While family physicians cited inequities between the midwifery and family medicine fee schedule as a source of attrition and frustration, midwives cited their

ongoing pay equity case with the Government of Ontario as an example of the lack of recognition and respect they were afforded within the current system.

A family physician participant raised the lack of base on-call funding (i.e. base remuneration for time on-call regardless of billable services rendered) as a factor restricting access to care. Midwife participants explained that they understood that the absence of base on-call funding for physicians could spur interprofessional tensions when providers were limited in their capacity to bill for an on-call shift because all of the clients that arrive at the hospitals are attached to other provider groups. Participants noted that some hospitals alleviate challenges associated with variable incoming volume of births by pooling and redistributing payments across all providers on the call schedule.

A number of provider and policy-maker participants felt that the co-location of the full range of providers in a multi-specialty clinic, alongside complementary providers (e.g. nurses, lactation consultant) and laboratory services could foster stronger interprofessional relationships, enable care integration, and increase access to care. Participants envisioned that all providers in this clinic would be on salary, and that the pregnant people would be enabled to choose their provider, with access to obstetrical consultation throughout the pregnancy, including a standard appointment at 20 weeks to identify any risk factors.

The variable degrees of interprofessional collaboration that have been achieved across the region were also reflected in parent participants' experiences. Some parents confirmed that their obstetricians and family physicians had encouraged them to continue seeking care from a midwife, while others recognized the lack of respect for midwifery present within the system and explicitly outlined its impact on the care they received.

Organizational Environments

Participants confirmed that some hospitals across the region had established collaborative relationships between provider groups, enabled all providers to work to their full scope of practice, and had meaningfully integrated all providers into the facility's policy and decision-making process. While participants agreed that hospitals generally constitute a supportive environment for physicians, some hospitals within the region did not appear to have achieved these features of a supportive or enabling environment for midwives. Policy-makers at select sites confirmed lingering tensions between provider groups. Many of these hospitals were actively seeking to build stronger relationships between the providers engaged in their maternity care program. A number of participants working in different hospital sites noted the more^{OB} ® program (Salus Global, 2019) – an interdisciplinary performance improvement program targeted at increasing patient safety in facilities that provide maternity care – as an opportunity to build collaborative relationships between provider groups.

Participants who worked in the settings where enabling environments for midwifery had yet to be established remarked on the lack of recognition and invisibilization of midwifery within hospitals' organizational structure. Midwives did not have their own department, and lacked a voice in hospital decision making. In situations where midwifery was represented, participants described this seat at the table as tokenistic and inadequate, leaving the balance of power with the medical profession. Midwifery participants also expressed a desire for more paid leadership opportunities, explaining that their lack of recognition and respect rendered them ineligible for positions they were otherwise qualified to occupy. Midwifery participants expressed feeling heavily scrutinized and unsupported by their maternity care colleagues within these

environments, where they felt that they were only tolerated because of consumer demand for their services.

> "*You're scrutinized – you're just so heavily scrutinized. You walk in there just hoping everything goes absolutely perfectly because if it does not, then you know what you did is going to get picked apart at a level [...] There is no benefit of the doubt. When we come in with a transfer, it's not, "Okay, how can we help? This person in labour is in trouble." It's, "What did you do?" "How did the midwife fuck up?""* – Midwife

Midwifery participants noted that support must come from all levels within the hospital structure, because a lack of support at the administrative level trickles down to nurses, doctors, and trainees. They expanded, noting that under these suboptimal working conditions, the midwifery profession is seeing high rates of leaves of absence and turnover. Participants explained that midwives' status as independent health practitioners further complicated their status within hospital settings as they are not covered by the Occupational Health and Safety Act, limiting hospitals' responsibility to support their health and wellbeing within their clinical work environments.

One participant attributed the imbalance in support experienced by midwives compared to physicians to select hospitals' academic requirements; providers working with hospitals affiliated with the University of Ottawa were required to teach family medicine and obstetrical residents, but were not required to teach midwifery students due to the absence of a midwifery education program at the University of Ottawa. The absence of a midwifery education program in the region also limited opportunities for interprofessional education of trainees. Participants considered this to be a significant challenge, given that interprofessional education opportunities, where trainees learn about each other's scopes of practice and models of care, were recognized as opportunities to alleviate interprofessional tensions and improve interprofessional

collaboration. According to midwifery participants, the absence of a local midwifery program also limited awareness of midwifery as a career option, access to midwifery education for the local population, and access to continuing education for local midwives. Midwife participants noted that until the program's recent closure, the region did host midwifery placements for the students from the midwifery education program at Laurentian University. The limited supply of preceptors was, however, identified as a factor restricting placement opportunities within the Region. Furthermore, participants acknowledged that hosting midwifery placements did not necessarily result in ability to recruit because of the lack of availability of hospital privileges, which limited midwifery practice groups' ability to recruit and onboard new midwives on a more permanent basis. Participants noted that the recent closure of Laurentian University's midwifery education program was set to further constrain the region's supply of midwifery trainees and practicing midwives.

In contrast, a number of participants highlighted the Ottawa Birth and Wellness Centre as an enabling environment for midwifery in Ottawa as a midwifery-led space that is enabling the growth of the profession, increasing access, and offering space for education. The Ottawa Birth and Wellness Centre offers a number of community programs to pregnant people, new parents, and families, and offers clients of affiliated midwives the option of birthing their babies within the facility's birthing suites (Ottawa Birth and Wellness Centre, 2022).

Conditions Required to Support the Integration of the Full Range of Providers within the Current Model

Under the current model of remuneration, hospitals appeared to be forced to differentially prioritize and support the integration of obstetricians, family physicians, and midwives into their maternity care programs. This meant that pregnant people could choose between all three

provider groups at some hospitals, but not at others. Participants noted that first and foremost, hospitals felt pressure to maintain the practice viability and retention of obstetricians because of their reliance on obstetricians for transfers and consultations in the event of complications during birth, for surgical backup of cesarean sections, and for gynecological care. The retention of obstetricians was, therefore, considered essential to the sustainability of maternity care programs. Notably, physician and policy-maker participants explained that in rural maternity care programs that provided care for a relatively low volume of births, obstetricians' fee schedule did not enable them to simply provide surgical backup and consults to their low risk colleagues; in order for their practice to remain financially viable, they needed to engage in the provision of care to a greater proportion of low risk births. As was described by participants, this meant that within current organizational structures, obstetricians often yielded the power to block or restrict the privileging of other provider groups. Within the current system, certain conditions needed to be met in order for hospitals to be enabled to support the integration of family physicians and midwives. Based on the cases described by participants, hospitals appeared to be enabled to support family physicians and midwives who provide intrapartum care under three common conditions:

1. the obstetricians had established viable practices;
2. the hospital was seeking resource-effective program growth by bringing in new low risk births; and
3. respectful and collaborative relationships had been established between the provider groups.

Family physicians did appear to be at reduced risk of these barriers to privileging when compared to midwives, with participants highlighting that many hospitals relied on their contributions across other sectors of care, including pediatrics, neonatal resuscitation, the emergency department, and primary care. Participants noted that within the current fee structure, newborn care was not lucrative, which meant that in hospitals that depend on family physicians to provide newborn care, these providers needed to supplement their income with obstetrics or other forms of service provision. Participants also recognized that these family physicians required sufficiently large teams to moderate their workload and improve their lifestyle, which led certain hospitals to prioritize the expansion of their family medicine program. This left midwives particularly susceptible to constraints on their privileges and birth volumes, which were used to maintain the practice viability of the other maternity care provider groups active within the hospital, upon which they relied so heavily.

> "*we have policies that we're not going to take any more midwives for the short term. For the midwives, the policy restricts them because we're not giving more privileges right now. Because we need to assure that we can give some pregnancies to the new family docs who will be coming in, just because we need them for other parts such as postpartum resusc, that kind of stuff. Whereas midwives can't really fill that role themselves*." - Family Physician

> "*The [rural hospital] has placed a cap on midwife births. They haven't placed a cap on privileges, but on midwife births, and they are a hospital who would like to actually grow their obstetrical program, but they've placed a cap on midwife births because of pressures they feel it places on the obstetrician and family physicians providing care at the institution. In the viability of the program, in terms of recruiting family physicians to be able to continue to provide newborn care, and then needing to do obstetrical care along with that. Then, the obstetricians need to be able to maintain their financial viability with the relatively low birth volume. Those are the pressures that were explained to me in terms of the rationale for restricting the midwifery births. Basically, the hope was that by restricting midwifery births that people would choose other providers more frequently. For our*

> *practice group, what that has meant is there's been quite a dramatic shift in the ratio of births that have been done at [rural hospital] versus [urban hospital]."* – Midwife

Participants did, however, offer select examples of hospitals where midwives were encouraged to increase their birth numbers because they enabled the hospital to increase their birth volumes without utilizing additional nursing resources. Furthermore, one participant described an example of a midwifery practice group who had chosen not to advertise their services or expand their practice because they were consciously maintaining steady numbers so as to not infringe on the practices of their medical colleagues.

> *"We as midwives, we want them to be happy too, we want them to have enough workload to stay and not be tempted by a higher caseload somewhere else. So I don't think it would benefit us in the long run to advertise and to move to 8 or 10 midwives and service more people because it would impact them and their income. And we feel like we don't want to do that, because we desperately want them to stay. So while we don't necessarily meet everybody's needs who wants a midwife in the county, it's a hard one to really balance. I feel we're balancing both sides."* – Midwife

Policy Barriers to Integration of Maternity Care Providers into the Local Workforce

At the organizational level, facilities' policies and practices – including caps on birth volumes and privileging – that were designed to ensure program sustainability and, or, address budgetary constraints can pose barriers to the recruitment and optimal integration of providers into the local maternity care workforce.

Policy-maker participants identified a number of operational factors that were shaping these constraints on privileging. They explained that organizational caps were influenced by 1) the volume of births hospitals could accommodate within their existing physical infrastructure and fiscal budget; 2) the finite resources at their disposal to provide emergency backup; and 3) their

capacity to absorb additional births when the family medicine and midwifery groups had gaps in their coverage due to provider availability or sleep deprivation.

> *"[the tertiary care hospital has] no money, as we all know, so they don't want any more births, and they don't want to take any more [providers] on in any capacity, whether it's obstetrics, or family medicine, or midwifery, because they don't want to increase their volumes because they don't have to spend more money on the program, because of the incredible lack of funding overall to the hospital."* -Family Physician

Midwifery participants explained that the way that liability insurance and hospital privileging were disbursed to midwifery practice groups also limited their integration into the local maternity care system, and the availability of part-time work for midwives. A certain number of insured positions were disbursed to practice groups on an annual basis and these insured positions could not be shared between midwives working part-time. Furthermore, a number of midwifery practice groups described challenges gaining hospital privileges and restrictions on the number of births they can attend within the hospital, which represented a barrier to establishing and growing their practice within the area. Participants explained that midwifery practice groups were limited in their capacity to accommodate alternative work models or to allow midwives with a half caseload occupy a full insured and privileged position. These constraints were due to pressures to meet the targeted billable courses of care required to keep their practice afloat and to prevent their transfer payment agency[10] from clawing back their approved billable courses of care. These disbursement mechanisms also meant that if a midwife left a practice group midway through the year, they brought their liability insurance and their

[10] Most midwives in Ontario are independent contractors who remunerated through contracts with a midwifery practice group that has a contract with a transfer payment agency, which, in turn, has a contract with the Ontario Midwifery Program at the Ministry of Health. Midwifery practice groups are required to complete an annual budget approval process, which includes the estimated number of courses of care for which they are requesting to be compensated.

hospital privileges with them, limiting the practice's ability to replace the lost capacity. Participants noted that these policy constraints are particularly problematic in a highly feminized workforce, many of whom were in their childbearing years, during which time midwives enter and exit maternity leaves, and could benefit from accommodations to meet the demands of their family responsibilities.

Need for Leadership & Coordination

Policy-maker and provider participants indicated that given the absence of a single coordinating body for maternal and newborn care at the provincial level, there was a need for more coordinated leadership at both the regional and provincial level. This included the need to establish and implement a common vision and guidelines to foster an enabling environment for collaborative maternity care across facilities and provider groups. Participants explained that these coordinated efforts, accompanied by appropriate resources for organizations, providers, and parents, could serve to generate integrated and interprofessional solutions to the challenges that were being experienced across multiple hospital sites. Notably, participants identified the need for a provincial system-wide review of how maternity care is funded, delivered, and planned in Ontario. They explained that system change would require changes to the funding model, and that a funding overhaul would be necessary to ensure that pregnant people can access the care that they want and need without compromising others' access or leading to duplication of resources. Participants noted that resolving lingering tensions and inefficiencies present within the current system would require administrative leadership from individuals who do not have a financial interest in the outcome to encourage widespread trust and buy-in. This is particularly relevant given that an obstetrician participants acknowledged that many physicians within the

system were resistant to and mistrusting of health system transformation, citing the introduction of alternative funding plans as an example.

SUMMARY

Overall, the findings presented in this chapter point to the need for a sufficiently large workforce and adequately resourced teams with strong interprofessional and intraprofessional collaboration to meet population needs while ensuring sustainable workloads and call schedules for providers. Alternative funding models and coordinated leadership were highlighted by participants as enablers of access to the full range of maternity care providers by fostering innovative, person-centered models of collaboration that could provide appropriate levels of care to pregnant people at an appropriate cost to the system. The development of alternative remuneration and funding models was also seen as an opportunity to ensure the financial viability of establishing and maintaining practice, and to support flexible work arrangements that could promote the sustainability of practice within the maternity care workforce and greater integration across provider groups and models of care. Coordinated leadership at both the regional and provincial level, accompanied by appropriate resources, could foster an enabling environment for this type of collaborative maternity care across facilities and provider groups. These collaborative models would also require investment in the training and integration of additional providers to moderate existing workloads, increase flexibility in models of care and scopes of practice, and increase access to care. Finally, resolving lingering tensions and inefficiencies present within the current system would require administrative leadership from individuals who do not have a financial interest in the outcome to encourage widespread trust and buy-in.

Chapter 5

Intimate Decisions: Understanding the Factors Shaping Pregnant People's Opportunity, Ability and Propensity to Exercise Autonomous Choice of a Maternity Care Provider

CHAPTER 5 – Intimate Decisions: Understanding the Factors Shaping Pregnant People's Opportunity, Ability and Propensity to Exercise Autonomous Choice of a Maternity Care Provider

In this chapter, I present the remaining findings from the Stage 2 focus groups and interviews with parents, providers and policy-makers conducted for this study. This chapter focuses on the experiences of pregnant people and the network of factors that are shaping their opportunity, ability, and propensity to exercise informed choice of a maternity care provider within this regional maternity care system, based on experiences reported by parents themselves as well as observations and perceptions reported by provider and policy-maker participants. I begin by characterizing the local population's ability to exercise informed choice based on the levels of knowledge and awareness about the provider options available and their characteristics. I then move on to describing how access to primary care as a gateway to information, referral, and care, and the referral patterns of primary care providers, are influencing pregnant people's opportunity to exercise informed choice. Finally, I explore the full breadth of factors influencing pregnant people's choice of provider in the absence of adequate coordinated informational resources to guide this decision, and identify a number of specific populations who experience amplified barriers of access and choice, and by extension display lower propensity to exercise autonomy.

Knowledge & Awareness of Options Available and their Characteristics

To exercise autonomous choice at the individual level, pregnant people must first be informed about the options that are available to them. Many participants, however, described a lack of awareness amongst pregnant people in the region regarding the full range of maternity care provider options available, their relative scopes of practice, and models of care. Participants

indicated that obstetricians were the most commonly known provider, which meant they were accepted as the default option by many pregnant people and referring providers.

> *"I think a lot of people don't know about midwife care. I didn't even know, I didn't know about the GP option. So you have to know about your options, I think, in order to advocate for yourself. You know, my experience in the system is that my family doctor was like, "well, you're pregnant. Well, we're gonna refer you to an OB" like, that was what, there was no broader conversation about what options were. And when I brought up midwife care, it was kind of dismissed. So now that's, I don't think most family doctors are like that. I think that's just a function of my family doctor. Like he's a great family doctor. But he's old school. So yeah, I think, so I think patient knowledge is a huge restricting factor."* – Parent

This pattern resulted in what many participants described as an overutilization of obstetricians trained in high risk pregnancies for those at low risk of complication who could otherwise be accommodated by family physicians or midwives. Participants did, however, describe select sites across the region where obstetricians had chosen to restrict their practice to high risk pregnancies, leaving low risk pregnancies to other maternity care providers.

As for family physicians, all participant groups described a general lack of awareness about this option unless your primary care provider or their team provided these services. Participants also communicated some lack of awareness about the characteristics of this provider option, including not knowing that they engaged in intrapartum care in addition to prenatal care, or that they had received specialized training in maternity care. For pregnant people whose family physician did not provide this type of service, participants identified the need for a referral as an additional barrier to knowledge and access for this provider group, particularly because the current organization of primary care disincentivizes referrals between family physicians.

> *"I would say that unless your family doctor does obstetrical care, most people wouldn't go searching for another family doctor who does obstetrical care. So I think unless your family doctor does it, you're not going to go looking for it. Or at least people don't know*

> *that they can go looking for it, they just assume you're with your family doctor, you get transferred to OB. Generally, by talking to the Obs, I don't think a lot of people are told that there are other options for care. I think you get pregnant, you go to your family doctor, they confirm you're pregnant, and they say "we'll care for you until 28 weeks, and we'll transfer you over to OB".*" – Policy-Maker

Finally, while participants acknowledged that awareness and demand for midwifery care was growing through word of mouth, and that midwives had a strong foothold in some rural areas where practices were longstanding, they explained that many people remained unaware of this option. This lack of awareness extended to the characteristics of this provider option, including their coverage under provincial funding, their ability to practice in hospital, the pain relief options they could offer, and the breadth of their scope of practice and training.

> *"I think you have to pull it all together yourself. I remember mentioning midwife care to a few of my colleagues, and their first reaction was "why would you want to give birth at home?" They had no idea the scope of practice of midwives and that they had admitting privileges and that they were, you know...it's not some granola person with a crystal collection birthing people in the garage or something; it's a full medical professional with admitting privileges. People can give birth at home if they want to, but it's certainly not exclusively what midwives provide, and yeah, I think if there had been like information available that kind of laid out the options and what was provided in terms of the care that you would get with each provider, that would help generally improve people's ability to make informed choices about what type of care they want to seek for their pregnancy. Assuming that all those choices are accessible to them, which obviously, given your maps, is not the case yet"* – Parent

While self-referral is an acknowledged enabler of access to midwifery care, participants explained that lack of awareness about the referral process could result in delayed care seeking and barriers of access when the pregnant person reached out to the primary care provider for confirmation and referral, rather than reaching out directly to a midwifery practice group. Within

the current context of shortage, participants explained that there was no time to go talk to your family physician about your options before seeking out midwifery care.

Participants agreed that due to workforce supply constraints, pregnant people needed to choose and access their maternity care provider of choice early in their pregnancy, and once the decision was made, it was difficult to change your mind. Most notably, participants described a boom of demand for midwifery care in recent years, which had not been met with a commensurate increase in supply. As a result, midwifery practice groups filled their caseloads very quickly and were forced to put many people who requested their services on waitlists. In some cases, pregnant people on waitlists were eventually taken on by a midwifery practice group, but some remained unaccommodated throughout their pregnancy, and were required to redirect their choice to a different provider group. This meant that only participants who decided they wanted midwifery care *before* they were pregnant, and were aware of the need to seek out their services as soon as their pregnancy was confirmed, experienced ease of access to midwifery care.

> *"I can only speak to Ottawa, but I do know for midwives, as soon as – even just my friends, or I'll see on a Facebook group – as soon as someone says, "Oh, I'm interested in midwifery care, I just found out I'm pregnant", every single person will say, "call right now, call any practice you can, because if you don't get in now, you're not going to be able to". I know it's definitely a hot commodity here in Ottawa to be able to have a midwife."* – Parent

Participants also explained that pregnant people who had previously accessed midwifery care, or who had friends and family who had accessed midwifery care, experienced fewer challenges accessing care because midwifery practice groups prioritized accepting repeat clients.

> *"if you don't get in right away, it's really hard to get access to midwifery care. Yeah, and so, for example, for my second child, it was really easy to get midwifery care, because I already had a midwife. And so, they prioritize people they've already served. But, but for my first, I think I got the only midwife left in Ottawa."* – Parent

While isolated provider, hospital, or practice-specific advertising campaigns have occurred within the region, participants noted that there have not been coordinated system-level efforts to raise awareness about the full range of provider options available to pregnant people. This absence left it up to individual providers, who had a financial interest in promoting their own services over the services of others, to market themselves and raise awareness about their services. Physician participants perceived that while midwives had more freedom to advertise their services (e.g., social media, pamphlets, radio spots), family physicians and obstetricians were more constrained in their ability to advertise their services to the public. This appeared to be a source of tension between provider groups, with midwives being labelled as "excellent self-promoters" by one physician participant. Hospitals in the region did, however, report featuring the various providers available at their facility in their external communications.

Referral Patterns

Participants described significant variability in the information being offered to pregnant people by the provider confirming their pregnancy. Some providers offered informed choice and asked which provider the pregnant person would prefer. Others would provide options while either implicitly or explicitly pushing the pregnant person towards a particular provider based on their opinions of options available. For example, some parent participants communicated that their family physician dismissed their desire to seek care from a midwife, while others felt that their family physician "respected" or "approved" of their decision to seek care from an obstetrician.

> *"I think the personal opinions of whoever does your referral [influence choice]; so your family doctor, or whoever it is. When I had my first baby, I felt like my doctor, you know, kind of respected Obs more. I don't know; it's hard to put into words, but I felt like she approved of my decision to go with an OB."* – Parent

Multiple parent and midwifery participants shared their own experiences and the experiences of clients and friends in which some providers had gone so far as to actively discourage midwifery care by making extreme and unfounded statements about the safety of midwifery care or threatening to withhold primary care if the pregnant person chose to seek care from a midwife. Finally, some providers would assume rather than inform, dictating that the pregnant person would remain with them for prenatal care and then be transferred to obstetrics. Systemically disadvantaged populations, including Indigenous People, young parents, first-time parents, and peoples with comorbidities, were considered by family physician and midwifery participants to be particularly susceptible to this approach. Furthermore, participants communicated that if the confirming provider identified any type of risk within the pregnant person, they pushed them towards obstetrical care, which meant that midwifery was not offered as a viable option unless the pregnant person fit into a very narrow profile of what was perceived to be an acceptably low risk profile for this provider group. Some participants attributed this trend to lack of awareness rather than paternalism; explaining that the primary care providers confirming pregnancies were not necessarily knowledgeable about the full range of options available, and were therefore not equipped to provide the pregnant person with informed choice.

Parent participants felt that by not being made aware of their options, they were deprived of the opportunity to exercise choice. Amongst those who were made aware of their options, some parents reported being overwhelmed by a decision they were not aware they were going to have to make, in which case they defaulted to the option they knew best – an obstetrician. Others, who had pre-existing knowledge of the providers available and made their decision prior to confirmation of pregnancy, were equipped to assert more control over the consultation and referral process. Participants explained that many pregnant people trusted that their confirming

provider would provide them with all of the information they needed and were disappointed when they learned that this was not necessarily the case.

> *"I would say that my family doctor, my first pregnancy, I would have thought they would have given you some more information. I thought they would have listed options for me instead of just "Oh, you're here. I guess you're staying with the like medical stream, you know, family doctor-OB line of things", I thought they would have shared, or given you more information that way. I just trust in them that they're going to guide me in the right direction, I trusted my OB to guide me in the right direction. And boy, I was clueless. So, you really have to ask questions. And when you're a naive first-time parent, or you're in a rural area where you don't have these things in front of you all the time. There's no billboards, or signs for a midwife, or this is what you do when you're pregnant. Like there's no big arrows pointing this is what you do. I found it really challenging that the providers didn't just, they weren't forthcoming with the information. You had to dig for it yourself."* – Parent

Family physician participants communicated that many urban family physicians were reluctant to refer to other family physicians for intrapartum care for fear of losing that patient permanently following a positive birth experience, acknowledging that this fear may be less prevalent in select rural settings. This reluctance also stemmed from financial disincentives present within certain primary care models. For instance, family physician participants explained that family physicians who practiced in Ontario's Family Health Organization model – a comprehensive primary care payment model in which groups of physicians are primarily paid through capitation, while also being eligible for specific fee-for-service payments, and enrollment-based bonuses and premiums (Ministry of Health, 2020) – were hesitant to refer to other family physicians because select fee codes used by family physicians who provide intrapartum care, namely those that fall within the primary care basket (e.g. after hours care, urine dips), could result in negations, or financial penalties, for the individual's primary care physician. One provider

participant noted that the younger generation of family physicians appeared to be more willing to refer to family physicians who provide intrapartum care in other clinics.

Participants explained that family physicians often displayed established patterns of referral and consistently referred to the same providers with whom they and their patients have had positive experiences in the past. Some parent participants communicated that their confirming provider referred to their own birth experience, or that of their spouse, when making recommendations about choice of provider and birth setting. Some parent participants also explained that their family physicians exhibited a preference for referral to a provider within their clinic, or within their charting system/communication network, to ensure that they would be updated about the status of their patient throughout the pregnancy. Parent participants who had sought care outside of this communication network and who wanted their family physician to be informed about their status were required to advocate for their primary care provider to be included in all paperwork throughout their pregnancy.

Access to Primary Care as a Gateway

Participants highlighted the importance of primary care attachment as a gateway to access information, referrals, prenatal care, postpartum care, and newborn care. Participants across all stakeholder groups noted that for many pregnant people across the region, lack of attachment constituted a significant barrier to access and choice and an added layer of challenge in navigating the maternity care system.

> *"I think simply having a GP is really beneficial for accessing. You know, they can make referrals directly to Obs or you know, my doctor went on maternity leave, but she had made recommendations for Obs and then a person replacing her had actually made another recommendation for another OB who is, you know, giving equal; they're sharing really great stories about each OB. So I think it's really helpful because, you know, like*

> *[parent participant] said, the internet can be a really dark dive. And you know, it's a pretty intimate decision. It's a pretty intimate decision as to who's going to be caring for you throughout pregnancy and birth and postpartum. So being able to have that discussion with somebody that you know. That referral is helpful."*
> – Parent

Participants attributed this lack of attachment to the broader shortage of family physicians within the Region, which was worsening due to inadequate replacement of retiring physicians, and the variable participation in maternity and newborn care exhibited by the family physicians who were available within the current system. Parent participants who were attached to a primary care provider felt lucky to have a family physician, and explained that within the current context of shortage, individuals were pushed to accept the provider that was available to them, and were not afforded the opportunity to select a practice that provided maternity and newborn care. HealthCare Connect - a centralized referral system that matches unattached individuals with a primary care provider who is accepting patients, which prioritizes finding family physicians for pregnant people who are on their wait list was identified as a system-level policy that was enabling access for this population by a parent participant who had used the service to gain access to a family physician during her pregnancy, and by policy-maker participants.

The consequences of lack of attachment identified by participants included barriers of access to information and referrals, and barriers of access to prenatal, postpartum, and newborn care. Notably, family physician and midwife participants reported significant challenges referring newborns to a primary care provider who was both available and comfortable providing newborn care in the community following discharge. In order to fill these gaps in access, unattached individuals were forced to rely on walk-in clinics and emergency rooms. For example, a number of participants reported that for many unattached individuals, particularly those in rural settings, emergency rooms were the only available service to access newborn and postpartum care.

Participants described examples of circumstances when lack of attachment resulted in suboptimal outcomes including postpartum complications going untreated, and rapid repeat pregnancies due to lack of access to birth control. Participants explained that these barriers of access rendered the midwifery model of care particularly attractive for unattached individuals because it included six weeks of postpartum and newborn care. Participants also highlighted the Monarch Centre – a multidisciplinary team of providers, including family physicians, registered nurses, and lactation consultants, that support parents' transition home after a birth at the Ottawa Hospital – as an enabler of access to newborn and postpartum care.

Participants further explained that at times, lack of attachment resulted in suboptimal use of specialist care. For example, pregnant people who were classified as low risk being referred to obstetricians by emergency department and walk-in physicians very early on in their pregnancy to receive prenatal care that could otherwise have been delivered by their primary care provider, or pregnant people being referred to an obstetrician by a midwife for an antibiotic prescription that could have otherwise been filled by their primary care provider. In contrast, some rural family physicians reported keeping their attached patients until 32 weeks gestation due to limited availability of obstetricians within their area.

Factors Shaping Opportunity to Exercise Choice

The lack of awareness about provider options exhibited by pregnant people was shaped by a number of factors that were constraining pregnant people's opportunity to exercise autonomous choice of provider. Participants described a maternity care system that was characterized by:

- a lack of coordinated informational resources tailored to pre-conception and early pregnancy and designed to inform choice of provider;
- variable support of informed choice by the providers confirming pregnancies; and
- variable access to information through personal networks

Participants explained that existing resources – including prenatal courses offered by public health and informational packages offered by maternity care providers – were limited and targeted to the third trimester of pregnancy, covering the birthing process and newborn care rather than informing pregnant people about the providers available and guiding their care seeking decision.

This placed the onus on pregnant people to seek out information, self-select into an appropriate provider group, and navigate access to their services. Under these constrained system-level conditions which perpetuated inequities, participants described two different categories of individuals:

1. the ***informed self-advocate***, whose knowledge of the process and options enabled them to assertively navigate access to their provider of choice; and

   > *"I think information and support for healthcare choices is really dependent on so many personal factors, right? I personally was informed and made a decision on my behalf. But I don't think that the system provided me with information, that was incumbent upon me to do the research, and to make a choice that best fit for my family."* – Parent

2. the ***constrained adherent***, whose lack of awareness of the process, options, and characteristics prevented them from exercising choice on time to gain access to their preferred provider.

   > *"I think a lot of those patients, they go to a walk-in clinic or their family doctor, and they have their pregnancy confirmed, and then that doctor just sends them somewhere, and that's where they go. They don't understand that they even have options."* – Family Physician

In many cases, participants' experiences revealed that the burden of information seeking remained squarely with the pregnant person throughout their pregnancy due to models of care that limited access to providers. Participants explained that ten-minute appointments did not afford the provider or the pregnant person the time to fulfill their informational needs. This

burden was described as particularly heavy for pregnant people who did not have the time, ability, and resources to carry out these searches.

> *"My appointments with my doctors were very short. So, it's, it's not like you're having a long conversation with all your questions getting answered. So, there's a lot of work expected of the patient to be finding answers to their own questions when you've got like a 10-minute appointment with your OB, you know? So if the information was more compiled and accessible, that would, I think, make a big difference." – Parent*

Participants noted that for first time parents, who had yet to announce their pregnancy, the benefits of learning from their friends' and family's pregnancy experiences may come too late, which, combined with their reliance on the information provided by the provider confirming their pregnant, constrained their ability and opportunity to exercise autonomy in choosing a care provider. By the time they learned about the options available to them, or began the process of searching, it was too late in the pregnancy. In contrast, for experienced parents, or parents who had learned from the experience of others in their social networks, their pre-existing knowledge of the options available to them and of the process required to navigate access to their services, combined with a more assertive attitude toward care, enabled them to exercise autonomy in choosing and accessing a maternity care provider.

In response to these informational gaps, participants highlighted the value of developing coordinated and tailored education and resources to facilitate informed choice of an appropriate provider by providing evidence-based and unbiased information about provider options, the characteristics of providers, their availability within the area, and the process to access care. Participants recommended the development of a central information portal coordinated by a provincial or regional body, including a decision aid written with parent engagement to guide pregnant people and their families through the process of choosing and accessing the most

appropriate maternity care provider for their circumstances. This information portal could have all of the necessary information to answer one simple question: "I'm pregnant in Ontario. What do I do now?". This type of tool was considered particularly valuable as it would render information directly accessible to pregnant people and would enable informed choice, regardless of where the pregnant person began their journey in the maternity care system – with their primary care provider, in a walk-in clinic, in the emergency room, or on the internet. Participants also pointed to pre-conception education in provincial curricula or through public health as a means of normalizing the full range of provider options. Participants acknowledged that the most appropriate gateway for awareness about options was directly to pregnant people because so many did not have a primary care provider, and for those who did have providers, there was too much variability in the information that was conveyed.

Factors Influencing Choice

While numerous factors influencing choice emerged in our discussions – including risk profile, gender, language, culture, preferred setting, and model of care – participants acknowledged that in the absence of coordinated informational resources to inform these decisions, the most significant factor shaping people's choice of provider was word of mouth and past experiences (see Textbox 4 on p.134 for a full list of factors influencing choice). Whether this information was transmitted through friends, family, or social media platforms, pregnant people who had become informed self-advocates had often first been made aware of these options through their informal social networks. This informal channel of information, however, did not guarantee that pregnant people had access to the full breadth of information and evidence required to select the most appropriate provider for their circumstances; participants recognized that the information they received was shaped by the knowledge and judgement of those around them.

> *"I think that [an easily accessible informational resource] is definitely something that is missing. I think from a patient perspective, everything really seems to be word-of-mouth. Someone will ask their friends, their family members, or they'll ask online. Either they'll ask "who did you like?" "What kind of care provider did you have?" Sometimes people will say, "I want to give birth at this specific hospital, so does anyone know any Obs that have privileges – or midwives that have privileges there?" Really, from my perspective, it's really all word of mouth, and then they're only getting one piece of all the information that's out there, based on who they're talking to. So I think that would be a very valuable tool to have."* – Parent

Participants noted that friends and family often shared knowledge of options available and their experience with particular maternity care providers and birth setting with expecting parents. Adjacently, provider participants acknowledged that their reputation and the reputation of their facility within the community influenced demand for their services.

> *"One thing that really helped me was just like word of mouth, talking to people you knew, or friends, or those like love-hate relationships I'm sure we all have with the Facebook mom groups, you know, you can just do a search for Obs, or midwives or other people's experiences. Being that I'm in a rural community. Honestly, that's what I did; just talk to other people that I knew that was pregnant to get information, or had already had children, or I did that Google search, you know, I kind of took it into my own hands. But it is kind of nice, having that, you know, the web at our fingertips. I don't know what people would have done years ago when you couldn't do that."* – Parent

In the absence of a comprehensive portal of information, participants described the process through which pregnant people were piecing together the information required to choose and access a care provider using disparate sources of information on various websites and social media platforms. Parent participants described their experiences using Google searches and requests for recommendations on Facebook mom groups to research options and learn from other people's experiences with particular providers. Providers and policy-makers described the information that had been made available through individual organization websites, social media

accounts, pamphlets, and other promotional materials, while recognizing that these sources of information were not all up-to-date or comprehensive.

TEXTBOX 4 – FACTORS INFLUENCING CHOICE

Gender: Participants explained that many pregnant people, whether for cultural or religious reasons or not, exhibit a preference for female maternity care providers, resulting in higher demand for their services.

Culture: Participants explained that immigrant populations from certain countries of origin associated maternity care with a particular provider group, which guided their choices. Furthermore, one participant noted that some conservative Catholic communities are refusing to seek care from pro-choice providers or providers and facilities that provide termination services.

Language: Participants explained that populations whose first language is not English often seek out care from a provider who speaks their first language. For instance, Muslim obstetricians who speak Arabic were reported by providers to be in high demand as they were equipped to provide culturally sensitive care in the language of pregnant people's comfort.

Risk profile: Participants noted that the presence of risk factors often redirected choice towards urban obstetrical care in tertiary care centres. This was particularly salient in light of the increasing acuity of the obstetrical population, with participants explaining that an increasing proportion of this population exhibited advanced maternal age and more comorbidities (e.g. diabetes, hypertension, obesity) and fell into the high risk category. For instance, participants reported that obstetricians at some low risk facilities with cesarean capability were restricting the profile of pregnant people they accepted into care, resulting in a

greater proportion of the population being forced to drive further to access urban secondary and tertiary care centres because they were "too risky" to access care close to home.

Bias, stigma & misconceptions: Participants explained that lingering stigma attached to midwifery care, combined with lack of awareness about their model of care, training and scope of practice, could be influencing both referral and care seeking patterns. For instance, parent participants described circumstances in which their friends and family expressed concerns about midwifery care and home birth.

Model of care: Certain features of the midwifery model of care appeared to be particularly desirable to parents, including their non-medicalized approach to birth, the provision of postpartum home care, and longer prenatal appointments that granted providers the opportunity to answer pregnant people's questions, address their concerns, and make them feel supported through the provision of additional information and guidance. Midwives acknowledged that their model of care allowed them to take on fewer clients and spend more time caring for each, which was not a luxury afforded to other providers under current system pressures. Participants remarked that this increased the quality of access for those who did have a midwife, but reduced the volume of clients who could gain access to these services.

Timeliness of access: A number of participants indicated that they had not investigated their family physician as an option for maternity care because their wait times for primary care appointments were so long. Parent participants also noted that ongoing access to midwives who were on-call should they have any immediate questions or concerns was a desirable feature of midwifery care, noting that pregnant people who were in other models of care might be required to access emergency departments for immediate concerns and/or after-hours care.

Finally, parent participants noted that despite the shortness of their appointments with obstetricians, they were often required to spend extended periods of time in their waiting rooms before being seen, or before being able to access follow-up testing, which extended the period of time they were required to spend away from their work and their families. Participants suggested that a more optimal use of available resources, combined with alternative models of remuneration, could serve to reduce wait times at obstetrical clinics by diverting low risk pregnancies toward more appropriate levels of care.

Desire for continuity: Some parent participants communicated the importance they placed on being able to give birth with a known provider and being able to build a relationship with this person. For some, this meant choosing the midwifery model of care which prioritized continuity. For others, this meant choosing to remain in the care of the family physician with whom they had developed a positive relationship or within their broader primary care team. For this reason, a number of participants felt that more pregnant people would choose their family physicians as their maternity care provider if this option was available to them. This desire for continuity extended beyond the perinatal period, with parent participants who had a positive provider experience describing a desire to access the same provider for subsequent pregnancies. Conversely, other parent participants communicated their choice to switch providers and settings for subsequent pregnancies following suboptimal birth experiences. It should be noted that select parent participants communicated that continuity of provider was not a priority for them.

Fit with individual provider: Some parent participants explained that provider fit was important for an experience as intimate as childbirth, but pregnant people's ability to choose

between individual providers was either enabled or constrained by the levels of access present within their community. In urban settings where supply of providers was higher, participants explained that pregnant people did have opportunities to choose which obstetrician, family physician, or midwife they would like to access, with some parents explaining that they had "interviewed" multiple providers to help assess their fit. In areas where provider supply was more constrained, participants communicated that it was not possible to choose a provider based on fit, because you were lucky to gain access to any provider at all.

Preferred setting: In some cases, pregnant people appeared to be choosing a provider based on who is privileged at a particular preferred hospital or facility. For instance, if a pregnant person wished to birth at home or at the Ottawa Birth and Wellness Centre, their only provider option was a midwife. Participants also explained that while some facilities had amenities that were considered highly desirable, pregnant people avoided other facilities based on past issues and/or practices that continued to shape their reputation within the community, even if the providers involved no longer worked at the facility. In some instances, participants described bypassing their closest facility to access their preferred setting and/or provider. Furthermore, select rural participants who worked in an urban centre described choosing a provider based on their proximity to their place of work, rather than their place of residence, to promote ease of access for prenatal appointments that occured during business hours.

Preference for specialized care: Select parent participants communicated that they had a preference for a specialist, rather than a generalist, with obstetricians considered to be specialists in high risk pregnancy, midwives considered to be specialists in low risk pregnancy, and family physicians perceived to be generalists.

Social Determinants of Access & Choice

Through my engagement with local stakeholders, I was able to explore several social determinants of access and autonomy that widen the gaps described above. All participants groups identified a number of populations who face amplified barriers of access and choice within the Champlain Region's local maternity care system, including:

- young parents;
- people who's first language is not English (see textbox 5 on p.139);
- people who have lower levels of education and literacy;
- people who have inflexible and/or insecure employment (see textbox 5);
- people who have low income;
- people whose family responsibilities and characteristics tie them more closely to their homes (see textbox 5);
- people of colour;
- Indigenous Peoples;
- newcomers to Canada and the region (see textbox 5);
- people who lack access to a vehicle or reliable transportation;
- the LGBTQ2+ community;
- people with disabilities; and
- people who have mental health conditions or use substances

"I did a little presentation at Youville, which was the high school for pregnant teens, and a lot of them were so interested in midwives. They already knew about them. They thought it was great. They loved it. They wanted the home care afterwards, because they don't have cars and stuff, but they don't have their stuff together. They're not five weeks pregnant, they miss their period a day ago, and they're already calling the midwifery office, because that's not – they're teenagers, so they get around to it when they're 10 or 12 weeks or whatever, and then everything's booked solid, completely booked solid. They've got no chance at all of getting a midwife, and those are ideal clients for us. They're pretty low risk most of the time. They're young, they're healthy, they really need the care, and we can't." – Midwife

"Hawkesbury is an area that there's a lot of poverty, a lot of substance use. Most of my clients don't have access to transportation, most of my clients are very, very limited in resources in their social network. So if you don't have a friend who can drive you to your appointments, and you don't happen to live right down the street from your doctor, you know, like you're not going to walk very far when you are eight months pregnant to go see your doctor. So there's, it's definitely, it's definitely more difficult for those moms to seek service" – Parent

TEXTBOX 5 – EXPANDING ON SOCIAL DETERMINANTS OF ACCESS AND AUTONOMY

- **Language:** According to participants, limited access to services in languages other than English, combined with restrictions on the availability of formal and informal translation support in the context of COVID, have amplified the language barriers between providers and pregnant people. Participants explained that under these circumstances, providers could not communicate available options to the pregnant person, which meant that they were simply being directed to an obstetrician. These language barriers could also result in miscommunications that could cause distress to the pregnant person. Participants provided examples of organizations that had taken the initiative to have multilingual providers on staff and to translate their materials into multiple languages. In the case of midwifery, participants explained that the French language requirement to work at Montfort limits certain practices' ability to recruit by restricting the pool of eligible candidates. This trend may worsen with the closure of the Midwifery Education Program at Laurentian University, which was the only bilingual program in the country.
- **Employment:** Participants noted that taking time off work for prenatal appointments can be challenging if the pregnant person's employer was inflexible, or if the pregnant person was required to sacrifice income in order to seek care. This was seen as particularly challenging for high risk individuals who had frequent lengthy visits to tertiary care centres that may have been outside of their communities.
- **Personal & Familial Circumstances:** Participants provided examples of how personal and familial circumstances could pose barriers of access, which had been exacerbated

since the onset of the pandemic. For example, participants noted that single parents, military spouses, and parents of multiple children were facing challenges accessing care as they could not leave their children at home, or bring them to the prenatal/postpartum appointments. Furthermore, with restrictions on support people being present for appointments during the pandemic, some participants reported instances where pregnant people who were in abusive relationships were unable to access appropriate prenatal care because their partners did not want them accessing services alone.

- **Residency:** Participants, including parents with lived experience, identified immigrant communities and military families who were new to the region as populations that were not necessarily familiar with the local system or the options available to them. According to participants, their lack of attachment to a primary care provider and their reliance on walk-in clinics and emergency rooms for care further limited their access to the information and referrals that could have facilitated their navigation of this new system. Participants expanded, explaining that for newcomers, these barriers of access to information and referrals were compounded by the complications associated with transferring or initiating their public insurance coverage. Upon arrival in the province of Ontario, there was a 3-month waiting period before an individual was covered under the Ontario Health Insurance Plan (OHIP). During this time, newcomers to Canada arere uninsured, and Canadian residents who have moved between provinces face barriers related to various providers' willingness or ability to accept out-of-province insurance. Participants described the agreement that midwives within the region had with their Transfer Payment Agency, which allowed them to provide care to pregnant

people who did not have OHIP coverage and for other providers who they consulted during this course of care to be remunerated for their services. Midwife participants explained that other providers and hospital administrators did not always understand this agreement, leading to concerns about whether they would be paid, which posed barriers to access and consultation, and created an additional burden of education and coordination for midwives.

According to participants, the culmination of these barriers meant that pregnant people who fell into one or more of these categories may not have been aware that they had options within the system and accepted the course of care that was offered by the confirming provider.

> *"There's certainly that large group of vulnerable patients who are just happy to get any care."* – Family Physician

As a result, participants believed that the demographic group that was best informed about midwifery as an option, and best equipped to navigate access to their services was not necessarily the population that would benefit the most from this model of care. Select midwifery practice groups had chosen to reserve a portion of their caseload for the systemically disadvantaged high-needs populations who typically sought care later in their pregnancy. This practice could be a more stressful balance for midwives who were concerned about maintaining a full-time caseload, but participants reported that these spots did fill up eventually. Other midwifery practice groups offered a greater volume of home care prenatally to pregnant people who faced barriers of access, including old order Mennonite communities, pregnant people with minimal access to transportation, and rural parents who could not bring their children into the clinic during the pandemic. This type of service increased midwives' already high workload, which meant that they could only provide this type of service to a limited number of clients, or

were forced to limit their overall caseload, to accommodate the additional workload. Participants highlighted the value of co-locating maternity care providers with other community and social services as a means of increasing access and enabling more holistic support for systemically disadvantaged populations. For example, one midwifery practice group's satellite practice in a rural area served a largely young, rural, low-income population and was co-located in a community centre with other social services. Finally, one midwifery practice group chose to establish a satellite practice that was easily accessible by public transportation to enable access for individuals who did not have access to a vehicle.

SUMMARY

The findings presented in this chapter demonstrate that the existing system's over-reliance on informal informational channels generated significant inequities in access to the information and resources required to exercise autonomous choice, and introduced disproportionate barriers of access and autonomy for those who do not have the knowledge, social capital, and agency to overcome the barriers present within the maternity care system. In response to these informational gaps, participants highlighted the value of developing coordinated and tailored education and resources. These need to be universally accessible early on in pregnancy to facilitate informed choice of an appropriate provider by providing evidence-based and unbiased information about provider options, the characteristics of providers, their availability within the Region, and the process to access care. This type of tool was considered particularly valuable as it would render information directly accessible to pregnant people and would enable informed choice, regardless of where the pregnant person began their journey in the maternity care system; with their primary care provider, in a walk-in clinic, in the emergency room, or on the internet.

Chapter 6
Discussion & Conclusion

CHAPTER 6 – Discussion & Conclusion

In this discussion, I begin by summarizing key findings across the four research questions that guided this thesis and integrate these findings with existing theory and evidence to present a *Framework for the Promotion of Equitable Access and Autonomy in Maternity Care Systems*. I then move on to describe the contribution of this body of work to knowledge, methods, and practice. Finally, before concluding, I acknowledge the limitations of this thesis.

SYNTHESIS OF KEY FINDINGS

How is access to provider-specific maternity care distributed across the Champlain Region?

Measuring the interaction between service requirement and capacity trends within the Region using my adapted enhanced two-step floating catchment area methodology, I described the distribution of access to provider-specific maternity care across the Champlain Region. Through this description, I first demonstrated that access to obstetricians, family physicians, and midwives who provide intrapartum care is inequitably distributed across the Champlain Region. The second key finding emerging from this description was that when comparing relative accessibility across provider groups, the average accessibility index score for care provided by obstetricians was significantly higher than the average accessibility index scores for care provided by family physicians or midwives, with higher accessibility scores indicating higher levels of access to this provider group. This analysis also demonstrated that in some areas, access to one provider group was compensating for lack of access to others. This allowed for access to care without necessarily affording pregnant people the opportunity to exercise choice of provider. Finally, with access concentrated in larger population centres, I identified a number of smaller rural communities left with little to no access to any provider group forcing pregnant

people to drive long distances and leave their community to access any maternity care, let alone their preferred provider.

What individual, organizational, and system-level factors are shaping access to the full range of maternity care providers?

Geographic Determinants of Access to Maternity Care Providers

Using qualitative data collected in stage 2, I was able to deepen my understanding of the geographic determinants of access. These qualitative data confirmed that providers were concentrated in population centres that offer high density of demand & proximity to hospitals with obstetrical programs. This resulted in an inequitable distribution of access to the full range maternity care providers and choice of birth setting across the region.

These geographic barriers of access for rural populations were attenuated by the presence of rural obstetrical programs and satellite sites, which were identified as critical to bringing care closer to home for these populations. They were also attenuated by midwives' ability to uncouple access to care from the distribution of facilities and cover large geographic areas through their provision of home care. Furthermore, since the onset of COVID, the use of virtual care for a subset of prenatal appointments had attenuated some of these barriers. On the other hand, geographic barriers of access to maternity care were compounded for parents who: (1) had a risk profile requiring frequent visits to tertiary care centres, (2) lacked access to transportation, (3) had inflexible employment models that forced them to sacrifice income to attend appointments, or (4) faced inclement weather.

Persistent challenges with recruitment and retention of providers in rural settings were identified by participants as key drivers of the inequitable distribution of providers that were shaping these

geographic barriers of access. Participants explained that these challenges stemmed from: (1) lack of exposure to, training for, and comfort in rural practice amongst graduating students, (2) new graduates hesitating to take on the amplified challenges associated with building a new practice in a rural setting, (3) large catchment areas and small practice teams resulting in demanding call schedules, and compromised provider wellbeing, and (4) rural facilities' difficulties generating sufficient volume to maintain the competence, ensure the financial viability, and justify the lifestyle of rural providers. As a result of these challenges with recruitment and retention, rural programs were often in precarious situations, where one or two providers reducing or discontinuing their services could destabilize access to services for an entire region, leaving the remaining providers covering an excessive amount of work to keep services running, or leading to temporary or permanent service closures.

Extant literature recognizes that quantitative shortages in the availability of health workers are often amplified by issues of geographic maldistribution, which impede access to quality care (Koblinski et al., 2016). Accordingly, the Champlain Region appears to be facing similar challenges to other jurisdictions; participants' identification of the sustainability rural programs and challenges with recruitment and retention of providers as key contributors to this maldistribution is strongly aligned with extant literature on the causes and impacts of rural maternity care program closures on access to care close to home (Haque, Nigam & Sibbald, 2017; Iglesias et al., 2015; Kornelsen, Stoll & Grzybowski, 2011; Miller et al., 2012). The gaps in access present within the Champlain Region are particularly problematic in light of the strong body of evidence on the adverse impacts that being forced to travel long distances to access maternity care outside your home community can have on maternal and neonatal outcomes, rates of obstetrical intervention, rates of unplanned out of hospital births, birthing people's level of

satisfaction, birthing people's level of stress, costs incurred and disruptions experience by birthing people to access maternity care (Kornelsen & Grzybowski, 2005; Grzybowski, Stoll & Kornelsen, 2011; Haque, Nigam & Sibbald, 2017; Iglesias et al., 2015; Klein et al., 2002; Kornelsen, Stoll & Grzybowski, 2011; Mattison et al., 2018; Sutherns & Bourgeault, 2008; Sutherns, 2004).

Workforce Trends Constraining Potential Access

Based on the insights shared by participants, workforce trends appeared to be constraining potential access to maternity care by limiting the service capacity generated by all three provider groups across both rural and urban settings. First, limits on the number of students trained and barriers to the integration of available providers limited workforce supply within the region. This left providers adopting heavy workloads and demanding lifestyles to meet growing population needs with limited resources. These heavy workloads were unsustainable, leading to burnout, leaves of absence and attrition. This was particularly true when providers were required to cover for various types of leaves of absence and to compensate for the lost capacity of providers transitioning into retirement, without the introduction of new resources. This unsustainable level of activity was leading to decreased participation in intrapartum care in particular. Participants described fewer graduates being interested in adopting the lifestyle required to provide intrapartum care, and that some providers who had flexibility in their scope of practice to do so were either suspending or decreasing their intrapartum activities and on-call work. Participants noted that all of these trends pointed to the need for a sufficiently large workforce and team to meet population needs while ensuring sustainable workloads and call schedules for providers.

These findings are aligned with extant literature on the capacity of the maternity care workforce to meet population health needs and offer pregnant people the opportunity to choose from an

acceptable range of options. Existing studies have described a state of maternity care workforce shortage resulting from physicians' decreasing participation in maternity care and the midwifery workforce's inadequate capacity to fill this emerging gap (Benoit, Carroll & Westfall, 2019; Bourgeault, 2001; Bourgeault & Darling, 2008; Butler, Hutton & McNiven, 2016; Hedden et al., 2019; Price, Lane & Klein, 2005; Redding, 2015). This trend is not constrained to the maternity care sector, with emerging trends towards specialization amongst family physicians, who are increasingly adopting focused practice (Kabir et al., 2022; Oandasan et al., 2018). Many of the drivers of decreased participation in maternity care discussed by participants, including the demands of the heavy workloads and call schedules associated with maternity care and the impacts on providers personal lives and mental and physical health, have also been described by others (Bourgeault, 2001; Bourgeault & Darling, 2008; Smith et al., 2009; Stoll & Gallagher, 2019). The workforce trends in the Champlain Region cannot, therefore, be considered unique, but rather reflective of a cycle of attrition present within maternity care that has had, and will continue to have, significant repercussions on the sustainability of the local maternity care workforce and its capacity to support pregnant people's access to and choice of a provider.

Impact of Funding and Remuneration on Integration of the Local Workforce

Many participants noted that pregnant people seek more integrated models of interprofessional maternity care. Despite this emerging trend, provider and policy-maker participants indicated that the current model of remuneration for maternity care providers created competition for limited "market share" between and within provider groups. This constrained choice by rendering it challenging for maternity care programs – particularly in rural contexts – to generate sufficient volume to maintain the financial viability of all three provider groups. These models of remuneration were also reported to impede interprofessional collaboration by fostering tensions

and disincentivizing interprofessional support, and led to suboptimal use and duplication of resources as a result of the absence of compensation mechanisms for integrated care.

These financial disincentives, combined with historical tensions between maternity care provider groups, meant that sites across the region had achieved remarkable variability in interprofessional collaboration and integration. While some hospitals across the region had established collaborative relationships between provider groups, enabled all providers to work to their full scope of practice, and had meaningfully integrated all providers into the facility's policy and decision-making process, others had yet to fully realize these characteristics of an enabling organizational environments for the integration of all three provider groups.

Under the current models of remuneration, hospitals differentially prioritized and supported the integration of obstetricians, family physicians, and midwives into their maternity care programs. First and foremost, hospitals were required to prioritize maintaining the practice viability and retention of obstetricians because of their reliance on obstetricians for surgical backup and gynecological care. In contrast, within the current system, certain conditions needed to be met in order for hospitals to be enabled to support the integration of family physicians and midwives. Based on the cases described by participants, hospitals appeared to be enabled to support family physicians who provide intrapartum care and midwives under three common conditions:

1. local obstetricians have established viable practices;
2. the hospital is seeking resource-effective program growth by bringing in new low risk births; and
3. respectful and collaborative relationships have been established between the provider groups.

At the organizational level, facilities' policies and practices – including caps on birth volumes and privileges – can pose barriers to the recruitment and optimal integration of providers into the local maternity care workforce. Family physicians did appear to be at reduced risk of these caps when compared to midwives, with participants highlighting that many hospitals relied on their contributions across other sectors of care, including pediatrics, neonatal resuscitation, the emergency department, and primary care. This left midwives particularly susceptible to constraints on their privileges and birth volumes, which were used to maintain the practice viability of the other maternity care provider groups active within the hospital, upon which they relied so heavily.

Tensions between maternity care providers stemming from competition for births, such as those described by the participants engaged in this study, have already been well documented in previous studies conducted within the Canadian context (Bourgeault & Darling, 2008; Behruzi et al., 2017; Peterson et al., 2007; Haque, Nigam & Sibbald, 2017; Munro, Kornelsen & Grzybowski, 2013). My findings are also aligned with those of previous studies pointing toward the persistence of medical dominance within the organization of maternity care, which affords physicians, and particularly obstetricians, a disproportionate level of power and influence over decision-making within hospital-based maternity care programs, and control over the integration and activities of other maternity care providers (Benoit et al., 2010, Bourgeault & Mulvale, 2006, Kuhlmann et al., 2010, Behruzi et al., 2017, Bourgeault & Darling, 2008). In the case of the Champlain Region, this power imbalance, combined with suboptimal remuneration structures, appear to have allowed for the financial sustainability of physicians' practices to take precedence over the development of a workforce that affords pregnant people equitable opportunity to choose a maternity care provider.

What individual, organizational, and system-level factors are shaping pregnant people's autonomy in choosing a maternity care provider?

Knowledge and Awareness of Options and Characteristics

Beyond the availability and accessibility of the full range of maternity care providers at the system and organizational levels, pregnant people must be informed about the options that are available to them in order to exercise autonomous choice at the individual level. However, participants expressed that there was a lack of awareness amongst both pregnant people and primary care providers in the Region regarding the full range of maternity care provider options available, and their relative scopes of practice and models of care.

Obstetricians were the most commonly known provider, which meant they were accepted as the default option by many. As for family physicians, participants described a general lack of awareness about this option unless their primary care provider or their team provided these services. Participants also communicated some lack of awareness about the characteristics of this provider option, including not knowing that they engaged in intrapartum care in addition to prenatal care, or that they had received specialized training in maternity care. Finally, while participants acknowledged that awareness and demand for midwifery care was growing through word of mouth, and that midwives had a strong foothold in some rural areas where practices were longstanding, they explained that many people remained unaware of this option. This lack of awareness extended to the characteristics of this provider option, including their coverage under provincial funding, their ability to practice in hospital, the pain relief options they could offer, and the breadth of their scope of practice and training.

As a core prerequisite to both access and autonomy, the emergence of knowledge and awareness of the full range of provider options as a key theme in my study of the factors shaping pregnant

people's autonomy in choosing a maternity care provider within the Champlain Region came as no surprise. Furthermore, the general lack of awareness amongst both parents and providers in the Champlain Region that was described by participants in this study was not unexpected, with multiple previous studies pointing to lack of awareness as a persistent barrier to informed choice in maternity care (Jimenez et al., 2010; Zadoroznyj, 2000), and others reporting similar challenges with respect to the inconsistent information being provided by family physicians upon confirmation of pregnancy (Darling et al., 2019a; Jimenez et al., 2010; Psaila & Schmied, 2017; Stevens et al., 2016; Sutherns & Bourgeault, 2008; Zadoroznyj, 2000).

Factors Shaping Opportunity of Exercise Choice

The lack of awareness about provider options exhibited by pregnant people was shaped by a number of factors that were constraining pregnant people's opportunity to exercise autonomous choice of provider. Participants described a maternity care system that was characterized by:

- a lack of coordinated informational resources tailored to pre-conception and early pregnancy and designed to inform choice of provider;
- variable support of informed choice by the providers confirming pregnancies; and
- variable access to information through personal networks

This placed the onus on pregnant people to seek out information, self-select into an appropriate provider group, and navigate access to their services. Under the constrained system-level conditions which perpetuated inequities, participants described two different categories of individuals: (1) the *informed self advocate*, whose knowledge of the process and options enabled them to assertively navigate access to their provider of choice, and (2) the *constrained adherent*, whose lack of awareness of the process, options and characteristics prevented them from exercising choice on time to gain access to their preferred provider

While numerous factors influencing choice emerged in our discussions – including risk profile, gender, language, culture, preferred setting and model of care – participants acknowledged that in the absence of coordinated informational resources to inform these decisions, the most significant factor shaping people's choice of provider was word of mouth and past experiences. Whether this information was transmitted through friends, family, or social media platforms, pregnant people who had become informed self-advocates had often first been made aware of these options through their informal social networks.

These findings build on a growing body of literature describing pregnant people's strong reliance on past experience, word of mouth, social networks, and the internet – including social media platforms and applications – as key sources of pregnancy-related information, including information about provider options (Alamer & Al-Edreese, 2021; Darling et al., 2019a; Jimenez et al., 2010; Tizzard & Pezaro, 2019; Wright, Matthai & Meyer, 2019). Given current societal trends, in which the pandemic has moved many of our personal, professional, and social interactions online, the prevalence of information-seeking via the internet will likely continue to grow, underlining the importance of evidence-based and comprehensive online tools and resources to more equitably support the informed choice of a maternity care provider.

Access to Primary Care as a Gateway

Participants highlighted the importance of primary care attachment as a gateway to access information, referrals, prenatal care, postpartum care, and newborn care, and noted that for many pregnant people across the Region, lack of attachment constituted a significant barrier to access and choice. Participants attributed this lack of attachment to the broader shortage of family physicians within the Region, which was worsening due to inadequate replacement of retiring

physicians, and the variable participation in maternity and newborn care exhibited by the family physicians who were available within the current system.

The consequences of lack of attachment identified by participants included barriers of access to information and referrals, and barriers of access to prenatal, postpartum and newborn care. In order to fill these gaps in access, unattached individuals were forced to rely on walk-in clinics and emergency rooms. Participants further explained that at times, lack of attachment resulted in suboptimal use of specialist care.

The interplay between access to a primary care and access to and choice of a maternity care provider revealed in this study appears to be a critical gap within the current evidence base. This understudied topic certainly merits further investigation moving forward given the growing proportion of the population within the Champlain Region, and beyond, who are not attached to a primary care provider, which may expose a greater number of pregnant people to the associated barriers to information, access and referral described by participants in this study.

Social Determinants of Access & Autonomy

Through my engagement with local stakeholders, I was able to identify a number social determinants that widen gaps in access and autonomy. Participants identified a number of populations who face amplified barriers of access and choice within the Champlain Region's local maternity care system, including: young parents, people who's first language is not English, people who have lower levels of education and literacy, people who have inflexible and/or insecure employment, people who have low income, people whose family responsibilities and characteristics tie them more closely to their homes, people of colour, Indigenous Peoples, people with disabilities, newcomers to Canada and the region, people who lack access to a

vehicle or reliable transportation, the LGBTQ2+ community, and people who have mental health conditions or use substances. These social determinants impact a pregnant person's positionality within the local maternity care system. Pregnant people who are systemically disadvantaged are at heightened risk of falling within the definition of a "constrained adherent", with significant systemic constraints on their opportunity, ability & propensity to exercise autonomous choice of provider.

Participants' identification and characterization of these communities is aligned with extant literature describing systemically disadvantaged populations' reduced autonomy and increased barriers of access within the Canadian maternity care system (Bourgeault, 2001; Sutherns & Bourgeault, 2008; Darling et al., 2019a; Vedam et al., 2019; Malott, 2017), and internationally (Bartholomew et al., 2015). Evidence also suggests that in the absence of tailored supports to assist these populations in navigating the process of choosing and accessing a maternity care provider, health systems that offer the opportunity to exercise choice of provider, may, in fact, increase inequities rather than maintaining equity (Bartholomew et al., 2015). As such, efforts to remedy these barriers would require and equity-based approach tailored to the unique needs of each of these communities to afford them the supports required to autonomously choose and access a maternity care provider.

What locally-relevant solutions could be effective in alleviating gaps in access and autonomy?

First, this thesis enabled the identification of underserviced areas of the Champlain Region where pregnant people's choice of maternity care provider are restricted by issues of service capacity or geographic access. It also highlighted the critical importance of rural maternity care programs, satellite practices, and provision of care in pregnant people's home to upholding access to care

closer to home. Participants in stage 2 were surprised that family physicians and midwives did not fill gaps in access in rural areas that do not have hospitals to support large obstetrical practices. In the absence of regional planning and matched incentives, providers do not inherently distribute themselves based on population needs. This underscores the importance of integrated, coordinated and transparent workforce planning efforts, accompanied by conducive health workforce policies and management practices, to guide the development of a fit-for-purpose maternal health workforce.

These findings also highlighted the potential of alternative remuneration and funding to foster more integrated models of care to support pregnant people's access to the full range of maternity care providers by fostering innovative, person-centered models of collaboration that could provide appropriate levels of care at an appropriate cost to the system. The development of alternative remuneration and funding models was also seen as an opportunity to ensure the financial viability of establishing and maintaining practice, particularly in rural low-volume centres, and to support flexible work arrangements and retention within the maternity care workforce. Furthermore, a number of participants felt that the collocation of the full range of providers in a multi-specialty clinic, alongside complementary providers and laboratory services could foster stronger interprofessional relationships, enable care integration, and increase access to care.

Participants indicated a need for more coordinated system-level leadership at both the regional and provincial level, accompanied by appropriate resources – including the establishment and implementation of a common vision and guidelines – in order to foster an enabling environment for collaborative maternity care across facilities and provider groups. Resolving lingering tensions and inefficiencies present within the current system would require administrative

leadership from individuals who do not have a financial interest in the outcome to encourage widespread trust and buy-in. These collaborative models would also require investment in the training and integration of additional providers to moderate existing workloads, increase flexibility in models of care and scopes of practice, and increase access to care.

Finally, participants highlighted the value of developing coordinated and tailored education and informational resources to facilitate informed choice of an appropriate provider by providing pregnant people with evidence-based information about provider options, the characteristics of providers and their models of care, their availability within the area, and the process to access care.

FRAMEWORK FOR THE PROMOTION OF EQUITABLE ACCESS AND AUTONOMY IN MATERNITY CARE SYSTEMS

Building on existing theories of access (Aday, 2004), relational autonomy (Mackenzie, 2014; Sherwin, 1998), and quality of care (Donabedian, 1988), I have used these findings to develop a Framework for the Promotion of Equitable Access and Autonomy in Maternity Care (presented in figure 19, p.161), which describes the structural conditions that would be necessary to equitably support pregnant people's opportunity, ability & propensity to exercise autonomous choice of a maternity care provider. My guiding theoretical frameworks were integrated into the design of this thesis, the implementation of data collection (e.g. explicit questions in the interview guide) and analysis activities (e.g. pertinent thematic codes), as well as my synthesis of findings. This framework not only allows for the integration of my guiding theoretical frameworks, but allows me to build upon their combined structure to make a substantive contribution to advancing theory in this space.

I present this framework in lieu of traditional evidence-based policy recommendations. As this thesis was conducted as an embedded research project and in partnership with an advisory committee, I committed to limiting the scope of this work to the generation of evidence and the presentation of recommendations generated by participants, leaving the translation of this evidence into policy recommendations and actions to my partner organizations. This framework does, however, constitute an integrated overview of the conditions required to support access and choice based on existing literature and the evidence generated through this thesis. As such, it should provide knowledge-users within the Champlain Region, and elsewhere, with a tool to identify strategic areas for evidence-based policy action as they seek to promote of equitable access and autonomy in maternity care systems.

At the policy level, the Framework posits that leadership, coordination and integration across stakeholders, facilities and provider groups is required to enable the development of a system of maternity care that equitably supports pregnant people's opportunity, ability and propensity to exercise autonomous choice of provider. This system-level leadership, coordination and integration is critical to enable the translation of maternal health policies that support access and choice in theory into structures and processes that fulfill these targeted outcomes in practice.

The Framework divides the structures required to support pregnant people's opportunity, ability and propensity to choose a provider into three key areas of intervention: the maternity care system, the birthing population, and the environment within which they interact.

First, a maternity care delivery system that is equipped to support access and autonomy has a supply, distribution & mix of maternity care providers that is aligned with population needs, supportive of care close to home, and adequate to maintain sustainable workloads and call

schedules. This requires particular attention paid to the sustainability of rural maternity care programs, and to the education, recruitment and retention of rural maternity care providers. Furthermore, within such a system, educational, financial, organizational, physical & technological structures should foster integration of and collaboration across all provider groups in person-centred models of care.

Second, in order to avail themselves of the full breadth of resources available within this maternity care delivery system, the birthing population requires direct access to information about provider options available, and to the resources required to navigate access to their services. Ideally, access to information and maternity care providers is facilitated through attachment to a primary care provider who supports informed choice and serves as a gateway into the maternity care delivery system. System structures that promote access to information and resources limit the presence of *constrained adherents* within the birthing population, prevent the need for pregnant people to serve as *informed self-advocates*, and level the playing field for the emergence of a birthing population that is equitably equipped, supported and empowered to exercise informed choice.

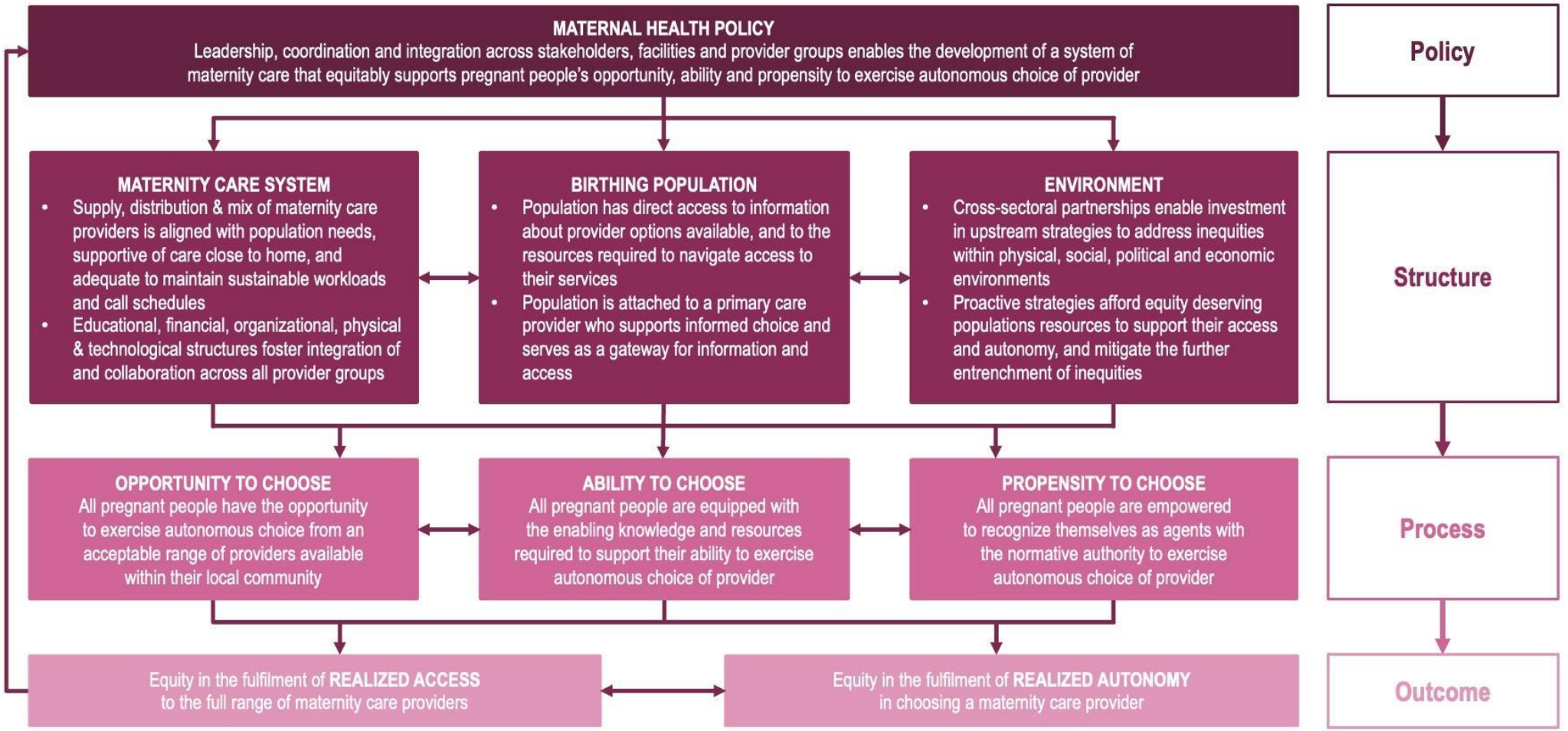
Third, proactive strategies that offer equity deserving populations resources to support their access and autonomy can mitigate the further entrenchment of inequities present within physical, social, political and economic environments. Cross-sectoral partnerships can supplement these efforts by enabling investment in upstream strategies to address the root causes of these inequities.

These structures interact to shape the three prerequisites that enable pregnant people to actively engage with the process of choosing and accessing a maternity care provider. The first

prerequisite to the achievement of equitable access and autonomy, which aligns with Mackenzie's (2014) concept of self-determination, is that all pregnant people have the opportunity to exercise autonomous choice from an acceptable range of providers available within their local community. The second prerequisite, which aligns with Mackenzie's (2014) concept of self-governance, is that all pregnant people are equipped with the enabling knowledge and resources required to support their ability to exercise informed and autonomous choice of provider. The third and final prerequisite, which aligns with Mackenzie's (2014) concept of self-authorization, is that all pregnant people are empowered and recognized as agents with the normative authority to exercise autonomous choice of provider.

Finally, maternity care systems that have established the policy and structures required to enable the fulfillment of these three prerequisites have the means of achieving two targeted outcomes: 1) equitable realized access to the full range of maternity care providers, and 2) equitable realized autonomy in choosing a maternity care provider. A system's success in achieving these goals, and the lessons learned along the way, can be fed back into maternal health policy to enable the refinement of person-centred care, information, and resources.

FIGURE 19: Framework for the Promotion of Equitable Access and Autonomy in Maternity Care Systems
(Adapted from Aday, 2004, Mackenzie, 2014, Sherwin, 1988 & Donabedian, 1988)



CONTRIBUTION TO KNOWLEDGE

Throughout the implementation of this thesis, I have been struck by how strongly aligned the findings of this thesis have been with extant literature on the organization of maternity care. In many ways, this is discouraging; decades later, studies continue to highlight the same persistent and pervasive challenges that have yet to be addressed. Inequities in access and autonomy within the maternity care sector, therefore, are not the result of lack of evidence, but rather due to the social, political, and economic barriers impeding the implementation of known solutions.

The findings of this thesis may echo and reinforce the existing body of evidence within this field, but the systems thinking approach I adopted in the conceptualization, design and implementation of this thesis offers a significant contribution to literature by enabling a robust examination of the complex system of factors that differentially enable and constrain pregnant people's access and autonomy within the Champlain Region's local maternity care system. While discrete components of the dynamics presented here have been addressed in isolation within the existing body of evidence – including the geographic access to maternity care, the capacity and practice patterns within the maternity care workforce, the influence of system and organizational-level policies on integration and collaboration, interprofessional dynamics within the maternity care system, knowledge and awareness as precursors to choice, and the social determinants of access and autonomy – this thesis has addressed critical gaps in our knowledge about how individual, organizational, and system-level factors interact to shape the availability and accessibility of provider-specific care, and pregnant people's experience choosing a maternity care provider and navigating access to their services. Similarities between the findings presented here and the experiences described in studies conducted in other Ontarian and Canadian locales suggest that these findings are not unique, may be relevant across contexts, and could serve to better

understand the system dynamics influencing pregnant people's opportunity, ability, and propensity to exercise choice of provider in other Regions across Ontario, and nationally.

Through this thesis, I have also contributed to the body of knowledge by filling two critical gaps in the literature on access to maternity care. First, while access to maternity care has been examined by others, very few studies have compared access to provider-specific maternity care. Second, to my knowledge, no studies have employed geospatial analysis as a means of describing the geographic distribution of pregnant people's opportunity to exercise choice across a range of maternity care providers. By adopting a systems approach in this thesis, I was also able to fill a gap in the evidence on interprofessional collaboration in maternity care by moving beyond the barriers and enablers to collaboration and integration within the organization of maternity care to examine how system-level policies and structures influence interprofessional dynamics, which in turn shape pregnant people's opportunity to choose from and navigate access to the full range of maternity care providers. This had yet to be fully elucidated in literature.

My contributions to both of these bodies of literature stem from my integrated examination of access and autonomy. Most of the health services literature adopts a strong focus on availability and accessibility, leaving discussions of autonomy to the fields of ethics and feminist and gender studies. By examining the factors shaping both access and autonomy within a local maternity care system, I have contributed to both of these fields by highlighting the interactions and interdependencies between these two concepts. Access is a necessary but independently insufficient prerequisite to the achievement of reproductive autonomy, and inequities in autonomy within a birthing population can actively constrain access for those with limited gateways to enabling information and resources.

Finally, because very few publicly-funded maternity care systems internationally offer pregnant people who are at low risk of obstetrical complication the opportunity to choose between tertiary and primary care providers, literature on the factors influencing pregnant people's opportunity to exercise autonomous choice of provider, and the factors influencing this choice, is scarce. The mixed-methods I adopted in this thesis represented a unique opportunity to contribute to this nascent area of research by exploring the interaction between the geographic accessibility of provider-specific maternity care and pregnant people's differential access to the broader range of prerequisite knowledge and resources required to support their ability, opportunity and propensity to exercise autonomous choice of provider.

CONTRIBUTION TO METHODS

As a contribution to methods, I developed an innovative methodology that leveraged promising practices in workforce planning to address key challenges in the field and align workforce supply, distribution, and mix with pregnant people's choices and needs. This adapted methodology allowed me to account for individual providers' practice patterns when measuring the service capacity they offer within the local maternity care system. This proved to be essential to the validity of my measures of access. Using a simple headcount-based provider-to-population ratio would have led me to a considerably overestimate access to maternity care provided by family physicians because the Champlain Region has a high number of family physicians providing relatively low volumes of maternity care compared to their obstetrical counterparts.

This adapted methodology also allowed me to account for the unique demographic and risk profiles of local populations when measuring the maternity care needs they generate. This also proved to be essential to the validity of my measures of access given that the birth rates and proportion of births classified as low risk were variable across the region.

Finally, the addition of consultations with local parents, providers and policy-makers enabled me to 1) mitigate limitations associated with data lag in administrative databases by creating opportunities to validate where trends reflected in the maps remain relevant and highlight any areas where change may have occurred since the data were produced, and 2) deepen my understanding of the determinants of access that were reflected in the maps I produced.

While I designed this adapted methodology for application to the Champlain Region's maternity care system, it is readily adaptable to other planning geographies and sectors of care within and beyond Ontario, and has the potential to make significant contributions to the field of health workforce planning. Other regions across Ontario have expressed an interest in applying this methodology within their own regional maternity care system, and I am currently applying this methodology to the examination of access to psychotherapy amongst adults with mood and anxiety disorders within Manitoba's Prairie Mountain Health Region.

CONTRIBUTION TO PLANNING & POLICY

In line with the integrated knowledge translation approach I adopted, and my embedded scientist role with CMNRP, my primary goal in conducting this thesis was to use rigorous methods to inform evidence-based improvements to our local maternity care system. Beyond contributions to literature, examining whether or not the conditions required to equitably support autonomous choice of provider had been established within the Champlain Region was of inherent value to inform future policy and practice within the Region's maternity care system. These contributions were achieved by complementing a description of the current geographic alignment between workforce supply and population health needs with an exploration of the individual, organizational, and system-level factors that fed into, and emerged from, the trends displayed in the maps produced.

As a contribution to practice, this study enabled the identification of underserviced areas where pregnant people's choice of maternity care provider may be restricted by issues of service capacity and, or, geographic access. In doing so, this study is providing local health system planners and policy-makers with an evidence base to support better alignment between workforce supply, distribution and mix, with pregnant people's choices and needs. Amongst maternity care providers and organizations, this thesis could inform more informed practice location and expansion choices in line with pregnant people's needs, and provide professional associations with tools for advocacy.

Furthermore, by identifying the broader range of individual, organizational and system-level factors shaping pregnant people's experiences choosing and accessing a maternity care provider, eliciting locally-relevant solutions to the gaps in access and autonomy identified, this thesis could inform the development of policies, practices, and resources designed to equitably support pregnant people's access to and choice of a maternity care provider within the Champlain Region's local maternity care system, and beyond.

The acceptability, utility, validity and impact of my final results were supported by my integrated knowledge translation approach, which engaged a diverse array of providers, policy makers, and parents in all stages of this thesis, and by my considerable efforts to secure trust and buy-in across knowledge user groups. Moving forward, findings from this thesis are directly feeding into CMNRP's next cycle of strategic planning, and project partners have been in contact with the Ministry of Health, Ontario Health and the Provincial Council on Maternal Child Health to explore opportunities to translate this approach to other regions across the province.

LIMITATIONS AND FUTURE RESEARCH

Recognizing that all research has limitations, I would now like to reiterate the scope and acknowledge the limitations of this study and suggest areas future research could attend to these limitations.

Stage 1

First, I employed "Average Yearly Number of Births Attended as the Principal Care Provider" as a measure of service capacity. This was the most feasible proxy for a course of care available within our existing data infrastructure but did not capture transfers of care at any stage during the prenatal or intrapartum period and, therefore, does reflect the full spectrum of interprofessional maternity care. While this measure prevented the attribution of a single birth to more than one provider (i.e. double counting births), I may have underestimated the service capacity generated by family physicians and midwives, and overestimated service capacity generated by obstetricians. This methodology was also susceptible to capturing "accidental" or "suboptimal" births that occur within our system. I mitigated this limitation by adjusting for the volume of care delivered by each provider included in our cohort.

Second, while Indigenous Peoples' access to acceptable maternity care, and particularly to Indigenous midwifery, is an issue of critical importance that merits further study, I was unable to address this topic within the scope of this study. A study on access to Indigenous midwifery would have been an entirely separate study requiring different population data, different workforce data, and likely a different methodology that accounted for Indigenous ways of knowing and for the precarity of profession-specific service capacity available within the Region. Furthermore, even in the event that administrative data were available for this subset of the birthing population and the workforce, it would likely not have been released by data

stewards at the granular level of geography required to conduct this type of geospatial analysis due to small cell sizes and risk of reidentification. I also recognize that I, as a white woman, simply do not have the lived experience to lead a study focused on access to Indigenous midwifery. Furthermore, given the existing volume of work required to complete the other components of this thesis, I felt that I did not have the time or resources required to engage in the level of meaningful partnership with Indigenous communities that would have been required to do justice to this work.

Third, I attributed providers' service capacity to an ADA based on their postal code of practice. As a result, my findings did not reflect the full breadth of geographic coverage that midwives provide through home care and may have misallocated the service capacity of physicians in the event that the postal code of practice available in administrative databases was inaccurate.

Fourth, my use of administrative databases introduced certain limitations with respect to the timeliness of the data used in this exercise. Due to the lag that occurs between the reporting of data, its input into administrative databases, and its release to researchers and knowledge users, the most recent year of data available for this exercise was fiscal year 2017/18. As a result, any trends that have emerged since April 2018 were not reflected in the maps I produced. My consultations with local patients, providers and policy-makers mitigated this limitation by creating opportunities to confirm where trends that were reflected in the maps remained relevant and highlight any areas where change may have occurred since 2018.

Fifth, the catchment areas were calculated using drive-times and did not account for public transportation travel times. Creating catchments that reflected travel times using public transportation would have required a separate network file reflecting public transportation routes,

and would have required the creation of six additional series of accessibility index scores. As is reflected in my qualitative findings, lack of access to a vehicle or reliable transportation represents a significant barrier of access to maternity care. The accessibility index scores produced in this study are, therefore, likely an overestimate of the level of access experienced by individuals who rely on public transportation.

Finally, edge effects are a common limitation of geospatial analysis of defined regions that represent artificial rather than absolute boundaries. While the data I employed in this study were limited to patients and providers that resided or practiced within the Champlain Region's geographic boundaries, both residents and providers in and around the Champlain Region are free to access and provide maternity care services within and beyond these boundaries.

For the purposes of this study, I defined the patient population as the residents of the Champlain Region. However, non-residents can seek care within its geographic boundaries, and providers within the Region are free to provide services to these non-residents. This means that non-residents represent an incoming source of demand and service requirements that was unaccounted for in this exercise. As such, across the Region, I may have overestimated the service capacity available to meet the needs of residents given that a portion of this service capacity was occupied by demand incoming from neighbouring regions, as well as residents of Québec, and birth tourists.

Similarly, residents of the Champlain Region may access their care outside the geographic boundaries of the Region, and providers outside the Region, particularly those who practice in bordering regions, may represent additional access points for these residents. Therefore, I may have underestimated access to care for peripheral ADAs whose residents may have been

accessing providers outside the Region who are not being captured in our surveys or administrative datasets.

The edge effects of the Champlain Region are theoretically mitigated by the fact that the region is bound by a provincial border, an international border, and a provincial Park, all of which represent natural and administrative barriers that would deter cross-border care seeking. The area that is most susceptible to edge effects in the Champlain Region is the South-Western corner that borders the South-East Region. The original methodology I developed for this study prescribed a linkage between provider and patient records in order to 1) include providers outside the Region who provided care to Region residents in our cohort, and 2) adjust each provider's service capacity for the proportion of care delivered to residents of the Region. This linkage proved to be impossible to operationalize within this thesis' budget and timelines. In future applications of this methodology, I will endeavour to apply these adjustments in order to further mitigate edge effects. This type of linkage would also facilitate examination of access to culture-matched and linguistically acceptable care

Stage 2

First, while I achieved a sufficient sample size and endeavoured to capture a variety of voices, I do not contend that participants in this study constitute a representative sample. These findings reflect the perspectives and experiences of this group participants alone and may or may not reflect the perspectives of other parents, providers, and policy-makers within and beyond the Champlain Region.

Second, data collection was interrupted in March 2020 due to the emergence of COVID-19 and further delayed by my own parental leave. As the focus of this study was not the impact of

COVID-19 on access or choice, when data collection resumed in January 2021, I adjusted my patient inclusion criteria to capture the experiences of pregnant people who had chosen and accessed their provider prior to the emergence of the pandemic. This adjustment to my inclusion criteria also resulted in an adaptation of my patient recruitment strategy. Unfortunately, despite my best efforts, patients who accessed intrapartum care provided by a family physician are under-represented in the resulting sample.

Finally, I must also acknowledge that these findings do not reflect the perspectives of one hospital site within our Region, and underrepresent the perspectives of certain provider groups who chose not to participate in this study.

Future Research

Future research in this field should endeavor to examine 1) rural models that can simultaneously support pregnant people's access and autonomy and providers' practice viability and sustainability, 2) the role of the broader range of providers that contribute to the provision of maternal newborn care in supporting access and autonomy, 3) structures required to promote access and choice amongst pregnant people who are not attached to a primary care provider, and 3) readiness to adopt and potential impact of adoption of alternative remuneration and funding models on collaboration and integration in maternity care.

Pending the availability and accessibility of necessary data, future projects should also seek to adapt this approach to account for (1) access to care through public transportation, (2) the proportion of care delivered and accessed within and beyond the geographic boundaries of a planning region, (3) access to Indigenous midwifery, and (4) access to culture-matched and linguistically acceptable maternity care.

PERSONAL REFLECTIONS

When this thesis was first conceptualized, I was a 25-year-old woman with all the passion in the world for maternal and child health, who had witnessed and supported many births as both a researcher and a birth companion, but who had no lived experience of my own of the birthing process. Four years later, equipped with lived experience choosing and accessing a maternity care provider within the region at study, and immersed in the rich insights and experiences so generously offered by the parents, providers, and policy-makers who participated in this study, my firm belief that all pregnant people should be supported in exercising autonomous choice of provider is steadfast, and my confidence in the system's capacity – under the right conditions – to support this choice, has been bolstered.

As was so eloquently articulated by parent participants, the ability to choose a provider and model of care that is best aligned to meet your family's needs at one of the most important and intimate junctures of one's life is critical to the achievement of person and family-centred care. Furthermore, in a pandemic era where access to personal and familial support structures may be limited, the importance of choosing a provider and model of care that meets your needs has become all the more poignant. This choice should not be a privilege reserved for those with the knowledge, agency and social capital to avail themselves of the limited resources available, but rather an opportunity afforded to all pregnant people. These beliefs led to the conceptualization of this thesis, and served as a foundational assumption and lens through which data were collected and analyzed.

The honesty exhibited by providers and policy-makers when articulating the system and organizational-level factors that fostered competition and prevented optimal integration of the full range of providers, while somewhat shocking and disheartening at first, indicated to me that

if the hard work of establishing more conducive structures at the system and organizational level could be accomplished, interprofessional collaboration and integration – and by extension choice – could be achievable. This thesis has also deepened my appreciation for the role of the full range of maternity care providers included in this study, and for the tireless efforts made by these professionals who share a common dedication to providing quality maternity care to the parents of this region. Recognizing the value of each of their models of care, I can honestly state that I will find it challenging to choose a single provider for my next pregnancy, but I am hopeful and grateful that I will have the means and the opportunity to do so.

CONCLUSION

In the case of the Champlain Region, the findings of this thesis have demonstrated that pregnant people have inequitable opportunities to exercise autonomous choice of maternity care provider due to (1) system and organizational-level factors that are creating imbalances in the supply, distribution and mix of maternity care provider options, and (2) pregnant people's differential access to the enabling information and resources required to exercise autonomous choice of provider and to navigate access to their services. Building on extant literature on access and autonomy, the barriers, enablers and locally-relevant solutions identified by parents, providers and policy-makers have been synthesized into a *Framework for the Promotion of Equitable Access and Autonomy in Maternity Care Systems.* By describing the structural conditions that are necessary to equitably support pregnant people's opportunity, ability & propensity to exercise autonomous choice of a maternity care provider, I hope that the findings of this thesis are more readily translated, adapted and built upon across settings and user groups, and inform the development of systems of maternity care that are equipped to provide support the full range of maternity care providers, and the families they serve.

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APPENDIX 1 – SURVEY OF MIDWIFERY PRACTICE GROUPS

1. Please Provide the following Contact Information:

Name of Midwifery Practice Group	
Name of Contact Person	
Email Address	
Phone Number	

2. Please provide the total number of midwives within your practice group in each of the following categories:

Permanent - Full-time	
Permanent - Part-Time	
Locum	
On Leave	
Student	

3. In what language(s) is your midwifery practice group capable of providing services?

☐ English
☐ French
☐ Other (please specify)

4. What is/are the postal code(s) of your midwifery practice group office(s)?

Office 1	
Office 2 (optional)	
Office 3 (optional)	
Office 4 (optional)	

N.B. If your midwifery practice group has two (2) or more offices, please proceed to question 5. If your midwifery practice group has one (1) office, please proceed to question 6.

5. Please estimate the percentage of care within your practice group that is delivered at each of your offices:

Office 1	%
Office 2	%
Office 3 (optional)	%
Office 4 (optional)	%
Total	100%

6. Please describe the boundaries of your midwifery practice group's catchment area:

7. At which of the following hospitals do midwives within your practice group hold privileges?

- ☐ Almonte General Hospital
- ☐ Brockville General Hospital
- ☐ Cornwall Community Hospital
- ☐ Hawkesbury and District General Hospital
- ☐ Hôpital Montfort
- ☐ Pembroke Regional Hospital
- ☐ Queensway Carleton Hospital
- ☐ The Ottawa Hospital - General Campus
- ☐ The Ottawa Hospital - Civic Campus
- ☐ Winchester District Memorial Hospital
- ☐ Other (please specify)

N.B. If midwives within your midwifery practice group hold privileges at two (2) hospitals, please proceed to question 8. If midwives within your midwifery practice group hold privileges at one (1) hospital, please proceed to question 9.

8. Estimate what percent of all hospital births attended by midwives within your midwifery practice group occur at each of the hospitals at which they hold privileges:

Hospital 1 (please specify) -	%
Hospital 2 (please specify) -	%
Total	100%

9. In each of the following fiscal years, what is the total number of births that midwives within your practice group attended as primary midwives?

FY 2018-2019	
FY 2017-2018	
FY 2016-2017	
FY 2015-2016	
FY 2014-2015	
FY 2013-2014	

10. In each of the following fiscal years, what is the total number of billable courses of care that midwives within your practice group completed as primary midwives?

FY 2018-2019	
FY 2017-2018	
FY 2016-2017	
FY 2015-2016	
FY 2014-2015	
FY 2013-2014	

11. In each of the following fiscal years, estimate what percentage of births attended by all midwives within your practice group occurred at home, in hospital, and at the Ottawa Birth and Wellness Centre:

	Home	***Hospital***	***Ottawa Birth and Wellness Centre***	***Total***
FY 2018-2019				100%
FY 2017-2018				100%
FY 2016-2017				100%
FY 2015-2016				100%
FY 2014-2015				100%
FY 2013-2014				100%

12. In each of the following fiscal years, estimate what percentage of care within your practice group was delivered to residents of the Champlain LHIN:

FY 2018-2019	
FY 2017-2018	
FY 2016-2017	
FY 2015-2016	
FY 2014-2015	
FY 2013-2014	

13. Does your midwifery practice group maintain a waitlist?

☐ Yes - we maintain a waitlist for each of our midwives
☐ Yes - we maintain a practice group-level waitlist
☐ Yes - we maintain a coordinated waitlist with other midwifery practice groups (please specify the midwifery practice groups in question):
☐ No - we do not maintain a waitlist (please specify why):

14. Please estimate the number of requests for care that your practice is unable to accommodate on a yearly basis due to caseloads being full:

15. Do you ever experience difficulties filling your midwives' desired caseloads?

☐ Yes (explain as needed):
☐ No (explain as needed):

16. How many new midwives do you anticipate recruiting into your midwifery practice group in the next five (5) years?

17. How many of the existing midwives within your midwifery practice group do you anticipate will leave active practice in the next five (5) years?

18. Would midwives within your practice group be interested in participating in a focus group discussion on factors influencing women's access to the full range of maternity care providers across the Champlain LHIN?

☐ Yes (explain as needed):
☐ No (explain as needed):

APPENDIX 2 – PCMCH DEFINITION OF BIRTHS CLASSIFIED AS LOW RISK

Pregnant people classified as low risk are those whose pregnancies fall into Robson criteria 1 to 4:

- Robson 1: Nullipara, singleton cephalic, ≥ 37 weeks, spontaneous labour
- Robson 2: Nullipara, singleton cephalic, ≥ 37 weeks, induced or Caesarean section before labour
- Robson 3: Multipara, singleton cephalic, ≥ 37 weeks, spontaneous labour, no previous Caesarean
- Robson 4: Multipara, singleton cephalic, ≥ 37 weeks, induced or Caesarean section before labour, no previous Caesarean

In order to be considered low risk, individuals falling within these four categories must also not have any of the following health conditions: Lupus; Rheumatoid Arthritis; Autoimmune Other; Cancer Diagnosed in Pregnancy; Cancer Medication exposure in pregnancy-Chemotherapeutic Agents; Acquired Heart Disease; Antihypertensive Therapy Outside of Pregnancy; Cardiovascular Disease; Congenital Heart Defect; Congenital Heart Disease ; Pre-existing Hypertension; Renal Disease; Cardiovascular Other; Diabetes; Liver/ Gallbladder - Cholecystitis; Colitis; Crohn's; Hepatitis; Liver/ Gallbladder - Intrahepatic Cholestasis of Pregnancy; Acquired Renal (Insufficiency; Chronic Infections); Congenital/ Genetic Renal (Renal Agenesis; Pelvic Kidney); Renal Disease; Uterine Anomalies; Genitourinary Other; Gestational Thrombocytopenia; Haemophilia (A; B Von Willebrand); Idiopathic Thrombocytopenia; Sickle Cell Disease; Thalassemia; Thrombophilia; Haematology Other; Gestational Hypertension; Eclampsia; HELLP; Preeclampsia; Preeclampsia Requiring Magnesium Sulfate; Pre-existing Hypertension with Superimposed Preeclampsia; Maternal Hypertension Unknown; Muscular Dystrophy/ Neuromuscular Disorder; Myotonic Dystrophy; Osteogenesis Imperfecta; Achondroplasia; Musculoskeletal Other; Cerebral Palsy; Multiple Sclerosis; Myasthenia Gravis; Spina Bifida/ Neural Tube Defect; Neurology Other; Placenta Accreta; Placenta Increta; Placenta Percreta; Placenta Previa; Placental Abruption; Placental Other; Cystic Fibrosis; Previous Pulmonary Embolism/ Deep Vein Thrombosis; Pulmonary Hypertension; Pulmonary Other; Anomalies; Isoimmunization/ Alloimmunization; Intrauterine Growth Restriction; Oligohydramnios; Fetal other; CGH Microarray Abnormality Polymorphism; Chromosome Abnormality; Other Birth Defects; Other Genetic Inherited Disorders/ Syndromes.

APPENDIX 3 – MICROSOFT POWERPOINT VERSION OF INTERVIEW GUIDE

Understanding the Individual, Organizational, and System-level Factors Shaping Access and Autonomy in the Champlain Region's Maternity Care System

ACKNOWLEDGMENTS

Thesis Advisory Committee

- Ivy Lynn Bourgeault (Supervisor)
- Agnes Grudniewicz
- Elizabeth Kristjansson
- Wendy Peterson

Health System Mentor

- Mari Teitelbaum (CHEO / CMNRP)

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- Daisy Moores (Family Medicine CoP)
- Rosemarie Parisien (Midwifery CoP)
- Elyse Banham (OBWC)
- Elizabeth Heller (CAM)

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- Women's Xchange $15K Challenge
- CIHR Health System Impact Fellowship

CONSENT

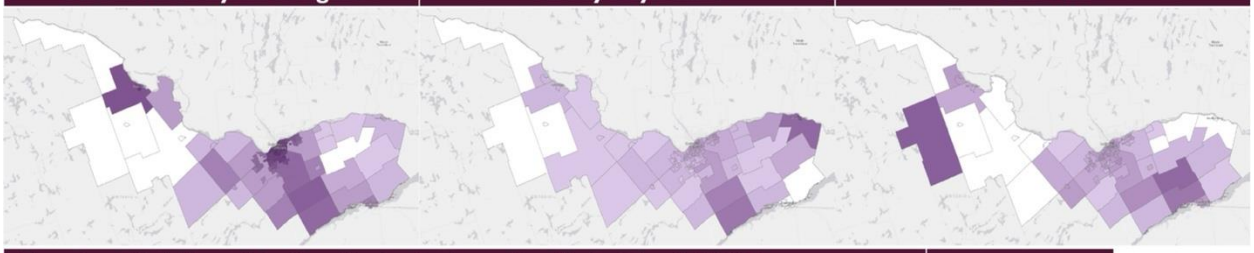
- **Purpose of the Study:** Explore the individual, organizational, and system-level factors that are enabling or restricting 1) pregnant people's access to the full range of maternity care providers, and 2) their autonomy in choosing a maternity care provider.
- **Participation:** One hour-long audio-recorded interview
- **Risks:**
  - Participants may experience heightened emotion in the event that their experiences within the local maternity care system have been difficult
    - All participants have full control over what information I choose to share
- **Benefits:** Opportunity to contribute to evidence designed to inform the development of a maternity care workforce that is better aligned with pregnant people's choices and needs

CONSENT (CONTINUED)

- **Confidentiality and Anonymity:**
  - All information participants share will remain strictly confidential, and will only be used for the purposes of this research project
  - In written reports, participants' names and all other identifying information will be disguised
- **Conservation of Data:**
  - Data will be stored in a secure manner for 5 years.
  - Only the student researcher, supervisor & a transcription professional will have access to the data
- **Voluntary Participation:**
  - Participants are under no obligation to participate
  - Participants can withdraw from the study at any time and/or refuse to answer questions
    - In the event of withdrawal, the participant's data will be used for analytical purposes only, and will not be directly referenced or quoted in any form of publication

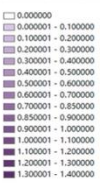
STEP 1 – INTERPRETATION OF ACCESSIBILITY MAPS
Comparing Across Provider Groups

Accessibility Indices for Obstetrician/Gynaecologists	Accessibility Indices for Family Physicians	Accessibility Indices for Midwives



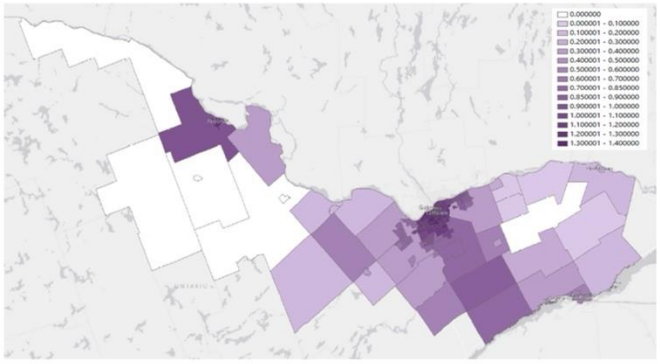
Adaptation of the Enhanced Two-Step Floating Catchment Area Method (Luo & Qi, 2009)	
Years of Data Analysed	FY 2015/16 – FY 2017/2018
Geographic Unit of Analysis	Statistics Canada Aggregate Dissemination Areas
Drive Time Threshold	30 minutes with weighted rings of 0-10, 10-20, and 20-30 minutes
Measure of Workforce Supply	Average yearly volume of deliveries attended as the principal care provider
Measure of Population Needs	Average yearly volume of (low risk) births generated by residents

Legend



STEP 1 – INTERPRETATION OF ACCESSIBILITY MAPS
Access to Obstetricians

Are the accessibility indices for obstetrical care displayed in this map congruent with your experience within the local maternity care system?

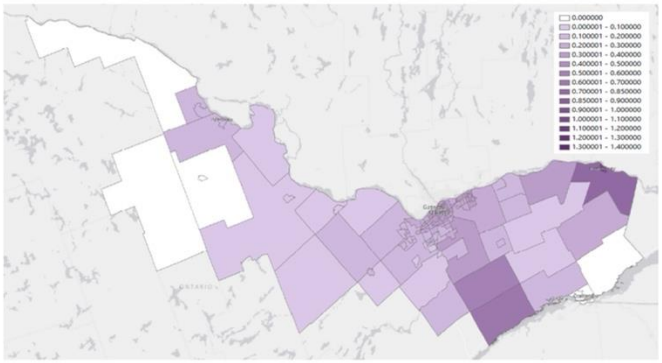


Based on your experience within the system, and the accessibility indices displayed in this map:

- do residents of the Champlain Region have ***adequate access*** to obstetrical care?
- do residents of the Champlain Region have ***equitable access*** to obstetrical care?
- are there any areas within the Champlain Region that are ***underserviced*** for obstetrical care?
- are there any areas within the Champlain Region that are ***overserviced*** for obstetrical care?

STEP 1 – INTERPRETATION OF ACCESSIBILITY MAPS
Access to Family Physicians who Provide Intrapartum Care

Are the accessibility indices for maternity care provided by family physicians displayed in this map congruent with your experience within the local maternity care system?

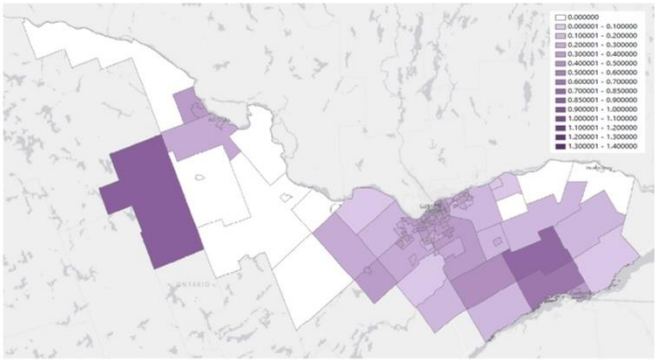


Based on your experience within the system, and the accessibility indices displayed in this map:

- do residents of the Champlain Region have ***adequate access*** to maternity care provided by family physicians?
- do residents of the Champlain Region have ***equitable access*** to maternity care provided by family physicians?
- are there any areas within the Champlain Region that are ***underserviced*** for maternity care provided by family physicians?
- are there any areas within the Champlain Region that are ***overserviced*** for maternity care provided by family physicians?

STEP 1 – INTERPRETATION OF ACCESSIBILITY MAPS
Access to Midwives

Are the accessibility indices for midwifery care displayed in this map congruent with your experience within the local maternity care system?



Based on your experience within the system, and the accessibility indices displayed in this map:

- do residents of the Champlain Region have ***adequate access*** to midwifery care?
- do residents of the Champlain Region have ***equitable access*** to midwifery care?
- are there any areas within the Champlain Region that are ***underserviced*** for midwifery care?
- are there any areas within the Champlain Region that are ***overserviced*** for midwifery care?

STEP 2 – EXPLORING THE SYSTEM SHAPING ACCESS

Factors Enabling/Restricting Access

What are the ***system-level factors*** that are enabling/restricting access to the maternity care provided by:	• *Family Physicians* • *Obstetricians* • *Midwives*
What are the ***organizational-level factors*** that are enabling/restricting access to the maternity care provided by:	• *Family Physicians* • *Obstetricians* • *Midwives*
What are the ***individual-level factors*** that are enabling/restricting access to the maternity care provided by:	• *Family Physicians* • *Obstetricians* • *Midwives*

STEP 3 – EXPLORING THE SYSTEM SHAPING AUTONOMY

Factors Enabling/Restricting Autonomy in Choosing a Care Provider

What are the ***environment-level factors*** that are enabling/restricting pregnant peoples':	• *Opportunity to exercise autonomy* • *Ability to exercise autonomy* • *Propensity to exercise autonomy*
What are the ***community-level factors*** that are enabling/restricting pregnant peoples':	• *Opportunity to exercise autonomy* • *Ability to exercise autonomy* • *Propensity to exercise autonomy*
What are the ***individual-level factors*** that are enabling/restricting pregnant peoples':	• *Opportunity to exercise autonomy* • *Ability to exercise autonomy* • *Propensity to exercise autonomy*

STEP 4 – IDENTIFYING LOCALLY-RELEVANT INTERVENTIONS

	Enabling Factor	Restricting Factor
Access	What locally-relevant interventions could serve to ***reinforce the enablers of access*** you have identified?	What locally-relevant interventions could serve to ***alleviate the restrictions on access*** you have identified?
Autonomy	What locally-relevant interventions could serve to ***reinforce the enablers of autonomy*** you have identified?	What locally-relevant interventions could serve to ***alleviate the restrictions on autonomy*** you have identified?

STEP 2 – EXPLORING THE SYSTEM SHAPING ACCESS
Factors Enabling/Restricting Access & Autonomy

	Enabling Factors	Restricting Factors	Locally-Relevant Interventions
System Level			
Organizational Level			
Individual Level			