

**Inequitable Fertilization: Improving Access to  
Assisted Reproductive Technologies in  
British Columbia**

**by  
Jenna Quelch**

B.A., The University of British Columbia, 2014

Project Submitted in Partial Fulfillment of the  
Requirements for the Degree of  
Master of Public Policy

in the  
School of Public Policy  
Faculty of Arts and Social Sciences

© Jenna Quelch 2020  
SIMON FRASER UNIVERSITY  
Spring 2020

Copyright in this work rests with the author. Please ensure that any reproduction or re-use is done in accordance with the relevant national copyright legislation.

# Approval

**Name:** Jenna Quelch

**Degree:** Master of Public Policy

**Title:** Inequitable Fertilization: Improving Access to Assisted Reproductive Technologies in British Columbia

**Examining Committee:** **Chair:** Maureen Maloney  
Professor

**Doug McArthur**  
Senior Supervisor  
Professor

**Kora DeBeck**  
Internal Examiner  
Assistant Professor

**Date Defended/Approved:** March 2, 2020

## Ethics Statement

The author, whose name appears on the title page of this work, has obtained, for the research described in this work, either:

- a. human research ethics approval from the Simon Fraser University Office of Research Ethics

or

- b. advance approval of the animal care protocol from the University Animal Care Committee of Simon Fraser University

or has conducted the research

- c. as a co-investigator, collaborator, or research assistant in a research project approved in advance.

A copy of the approval letter has been filed with the Theses Office of the University Library at the time of submission of this thesis or project.

The original application for approval and letter of approval are filed with the relevant offices. Inquiries may be directed to those authorities.

Simon Fraser University Library  
Burnaby, British Columbia, Canada

Update Spring 2016

## **Abstract**

Advances in assisted reproductive technologies (ART) and growing rates of medical and circumstantial infertility have led to increased demand for in vitro fertilization (IVF). The financial, geographic and social barriers associated with IVF raise significant and sometimes prohibitive challenges for those pursuing treatment in BC. The procedure is also associated with an elevated multiple births rate, which poses health risks for individuals, as well as high healthcare costs for governments. This capstone examines access to IVF across the Province and assesses multiple options to address the inequities faced by those experiencing different forms of infertility. Methodologies include an original survey of British Columbians experiencing infertility, literature review, jurisdictional scan, and interviews with subject matter experts. Three policy aspects are assessed using criteria and measures to identify strengths, weaknesses, and trade-offs. The recommendation includes options for eligibility constraints, embryo transfer policies, and funding models.

**Keywords:** In Vitro Fertilization; Assisted Reproductive Technologies; Fertility Clinics; Infertility; Stratified Reproduction; British Columbia

## **Dedication**

For Pat and Ellen.

## **Acknowledgements**

This capstone is the result of a supportive network of professors, peers and participants. To Doug McArthur, thank you for your constructive feedback and invaluable guidance as a supervisor. To Dr. Kora DeBeck, thank you for the thoughtful questions and suggestions you shared as an external examiner. To Daniel Savas, thank you for your support in reviewing the survey questions and your encouragement in pursuing this methodology. To the clinics, fertility coaches, infertility support groups and clinicians who were willing to post the survey link, thank you for sharing this study with your networks. To the subject matter experts who were so generous with their time, thank you for sharing your expertise and lending your perspectives. Finally, to all those who shared their experiences with infertility through this study's survey, a sincere thank you; this project would not have been possible without you all.

# Table of Contents

|  |           |
|--|-----------|
| Approval.....  | ii        |
| Ethics Statement.....  | iii       |
| Abstract.....  | iv        |
| Dedication.....  | v         |
| Acknowledgements.....  | vi        |
| Table of Contents.....   | vii       |
| List of Tables.....  | ix        |
| List of Figures.....   | x         |
| List of Acronyms.....  | xi        |
| Glossary.....  | xii       |
| Executive Summary.....   | xiii      |
| <b>Chapter 1. Introduction.....</b>                            | <b>1</b>  |
| <b>Chapter 2. Infertility and its Impact on IVF Usage.....</b> | <b>3</b>  |
| 2.1. What is IVF?.....   | 3         |
| 2.2. Changing Fertility Patterns in BC and Canada.....         | 5         |
| <b>Chapter 3. IVF Demand and Funding.....</b>                  | <b>8</b>  |
| 3.1. Rising Demand for IVF.....                                | 8         |
| 3.2. IVF Regulation and Funding Across Canada.....             | 9         |
| <b>Chapter 4. Equity and Health Implications.....</b>          | <b>11</b> |
| 4.1. Theories of Reproduction.....                             | 11        |
| 4.2. Equity Considerations – Barriers to Access.....           | 12        |
| 4.3. Health Considerations – Multiple Births Rate (MBR).....   | 14        |
| 4.4. Summary of Findings.....                                  | 18        |
| <b>Chapter 5. Methodology.....</b>                             | <b>19</b> |
| 5.1. Survey.....   | 19        |
| 5.2. Jurisdictional Scan.....                                  | 20        |
| 5.3. Feasibility Assessment.....                               | 20        |
| 5.4. Limitations.....  | 21        |
| <b>Chapter 6. Primary Data – Survey Analysis.....</b>          | <b>23</b> |
| 6.1. Sample Description.....                                   | 23        |
| 6.2. Findings for Those Unable to Pursue IVF.....              | 26        |
| 6.3. Findings for Those Pursuing IVF.....                      | 30        |
| 6.4. Summary of Survey Findings and Policy Implications.....   | 40        |
| <b>Chapter 7. Policy Review – Jurisdictional Scan.....</b>     | <b>41</b> |
| 7.1. Ontario.....  | 42        |
| 7.2. Quebec.....   | 42        |
| 7.3. New Brunswick.....  | 43        |

|   |  |           |
|---|--|-----------|
| 7.4.  | New Zealand .....  | 44        |
| 7.5.  | Australia .....  | 45        |
| 7.6.  | Denmark.....   | 46        |
| 7.7.  | Policy Aspects of the Jurisdictional Scan .....                                | 46        |
| <b>Chapter 8. Feasibility Assessment – Expert Interviews.....</b>   |  | <b>48</b> |
| 8.1.  | Infertility as a Medical Condition – Societal and Economic Objectives .....    | 49        |
| 8.2.  | Options to Reduce Barriers – Demographic and Equity Observations.....          | 50        |
| 8.3.  | Considerations for Public Funding – Access Policies and Regulatory Impacts ... | 51        |
| <b>Chapter 9. Policy Aspects and Options .....</b>                  |  | <b>53</b> |
| 9.1.  | Policy Aspect 1 – Fertility Eligibility Options.....                           | 54        |
| 9.2.  | Policy Aspect 2 – Embryo Transfer Limit Options.....                           | 54        |
| 9.3.  | Policy Aspect 3 – Funding Model Options .....                                  | 56        |
| <b>Chapter 10. Evaluation Criteria .....</b>                        |  | <b>59</b> |
| 10.1.   | Criteria for Policy Aspect 1 – Fertility Eligibility Options.....              | 60        |
| 10.2.   | Criteria for Policy Aspect 2 – Embryo Transfer Limit Options.....              | 62        |
| 10.3.   | Criteria for Policy Aspect 3 – Funding Model Options.....                      | 65        |
| <b>Chapter 11. Policy Analysis .....</b>                            |  | <b>68</b> |
| 11.1.   | Analysis of Policy Aspect 1 – Fertility Eligibility Options .....              | 69        |
| 11.2.   | Analysis of Policy Aspect 2 – Embryo Transfer Limit Options .....              | 72        |
| 11.3.   | Analysis of Policy Aspect 3 – Funding Model Options .....                      | 76        |
| <b>Chapter 12. Recommendation and Conclusion.....</b>               |  | <b>83</b> |
| <b>References.....</b>  |  | <b>84</b> |
| <b>Appendix A. Survey Questions.....</b>                            |  | <b>92</b> |
| <b>Appendix B. Survey Recruitment Poster .....</b>                  |  | <b>97</b> |
| <b>Appendix C. Quebec Infertility Tax Credit Rates .....</b>        |  | <b>98</b> |
| <b>Appendix D. New Brunswick Infertility Grant Application.....</b> |  | <b>99</b> |



## List of Tables

|               |   |    |
|---------------|---|----|
| Table 5.3.    | List of interview participants.....                                     | 21 |
| Table 7.      | Summary of jurisdictional scan.....                                     | 41 |
| Table 9.3.1.  | BC fertility treatment tax credit rates .....                           | 56 |
| Table 10.1.   | Evaluation criteria and measures for eligibility options .....          | 60 |
| Table 10.2.   | Evaluation criteria and measures for embryo transfer limit options..... | 62 |
| Table 10.3.   | Evaluation criteria and measures for funding model options .....        | 65 |
| Table 11.1.   | Summary of evaluation criteria for eligibility options .....            | 69 |
| Table 11.1.3. | Summary of analysis for eligibility options .....                       | 71 |
| Table 11.2.   | Summary of evaluation criteria for embryo transfer limit options.....   | 72 |
| Table 11.2.3. | Summary of analysis for embryo transfer limit options .....             | 75 |
| Table 11.3.   | Summary of evaluation criteria for funding model options.....           | 76 |
| Table 11.3.1. | Estimated costs for the income-tested tax credit .....                  | 77 |
| Table 11.3.2. | Estimated costs for provincially funded cycles.....                     | 78 |
| Table 11.3.3. | Estimated costs for the special assistance fund .....                   | 80 |
| Table 11.3.4. | Summary of analysis for funding model options .....                     | 82 |

## List of Figures

|                 |  |    |
|-----------------|--|----|
| Figure 2.1.     | Six stages of the IVF process.....   | 4  |
| Figure 2.2.1.   | Average age of mothers in Canada at birth of first child.....              | 5  |
| Figure 2.2.2.   | Fertility rate in Canada by age group of mother .....                      | 6  |
| Figure 2.2.3.   | Average age of mothers at birth of first child by province/territory ..... | 7  |
| Figure 3.1.     | ART cycles and number of women/patients by year.....                       | 8  |
| Figure 4.3.1.   | Treatment level multiple births rate – IVF births vs. all births .....     | 16 |
| Figure 4.3.2.   | Baby level multiple births rate for IVF births.....                        | 17 |
| Figure 6.1.1.   | Respondents’ experience with IVF and infertility .....                     | 24 |
| Figure 6.1.2.   | Regional representation of sample vs. general population.....              | 25 |
| Figure 6.2.1.1. | Portion of respondents by region who have not undergone IVF .....          | 26 |
| Figure 6.2.1.2. | Reasons for not pursuing IVF .....   | 27 |
| Figure 6.3.1.   | Age breakdown of respondents using IVF .....                               | 30 |
| Figure 6.3.2.1. | Birth types following IVF cycles .....                                     | 31 |
| Figure 6.3.2.2. | Maximum number of embryos transferred.....                                 | 32 |
| Figure 6.3.2.3. | Portion of respondents pursuing IVF who indicate facing barriers .....     | 33 |
| Figure 6.3.2.4. | Portion of respondents with insurance coverage for IVF .....               | 33 |
| Figure 6.3.3.   | Reported total costs of pursuing IVF .....                                 | 34 |
| Figure 6.4.     | Summary of survey findings .....   | 40 |
| Figure 8.       | Interview perspectives and components .....                                | 48 |
| Figure 9.       | Analysis pathway .....   | 53 |
| Figure 10.      | Key considerations for evaluation criteria.....                            | 59 |
| Figure 11.      | Analysis pathway .....   | 68 |
| Figure 12.      | Summary of general recommendation .....                                    | 83 |

## List of Acronyms

|              |   |
|--------------|---|
| ART          | Assisted Reproductive Technologies                        |
| BC           | British Columbia  |
| BORN Ontario | Better Outcomes Registry and Network Ontario              |
| CARTR Plus   | Canadian Assisted Reproductive Technologies Register Plus |
| CFAS         | Canadian Fertility & Andrology Society                    |
| CIHI         | Canadian Institute for Health Information                 |
| MET          | Multiple Embryo Transfer                                  |
| SET          | Single Embryo Transfer                                    |
| ICSI         | Intracytoplasmic Sperm Injection                          |
| IUI          | Intrauterine Insemination                                 |
| IVF          | In Vitro Fertilization                                    |
| MBR          | Multiple Births Rate                                      |

## Glossary

|  |   |
|--|---|
| Assisted Reproductive Technologies (ART) | Fertility treatments that include the in vitro handling of both eggs and sperm or embryos for the purpose of establishing a pregnancy. In vitro fertilization (IVF) is the most common form of ART, and the procedure may include donor eggs and sperm, previously frozen embryos, or a surrogate. For the purposes of this study: 1) ART generally refers to IVF and 2) ART is inclusive of intrauterine insemination (IUI). |
| CARTR Plus                               | CARTR Plus database provides comprehensive data on fertility outcomes via annual reports. Clinics in Canada voluntarily submit their IVF outcome data to CARTR Plus, part of the BORN (Better Outcomes Registry and Network) Ontario maternal-child registry.   |
| Circumstantial infertility               | The inability to achieve pregnancy due to factors associated with partnership status, e.g. being in a same-sex partnership or single.   |
| Canadian Fertility & Andrology Society   | A multidisciplinary national non-profit society that serves as the voice of reproductive specialists, scientists, and allied health professionals working in the field of assisted reproduction.  |
| Intracytoplasmic Sperm Injection (ICSI)  | A process where sperm is injected directly into an egg to fertilize it in an IVF procedure. Primarily associated with male factor infertility.  |
| Intrauterine Insemination (IUI)          | A fertility treatment that involves placing sperm inside a woman's uterus, typically via catheter, to facilitate fertilization. The goal of IUI is to increase the number of sperm that reach the fallopian tubes and subsequently increase the chance of pregnancy.  |
| In Vitro Fertilization (IVF)             | A fertility treatment wherein a woman's eggs are surgically retrieved from the ovaries and fertilized by sperm in a lab, producing an embryo. The resulting embryo(s) are then transferred to the uterus and/or frozen for future transfers.  |
| Medical infertility                      | The inability of a sexually active, non-contracepting couple to achieve pregnancy or carry a pregnancy to full term.  |
| Multiple Births Rate (MBR)               | The proportion of births resulting in the delivery of more than one baby, i.e., the birth of twins or triplets.   |
| Multiple Embryo Transfer (MET)           | The transfer of two or more fresh or frozen embryos for the purposes of achieving pregnancy in the IVF process. It is associated with the birth of multiples (i.e., twins or triplets).   |
| Single Embryo Transfer (SET)             | The transfer of one fresh or frozen embryo for the purposes of achieving pregnancy in the IVF process. It typically results in the birth of a singleton (i.e., one baby).   |

## Executive Summary

Advances in assisted reproductive technologies (ART) and growing rates of medical and circumstantial infertility have led to increased demand for in vitro fertilization (IVF). The financial, geographic and social challenges associated with IVF raise significant and sometimes prohibitive barriers for those pursuing treatment in British Columbia (BC). The procedure is also associated with an elevated multiple births rate (MBR) linked to multiple embryo transfers. As a result, this study addresses the following policy problem: Fertility treatments, namely IVF, are inaccessible to many British Columbians due to financial, geographic, and administrative barriers, resulting in inequitable access. This problem is also associated with an elevated rate of multiple births that poses health risks to individuals and cost challenges to government.

This study's methodologies include an original survey of British Columbians experiencing infertility, a literature review, a jurisdictional scan, and interviews with clinical and policy experts. The results suggest that financial, emotional, and geographic barriers contribute to inequitable access to fertility treatments. The results also point to the prevalence of multiple embryo transfers and an elevated MBR.

To address these challenges, three unique policy aspects of publicly funded fertility treatments are considered: fertility eligibility, embryo transfer limits, and types of funding models. Fertility eligibility options include limiting access to medical infertility and an option opening access to both medical and circumstantial infertility. Embryo transfer limit considerations include an option for implementing a single-embryo transfer limit tied to any publicly funded IVF cycles and an option for establishing provincial guidelines. Finally, based on existing models found in other provinces, funding model options include an income-tested tax credit, grant funding through a special assistance fund, and provincially funded cycles offered through clinics.

Analysis of the options is conducted using a number of evaluative criteria unique to each policy aspect, including but not limited to social equity, fertility promotion, and reducing the MBR and its associated healthcare costs. The analysis indicates that BC should establish a special assistance fund offering grants of up to \$5,000. This funding should be tied to a single embryo transfer (SET) policy and made available to BC residents experiencing medical and/or circumstantial infertility.

# Chapter 1.

## Introduction

This study explores access to assisted reproductive technologies (ART), namely in vitro fertilization (IVF), in British Columbia (BC). More specifically, this study examines barriers to fertility treatments and alternative policy options with the goal of identifying interventions that promote more equitable access and a reduced multiple births rate (MBR) associated with the procedure.<sup>1</sup>

IVF is a medical procedure used to treat medical infertility, wherein eggs are extracted and fertilized outside of the body in a laboratory, with the resulting embryo(s) transferred to the uterus. The procedure offers couples experiencing infertility, as well as same-sex couples or single individuals who would otherwise be unable to conceive, the opportunity to carry children. Demand for IVF has increased significantly over time, with the number of cycles conducted in Canada rising by nearly 40% since 2013 (CARTR Plus, 2018). This is due in large part to both medical advances in ART and the growing rate of medical and circumstantial infertility, which is largely attributed to changing social norms and women increasingly delaying the age at which they conceive (Maxwell et al., 2018).<sup>2</sup> However, the financial, geographic and social challenges associated with IVF raise significant and sometimes prohibitive barriers for those pursuing treatment.

Currently, IVF is not covered through BC's provincial health plan, and while some associated fertility drugs are covered through private insurers, patients are largely responsible for covering the full costs of any attempted cycles, which can reach \$15,000 to \$20,000 when the costs of medications are factored in. As of 2010, the Canadian Agency for Drugs and Technologies in Health estimated that only 15% of couples who experience infertility could afford treatment. While this figure has climbed to approximately 40% for 2017, more recent literature has pointed to increasingly polarized

<sup>1</sup> The multiple births rate (MBR) refers to the proportion of births resulting in the delivery of more than one baby, i.e., the birth of twins or triplets.

<sup>2</sup> Medical infertility is defined as the inability of a sexually active, non-contracepting couple to achieve pregnancy, whereas circumstantial infertility refers to the inability to achieve pregnancy due to factors associated with one's partnership status, e.g. being in a same-sex partnership or single. It should be noted that some people may experience both forms of infertility.

access, with high-income, heterosexual, White couples making up a disproportionate share of those undergoing IVF despite the barriers they also face in pursuing treatment (Bell, 2016). In addition to the equity implications, the inaccessibility of IVF also poses a number of health challenges, given the elevated MBR associated with the procedure due to the likelihood of twin or triplet births resulting from multiple embryo transfers (MET).

As such, this study seeks to address the following policy problem:

Fertility treatments, namely IVF, are inaccessible to many British Columbians due to financial, geographic, and administrative barriers, resulting in inequitable access. This problem is also associated with an elevated rate of multiple births that poses health risks to individuals and cost challenges to government.

This study aims to explore the implications of this policy problem using four methodologies. First, a literature review examines trends in Canadian fertility patterns, as well as contemporary understandings of reproduction and the equity and health implications associated with IVF (Chapters 1-4). This is followed by the primary methodology: the analysis of an original survey conducted in Fall 2019 to better understand the demographics of those pursuing IVF and the barriers that exist given the Province's current access model (Chapter 6). Results of the survey help to identify the considerations and policy options that are reviewed through a jurisdictional scan (Chapter 7). These possible policy interventions are assessed for feasibility via consultation with subject matter experts by way of semi-structured interviews (Chapter 8). Finally, alternative options are analyzed across three policy aspects central to any publicly funded IVF program: fertility eligibility, embryo transfer limits, and funding models (Chapters 9-11).

The analysis finds that a special assistance fund should be established, with fertility treatment grants made available for both medical and circumstantial infertility and tied to a single embryo transfer (SET) policy. This comprehensive model is best suited to fostering more equitable access for those pursuing IVF while promoting safer outcomes as they relate to a reduced MBR.

## Chapter 2.

### Infertility and its Impact on IVF Usage

The following subchapters explain the process of IVF as a medical procedure and the broader context of demand for fertility treatments in Canada, including how changing fertility patterns contribute to demand for IVF, in order to better understand the policy problem at hand.

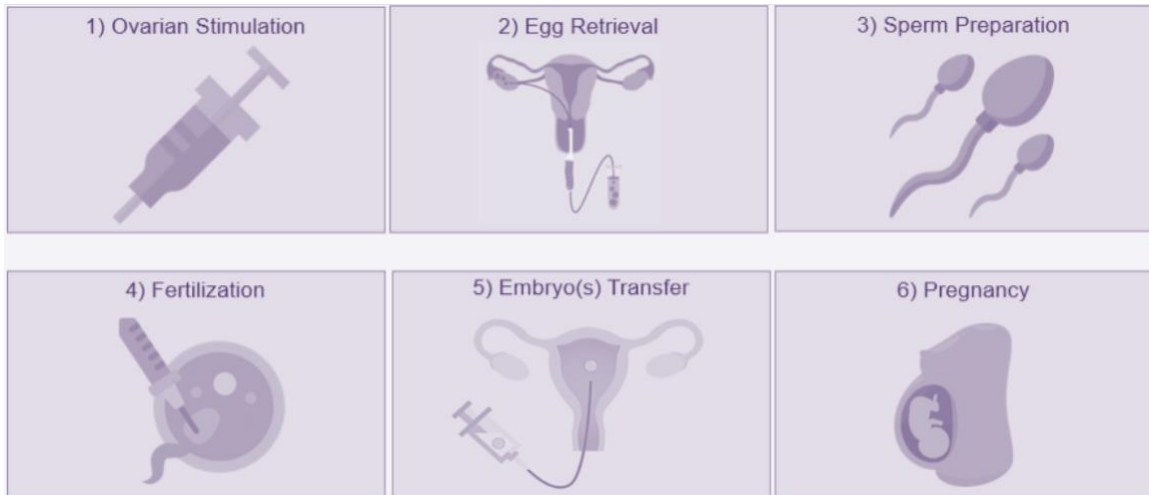
#### 2.1. What is IVF?

The first child conceived through IVF, Louise Brown, was born in Manchester, United Kingdom in 1978. This initial use of IVF was subject to critique from both religious communities and bioethicists, though over time, the treatment has become increasingly accepted, having resulted in the birth of more than an estimated eight million children worldwide (European Society of Human Reproduction and Embryology, 2018). Further advances in ART have positioned IVF as a popular fertility treatment, offering couples and individuals the opportunity to achieve pregnancy through medical intervention.

In its simplest form, the IVF process is made up of six stages (Figure 2.1). First, the female undergoes hormone therapy (usually via at-home injections) in order to stimulate egg production. Next, the patient undergoes an egg retrieval, wherein eggs are collected via transvaginal ultrasound aspiration, though in some cases, donor eggs may be used. A sperm sample is then provided by the male partner or by a donor. The sperm and eggs are combined in a laboratory to allow for fertilization, where an embryologist then identifies those embryos with the highest chance of success for implantation.<sup>3</sup> The embryo(s) are transferred via catheter to the female's uterus, and/or frozen for future use in additional transfers. Following the transfer, a successful pregnancy may result, and depending on the number of embryos transferred (a topic discussed further in Chapter 4.2), the female may give birth to one or more babies.

<sup>3</sup> The fertilization process may also include intracytoplasmic sperm injection (ICSI), where a single sperm is injected into each egg to assist with fertilization. ICSI is generally used in response to severe male-factor infertility. For the purposes of this study, reference to IVF is inclusive of those cycles utilizing ICSI.



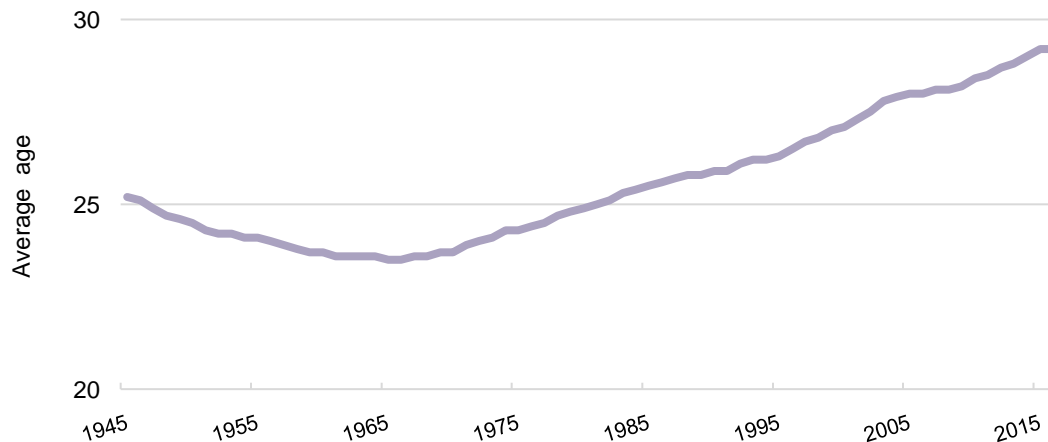


**Figure 2.1. Six stages of the IVF process**

IVF is available for individuals and couples in a number of infertility scenarios, including both medical and circumstantial infertility. For heterosexual couples experiencing medical infertility, whereby one or both partners are unable to conceive due to medical reasons, such as tubal blockage or decreased sperm motility, IVF is one of several ART treatments available to them. Female same-sex couples may also pursue IVF using either donor sperm or sperm provided by a friend or family member of the partner whose eggs are not being used. Additionally, same-sex male couples and single men looking to surrogacy may have IVF included as part of the process. Lastly, single women may also turn to IVF, with female individuals undergoing the procedure using either known or unknown donor sperm. Given the availability of IVF as a fertility option for heterosexual couples, same-sex couples and single individuals, policies that provide either coverage or funding for IVF should be cognisant of how eligibility requirements and access barriers impact various groups and the extent to which the policies are equitable across these user groups.

## 2.2. Changing Fertility Patterns in BC and Canada

Since the 1983 birth of Robert Reid, the first baby conceived via IVF in Canada, the use of ART has become increasingly popular, with significant increases in use since the early 2000s (Bushnik et al., 2012).<sup>4</sup> This change is primarily attributed to advances in ART and increasing rates of infertility. Citing a lack of data on national infertility rates, Statistics Canada's Health Analysis Division conducted a review of data from the 2009-10 Canadian Community Health Survey to estimate the prevalence of infertility among Canadians. Initially, the 2012 study found that infertility estimates have been both sporadic and varied, especially given the use of multiple definitions of infertility. Using three different measures of infertility, the study estimated that the prevalence of infertility in Canada ranged from 11.5% to 15.7%. The range of estimates presents an increase from the previous estimate of 8.5% in 1992 (Dulberg, 1993). While this finding was anticipated, the study also identifies a positive relationship between the age of female respondents and rates of infertility, as demonstrated by women increasingly delaying the age at which they conceive children. Since the 1960s, it has been observed that the average age of mothers, including at the birth of their first child, has been increasing (Figure 2.2.1).



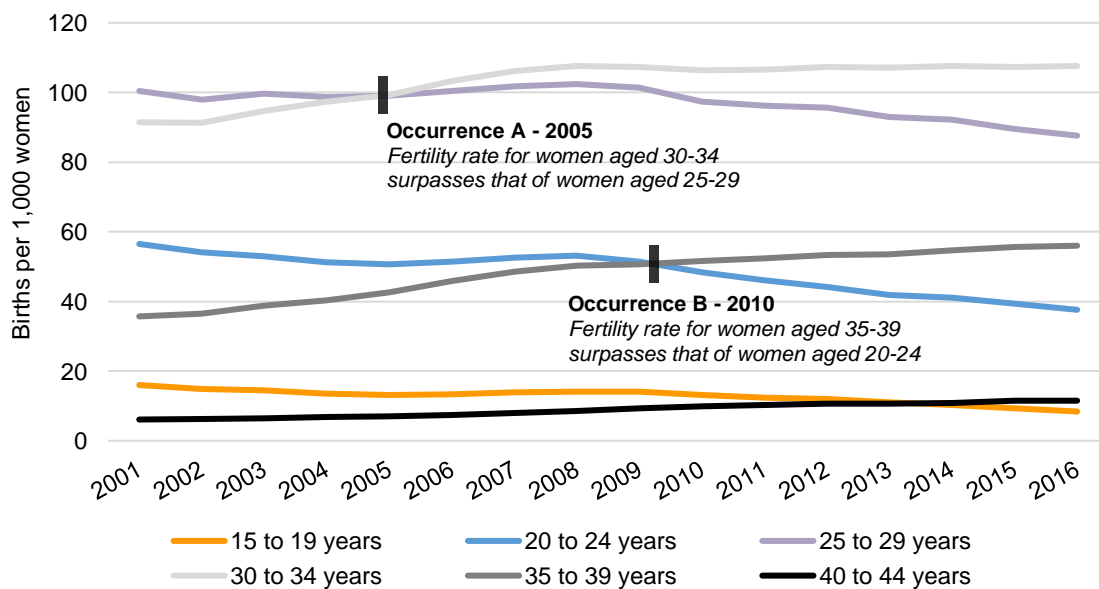
**Figure 2.2.1. Average age of mothers in Canada at birth of first child (1945-2016)**

Source: Statistics Canada, Population Estimates Program and Canadian Vital Statistics, Births Database, 1945 to 2016, Survey 3231.

<sup>4</sup> It is notable that while Robert Reid was the first baby conceived via IVF in Canada, he was not the first IVF baby *born* in Canada. In 1982, a Canadian woman gave birth to twins in Ontario after having undergone IVF in Britain (CBC News Archives, 1984).

This shift has largely been attributed to women delaying childbirth in order to pursue education and employment opportunities, access to effective contraceptives, and changing patterns of cohabitation and social norms (Mills et al., 2011). It is also worth noting that men have not been excluded from the phenomenon. In 2016, men were, on average, 32.2 years old at the birth of their first child, compared to 31.6 in 2012, and that for all 2017 Canadian ART cycles, male factor infertility presented itself in a third of all cycles (CARTR Plus, 2019).

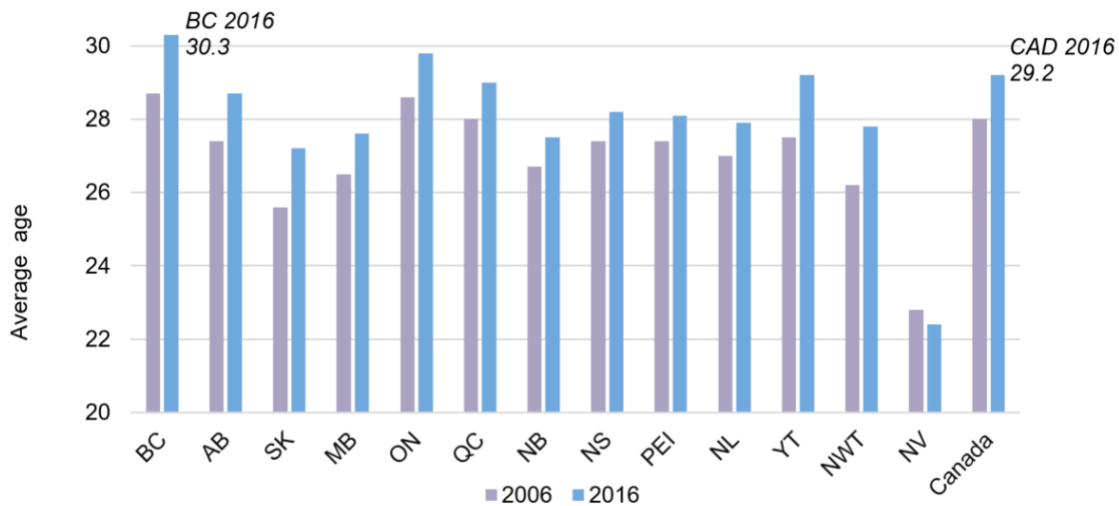
Alongside the increase in the prevalence of infertility, Canada is also experiencing a decrease in its total fertility rate, i.e., the number of children born to each woman. In keeping with changes in the age at which women are conceiving, fertility rates for all those under 30 have decreased, while fertility rates for those older than 30 have generally increased. Most notably, two occurrences have marked a substantial change in the Canadian fertility landscape. First, as of 2005, the fertility rate for women aged 30-34 has exceeded that for women aged 25-29 (Occurrence A, Figure 2.2.2). Second, as of 2010, the fertility rate for women aged 35-39 has exceeded that for women aged 20-24 (Occurrence B, Figure 2.2.2). Since these changes, the respective gaps between the pairings have widened, with the gap between those women aged 25-29 and 35-39 converging, signalling an intensification of these demographic shifts.



**Figure 2.2.2. Fertility rate in Canada by age group of mother**  
 Source: Statistics Canada, Canadian Vital Statistics, Births Database, 2001 to 2016, Survey 3231 and Demography Division, Demographic Estimates Program (DEP).

These changes in fertility patterns have important implications for IVF usage. First, as women continue to delay childbirth, Canada can expect age-related infertility to increase (Bushnik et al., 2012). Second, as IVF technology continues to improve, Canada can expect demand for the procedure to increase, with women and families becoming more confident in their ability to achieve pregnancy at an older age through the use of ART (Assal et al., 2019).

These implications are likely to impact BC on a grander scale, given that changes in fertility patterns have been more pronounced in BC. For example, outside of Nova Scotia and Newfoundland and Labrador, BC has the lowest fertility rate at 281 children per thousand women, and since 2004, the average age of BC mothers at birth has been older than 30, reaching 31.6 in 2016. Additionally, as of 2016, the latest year for which data is currently available, BC is the only province or territory where the average age of mothers at the birth of their first child exceeds 30 (Figure 2.2.3).



**Figure 2.2.3. Average age of mothers at birth of first child by province/territory**  
 Source: Statistics Canada, Canadian Vital Statistics, Births Database, 2006, 2012 to 2016, Survey 3231 and Demography Division, Demographic Estimates Program (DEP)

Though data on infertility is limited, especially at the provincial level, it could be expected, given the positive relationship between infertility and the age of the female partner, that BC will experience higher rates of infertility and associated increases in demand for IVF compared to its provincial counterparts. These fertility patterns and impacts on demand for IVF necessitate action on the policy problem at hand and that interventions support services that are not only accessible in an increasingly challenging fertility landscape, but also equitable across the Province.

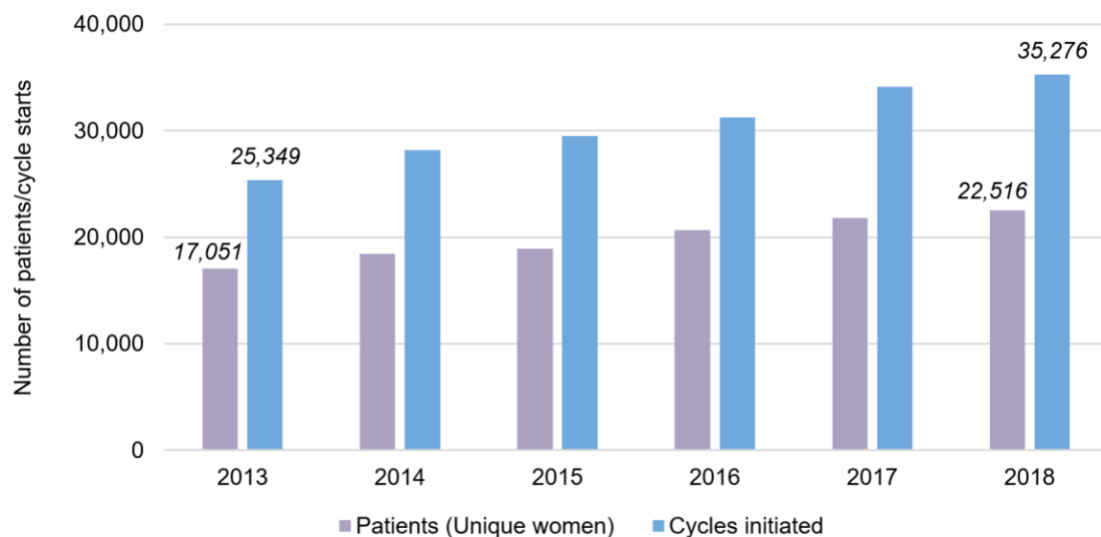
## Chapter 3.

### IVF Demand and Funding

The following subchapters explore IVF usage in Canada as it relates to demand for the procedure, as well as existing regulatory and funding frameworks.

#### 3.1. Rising Demand for IVF

The demand for IVF has risen sharply since the early 2000s, in large part due to advances in technologies and increasing rates of age-related infertility (Bushnik et al., 2012). In 2001, there were 5,393 cycles initiated compared to 35,276 in 2018, marking more than a six-fold increase (CARTR Plus, 2019); and since 2013 alone, there has been a nearly 40% increase in the number of cycles undertaken by Canadians (Figure 3.1). While these figures mark a significant rise in IVF usage in Canada, the literature suggests that there is still a high level of unmet demand for ART services. As of 2003, Chambers et al., estimated that only 21% of demand for ART in Canada had been met. Extrapolating from Chambers et al.'s methodology and using updated 2014 estimates of demand for ART at 2,500 couples for every one million in population, it is estimated that still, only 38% of demand for ART in Canada was met in 2018 (Chambers et al., 2009, Kocourkova et al., 2014; Statistics Canada 2019; author's calculations).



**Figure 3.1. ART cycles and number of women/patients by year**  
Source: CARTR Plus annual reports 2013-2018

While Canada is estimated to be meeting nearly 40% of its demand for ART, it is critical to acknowledge that this figure is likely to vary across provinces and territories, especially when considering the impact of public funding. Studies, including those of Chambers et al., (2009), Shaulov et al., (2015), and Präg and Mills (2017) have demonstrated that where IVF is publicly funded, either through tax credits, subsidies or public health coverage, those experiencing infertility are more likely to access treatment. As such, it can be reasonably assumed that within Canada, unmet demand for ART is likely to be greater in provinces and territories where couples and individuals pay out of pocket for IVF, as is the case in BC. This carries important implications regarding not only equity of access, but also the role that finances play in the decision-making process both in terms of when to pursue IVF, and when considering the number of embryos to have transferred, a topic further discussed in Chapter 4.2.

### **3.2. IVF Regulation and Funding Across Canada**

Following the technological advancements in ART and the subsequent establishment of the Royal Commission on New Reproductive Technologies in 1989, Parliament passed the Assisted Human Reproduction Act (the Act) in 2004. The Act established a federal regulatory agency to govern assisted reproduction and introduced multiple federal restrictions (Rothmayr and L'Espérance, 2017). However, Quebec, backed by a number of provinces, including Saskatchewan, New Brunswick and Alberta, argued that the Act infringed upon provinces' jurisdiction over healthcare and asked the Court of Appeal to intervene. The case was eventually brought to the Supreme Court of Canada, where, in 2010, part of the appeal was upheld given that several provisions did, in fact, violate provincial jurisdiction, while others were viewed as being within the Federal government's powers. The Act's prohibitions against sex-selective embryo manipulation, cloning, and payment for surrogacy, eggs and sperm remain in place (though the latter is contested on the grounds of equity (Scala, 2019)).<sup>5</sup>

<sup>5</sup> Some Feminist critiques of the criminalization of commercial surrogacy (i.e., payment for surrogacy and any needed eggs or sperm) argue that it promotes transnational surrogacy and the commodification of women in the Global South while also limiting safeguards that could otherwise be in place to protect those women who wish to act as surrogates within Canada (Deckha, 2015).

The result of the 2010 decision was the dissolution of the national agency and a resulting “patchwork” of regulatory and clinical standards across Canada, with provincial governments taking on the core policy role for all matters related to ART, including funding (Snow, 2019). In all but four provinces (Ontario, Quebec, Manitoba and New Brunswick), IVF is not covered through provincial health plans or specialized funding, with patients paying an average of \$10,000 to \$15,000 per cycle and up to \$20,000 when the costs of medications are factored in (Ontario Health Insurance Plan, 2019). As of Budget 2017, these costs do, however, qualify for the federal non-refundable medical expenses tax credit (Canada Revenue Agency, 2017).

Given the lack of public funding for these treatments in BC, a network of private clinics is available to those pursuing IVF and other fertility treatments. Four of the Province’s five clinics offering IVF operate in the Lower Mainland, with one additional clinic located in Victoria. While Kelowna and Prince George operate fertility clinics, they do not provide IVF services, including egg retrievals or transfers, and instead operate in partnership with Lower Mainland clinics. The location of clinics presents additional challenges and costs to those outside of major treatment centres. Chapter 6 discusses how these geographic barriers heavily impact the decision-making process of those considering IVF as well as those who are in a position to pursue the process on Vancouver Island and the Lower Mainland.

## Chapter 4.

### Equity and Health Implications

The policy problem facing BC requires careful consideration of the equity and health impacts associated with IVF access in the Province, and more broadly, how conceptions of infertility vary along the lines of race, socioeconomic status, and sexual orientation. The following subchapters first explore critical literature related to theories of reproduction, followed by a discussion of barriers to access and the health impacts associated with an elevated MBR, as described in the literature.<sup>6</sup>

#### 4.1. Theories of Reproduction

At a societal level, the proliferation of IVF and other reproductive technologies has forced society and policymakers to re-examine conceptions of fertility, parenthood, and family composition. While advances in ART have helped to reshape some understandings of these conceptions, it is the value-laden ART policy constraints, such as funding eligibility and access, that continue to “transgress and re-inscribe these conventional meanings” (Michelle, 2006). This phenomenon is known as “stratified reproduction,” which refers to the power dynamics that empower or disempower specific groups to reproduce, thereby reinforcing social structures like race, sexual orientation, gender and class (Ginsburg and Rapp, 1995). Scala (2014) argues that this phenomenon is ever-present in Canada and the United States, where policies to control fertility are directed towards low-income, visible-minority women, while reproductive technologies that promote fertility are made increasingly available to wealthy, White women, presumably in heterosexual partnerships, through the availability of ART.

Within Canada, the varying levels of funding support for IVF have contributed heavily to stratified reproduction, whereby provincial governments largely dictate access to treatment. For those provinces that offer funding, access to reproductive services is made more accessible by reducing financial barriers, though eligibility requirements

<sup>6</sup> It should be noted that some feminist critiques view ART as a new realm for the exploitation of women and that advances in technology and government support actually serve to entrench the view that women’s sole purpose is that of reproduction. For the purposes of this capstone, this view has not been adopted and the subject is instead approached using reproductive equity theories.



related to age, residency and existing children function to promote access for specific demographics. For those provinces without any form of funding assistance, reproduction is stratified along “economic lines and insurance status,” with wealthy, White, heterosexual couples being the groups most able to access treatment (Scala, 2014).

This demographic overrepresentation also serves to reinforce a particular vision of infertility; that of the medically infertile, wealthy, White couple. These conceptions of infertility serve to entrench other barriers to access, including those related to race and sexual orientation. Jain’s 2006 study found that even in jurisdictions with comprehensive insurance coverage for IVF, the vast majority of patients were wealthy, well-educated, White women and that patients of colour experienced infertility for substantially longer periods of time before seeking treatment. Given the hyper-representation of wealthy, White women as the typical patient, those who exist outside of these social structures are less likely to identify as being infertile, let alone seek treatment (Shanley and Ash, 2009).

This is also seen among same-sex couples or single individuals who, while circumstantially infertile, may subconsciously ascribe to a view that their infertility is not “legitimate,” given the medicalization of accessing ART services (Bell, 2016). These notions of legitimacy impact policymaking insofar as governments are responsive to public perceptions and societal norms. Where certain forms of infertility and family composition are deemed to be “lifestyle choices,” policies that expand coverage for ART to circumstantially infertile persons are unlikely. As such, decision-makers must look to both evidence-based policy considerations and the sociopolitical landscape of their jurisdiction to ensure that access and funding models are in keeping with the demographics they serve.

## **4.2. Equity Considerations – Barriers to Access**

While IVF has become increasingly effective and popular, there are many barriers that make accessing services challenging, and in some cases, prohibitive. There are a number of financial, physical, emotional and workplace challenges associated with IVF, which render the procedure one that is demanding of not only a patient’s finances but of their partnership, employment, and emotional and physical wellbeing.

First, the costs of the procedure, medications and any necessary travel or time away from work can result in prohibitive financial barriers. In BC, the cost of an IVF cycle can reach between \$10,000-\$15,000, plus medication costs of approximately \$5,000 (Health Link BC, 2019). Though many British Columbians have partial coverage for medication, with a small minority also having private insurance coverage for IVF procedures, the out of pocket costs are generally a critical access barrier. As a result, those looking to IVF may be forced to delay treatment to budget and save for the procedure, or pursue less expensive (though typically less effective) forms of treatment (Brigham et al., 2013). Those experiencing medical infertility may also face increased financial challenges, given the likelihood of having to undergo multiple cycles before achieving the birth of a baby (Shanley and Asch, 2009).

In addition to the financial barriers that limit access for British Columbians pursuing fertility treatment, the Province's unique geographic challenges can be especially restrictive. With only five clinics offering IVF, all of which are in the Lower Mainland or Vancouver Island, patients are frequently required to travel long distances to access treatment. While those in Northern BC and the Okanagan have access to fertility clinics in Prince George and Kelowna for diagnostic and monitoring services, patients are required to travel to "partner clinics" in the Lower Mainland for egg retrievals and transfers, often having to take multiple days off work to pursue treatment. The geographic challenges impact not only the decision-making process of those pursuing fertility treatments but render the process all the more difficult and generate further inequities among British Columbians experiencing infertility.

Lastly, other barriers to access include the physical and psychological impacts of fertility treatments. As noted in Assal et al.'s 2019 qualitative study of Ontario patients, the IVF procedure is not only physically demanding, including hormone therapy, egg retrievals, and the transfer process, but also psychologically challenging. Assal et al.'s focus group respondents note that the desire to achieve pregnancy places extreme pressures both on the patient undergoing IVF and the partnership itself. Additionally, because of the stigma and sensitivity surrounding infertility, those undergoing treatment may feel isolated throughout the process and unable to communicate their experiences to their social networks. This can translate to workplace challenges, with patients having to incorporate frequent clinic and monitoring appointments into their schedules without

divulging the fact that they are pursuing medical treatment. Together, these challenges result in increasingly restrictive access to IVF and related ART options.

### **4.3. Health Considerations – Multiple Births Rate (MBR)**

While advances in IVF have resulted in increasingly safe and effective fertility treatments, the procedure is associated with an elevated MBR (i.e., the proportion of births that result in the delivery of more than one baby). Generally, the rate of multiples conceived via IVF exceeds the rate of multiples for all births. This is due to the prevalence of multiple embryo transfers (MET), wherein two or more embryos are implanted in the uterus during the IVF process, increasing the likelihood of twins, triplets or higher-order multiples. As such, while multiple births are relatively rare in non-ART pregnancies, they are more common in IVF births.

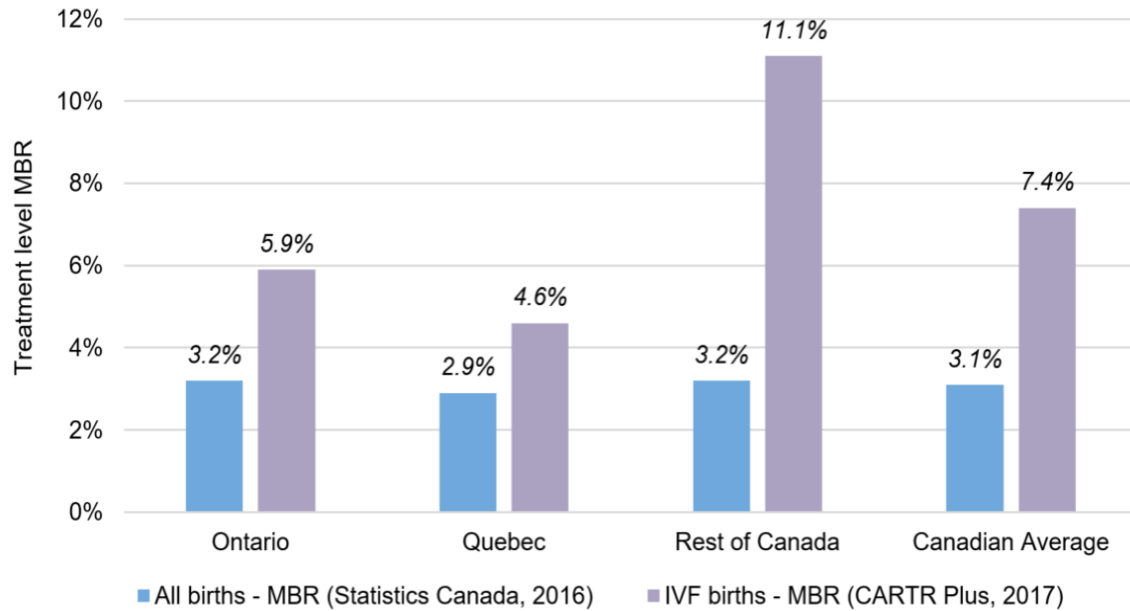
While MET occurs for several reasons, including when clinicians determine that it may be the best approach to treat severe forms of infertility or when previous attempts have not proven successful, the literature also suggests that patients may opt for MET due to financial pressures. First, given the high costs of IVF, patients may only be able to afford one cycle, viewing the transfer as their “one shot” at having a baby, and therefore opt for MET to increase their chances of a pregnancy. Second, some patients, especially older ones, may prefer MET because they would like to have more than one child, and for health and financial reasons, prefer not to undergo additional IVF cycles or transfers.

This presents both mothers and their newborns with a number of health risks. Sazonova et al.’s 2013 study finds that for babies born via IVF, twins are 12 times more likely to be born prematurely, 16 times more likely to have low birth weight, and approximately five times more likely to have jaundice or respiratory complications than singletons conceived via IVF. Sazonova et al. also finds significantly higher rates of pregnancy complications, including preeclampsia and cesarean sections, for mothers of twins conceived via IVF versus mothers of singletons conceived via IVF. El-Toukhy et al. (2018) also notes that carrying multiples increases the risk of “pregnancy-induced hypertension, gestational diabetes, peripartum hemorrhage, operative delivery, and postpartum depression and anxiety,” and is associated with a six-fold increase in the risk of pre-term births, which the study cites as being a leading cause of “infant mortality and

long-term mental and physical disabilities,” including cerebral palsy, and learning difficulties.

Beyond these health impacts, the literature also points to the increased healthcare costs associated with multiple births, including the 2011 study by Janvier et al. that found that multiples conceived via IVF account for 17% of Neonatal Intensive Care Unit (NICU) admissions in Canada. These elevated costs also include the long-term health problems associated with very preterm and preterm births, which are more likely among multiples (Collins, 2007). Given the health impacts and associated healthcare costs, a high MBR presents critical public health and policy challenges, impacting not only those born via and pursuing IVF but the broader public insofar as it contributes to healthcare spending.

At the national level, Canada’s 2017 MBR for all births (AB-MBR) was 3.1%, in line with other developed countries, though its MBR for IVF births (IVF-MBR) of 7.4% is considerably higher (Figure 4.3.1). These figures also differ significantly between those provinces with publicly funded IVF programs and those without. As Figure 4.3.1 on the following page demonstrates, Quebec’s AB-MBR in 2017 was not only lower than Canada’s AB-MBR, but its IVF-MBR was only 4.6% compared to the national rate of 7.4%. This is due in large part to Quebec’s SET limit associated with its public funding model, a topic further discussed in Chapter 7.2.



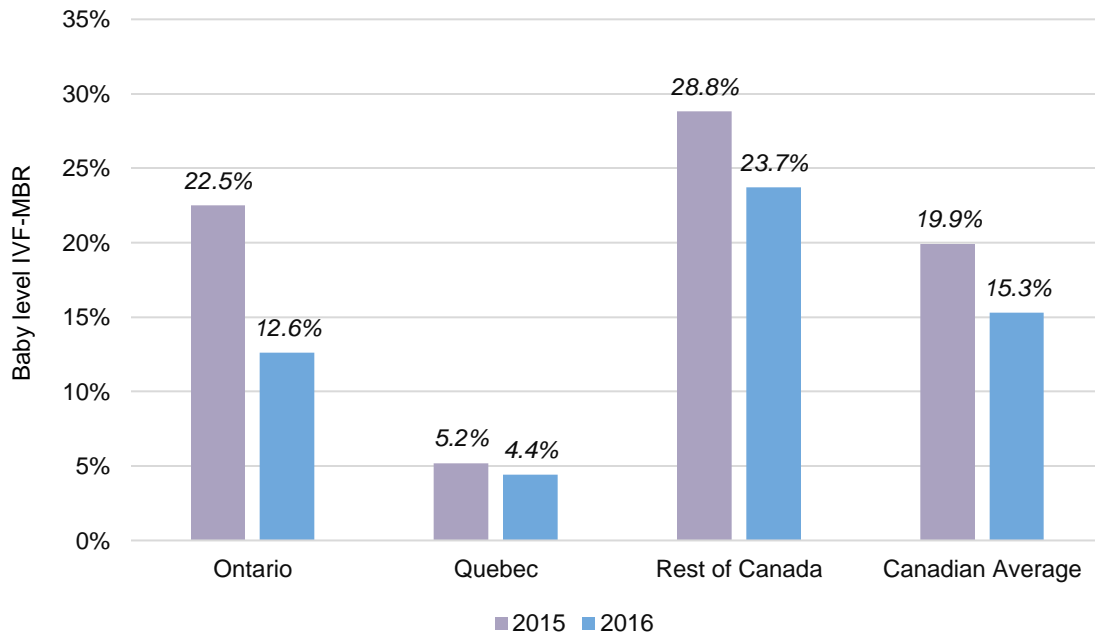
**Figure 4.3.1. Treatment level<sup>7</sup> multiple births rate (MBR) – IVF births vs. all births<sup>8</sup>**

Source: Statistics Canada, Canadian Vital Statistics, Births Database, 2006, 2012 to 2016, Survey 3231 and Demography Division, Demographic Estimates Program (DEP) and CARTR Plus final treatment cycle and pregnancy outcome data for 2017.

A similar phenomenon is seen when looking more closely at Ontario and its changing baby level IVF-MBR between 2015 and 2016, the transition year for which IVF births are attributable to the Province’s public funding model. In 2015, the Province’s IVF-MBR was 22.5%, nearly 20 points greater than its AB-MBR. Following the introduction of publicly funded IVF with strict SET limits in 2015, the Province saw a decrease in its IVF-MBR of nearly 10 points (Figure 4.3.2). For those provinces captured in “Rest of Canada,” both their 2015 and 2016 IVF-MBR surpass the national averages.

<sup>7</sup> Treatment level MBR refers to the proportion of *births* that result in multiples, i.e., where among 10 births, nine singletons and one set of triplets (1/10) would produce an MBR of 10%. Baby level MBR refers to the proportion of *babies* that are the result of multiples, i.e., where among 10 births, nine singletons and one set of triplets (3/12) would produce an MBR of 25%. Up until 2017, the CARTR Plus annual reports displayed baby level MBR.

<sup>8</sup> CARTR Plus has MBR data available for Ontario, Quebec, “Rest of Canada” and all of Canada. Data at the provincial level was requested for other provinces, including BC, though CARTR Plus confirmed that it is unable to provide proportions for BC exclusively, and that “Rest of Canada” is the most granular data available. As such, “Rest of Canada” is used as a proxy for BC’s MBR.



**Figure 4.3.2. Baby level multiple births rate (MBR) for IVF births (2015 vs. 2016)**

Source: CARTR Plus Final treatment cycle and pregnancy outcome data for 2015 and 2016.

In recognition of the economic challenges and, more importantly, the health risks associated with an elevated IVF-MBR, clinicians in Canada have been actively pursuing measures to reduce the occurrence of multiple births. The Canadian Fertility & Andrology Society (CFAS), the national body representing ART providers, has adopted guidelines encouraging SET as a means to reduce the IVF-MBR while maintaining high clinical pregnancy rates (CFAS, 2013). Nonetheless, for those provinces outside of Ontario and Quebec, including BC, an IVF-MBR of 11.1% demonstrates that there is cause for concern among provinces without the funding and associated regulatory capacity to address the prevalence of MET.

## 4.4. Summary of Findings

As discussed throughout Chapters 2 through 4, changing fertility patterns and the associated rise in demand for IVF have resulted in critical health and equity considerations for policymakers. Notably, declining fertility rates and increasingly older first-time mothers point to challenges in meeting the demand for IVF while ensuring that access is both equitable and supportive of a reduced MBR. These initial findings shape the study's approach to addressing the policy problem facing BC and help to inform the approaches taken throughout each of the methodologies, as discussed in Chapter 5.

### *For Consideration:*

It should be noted that while these findings and the resulting analysis seek to make IVF more accessible, there is an argument to be made for responding to this policy problem by instead reducing the growing demand for fertility treatment. Given the increasingly older ages at which Canadians are trying to conceive and the associated rise in age-related infertility, some of the literature suggests that research should instead examine this aspect of the problem and focus on discouraging people from delaying parenthood. While the study acknowledges this aspect of the issue, the methodologies and subsequent policy analysis take the approach of addressing *current* levels of inequity and inaccessibility. Proposed interventions are designed to improve access for those British Columbians seeking fertility treatments while effectively reducing the elevated MBR associated with IVF.

## **Chapter 5.**

### **Methodology**

In addition to the initial literature review presented throughout Chapters 2-4, this study employs three methodologies. The primary methodology is the analysis of original survey results collected from British Columbians experiencing infertility who may have considered IVF and/or who are pursuing IVF. The second methodology is a jurisdictional scan of comparable provinces and countries to identify possible policy interventions to promote more equitable access to IVF in BC while reducing the MBR. Finally, expert interviews with clinicians, academics, and subject matter experts are used to assess the feasibility of implementing those interventions and funding models identified by way of the jurisdictional scan.

#### **5.1. Survey**

This study includes an anonymous, online survey of more than 250 British Columbians experiencing infertility to better understand the demographics of those accessing IVF services in BC and what barriers contribute to the inaccessibility of fertility treatments. The themes and design of the survey are informed by a preliminary literature review where both academic literature and clinical reports are examined to help identify research questions and hypotheses. As a result, the survey is designed to identify demographic trends, barriers to access, average costs to British Columbians, and patterns in embryo transfers and multiple births. Additionally, questions feature open-ended text options to allow respondents to identify barriers or considerations not otherwise raised throughout the survey. The complete list of survey questions can be found in Appendix A.

Survey participants include both those British Columbians experiencing infertility who are pursuing IVF and those who are not. In order to ascertain specific answers from those participants who have not undergone IVF, compared to those who have undergone multiple cycles or who may have been undergoing IVF while participating, a skip logic function is used, meaning that depending on a respondent's answer, they are



redirected to specific questions. The resulting data is used to identify criteria and measures as well as target outcomes for possible policy interventions.

To ensure regional representation, the survey was distributed in partnership with fertility clinics and organizations across the Province, including those in areas such as Northern BC, the Kootenays and the Okanagan, where IVF is not offered. Additionally, infertility support groups and a number of fertility coaches posted the link to the survey on webpages and social media platforms. Lastly, some fertility counselling services and clinics displayed posters (Appendix B) featuring a QR code in their offices and waiting rooms, allowing clients/patients to complete the survey while accessing these services.

## **5.2. Jurisdictional Scan**

A key part of the research also includes a jurisdictional scan to identify policy interventions that would adequately address the desired outcomes identified throughout the survey analysis and literature review. The following jurisdictions were selected based on governance structures, variance among types of public funding models, and access to data and information related to program outcomes: Ontario, Quebec, New Brunswick, Denmark, New Zealand and Australia. Each jurisdiction's policy is reviewed to assess its funding mechanism, eligibility criteria, ease of access, costs, and multiple-births rate to determine which options might be suitable to address the policy problem facing BC.

## **5.3. Feasibility Assessment**

Following the identification of possible policy interventions by way of the jurisdictional scan, six subject matter experts are consulted to discuss the feasibility of implementing those interventions. This allows for a theoretical review of possible applications as well as the identification of practical and clinical implementation barriers. The feasibility assessment helps to inform criteria and measures while also bridging any gaps in knowledge or implementation challenges otherwise unknown to the principal investigator. Consultations took the form of telephone and in-person interviews conducted throughout January 2020.

**Table 5.3. List of interview participants**

| Interview Participants  | Field of Expertise  |
|---|---|
| <i>Dr. Alana Cattapan</i><br>Assistant Professor, Department of Political Science, University of Waterloo, Waterloo, ON                       | Professor Cattapan studies gendered inclusion in policymaking, identifying links between the state, the commercialization of the body, and reproductive labour.   |
| <i>Dr. Caitlin Dunne</i><br>Reproductive Endocrinology and Infertility Subspecialist, Pacific Centre for Reproductive Medicine, Vancouver, BC | Dr. Dunne is a partner and co-director at the Pacific Centre for Reproductive Medicine. She also serves as a clinical Assistant Professor in the University of British Columbia's Department of Obstetrics and Gynaecology. |
| <i>Dr. Robin Johnson</i><br>Obstetrician-Gynaecologist<br>Blossom Fertility Clinic, Prince George, BC   | Dr. Johnson operates the Blossom Clinic in Prince George BC. The clinic functions in partnership with Vancouver's Olive Fertility Clinic and offers patients pre-treatment ultrasounds and monitoring.                      |
| <i>Dr. Jonathan Rhys Kesselman</i><br>Professor Emeritus, School of Public Policy, Simon Fraser University, Vancouver, BC                     | Professor Kesselman is a frequent commentator on issues of public finance, taxation, and economic policy. He has written widely on topics in tax policy, income security, employment policy, and social insurance finance.  |
| <i>Confidential Participant #1</i>  | This participant offers both clinical and regulatory perspectives.  |
| <i>Confidential Participant #2</i>  | This participant offers both clinical and academic perspectives.  |

## 5.4. Limitations

While each of the three methodologies is approached systematically, several limitations persist. For the survey, three considerations should be accounted for. First, because of the sensitive nature of the topic, potential participants may have been hesitant to access the survey via online forums out of fear of being identified, or because the topic itself may be emotionally triggering. Second, when asking if patients had previously or are currently undergoing IVF, the question did not explicitly ask if treatment was undertaken in BC. As such, some responses may include BC residents who underwent the procedure in another jurisdiction. Lastly, because survey invitations identified the study as "5-minute survey: Improving Access to IVF in British Columbia," those answering may have self-selected with the goal or view that the procedure should be publicly funded, or because they experienced particularly difficult challenges when pursuing IVF and wanted to share their concerns.

Regarding the feasibility assessment, the size of the interview sample is relatively small, with only six participants. This methodology is, however, designed to capture specific viewpoints and intentionally includes the following perspectives: clinical/medical, academic/research-based, economic/policy, Northern BC, and regulatory.

Finally, on a more general level, this study does not include an exact figure for the number of IVF cycles initiated in BC on an annual basis. BC clinics do report these figures to CARTR Plus on a voluntary basis, and the data was requested by the principal investigator. However, because of the limited number of private clinics in BC, CARTR Plus "cannot release provincial numbers if there is any risk that individual clinics' data (including cycle volumes) could be identified" (CARTR Plus, 2020).

## **Chapter 6.**

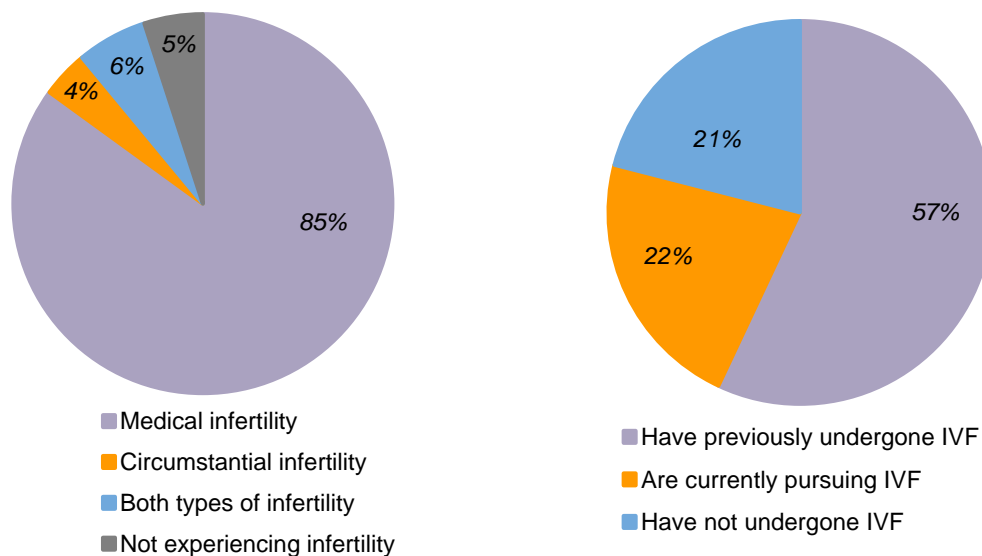
### **Primary Data – Survey Analysis**

To better understand the regional and socioeconomic demographics of those accessing fertility services in BC and what barriers they face when pursuing IVF, online survey responses from more than 250 respondents were collected throughout November and December 2019. The survey was open to all persons 18+ who had either considered or pursued IVF either presently or in the past. This allows for those respondents who may have liked to undergo IVF but could not for financial, geographic, or other reasons to share their perspectives, thereby helping to identify critical access barriers. Additionally, survey respondents who have undergone IVF provide responses regarding average costs, the number of embryos transferred, and what types of challenges they faced. The following subchapters examine the results of the survey and illuminate the necessary considerations for reviewing policy interventions to improve IVF access in BC.

#### **6.1. Sample Description**

While 253 respondents accessed and consented to the survey, only 206 completed it in its entirety, including all demographic questions. Given the importance of understanding demographic trends and how access to IVF varies by socioeconomic status, region, marital status, etc., only complete surveys were included in the analysis, resulting in a sample of 206. Within the sample, women account for 98% of respondents, and 96% of respondents indicate being married or in a domestic/common-law partnership compared to 58% of the general population in BC (Statistics Canada, 2017a). Of these respondents, 97% indicate being in a heterosexual partnership compared to only 3% who identify as being in a female same-sex partnership. Finally, 41% of respondents are between the ages of 35-39, with the next most significant subgroup being 24% of respondents between the ages of 30-34.

In terms of respondents' experiences with infertility and IVF, 85% indicate experiencing medical infertility, 4% indicate experiencing circumstantial infertility, 6% indicate experiencing both types of infertility, and 5% indicate not experiencing any type of infertility (Figure 6.1.1, left).<sup>9</sup> Among all respondents, 57% indicate having previously undergone IVF, 22% indicate currently pursuing IVF, and 21% indicate having not undergone IVF (Figure 6.1.1, right).



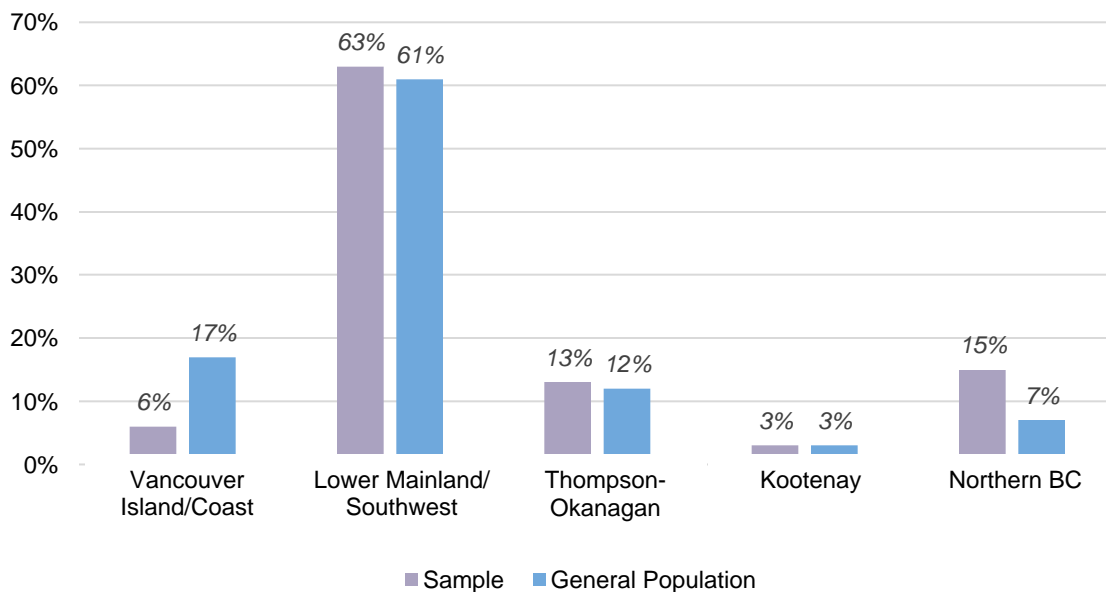
**Figure 6.1.1. Respondents' experience with IVF and infertility**

When considering socioeconomic and cultural demographics, the sample is overrepresented by high-income earners, those identifying as White, and highly educated respondents. For instance, 79% of respondents indicate a combined annual household income of at least \$90,000, exceeding the 2017 average of \$80,810 for couple families with or without children in BC (Government of British Columbia, 2019). Further, more respondents have a combined annual income exceeding \$200,000 (9%) than do those with one under \$60,000 (6%). In terms of education, 69% of respondents report that someone in their partnership holds a bachelor's degree. Though not exactly comparable, only 30% of the general population aged 25-64 in British Columbia holds a bachelor's degree (Statistics Canada, 2017b). When looking at employment, 10% of

<sup>9</sup> Respondents had the option to select "other" when asked if and what type of infertility they have experienced. "Other" responses describing unexplained medical infertility, or medical conditions or treatments related to infertility such as polycystic ovary syndrome (PCOS), chemotherapy, or recurrent miscarriages are included in the count for medical infertility.

respondents indicate not being employed, while 75% and 15% indicated being employed full-time or part-time, respectively. Those 10% of respondents who are not currently employed did not indicate being unemployed, though they might be, it may also be the case that they are caring for families or currently on parental leave. Lastly, at 81%, the sample is over-representative of those respondents who identify as White, compared to roughly 70% for the general BC population.<sup>10</sup>

Finally, in terms of regional representation, the sample is generally reflective of BC’s population, except for some overrepresentation from Northern BC and some underrepresentation from Vancouver Island and the Coast (Figure 6.1.2). Further, 14% of respondents indicate living in rural areas, which is similar to the 12% of rural residents in the general BC population (Strengthening Rural Canada Report, 2015). 48% of respondents indicated living in urban areas, with the remaining 37% living in suburban areas.



**Figure 6.1.2. Regional representation of sample vs. general population**

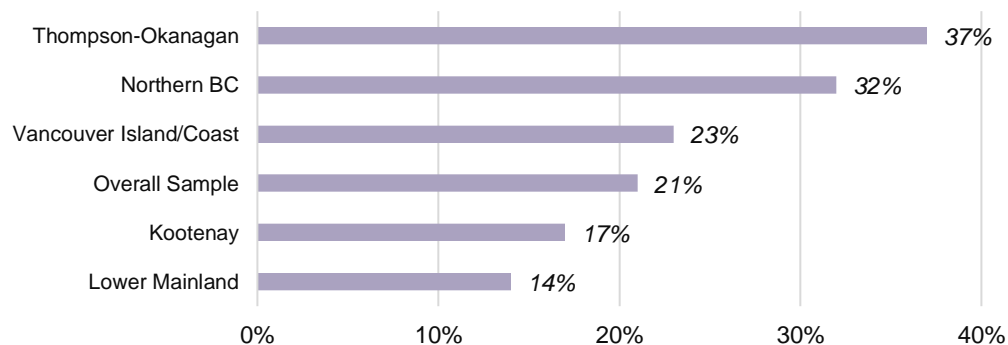
<sup>10</sup> Question 23 asked respondents to select all racial or cultural groups to which they belong, as per the categories/groupings used by Statistics Canada in the Community Health Survey. 81% of respondents selected only “White” when answering. The “roughly 70%” figure for BC is based on extrapolating from the 2016 census data for BC, which indicates that 30% of the general BC population identifies as a visible minority (Statistics Canada, Immigration and Ethnocultural Diversity Highlight Tables, 2016).

## 6.2. Findings for Those Unable to Pursue IVF

The following subsections examine the results for those respondents who indicate having not undergone IVF. Section 6.2.1 provides a descriptive review of the responses and emerging demographic patterns, while section 6.2.2 provides a qualitative review of the open-ended text questions.

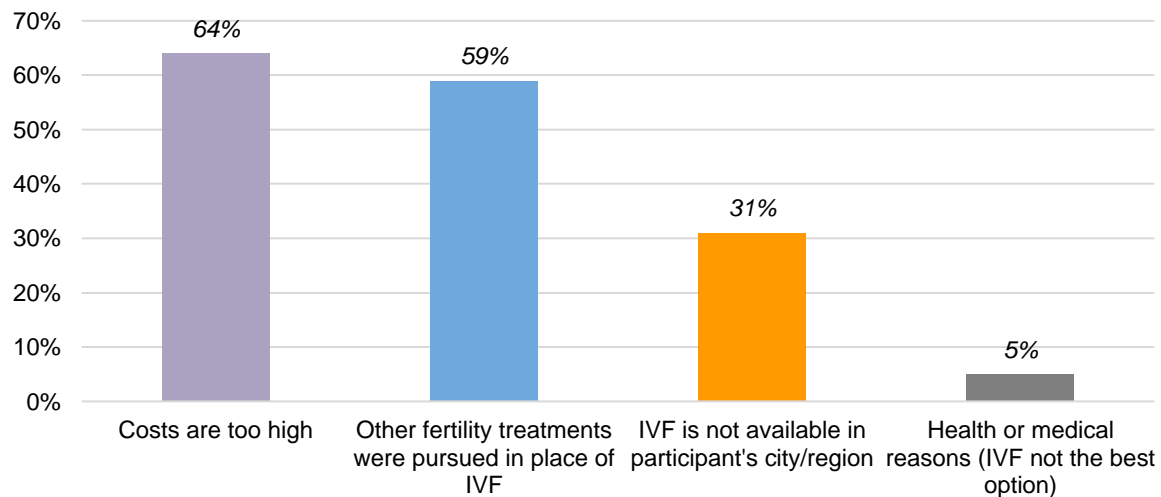
### 6.2.1. Demographic Trends in Inability to Pursue IVF

Exploring the results for the 21% of respondents who have not pursued IVF brings to light key access barriers and equity considerations. Regarding the demographics of these respondents, the racial and cultural breakdown mirrors the overall sample, while 36% indicate an annual combined household income of less than \$90,000, compared to the general sample of only 21%. Interestingly, of all White respondents, 22% indicate not having pursued IVF compared to only 13% of those respondents who do not identify as White. Perhaps more revealing, though, is geographic imbalances among respondents (Figure 6.2.1.1). Of all respondents from the Thompson-Okanagan region, 37% indicate having not undergone IVF, with all of those respondents stating that it was due to cost and geographic constraints. Similarly, 32% of Northern BC respondents indicate not having undergone IVF. These figures exceed not only the sample average of 21% but also the Lower Mainland/Southwest respondents' figure of only 14%. Lastly, only 4% of respondents aged 40 or older indicate not having undergone IVF, compared to 33% for those under 30, suggesting that among respondents, the procedure is more accessible to older women. This may be due in part to increased earning power, or greater employment stability and related support in arranging appointments.



**Figure 6.2.1.1. Portion of respondents by region who have not undergone IVF**

Beyond demographics, these responses also highlight the types of barriers that limit access to IVF and what the impact of alternative funding options may hold. For instance, of all respondents unable to pursue IVF, 79% indicate that if the procedure was publicly funded, i.e., paid for by the government, they would have undergone IVF. When asked to indicate all reasons for not undergoing IVF, meaning participants could select more than one answer, 64% of respondents indicate that the costs were too high, while 31% indicate that IVF is not offered in their city or region (Figure 6.2.1.2).



**Figure 6.2.1.2. Reasons for not pursuing IVF (respondents select all that apply)**

## 6.2.2. Qualitative Review – Barriers to Access

Participants who indicate having not undergone IVF are also provided with the opportunity to expand on what factors limit access and the types of barriers they face when considering the procedure. These results yield important qualitative responses that highlight the financial, geographic, and emotional barriers that limit respondents' ability to pursue IVF and how these barriers impact their decision-making process. The following thematic groupings shed light on the lived experience of those dealing with infertility and unable to pursue treatment in BC.

### **Costs**

While 64% of respondents indicate costs being too high as a factor for not having undergone IVF, the qualitative results also demonstrate that beyond costs being a determining factor in not pursuing treatment, they also impact a respondent's decision to



pursue other medical interventions. As demonstrated by the two responses below, the financial aspects of IVF can push patients to alternative treatments, such as IUI, with the view being that it is less effective. This has important implications not only for patient autonomy but also because the pursuit of less effective treatment may result in even older patients requiring ART, having not achieved a pregnancy through initial less expensive procedures. Given that BC has the highest maternal birth ages in Canada, this carries important policy and healthcare impacts.

*“We are pursuing IUI before IVF because it [IVF] is too expensive even though it’s more successful.”*

*“...however, if IVF was funded, I would have likely considered IVF earlier in my infertility journey.”*

While some respondents, such as those quoted above, have the option of pursuing alternative procedures, those experiencing more severe forms of infertility are faced with fewer choices. As such, the cost of IVF can act as a prohibitive barrier for those requiring more specialized treatment, such as ICSI (a treatment typically used in association with severe male factor infertility wherein sperm is injected directly into an egg). As noted in the responses below, these financial barriers faced by respondents also differ by region, with housing prices and workplace opportunities effectively preventing those with some types of medical infertility from accessing the necessary treatment, or alternatively, from putting money toward savings or other areas. Finally, the associated costs stemming from the mental health supports that may be required for these medical diagnoses poses an additional strain on respondents.

*“I have stage 2 endometriosis and my partner has Male Factor Infertility. We have been recommended to pursue IVF+ICSI but the base cost is \$8500 plus medications, and we don’t have that amount saved up. Although we are trying to save, we live in a city where the rental prices are very high and we both earn close to minimum wage. We have been devastated by our diagnoses and the lack of funding for medical treatment.”*

*“Making IVF and other fertility treatments even partially covered by MSP would have alleviated some of the already inherent stress of having a diagnosed medical condition that we couldn't afford to have treated and perhaps lowered our ongoing mental health costs to try to deal with the depression and grief.”*

## **Geographic**

Geographic inequities play a critical role in a respondent's ability to pursue IVF, with costs and travel logistics effectively limiting treatment options. As evidenced by the following quotes, the travel time and costs required by those living outside of major cities with IVF clinics can be prohibitive. It is important to note that because IVF is not a one-time procedure, but instead a series of consultations, monitoring appointments, transfers and check-ups, the scheduling challenges can exacerbate geographic barriers. These workplace, financial, and administrative challenges brought about by these geographic realities result in restrictive access for many respondents.

*“There is no fertility center in [Okanagan community] <sup>11</sup> where I live, so I would have to drive 2.5 hours to Kelowna and take the day off work.”*

*“Although in the Thompson-Okanagan now, we were living in Prince George when we first attempted to get treatment for infertility. Failing that, getting counselling for the resultant stresses on our relationship and individual grief counselling was very difficult to find and expensive when we did find someone qualified to assist us.”*

*“Access to anything beyond medication for infertility requires travel and time off work even a consultation appointment ends up costing at least \$1000 for travel etc.”*

<sup>11</sup> Though the respondent is unidentifiable, the name of the community has been removed from this response as an added precaution.

### 6.3. Findings for Those Pursuing IVF

The following subchapters examine the results of those respondents who indicate having previously undergone IVF or who are currently pursuing the procedure (hereby referred to as "respondents using IVF" for the sake of brevity). Section 6.3.1 provides a descriptive review of these responses and emerging demographic trends, while section 6.3.2 examines the embryo and MBR patterns, followed by section 6.3.3, which provides a qualitative review of the open-ended text answers provided by respondents.

Demographic indicators for those using IVF help to identify not only what challenges respondents are faced with when pursuing treatment, but what considerations should be made when examining policy intervention. First, it is notable that only 17% of IVF users have a combined annual household income of less than \$90,000 compared to 36% for those who have not undergone the procedure. Second, with regard to age, only 11% are younger than 30, while usage among those 40 or older exceeds that of those between the ages of 30-34 (Figure 6.3.1). Finally, in looking more closely at partnership status, it is notable that while those who are not married or in a domestic partnership make up only 4% of the sample, they all indicate using IVF.

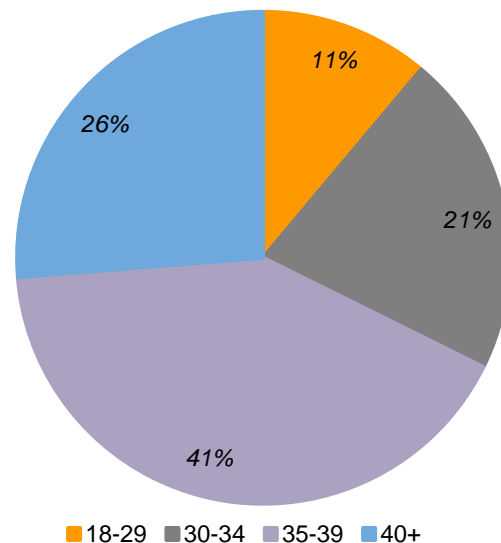
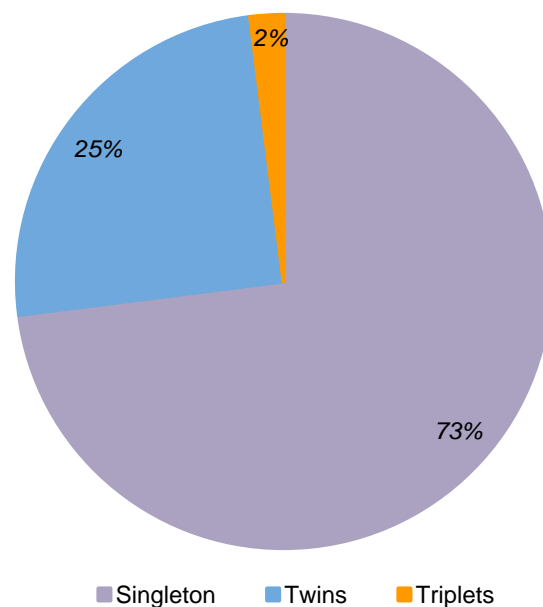


Figure 6.3.1. Age breakdown of respondents using IVF

### 6.3.1. Embryo Transfer Patterns and Access Considerations

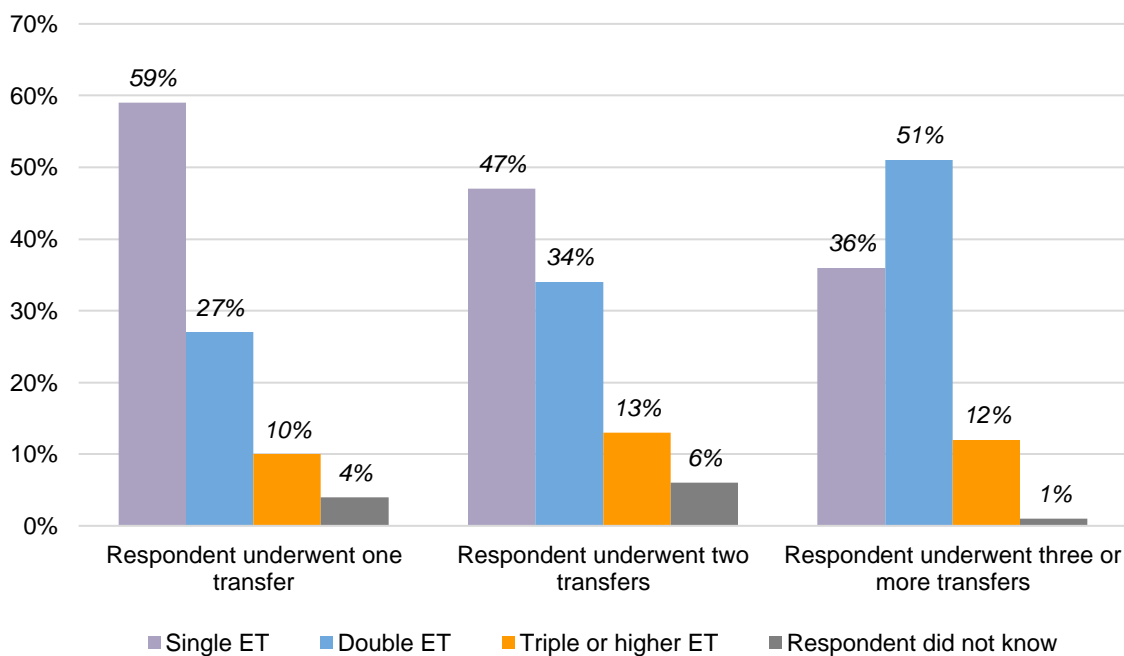
For those respondents who are either pursuing or who have previously pursued IVF, 34% indicate having completed more than two cycles, which includes all retrievals and transfers. Interestingly, of all respondents pursuing IVF, 63% indicate that they would have undergone additional cycles if it was publicly funded, while 25% indicate that they don't know. This finding may mirror the fact that of all those respondents who have undergone at least one IVF cycle, 53% have experienced the birth of one or more babies as a result of the procedure, with the birth types displayed in Figure 6.3.2.1.



**Figure 6.3.2.1. Birth types of the 53% of respondents who have undergone an IVF cycle resulting in the birth of one or more babies**

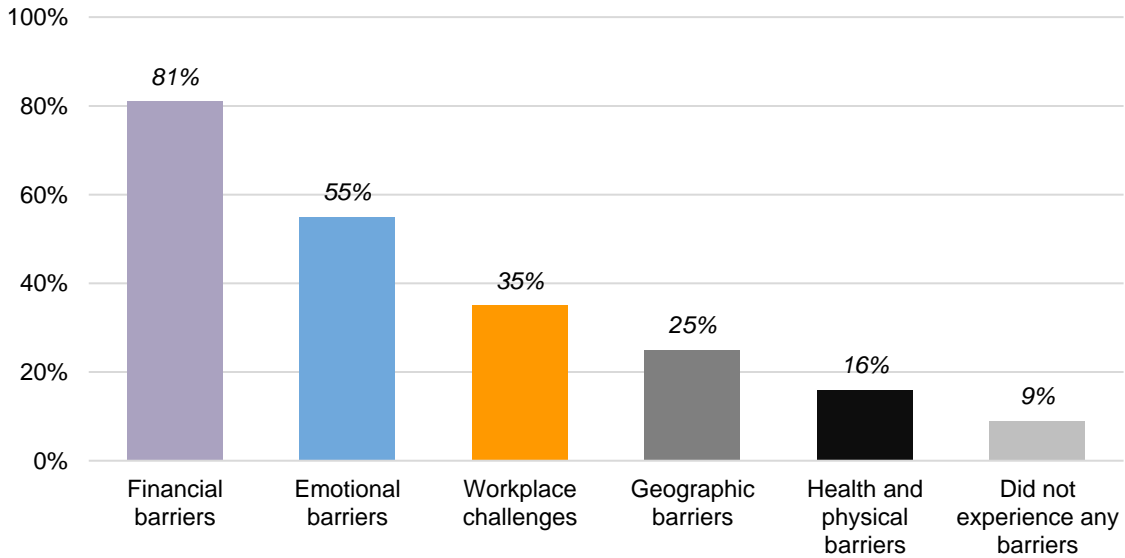
When looking more specifically at embryo transfers, we see that experiences vary for those respondents who have undergone different numbers of cycles. For this aspect of the analysis, respondents were first asked how many transfers they had undergone, then asked the maximum number of embryos transferred during any one cycle. For those participants who have only undergone one transfer, 37% indicate having had a multiple embryo transfer during that initial cycle compared to 47% for those who have undergone two transfers (Figure 6.3.2.2).

It is also worth noting an interesting yet unanticipated finding showing that up to 6% of respondents did not know the exact number of embryos transferred during each of their transfers (Figure 6.3.2.2). While this is not a particularly high figure, given the significance of the procedure, it seems problematic that any patients should be unsure of the number of embryos transferred. This may point to patient awareness as an area for concern, as previously discussed when considering how patients assess the risks of multiple pregnancies and births, and whether patients are well informed throughout the IVF and transfer process.



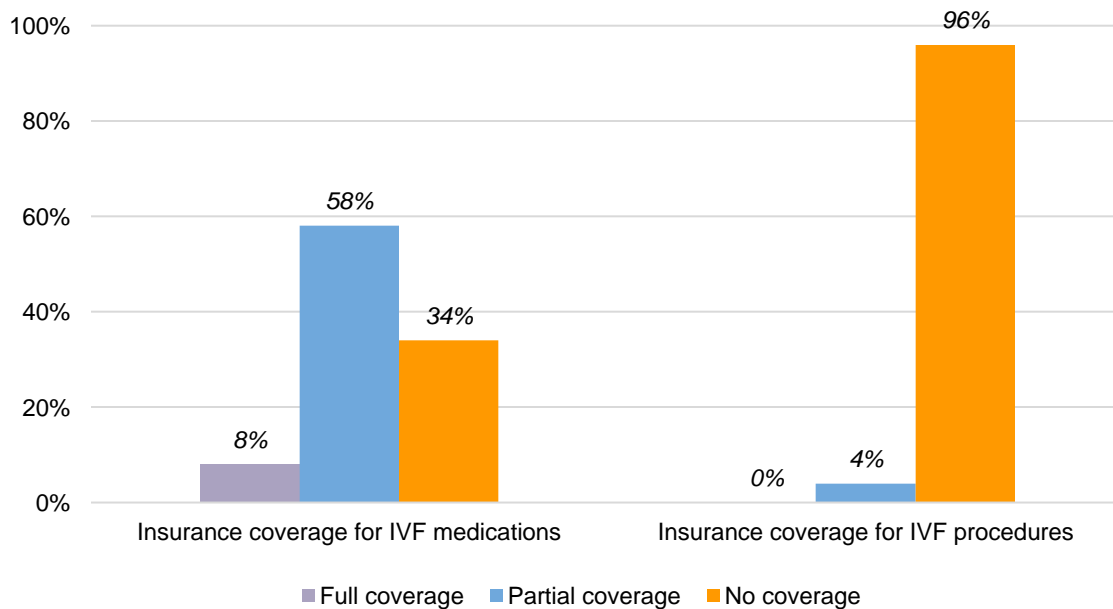
**Figure 6.3.2.2. Maximum number of embryos transferred during any one transfer (respondents separated by number of transfers they have undergone)**

Beyond discussing the medical aspects of the IVF process, respondents pursuing the procedure are also asked about access in terms of different types of barriers. Similar to the challenges that restrict access for those who have not pursued IVF, 81% of respondents indicate experiencing financial barriers (Figure 6.3.2.3). While only 25% indicate geographic barriers, it is noteworthy that when isolating for regions, geographic barriers are selected by 96% of Northern BC respondents and 48% of Thompson-Okanagan respondents compared to only 9% of Lower Mainland respondents.



**Figure 6.3.2.3. Portion of respondents pursuing IVF who indicate facing these barriers (respondents select all that apply)**

Additional access questions examine the extent to which respondents have access to insurance coverage for IVF, with results indicating minimal coverage for medications and almost nonexistent coverage for the procedure itself (Figure 6.3.2.4).



**Figure 6.3.2.4. Portion of respondents with insurance coverage for IVF medications and procedures**

### 6.3.2. Qualitative Review – Barriers to Access

Participants who indicate having undergone IVF are provided with the opportunity to expand on what factors limit access and the types of barriers they faced while undergoing the procedure. These results yield useful qualitative responses that highlight the financial, geographic, and emotional barriers that impact respondents' ability to pursue IVF and the inequities facing British Columbians experiencing infertility. The following thematic groupings shed light on the lived experience of those pursuing IVF and what barriers they consider most impactful, thereby informing important considerations for any proposed policy interventions.

#### Costs

For those respondents using IVF, 81% indicate that the financial challenges of IVF act as a barrier. This is also reflected in participants' reported total costs of IVF, with nearly 40% of respondents having spent upwards of \$28,000 (Figure 6.3.3), some of whom indicate spending up to \$150,000 - \$200,000. Further, 63% of respondents indicate that they would have undergone additional cycles if the procedure were publicly funded. With minimal insurance coverage available for treatment, these costs have important implications not only for those who can't afford IVF but also for how those who can afford the procedure choose to finance it.

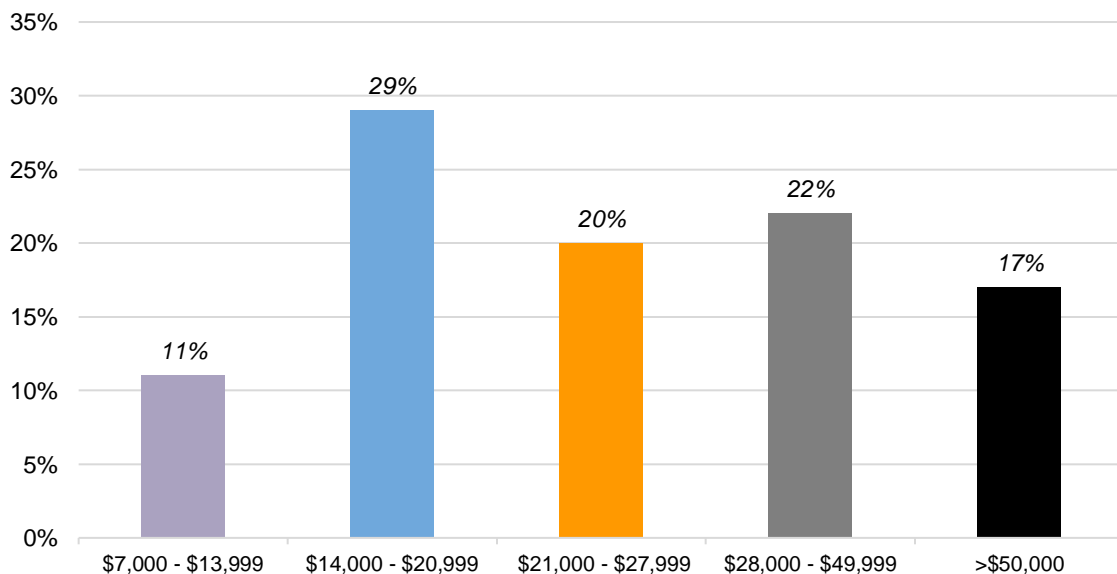


Figure 6.3.3. Reported total costs of pursuing IVF

Beyond the sheer cost of treatment, respondents also indicate that the associated financial barriers often required them to delay treatment in order to save, or that they look to other options like support from parents, remortgaging their homes, lines of credit, or online fundraisers like “GoFundMe” to cover the costs, as evidenced by the qualitative responses below. This raises important questions regarding not only income equity, but what other decisions may be impacted by the high up-front costs of IVF, including whether to pursue other forms of treatment, impacts on other health concerns, or whether a patient may have to stop treatment altogether due to costs. Finally, the overwhelming response regarding costs highlights the need to review other jurisdictions’ approaches to publicly funding fertility treatments.

*“It is so costly that we had to delay at first as we could not make the money work.”*

*“We can’t afford to pay for the procedure for the next couple years.”*

*“Well, it wasn’t necessarily a barrier that prevented us from proceeding, but we did have to take a line of credit out on our mortgage to pay for everything. We paid it off within a few months but otherwise would not have had that much cash on hand.”*

*“I was diagnosed with endometrial cancer during our IVF workup. Treatment caused me to lose my career. Have been cleared to get pregnant right away but are having a hard time coming up with money to continue. Hysterectomy is only being delayed until I finish having a child or the cancer comes back.”*

*“We were lucky we had parents who could help us out financially with the costs.”*

*“We had to do a GoFundMe to finance it.”*

*“I cannot afford to continue. It’s the worst thing I’ve ever experienced.”*



Similar to some of the responses of those respondents not pursuing IVF, the financial aspects of the procedure can push patients to defer treatment or to undergo alternative measures that they view as being less effective. This has important implications not only for patient autonomy but also because the pursuit of less effective treatment may result in even older patients requiring ART in the future.

*“Due to financial restrictions, we had to wait 6 years to be able to afford to do the second transfer of our final frozen embryo.”*

*“Because of the financial barriers, we tried multiple rounds of IUI before moving to IVF.”*

*“We did not want to take on any debt, so we pushed back our date to start IVF in order to save up the money. The cost is also stopping us from being able to save money for other things such as our retirement or unexpected problems (car or house issues). Most of the anxiety regarding IVF did not come from the procedure itself but the final cost of it all.”*

## **Geographic**

While only 25% of all respondents using IVF indicate geographic challenges as a barrier, further analysis shows substantial provincial variation. When isolated by region, geographic challenges are selected by 96% of Northern BC respondents, 48% of Thompson-Okanagan respondents, and 40% of Kootenay respondents. The associated costs and travel logistics impact not only treatment schedules but the financial demand and emotional support available to women undergoing treatment. As evidenced by the following quotes, the travel time and costs can be burdensome, adding additional barriers to those living in regions without full-service IVF clinics. As previously mentioned, it is also important to consider the fact that as IVF is not a one-time procedure, but instead a series of consultations, monitoring appointments, transfers and check-ups, the scheduling challenges can exacerbate geographic barriers. This is demonstrated by the fact that 35% of respondents indicate workplace challenges as being a barrier while pursuing IVF, with participants noting some of the particular difficulties in the quotes below.

*“I live 5 hours from my IVF clinic and so it was very challenging to get there for appointments, especially in winter months when road conditions are not favorable.”*

*“No clinics are located in Northern BC, so we had to relocate to Vancouver for two weeks while undergoing stims/retrieval/transfer.”*

*“My husband and I can’t afford to both travel for the procedure, so I will be going alone.”*

*“For work I couldn’t keep the process private and struggled to get doctors notes for missed work and to avoid emotional questions from colleagues. Fitting the appointments into a work schedule, while also maintaining privacy, is stressful.”*

*“I have 4 weeks of vacation per year and I spent all of that having procedures/surgeries.”*

### ***Emotional*** <sup>12</sup>

As detailed throughout the literature, the IVF process is emotionally challenging for both those patients that achieve the birth of a baby and those that continue to experience childlessness. As such, the lived experience of those undergoing IVF should serve as a key source of information when considering policy options and the population-level impacts of infertility and access to ART in BC. These experiences are detailed in respondents’ open-ended text answers, with two crucial findings having emerged. First, as 55% of respondents indicate experiencing emotional barriers, it is evident that the procedure is not only physically demanding, but psychologically challenging for both patients and their partners, impacting relationships, careers, finances, and mental health.

<sup>12</sup> Beyond offering important insights for policy considerations, this aspect of the analysis is intended to honour and acknowledge the willingness of respondents to share their experiences with infertility. While some aspects of these responses may not be tied directly to policy intervention, participants’ views are highlighted to demonstrate the lived experience of those pursuing IVF and other fertility treatments.

*“The lack of success has created shock waves that are being borne out on my physical and emotional health. And with \$500/year in coverage for psychological help, it leaves me paying a few thousand dollars out of pocket (every year, with only monthly visits, if I'm lucky) to get the support I require to deal with the grief.”*

*“I took 3 months paid medical leave after having a psychologist assess me for grief/anxiety after my second miscarriage/before my 3rd retrieval as I couldn't stand the pressure of work anymore.”*

*“It was very stressful and caused depression so going to work was very hard and keeping my work standard up was even harder.”*

The second important, though unanticipated, survey finding is the feeling of abandonment or frustration that respondents feel toward the healthcare system, with many participants noting their medical infertility as being a condition worthy of treatment and public coverage. These viewpoints help illuminate the lived experience of those dealing with infertility and perceptions surrounding the varying levels of IVF coverage provided across Canada.

*“It is such a shame that people who are born with reproductive issues even have to pay to try and conceive when it is in no question a choice they made. The government funds a long list of all different medical issues and this should be 1 of them.”*

*“There are countries that see the value in supporting families to grow and I wonder what it is about Canada that makes the system so hostile to people who need assistance, especially in the context of growing inequality, the necessity to work more and harder for less, and growing isolation in our culture. There is still such public hostility towards people (many of us ciswomen) who "can't afford" to have children.”*

*“I know I am not alone as a woman who waited to have a career, financial stability, a home, a marriage and a psychologically sound/wise mind before trying to bring a child into this world. I think it's ridiculous that other provinces in Canada, and other countries (Europe) [publicly] fund women through IVF and IUI treatment. BC is in the dark ages.”*

*“Infertility and inability to carry a child to full term should be treated as a condition which gets coverage. If we would treat someone’s defective heart, why would we not treat reproductive organs? Please make IVF accessible.”*

*“...we are even more disappointed with the provincial government for not providing financial support (Ontario offers one free IVF procedure). Oftentimes people seeking IVF have medical conditions preventing natural conception and we think that it should be covered under our healthcare just like many other medical treatments.”*

*“This is an excruciating journey and the financial burden that goes along with it is distressing. No one would choose this path but for a deep desire to conceive. I strongly believe financial assistance should be available.”*

*“Infertility is not choice. Fertility treatments are not elective, they are necessary. People do not choose to be infertile. Conditions that make individuals infertile should be considered as a medical issue and full coverage should be offered through health care (msp) and/or medical insurance.”*

## 6.4. Summary of Survey Findings and Policy Implications

The primary methodology of this study highlights the lived experience of those pursuing IVF while also identifying a number of important considerations for policy-makers, such as barriers to access, embryo transfer patterns, and demographic trends. First, survey data points to the need to address the challenges faced by those British Columbians pursuing fertility treatment, particularly the financial barriers that limit access to IVF. Second, the regional variation and challenges faced by those respondents living outside of areas with IVF clinics demonstrate geographic inequities across the Province. Finally, the relatively high MBR among respondents and the prevalence of MET indicates that, as the literature suggests, this is an area of concern for both individual health outcomes and the broader public healthcare system. Together, these findings and the more nuanced results of the survey help to inform the approach used in Chapter 7's jurisdictional scan, with a particular focus on those jurisdictions with existing public funding models.

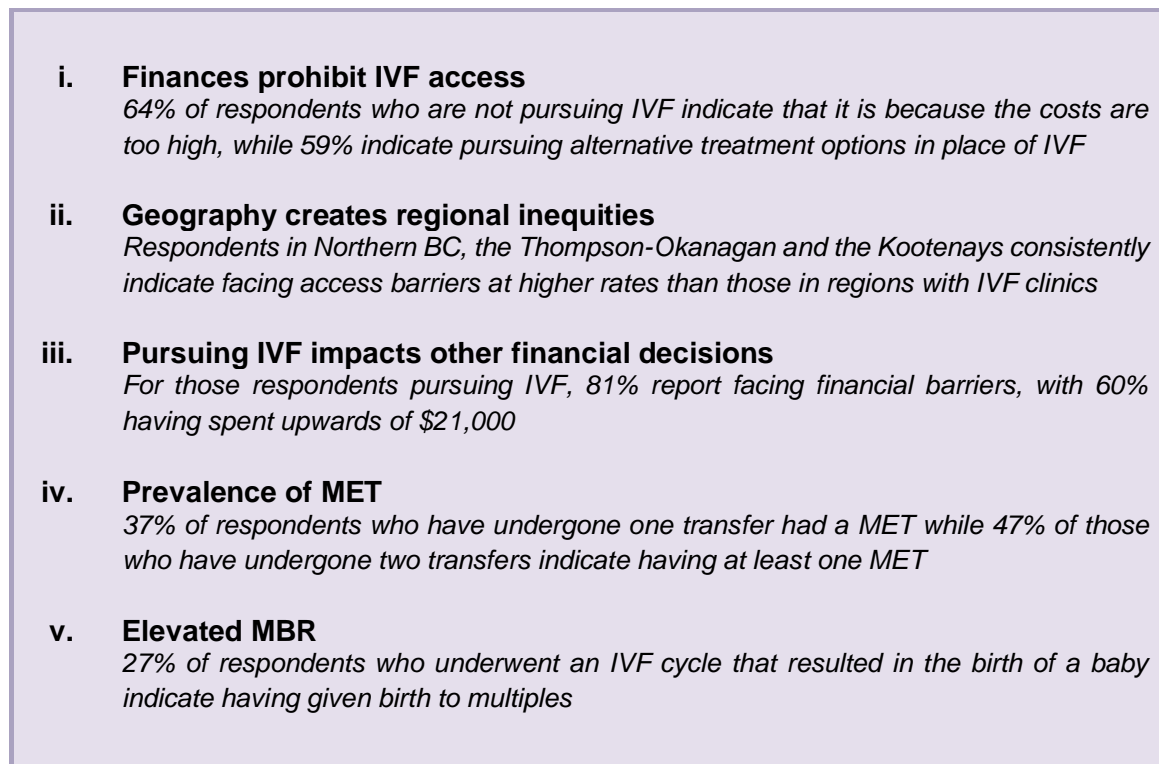


Figure 6.4. Summary of survey findings

## Chapter 7.

### Policy Review – Jurisdictional Scan

A jurisdictional scan is used to identify policy interventions that foster more equitable access to IVF while promoting safer outcomes as they related to a reduced MBR. Given the overwhelming survey responses surrounding financial barriers and the prevalence of publicly funded IVF in other Canadian provinces, the scan assesses different public funding models. Jurisdictions are identified based on the following criteria: Variation in public funding models and payment mechanisms, and the availability of program data, including MBR and impacts on healthcare costs. As a result, Ontario, Quebec, New Brunswick, Denmark, New Zealand and Australia are reviewed with the goal of identifying possible policy interventions that may be amenable to addressing the public health and equity challenges facing BC.<sup>13</sup> A summary of findings for each of the jurisdictions is displayed below in Table 7.

**Table 7. Summary of jurisdictional scan**

|  | Ontario  | Quebec                              | New Brunswick                               | New Zealand                        | Australia                     | Denmark  |
|--|--|-------------------------------------|---|------------------------------------|-------------------------------|--|
| Eligibility<br>(M)edical<br>(C)ircumstantial | All residents under 43 (M+C)                   | Residents without children (M+C)    | Residents with documented infertility (M)   | Points system and diagnosis (M)    | Medical infertility (M)       | All residents under 40 (M+C)                   |
| Embryo Transfer Limit                        | SET<br>MBR: 12.6%                              | SET<br>MBR: 4.4%                    | None<br>MBR: 23.0%                          | SET<br>MBR: 3.8%                   | SET<br>MBR: 3.8%              | SET<br>MBR: 5.0%                               |
| Funding Model                                | 1X fully funded cycle per patient per lifetime | Refundable income-tested tax credit | Special assistance fund 1X grant of \$5,000 | 2X fully funded fertility packages | Capped Medicare reimbursement | 3X fully funded cycles + transfers until birth |
| Annual Budget                                | \$50 million                                   | \$5.2 million                       | \$750,000                                   | Unavailable                        | Unavailable                   | Unavailable                                    |

<sup>13</sup> While some jurisdictions, such as France and Germany, have greater variation in eligibility requirements based on sexual orientation and marital status, only those countries that do not explicitly limit ART access to heterosexual couples are reviewed. Given BC's sociopolitical landscape and the protected rights of the LGBTQ2+ community, funding options that exclude patients on the basis of sexual orientation and/or marital status were deemed unfit for review. However, jurisdictions that limit coverage to those with medical infertility are included insofar as they do not bar single individuals or same-sex couples experiencing medical infertility from accessing treatment.

## **7.1. Ontario**

Ontario's public funding for IVF is considered one of the most comprehensive and accessible models among jurisdictions offering coverage for ART. Established in December 2015, the Ontario Fertility Program provides coverage for one full IVF cycle per patient, per lifetime, in addition to coverage for IUI and medically necessary fertility preservation. As part of the program's rollout, eligible fertility services were removed from the provincial Health Insurance Act as insured services and were made available via direct public funding of participating clinics (Ontario Health Services Branch, 2015). While there are currently 50 publicly funded fertility clinics participating in the program, long waitlists have been identified as a barrier, given the popularity and demand for the program. This is due in part to the program's annual funding cap of \$50 million for a fixed number of treatments, resulting in a limited number of cycles available to eligible patients every year.

In terms of eligibility, the program is available to all Ontario residents under the age of 43 with a valid healthcare card. Funded services are accessible for those experiencing both medical and circumstantial infertility, with no restrictions on sexual orientation, gender, and family status (Ontario Fertility Program, 2019). Additionally, the program is designed to promote singleton births, with a funded cycle including all "one-at-a-time" transfers of viable fresh and frozen embryos. The program has also implemented a SET limit, though exceptions may be made for medical reasons when deemed appropriate by the patient's healthcare provider (Ontario Fertility Program, 2019). Following the implementation of this SET policy, Ontario's baby level IVF-MBR dropped from 22.5% in 2015 to 12.6% in 2016 (CARTR Plus, 2017).

## **7.2. Quebec**

In 2010, Quebec introduced North America's first publicly funded IVF program through its provincial health insurance plan. While the program provided full coverage for IVF cycles and mandated a SET policy, the lack of limitations on patient age and number of cycles resulted in public demand and program costs that far exceeded what the government had predicted (Shaulov et al., 2015). In response, the Quebec government ended the program in 2015, replacing it with a refundable tax credit model with stricter eligibility requirements. The rate of coverage is income and marital status dependent,

with varying rates for single individuals and couples (Appendix C). Couples earning less than \$52,000 a year are granted a rate of 80%, with the rate gradually falling to 20% for those couples earning more than \$125,000. For single individuals, those earning less than \$26,000 receive a rate of 80%, with the rate gradually falling to 20% for those earning more than \$62,000.

Under the current model, Quebec residents without children may claim up to \$20,000 to cover fertility treatment costs, including expenses related to travel, clinical procedures, medications not otherwise covered by insurance, and some psychological assessments (Revenu Québec, 2019). In order for these expenses to be eligible, fertility treatments must have occurred within Quebec, and embryo transfers are limited to SET for women under 37, with a maximum double embryo transfer allowed in some cases for women 37 years of age or over. These SET requirements are in keeping with Quebec's original 2010 funding model, which previously included strict SET requirements that reduced the baby level IVF-MBR from 24% in 2010 to 9.5% in 2013 (Shaulov et al., 2015). As of 2016, Quebec achieved a baby level IVF-MBR of 4.4% compared to 23.7% for the rest of Canada.

### **7.3. New Brunswick**

In an effort to support residents with the costs of fertility treatments, New Brunswick introduced the Special Assistance Fund for Fertility Treatment in 2014, providing residents with one-time grant funding for fertility treatments. Residents with a valid Medicare card who are experiencing medical infertility or "fertility problems," as diagnosed by a physician, can claim up to 50% of eligible incurred costs, up to a maximum of \$5,000 (Government of New Brunswick, 2019). The annual budget of the fund is \$750,000, and on average, it reimburses 105 applicants per year, using approximately 70% of its funding (Government of New Brunswick, 2020).

The fund covers both IUI and IVF procedures as well as related medications, so long as they are not already covered through other provincial or private sector insurance plans. Eligible treatment costs are also limited to those incurred in New Brunswick or those incurred outside of the Province for treatments otherwise unavailable in New Brunswick. Because the fund is a one-time payout, applicants are advised to pursue all



treatments prior to submitting a claim, so patients are therefore required to pay out-of-pocket for treatment initially.

While the fund does not expressly limit eligibility by family composition or sexual orientation, it is only available to those with documented infertility, as diagnosed by a physician, meaning it is limited to those experiencing medical infertility. With the exception of this medical infertility requirement and the residency requirement, the grant funding does not impose any eligibility restrictions related to age, partnership status, or the number of embryos permitted per transfer. As a result of the relatively limited program requirements and CARTR Plus data protection policies, specific information on New Brunswick's MBR is unavailable, though its numbers are included in the CARTR Plus "Rest of Canada" figures, which indicate a treatment level IVF-MBR of 11.1% in 2017 (CARTR Plus, 2019).

## **7.4. New Zealand**

Since the mid-1990s, New Zealand has offered publicly funded ART treatments, including IVF. While New Zealand provides full coverage for fertility treatments, its eligibility requirements limit access to those that meet relatively restrictive criteria. For those patients that qualify for public funding, they are added to clinic waitlists, where they are then eligible for two treatment "packages" consisting of one of the following: One IVF cycle, four IUI cycles, microsurgery of the testes or fallopian tubes, or thaw and transfer cycles using materials from any previous privately funded cycles (National Women's Health, 2019). Publicly funded packages are limited to SET in women younger than 35 as a means to reduce costs related to an elevated MBR, resulting in a treatment level IVF-MBR of 3.8% in 2016 (National Perinatal Epidemiology and Statistics Unit, 2016).

Similar to other publicly funded, elective services in New Zealand, access to IVF and other fertility procedures is based on clinical priority access criteria (CPAC), a scoring system which prioritizes treatment access based on a number of pre-defined health and social criteria (Gillett et al., 2012). Implemented in 2000 to help streamline access across different regions and stabilize funding, CPAC for fertility treatments is intended to identify a person's need for treatment and their ability to benefit (Health Funding Authority, 2001). While there is still some regional variation given the authority

of District Health Boards (DHBs) in shaping eligibility criteria, general scoring is based out of 100, with patients needing a minimum score of 65 in order to receive funding (Fertility New Zealand, 2019). In order to achieve full points in each section, women must be under the age of 40, have a body mass index of less than 32, have not smoked within three months of consultation, and have been trying to conceive for one year with diagnosed infertility and four years with unexplained infertility. Some DHBs also require the male partner to meet a number of health and age-related criteria. Most notably, the criteria require that patients be medically infertile in order to receive funding, meaning that while same-sex couples and single individuals are not excluded from access, they would require a diagnosis of medical infertility in order to be eligible.

## **7.5. Australia**

Australia offers partial coverage for IVF through its national health insurance program, Medicare. Under this model, patients receive a designated reimbursement amount for ART procedures related to medical infertility. Patients pay clinics directly for ART services and may then submit claims as part of their Medicare coverage. The rebates are not income tested and may not be applied to hospital or day-surgery services such as egg retrieval (IVF Australia, 2019). A patient's initial cycle is eligible for a rebate of up to \$3,700, with coverage of up to \$4,250 for all additional cycles once the Medicare maximum has been reached (Victoria Department of Health and Human Services, 2018). These caps on Medicare rebates for fertility treatments were introduced in 2010 to ensure program sustainability (Keane, 2017).

While the Medicare program has no limit on the number of cycles eligible for rebates, eligibility is limited to those experiencing medical infertility. As such, same-sex couples and individuals experiencing circumstantial infertility do not receive coverage for IVF and other ART treatments and must pay out of pocket. It should, however, be noted that eligibility was explicitly limited to heterosexual couples up until the introduction of an equity bill in 2008. Additional eligibility requirements include a national SET policy, with varying age-related allowances for MET. The country's SET policy resulted in a treatment level IVF-MBR of 3.8% in 2016 (National Perinatal Epidemiology and Statistics Unit, 2016).

## **7.6. Denmark**

While almost all European countries offer some type of funding support for ART, Denmark is recognized as having one of the most accessible and robust models, offering complete coverage through its national health plan (Präg and Mills, 2017). Following a cut to public funding in 2010, the government reinstated coverage for ART in 2012, with treatment available to both those experiencing medical infertility and those experiencing circumstantial infertility. ART services are available through both private clinics and public hospitals in Denmark, with public coverage available for the latter. Notably, Denmark is also a popular destination for European women facing access barriers given both the number of clinics in Denmark and the normalization of ART usage by lesbian couples and single women (Mohr and Koch, 2016).

Coverage for public funding is, however, limited to a number of factors, including age, residency, and whether or not a patient already has children. Funding is available through public hospitals to couples experiencing infertility where the woman is younger than 40 years of age, lesbian couples with no child in common, and single individuals. Access was granted to single women and lesbian couples in 2007, prompting ART tourism from those countries where lesbians and single women are not permitted to pursue ART. For women older than 40 years of age, private access is available, though only permissible until the age of 46. Coverage includes up to three cycles of IVF and additional frozen embryo transfers up until the birth of a baby. As of 2015, the country has also implemented a policy aimed at reducing the MBR by recommending SET except in more challenging circumstances, such as where the woman is older than 40 or where at least four transfers have proven unsuccessful. This shift towards SET resulted in a treatment level IVF-MBR of 5.0% in 2016 (Meldrum et al., 2018).

## **7.7. Policy Aspects of the Jurisdictional Scan**

The jurisdictional scan highlights the variation among different public funding models found both in Canada and abroad, and how eligibility rules, embryo transfer limits, and the types of funding models can be adapted to suit the needs of each jurisdiction. As a result, the scan provides insights as to whether any of these models would be amenable to the policy problem facing BC. Specifically, the political, theoretical, clinical, and economic aspects of each policy require careful analysis. As

such, a feasibility assessment in Chapter 8 is used to determine what provincial considerations are unique to BC and what types of evaluation criteria should be established to assess policy options.

## Chapter 8.

### Feasibility Assessment – Expert Interviews

To assess the feasibility of implementing public funding models found in other jurisdictions in BC, six clinical and academic experts are consulted via semi-structured interviews. The participants' varied backgrounds ensure input from the following areas: clinical, academic, economic, theoretical, political, and regulatory (Figure 8). These interviews help to identify not only broader considerations for policy design and implementation but also to confirm some of the clinical aspects of the survey results. Throughout the interviews, three overarching themes emerge, as discussed in the following subchapters: infertility as a medical condition and the associated societal and economic objectives, demographic and equity observations, and considerations for public funding related to access policies and regulatory impacts.



Figure 8. Interview perspectives and components

## **8.1. Infertility as a Medical Condition – Societal and Economic Objectives**

### ***Consistent Access Across Provinces***

When discussing the accessibility of IVF in BC and the possibility of public funding, a common clinical viewpoint is that of infertility as a medical condition, one that has treatment options available, including, among other ART, IVF. Some clinical experts note that as a medical condition, the general population should have publicly available access to these treatments. Some also highlight the fact that with other provinces offering public coverage, BC residents are provided with a different level of healthcare compared to other Canadians. This point is also raised within political and academic considerations, noting that varying levels of care are not only problematic but that there are broader societal implications.

### ***Economic Rationales***

Some interviewees also highlight the significant economic implications of access to IVF, both in terms of improving fertility rates and in terms of reducing the healthcare costs associated with multiple births. First, it is noted that as age-related infertility is associated with women increasingly delaying childbirth to pursue higher education and greater labour force participation, one could argue that those older women most in need of IVF have actually contributed significantly to society and the economy. As such, to provide coverage for their subsequent infertility challenges is a matter of compensating these women for their economic contributions and a means to improve fertility rates. Second, given the high costs associated with multiple births, interviewees note that public funding models that promote SET may contribute to reduced healthcare costs to governments. Interestingly, a few participants also highlight that this cost aspect, if made known to the public, might help to make public funding more politically feasible by way of it being seen as a means to reduce healthcare costs in the long-term.

## **8.2. Options to Reduce Barriers – Demographic and Equity Observations**

The interviews also include discussions related to barriers to access and how they impact patients differently, shedding light on what criteria should be considered when assessing the fairness of policy options.

### ***Costs***

From an equity perspective, interview participants indicate that costs are generally the most restrictive barrier, supporting results obtained through the survey. They note that costs can prohibit those needing IVF from accessing it and that for those who can afford the treatment, it typically puts a financial strain on couples and may limit other spending decisions, something that is also evidenced in the survey results.

### ***Geography***

Additional barriers identified throughout the interviews include geography and scheduling issues. Clinicians note that while fertility services have expanded in areas like Northern BC and the Okanagan to include monitoring and consultation appointments, the actual IVF procedures are limited to Lower Mainland and Vancouver Island clinics. Patients outside of these regions are required to travel to those areas with full clinics, which adds additional costs and scheduling barriers to the process. Some clinicians also note that, given the lab infrastructure required, developing complete IVF services in the Okanagan and Northern BC remains unlikely, and instead highlight the need to facilitate travel to those areas offering the procedure.

### ***Demographics***

Finally, when discussing issues of equity and demographics, some clinicians and academics remark that the survey findings mirrored their experiences and expectations, with White, heterosexual couples making up the majority of those seeking treatment. Related to this, the interview results also highlight an unanticipated finding in Northern BC, with clinicians noting underrepresentation of Indigenous women among those accessing IVF. It was reported that despite Indigenous peoples accounting for a substantial portion of the population in Northern BC and a large part of their obstetrics and gynaecology practice, some clinicians had never had any of their Indigenous

patients pursue IVF. While this qualitative information includes the caveat that clinicians may not know if a patient identifies as Indigenous, it is useful in understanding some of the demographic patterns that emerge in the field of ART; an area, much like other healthcare fields, that sees increasingly stratified levels of care available to Indigenous women (McLeod, 2017).

### **8.3. Considerations for Public Funding – Access Policies and Regulatory Impacts**

Throughout the interviews, participants identify and discuss key considerations for publicly funded IVF, sometimes explicitly and sometimes in the context of clinical challenges associated with the private structure currently in place in BC.

#### ***Multiple Births Rate***

First, respondents highlight the role that other provinces' public funding models have played in reducing their MBR. Noting that reducing the MBR was a specific goal of the policy in Ontario, not a secondary outcome, some participants state the need to implement a SET policy as part of any funding model. One participant also mentions the fact that because of the competitive landscape associated with for-profit clinics in BC, patients may be more likely to press for a MET, knowing that if their clinic says "no," another clinic will likely oblige. Though clinics are actively pursuing healthy singleton births and working to educate patients on the risks associated with multiples, patient preferences, often influenced by the costs of the procedure, may result in a greater occurrence of MET than is desirable from a public healthcare perspective. One participant also notes that the need for a SET policy actually goes beyond public funding models and that it should be implemented regardless, either through regulatory or best practice guidelines. Counter to the calls for a SET policy, other participants highlight the need for clinical discretion, maintaining that doctors should be doing SET because it is "good medicine," not because they have to.



### ***Eligibility and Prioritization***

Second, respondents discuss eligibility requirements and how to approach these considerations in BC. Some note that ensuring broad access with limited eligibility rules should be a priority. Others also make the point that eligibility considerations should not extend to clinical prioritization, explaining that there is no ethical way for clinics to allocate funded cycles based on age, duration of infertility, diagnosis, likelihood of pregnancy, etc. While discussing eligibility and what this might mean for a means-tested funding mechanism, one participant also argues that if treatments like IVF should be publicly funded on the basis that infertility is a medical condition, then attaching funding eligibility or rates of coverage to income would discredit this original justification. While this view is not echoed by all participants, it highlights important questions regarding implementation and how to address varying levels of equity.

### ***Regulations and Reporting***

Lastly, the interviews indicate that analysis should also consider the regulatory impacts of implementing publicly funded IVF. Currently, clinical reporting to CARTR Plus is optional, though most clinics participate voluntarily. Some respondents did, however, note that public funding may bring about clearer reporting requirements and create more transparency for patients when reviewing a clinic's outcomes. Additionally, a few of the experts indicate that the provincial funding and subsequent reporting generated in Quebec and Ontario has provided governments with useful healthcare data, though this could also be achieved through other regulatory mechanisms. These reflections, in combination with other interview themes and findings of the original survey, help to inform critical considerations when reviewing potential policy options and the necessary evaluative criteria, as discussed in Chapter 10.

## Chapter 9.

### Policy Aspects and Options

This Chapter presents policy options for increasing equitable access to IVF in BC with the associated goal of reducing the IVF-MBR. Following initial analysis of the literature, survey results, jurisdictional scan, and expert interviews, it follows that options to address this study's policy problem should consider three distinct objectives and aspects: societal (i.e., fertility eligibility); clinical (i.e., embryo transfer limits); and economic (i.e., types of funding models). To ensure each policy is examined systematically with the same implementation considerations (i.e., so as not to unfairly favour one funding model based on the fact that it is attached to more effective eligibility or embryo transfer policies), this Chapter presents three distinct policy aspects, each with two to three unique options for consideration (Figure 9). Further analysis is used to match the most effective eligibility rules and embryo transfer limits with the funding model that best addresses the evaluative criteria laid out in Chapter 10.

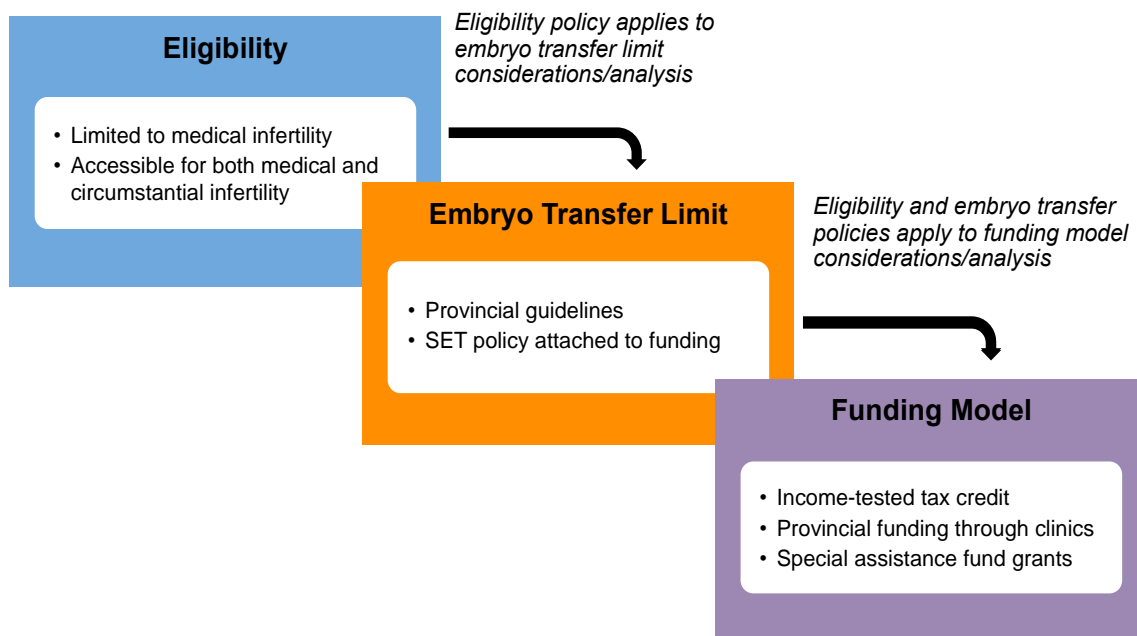


Figure 9. Analysis pathway

## **9.1. Policy Aspect 1 – Fertility Eligibility Options**

The following sections present two options for the types of infertility that would be eligible under any public funding model. The options are explicitly limited to infertility, with considerations like age and residency further examined in the Chapter 11 analysis.

### **9.1.1. Eligibility Option 1 – Limited to Medical Infertility**

This option would limit public funding for IVF, whether it be through tax credits, grant funding, or full coverage for cycles, to those BC residents experiencing medical infertility. Similar in nature to the models in New Brunswick, New Zealand, and Australia, this would provide coverage for those diagnosed with medical infertility, but not those experiencing circumstantial infertility, such as single individuals or same-sex couples. It would, however, not explicitly bar single individuals or same-sex couples from accessing the funding. In practice, this would mean that a single person with diagnosed medical infertility could access treatment, just as a lesbian couple wherein one or both partners have medical infertility would be eligible for the funding.

### **9.1.2. Option 2 – Includes Medical and Circumstantial Infertility**

This option would be in keeping with Ontario and Quebec's eligibility considerations and provides coverage to those experiencing medical and/or circumstantial infertility. Single individuals and same-sex couples experiencing circumstantial infertility would be eligible for funding, with no restrictions on sexual orientation, gender, or family composition. This option would, however, incorporate clinical discretion into treatment options, with a person's fertility practitioners considering the best course of treatment, be it IUI or IVF, ensuring that the most appropriate treatment is pursued given the type of infertility.

## **9.2. Policy Aspect 2 – Embryo Transfer Limit Options**

The following options are specific to what (if any) type of embryo transfer limit would be applied to a funding model. Two options are presented for consideration, as modelled after existing policy structures.

### **9.2.1. Embryo Limit Option 1 – Public funding limited to SET**

This option would impose a SET limit for procedures covered under any public funding model. Similar to the requirements attached to funding in Quebec, publicly covered treatments would be limited to SET for women under 37, with a maximum double embryo transfer allowed in cases for women 37 years of age or over.<sup>14</sup> For this option, patients are not necessarily limited to one transfer, but rather that all transfers associated with publicly funded IVF cycles, including those via tax credit, grant funding or clinical coverage, must be SET. Clinics would have some discretion to opt for a double-embryo transfer for women under 37 in exceptional circumstances and where medically justified, though a reporting mechanism would be included to account for the frequency of a clinic's MET usage. Cycles undertaken outside of the public system (i.e., via private clinic or without the intent of receiving a tax credit or grant) would not be limited to this policy, meaning that private access would still allow for MET, as is the current practice.

### **9.2.2. Embryo Limit Option 2 – Provincial guidelines for all IVF cycles**

The second option related to embryo transfer limits under a public funding model would take the form of provincial guidelines issued to all private and public clinics offering IVF. This option would be consistent with the 2013 guidelines introduced by the Canadian Fertility & Andrology Society and aim to reduce all publicly and privately funded IVF cycles to SET when medically appropriate. Guidelines would be established by BC's Guidelines and Protocols and Advisory Committee (GPAC), a joint committee that includes the BC Ministry of Health and Doctors of BC (Guidelines and Protocols Advisory Committee Handbook, 2017). The development of these guidelines would include healthcare practitioners, specialists, and bioethicists, and likely result in guidelines similar to the SET requirements in Quebec (i.e., SET for women under 37 with a maximum double embryo transfer allowed in some cases for women 37 years of age or over). In keeping with other GPAC guidelines, adhering to suggested transfer practices would not be mandatory, and in this case, they would apply equally to both

<sup>14</sup> It should be noted that the principal investigator is not a medical professional or clinical expert. The proposed SET age limits are modelled after the policies in Quebec, with the assumption that in practice, the Province would work with fertility specialists and bioethicists to establish exact age limits that are in keeping with technological advancements and patient safety.

privately funded and publicly funded IVF cycles. As such, this option would not impose a strict embryo transfer limit on IVF cycles covered by any public funding mechanisms, such as grants, tax credits or provincially funded cycles.

### 9.3. Policy Aspect 3 – Funding Model Options

The following three options are possible mechanisms for providing, in some way or another, publicly funded access to IVF. The three models, mirroring those that exist in other Canadian provinces, offer a range of coverage, accessibility, and complexity, areas further analyzed in Chapter 11.

#### 9.3.1. Funding Model Option 1 – BC Fertility Treatment Tax Credit: Income-tested tax credit

This option is an income-tested tax credit for fertility treatments. BC residents would be able to claim a maximum of \$20,000 in expenses and be eligible for a refundable provincial tax credit of up to 80%. This progressive tax assistance model would be similar to the structure of Quebec’s, with rates of coverage dependent on income and marital status (Table 9.3.1). Couples earning less than \$52,000 a year are granted a rate of 80%, with the sliding rate gradually falling to 20% for those couples earning more than \$125,000. For single individuals, those earning less than \$20,000 would receive a rate of 80%, with the rate gradually falling to 20% for those earning more than \$64,000.

**Table 9.3.1. BC fertility treatment tax credit rates**

|         |            | Applicable rate of progressive tax credit on claims up to a maximum of \$20,000 |                       |                       |                       |             |     |
|---------|------------|---|-----------------------|-----------------------|-----------------------|-------------|-----|
|         |            | 80%   | 68%                   | 56%                   | 44%                   | 32%         | 20% |
|         |            | Annual household income   |                       |                       |                       |             |     |
| Couples | ≤ \$52,000 | \$52,001 - \$70,000   | \$70,001 - \$88,000   | \$88,001 - \$106,000  | \$106,001 - \$125,000 | > \$125,000 |     |
| Single  | ≤ \$20,000 | \$ 20,001 - \$ 31,000   | \$ 31,001 - \$ 42,000 | \$ 42,001 - \$ 53,000 | \$ 53,001 - \$ 64,000 | > \$64,000  |     |

Eligible expenses under this model would include the costs of treatment (i.e., IUI and/or IVF, including ICSI) incurred in BC, travel and accommodation costs, medications not covered by the patient's healthcare plan, and any associated counselling services with a registered clinical counsellor in BC. For this option, patients would pay for all treatments and associated costs out of pocket, with any reimbursement occurring the following tax year. Given that the funding is distributed or allocated directly to patients, clinical involvement in implementing the model would be limited, except for providing patients with receipts and any required documentation of past treatment and diagnoses. For example, if this model were available only to those with medical infertility, clinics would be required to provide documentation of a diagnosis of infertility.

### **9.3.2. Funding Model Option 2 – BC Fertility Program: Provincial funding through clinics**

This option would provide the most comprehensive funding coverage for BC residents undergoing fertility treatment. Under this model, the Province, through a newly established BC Fertility Program (BCFP), would fund one IVF cycle per patient, per lifetime, in addition to coverage for IUI and medically necessary fertility preservation. Similar to Ontario's model, clinics would be given an annual budget to be used for providing treatment to those BC residents eligible under the BCFP. Clinics would, however, continue providing privately funded IVF and other services as they see fit.

Access to the BCFP would be available to BC residents under 43 and cover unlimited IUI cycles, one round of medically necessary fertility preservation, and up to one IVF cycle with a predetermined maximum of transfers, so long as the transfers uphold any embryo limit policies put in place by the Province. Under this model, patients would not pay out of pocket for treatment, as this would be covered through the clinic's BCFP budget, though expenses for travel, counselling services or medications would not be covered.

Given the perceived ethical issues in prioritizing treatment based on age, duration of infertility, or income, participating BCFP clinics would adhere to a provincial first come, first served waitlist approach for publicly funded cycles. This differentiates the model from Ontario's, where clinics determine patient prioritization and how to manage waitlists, and from New Zealand's CPAC model that prioritizes patient access based on

health and social indicators. BC clinics, would, however, continue to administer treatment according to best practices and clinical standards (i.e., not providing IVF when the clinician determines that IUI is the best course of action or when the clinician determines that a patient may not be a suitable candidate for treatment).

### **9.3.3. Funding Model Option 3 – BC Infertility Grant: Special assistant fund**

This option incorporates aspects of New Brunswick’s infertility grant, which is administered through a special assistance fund. Under a BC specific model, eligible patients would receive up to \$5,000 to cover the costs of fertility treatments. To access the grant, patients would submit documentation of costs for reimbursement, meaning that they would initially pay out of pocket for treatment. This model would not limit eligibility by age, instead deferring to clinics to uphold best practices. It would, however, be limited to those treatments that are in keeping with any embryo transfer limits that the Province has in place, and it would not cover the costs of treatments undertaken outside of BC.

The grant, which would not be income tested, would cover IUI, IVF and fertility preservation costs incurred in BC, as well as medications not otherwise covered by a patient’s insurance plan, travel and accommodation costs, and any counselling services by a registered clinical counsellor. The one-time grant would be administered through a special assistance fund overseen by the Province, with applications reviewed on a rolling basis until the annual budget is depleted. Application forms and processing protocols would be modelled after New Brunswick’s approach (Appendix D).

## Chapter 10.

### Evaluation Criteria

Figure 10 highlights key considerations, as identified throughout the survey and expert interview results, for establishing evaluation criteria for each of the three policy aspects. Sections 10.1, 10.2, and 10.3 then outline the evaluation criteria used to assess and compare policy options for each of the three policy aspects. Policy options are evaluated against these specific criteria in Chapter 11 in order to identify their anticipated outcomes and assess their strengths, weaknesses, and trade-offs.

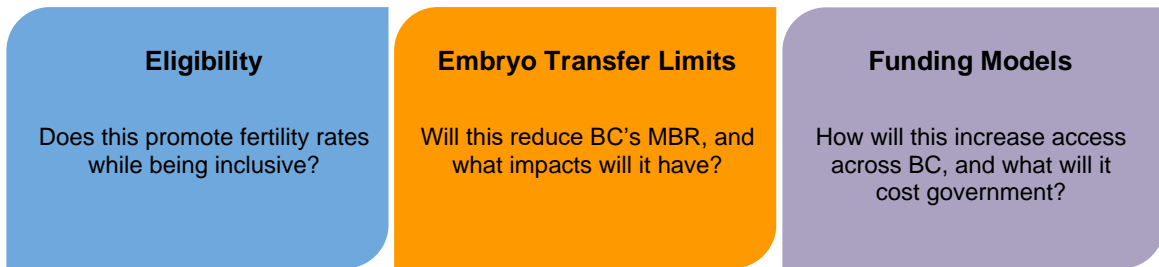


Figure 10. Key considerations for evaluation criteria



## 10.1. Criteria for Policy Aspect 1 – Fertility Eligibility Options

**Table 10.1. Evaluation criteria and measures for eligibility options**

| Objective                            | Criteria                       | Measure   | Data Source                        | Index <sup>15</sup><br>1 = undesirable<br>2 = neutral<br>3 = desirable   |
|--------------------------------------|--------------------------------|---|------------------------------------|--|
| <b><i>Social Equity</i></b>          | Inclusion of LGBTQ2+ residents | Degree to which LGBTQ2+ patients can access the funding model   | Literature review and interviews   | 1 - Limits on access<br>2 - Potential limits on access<br>3 - No limits on access  |
| <b><i>Development</i></b>            | Fertility promotion            | Projected impact on BC fertility rates                          | Literature and jurisdictional scan | 1 - Unlikely to promote fertility rates<br>2 - Some impact on fertility rates<br>3 - Substantial impact on fertility rates |
| <b><i>Stakeholder Acceptance</i></b> | Public support                 | Degree to which the BC public supports the eligibility criteria | Literature and comparable survey   | 1 - Public opposition/backlash<br>2 - Neutral support/opposition<br>3 - Public support/acceptability                       |

<sup>15</sup> Indexing of one to three is not empirical but instead used to give some sense of scoring. As such, a score of three does not indicate that one policy is three times better than that which receives a score of one, or that a score of three in “costs” is equivalent to a three in “social equity.”

### **10.1.1. Social Equity**

The social equity criterion is intended to capture the extent to which the eligibility policy either excludes or includes LGBTQ2+ patients, whether they are experiencing circumstantial infertility and/or medical infertility. This criterion is an important policy consideration given the barriers to reproduction that members of the LGBTQ2+ community face and because it highlights the degree to which the policy is accessible to marginalized groups, including same-sex couples pursuing ART.

### **10.1.2. Development**

As highlighted in Chapter 2, BC's increases in infertility, declining fertility rates, and increasingly older first-time mothers suggest that the Province may look to prioritize policies that promote fertility rates. As such, the development criterion is intended to measure whether or not an eligibility policy is likely to promote or increase fertility by way of making ART more accessible.

### **10.1.3. Stakeholder Acceptance**

Public perceptions are an important consideration when examining eligibility policies for publicly funded ART treatment, especially as they relate to political feasibility. As such, this criterion assesses the degree to which the public is likely to support or oppose different eligibility constraints related to medical and circumstantial infertility.

## 10.2. Criteria for Policy Aspect 2 – Embryo Transfer Limit Options

Table 10.2. Evaluation criteria and measures for embryo transfer limit options

| Objective                             | Criteria                                       | Measure   | Data Source  | Index<br>1 = undesirable<br>2 = neutral<br>3 = desirable  |
|---------------------------------------|--|---|--|---|
| <b>Effectiveness and Health</b>       | Reduced occurrence of multiple births          | Forecasted change in IVF-MBR  | Jurisdictional scan, CARTR reports, and interviews | 1 - Increase to IVF-MBR<br>2 - No change to IVF-MBR<br>3 - Reduction to IVF-MBR                                 |
| <b>Cost</b>                           | Reduced healthcare costs for government        | Projected change in healthcare costs associated with MBR                          | Literature, jurisdictional scan, and CIHI          | 1 - Increased costs to government<br>2 - Unchanged costs to government<br>3 - Decreased costs to government     |
| <b>Freedom</b>                        | Patient autonomy                               | Degree to which patients can exercise choice in the number of embryos transferred | Literature and interviews                          | 1 - Significant infringement on choice<br>2 - Minimal infringement on choice<br>3 - No infringement on choice   |
| <b>Implementation and Enforcement</b> | Ease of implementation and clinical compliance | Degree to which clinics accept policies, and their likeliness to comply           | Literature and interviews                          | 1 - Pushback and limited compliance<br>2 - Acceptance and some compliance<br>3 - Acceptance and full compliance |

### **10.2.1. Effectiveness and Health**

As discussed throughout this study, the elevated MBR associated with IVF presents both patient risks as well as high costs to the broader healthcare system. Given the results of the literature review, jurisdictional scan, and expert interviews, embryo transfer policies are assessed with regard to how effective they are in reducing the MBR (i.e., promoting the births of healthy singletons). This is measured by forecasting potential impacts to the MBR, extrapolating from the results of similar policies found in other provinces and/or countries.

### **10.2.2. Cost**

The cost criterion used to assess embryo transfer policies is intended to capture the extent to which a specific policy may impact healthcare spending. By looking beyond the impacts to the MBR and examining forecasted changes to government costs, a more robust analysis of the option is garnered. This criterion looks to the impacts of similar policies in other jurisdictions and BC's current healthcare spending to assess what, if any, effect a policy may have on decreasing annual NICU costs associated with multiple births.

### **10.2.3. Freedom**

Patients' freedom of choice and autonomy with regard to healthcare is an important consideration when reviewing policies that may limit the number of embryos a patient can have transferred. Health policy must be conscious of the extent to which restrictions and best practices infringe upon patient choice and preferences while accounting for adverse health risks and clinical expertise. As such, this criterion is intended to highlight the patient experience and ensure that impacts on patient autonomy are accounted for when analyzing potential embryo transfer limits. This is not to say that patient preference should outweigh clinical expertise or best practices, but rather that policymakers should be aware of the actual and perceived impacts on freedom.

#### **10.2.4. Implementation and Enforcement**

Given the small number of clinics providing IVF in BC and the concentration of medical expertise with regard to ART, policymakers should be mindful of clinical acceptability and impacts, as well as welcoming of input when implementing any guidelines and/or embryo transfer limits. As such, this criterion examines the degree to which clinics in BC are likely to accept any kind of embryo transfer policies and the likelihood of compliance. Clinical expertise is critical to establishing any limits or guidelines for embryo transfer policies, as is clinical acceptance. Closely linked to acceptance or support for these policy options is enforcement and the extent to which clinics will comply with any provincial limits on embryo transfers.

### 10.3. Criteria for Policy Aspect 3 – Funding Model Options

Table 10.3. Evaluation criteria and measures for funding model options

| Objective                        | Criteria                                   | Measure  | Data Source                        | Index<br>1 = undesirable<br>2 = neutral<br>3 = desirable  |
|----------------------------------|--|--|------------------------------------|---|
| <b>Cost</b>                      | Costs to government and certainty of costs | Forecasted costs associated with the funding model/program and degree to which government can set the budget | Literature and jurisdictional scan | 1 - High costs & low certainty<br>2 - Medium costs & medium certainty<br>3 - Low costs & high certainty   |
| <b>Income Equity</b>             | Progressive equity                         | Degree to which the model increases access for those low-income earners least able to afford treatment       | Literature, survey, and interviews | 1 - Regressive impacts for income<br>2 - Neutral impacts for income<br>3 - Progressive impacts for income |
| <b>Regional Equity</b>           | Geographic equity                          | Degree to which the model increases access for those residents outside of cities with IVF clinics            | Survey and interviews              | 1 - Increased geographic barriers<br>2 - Unchanged geographic barriers<br>3 - Reduced geographic barriers |
| <b>Administrative Complexity</b> | Ease of implementation and maintenance     | Required changes to existing healthcare funding mechanisms and required inputs                               | Jurisdictional scan and interviews | 1 - High complexity<br>2 - Medium complexity<br>3 - Low complexity  |

### **10.3.1. Cost**

Critical to assessing any public funding for ART is the cost the model poses to government, as measured by annual program costs. Given the multitude of competing healthcare priorities and limited spending available for services, program costs are an essential consideration when examining the feasibility and impacts of either a tax credit, special assistance fund, or provincial fertility program. This criterion is intended to project annual costs to the BC government when the model is used at full capacity while also accounting for the degree to which government can set a budget for the program ex-ante. This component is vital, given the risks associated with models that see reimbursement applications after the fact (i.e., tax credits) versus those with set funding (i.e., special assistance funds and funded cycle programs).

### **10.3.2. Income Equity**

Given the access barriers identified throughout the survey and interview results, equity considerations should look beyond general fairness and examine the extent to which any proposed funding model is progressive in nature. This is to say that considerations should include whether or not a model increases access for low(er)-income BC residents. Additionally, this should include considering whether patients would be required to pay out of pocket for treatment (i.e., a reimbursement model), which may prove more challenging for low(er)-income patients, or whether costs are initially covered (i.e., clinic coverage or pre-treatment funding).

### **10.3.3. Regional Equity**

This criterion is intended to account for the regional barriers that exist in BC and assess how a funding model would support those residents living outside IVF treatment centres in the Lower Mainland or Vancouver Island. This is measured in terms of whether or not costs associated with geographic barriers, like travel and accommodation expenses, would be accounted for in funding arrangements.

#### **10.3.4. Administrative Complexity**

The complexity of implementing any of the proposed funding models is critical in determining how best to address the policy problem at hand. Complexity challenges include the number of stakeholders or agencies required, the time needed to implement the funding model, and the extent to which changes would be required across ministries, health authorities, and clinics. This criterion is intended to capture the administrative complexity of each funding model, measured by the required number of changes to existing funding programs and mechanisms and the number of additional administrative and personnel inputs needed.



# Chapter 11.

## Policy Analysis

The following Chapter analyzes each of the options within the three policy aspects, according to the corresponding evaluation criteria established in Chapter 10. The analyses are informed by the study’s literature review, jurisdictional scan, survey results and feasibility assessment.

Following the analysis of eligibility options (section 11.1), the recommended policy option is carried forward and applied to the analysis of embryo transfer limit policies (section 11.2). The recommendations stemming from these analyses are finally applied to the assessment of each funding model (section 11.3). As established in Chapter 9, this is to ensure that each policy is examined systematically with the same implementation considerations, so as not to unfairly favour one funding model based on the fact that it is attached to more effective eligibility constraints or embryo transfer policies (Figure 11).

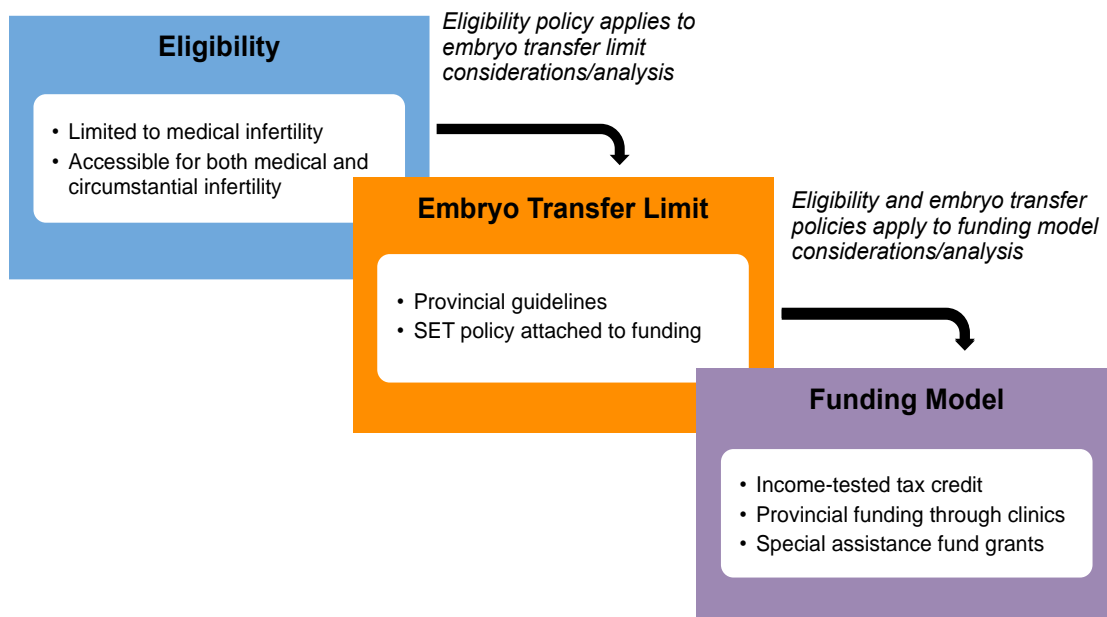


Figure 11. Analysis pathway

## 11.1. Analysis of Policy Aspect 1 – Fertility Eligibility Options

The following section analyzes the two eligibility options described in Chapter 9; eligibility limited to medical infertility and eligibility open to both circumstantial and medical infertility.

**Table 11.1. Summary of evaluation criteria for eligibility options**

| Criteria   |   |   |
|--|---|---|
| <b>Social Equity</b><br>Inclusion of LGBTQ2+ residents | <b>Development</b><br>Fertility promotion | <b>Stakeholder Acceptance</b><br>Public support |

### 11.1.1. Eligibility Option 1 - Limited to medical infertility

With regard to social equity, this option has the potential to limit access to those LGBTQ2+ patients experiencing circumstantial infertility. While it would not explicitly bar them from accessing publicly funded treatments, it would effectively limit them by way of their sexual orientation and/or partnership status. It could also be argued that by limiting access to medical infertility, policymakers are implying that circumstantial infertility is choice-based, rather than a result of one’s sexual orientation or partnership status.

In terms of development, this option lends itself to promoting fertility rates by way of making ART more accessible to those experiencing medical infertility sooner than if they had to cover all expenses independently. By making public funding available to those with medical infertility, patients may pursue the most effective, but likely more expensive treatment, more immediately, thereby increasing their chances of successfully conceiving in the short term (Connolly et al., 2010). Additionally, by supporting medically infertile patients in accessing treatment at the outset of their diagnosis, compounding age-related infertility impacts are lessened.

Finally, when considering stakeholder acceptance, this option is likely to garner public support because it is tied to medical infertility. A recent survey of more than 6,000 Europeans found that over 90% of respondents support publicly funding IVF, with a majority indicating that treatment specifically for medical infertility should be a priority (Fauser et al., 2019). However, the policy may be seen as non-inclusive and not in

keeping with the Province's progressive sociopolitical landscape, resulting in pushback from those who see the eligibility limits as discriminatory. This is not to say that the projected opposition is against the treatment of medical infertility but rather the restrictions it places on circumstantial infertility.

### **11.1.2. Eligibility Option 2 - Medical and circumstantial infertility**

In terms of social equity, this option is likely to have a positive impact, making public funding available to LGBTQ2+ individuals based on circumstantial infertility associated with sexual orientation and/or partnership status. This would signal equity among types of infertility and legitimize the reproductive challenges associated with circumstantial infertility.

When considering development, this option is likely to have a positive, and potentially substantial, impact on fertility rates in BC, as was the case when Quebec introduced publicly funded IVF (Shaulov et al., 2015). First, as with option 1, patients may pursue the most effective, but likely more expensive treatment, more immediately, thereby increasing their chances of conceiving in the short term. Second, by providing same-sex couples and single individuals access to a publicly funded IVF model, the Province would also be facilitating treatment for those most likely to conceive (i.e., those not diagnosed with medical infertility) with limited intervention (such as IUI for example).

Lastly, with regard to stakeholder acceptance, this option presents two potential positions among the public. First, the notion of equity is likely to be well received, with BC supportive of inclusive policy. As mirrored in the 2019 survey of Europeans, 64% support access for same-sex female couples, with 61% supporting access for single women (Fauser et al.). Second, though, is the possibility that some residents may feel that funding should be limited solely to medical infertility. This is based on the Fauser et al. survey results showing that medical infertility receives greater levels of support than does circumstantial infertility. However, given BC's progressive sociopolitical landscape, pushback from those against funding circumstantial infertility is likely to be outweighed by those that support inclusive policy.<sup>16</sup>

<sup>16</sup> A 2019 survey of Canadians' views on same-sex marriage is used as a proxy for determining eligibility acceptability among British Columbians. The survey found that nearly 70% of British

### 11.1.3. Summary and Recommended Eligibility Option

A summary of the analysis is displayed below in Table 11.1.3. It is recommended that, given the strengths and limited weaknesses of extending public funding to include those experiencing circumstantial infertility, namely LGBTQ2+ individuals, any publicly funded model should not limit access based on a diagnosis of medical infertility.

**Table 11.1.3. Summary of analysis for eligibility options**

| 1 = undesirable<br>2 = neutral<br>3 = desirable               | Eligibility limited to medical infertility  | Eligibility includes medical and circumstantial infertility   |
|---|---|---|
| <b>Social Equity</b><br><i>Inclusion of LGBTQ2+ residents</i> | Does not explicitly bar LGBTQ2+ patients, but would only be accessible to those experiencing medical infertility, effectively limiting access to many same-sex couples by way of their sexual orientation and/or partnership composition (1)  | No limits on access for LGBTQ2+ patients experiencing circumstantial and/or medical infertility and is inclusive of infertility resulting from sexual orientation and/or partnership composition (3)  |
| <b>Development</b><br><i>Fertility promotion</i>              | Some positive impact on fertility rates by way of making ART more accessible to those experiencing medical infertility sooner than if they had to cover all expenses independently (2)  | Substantial positive impact on fertility rates by way of making ART more accessible to those experiencing medical infertility sooner than if they had to cover all expenses independently (i.e., higher chances of achieving a healthy birth) and by way of increasing access for those couples not experiencing medical infertility who otherwise might delay treatment (i.e., high likelihood of achieving a healthy birth because they don't have medical infertility) (3) |
| <b>Stakeholder Acceptance</b><br><i>Public support</i>        | Likely to garner public support when funding is tied to medical infertility and subsequent limits on the number of cycles, embryo transfers, etc. (3). There may, however, be opposition as the medical infertility criterion is likely to be seen as excluding BC's LGBTQ2+ patients (1), resulting in a mix of support and opposition (2) | May be seen as too broad in eligibility by a smaller subset of the population who feel that public funding should be limited to medical infertility (2), but likely to garner public support as it is seen as being inclusive of LGBTQ2+ patients (3), resulting in a projection of more support than opposition (2.5)  |
| Total   | 5   | 8.5   |

Columbian respondents, second only to Saskatchewan and Manitoba, support the view that same-sex couples should continue to be allowed to legally marry (Canseco, 2019).

## 11.2. Analysis of Policy Aspect 2 – Embryo Transfer Limit Options

This section analyzes the two embryo transfer policy options outlined in Chapter 9. Analysis is conducted with reference to the section 11.1 recommendation that public funding be made available for both medical and circumstantial infertility.

**Table 11.2. Summary of evaluation criteria for embryo transfer limit options**

| Criteria   |   |                                    |   |
|--|---|------------------------------------|---|
| <b>Effectiveness/Health</b><br>Reduced occurrence of multiple births | <b>Cost</b><br>Reduced healthcare costs associated with multiple births | <b>Freedom</b><br>Patient autonomy | <b>Implementation/Enforcement</b><br>Ease of implementation and clinical compliance |

### 11.2.1. Embryo Limit Option 1 – Public funding limited to SET

With regard to effectiveness and health, a policy mandating SET for publicly funded IVF cycles is projected to substantially reduce the IVF-MBR by way of a clinical mandate. This policy has had positive results in both Ontario and Quebec, each producing a 2017 treatment level IVF-MBR (5.9% and 4.6%, respectively) substantially lower than the 11.1% for the rest of Canada (CARTR Plus, 2019). This is largely because clinics offering publicly funded IVF or cycles that a patient will redeem for public funding (i.e., tax credits) must adhere to SET for women up to a specific age with a maximum double embryo transfer allowance for older women when medically necessary. It should be noted that while the patient incentive to maximize each transfer by having a MET in the hopes of delivering a singleton or explicitly aiming for multiples is reduced by way of public funding, some patients may still prefer MET because they desire twins or because they would like to limit the number of transfer/cycles they undergo (Clua et al., 2019). As such, a SET policy is still needed to stem the occurrence of MET.

With respect to costs, the anticipated reduction in the IVF-MBR would translate to reduced healthcare costs in the form of fewer NICU admissions and reduced long-term healthcare costs. Klitzman (2016) found that the costs of two separate singleton births are roughly the same as one twin birth, with long-term complication costs also contributing to elevated healthcare costs (Thurin-Kjellberg et al., 2006). In Ontario, the

Canadian Institute for Health Information (CIHI) found that the average cost of a multiple birth is more than five times the cost of a singleton, at \$12,486 compared to \$2,326 (2018). Further, “Raising Expectations,” a 2009 report released by the Ontario government, estimated \$400-\$550 million in savings over 10 years by implementing recommendations aimed at reducing the MBR associated with ART (Ministry of Children, Community and Social Services).

When considering freedom in terms of patient autonomy, this option significantly infringes on patient choice, as funding is directly tied to constraints on embryo transfers. As noted by Klitzman, patient preference for a multiple birth coupled with a lack of understanding of the risks associated with this type of birth may drive a preference for twins or triplets (2016). As such, limiting this preference by way of permitting public funding only for SET impacts patient autonomy while also highlighting the need for increased patient knowledge on the potential risks and costs associated with multiples.

Finally, in terms of implementation and enforcement, this option would likely be widely accepted by clinics insofar as it only applies to publicly funded cycles while also reducing any “blame” a clinic may receive for not permitting the transfer of multiple embryos. Given the competitive landscape and likelihood of this remaining the case under any new funding model, this aspect is critical to implementation and ensuring that patients don’t simply opt for another clinic if one practitioner declines to do a MET. There may, however, be some enforcement challenges in terms of monitoring compliance with the policy, though tracking mechanisms can be put in place, and it is also likely that clinicians would support this approach under a public funding model. Further, interview results indicate that clinicians would likely support the policy given adequate consultation on requirements and allowances for clinical discretion.

### **11.2.2. Embryo Limit Option 2 – Provincial guidelines for SET**

Non-mandatory provincial guidelines that call for increased usage of SET are unlikely to reduce the IVF-MBR and may actually elevate the occurrence of multiple births. As public funding is intended to increase the accessibility of ART and thereby increase the number of cycles and births, patients who would have otherwise not undergone treatment may, for reasons previously identified, opt for MET. This may be offset slightly by way of public funding reducing the financial barriers that incentivize

MET and transfer maximization, but the risks and costs associated with multiple births necessitate more active intervention. These considerations apply equally to this option's ability to reduce healthcare costs associated with multiple births. As guidelines would not be mandatory, continued usage of MET may contribute to increased costs as a result of additional multiple births associated with IVF.

In terms of patient autonomy, this option infringes minimally on the freedom of British Columbians seeking fertility treatment. While it may be the case that clinicians increasingly refer to provincial guidelines to promote SET and feel more able to insist upon them if patients are undergoing publicly funded treatment, the lack of mandate means that the policy would not impose any restrictions.

Lastly, with respect to implementation and enforcement, this option is likely to be acceptable to clinics, given that the guidelines would be developed alongside local experts with extensive input from BC practitioners. Further, because it would not impose restrictions on privately funded cycles, clinical acceptability is likely to be high, as per indications in the expert interviews. Implementation may, however, be challenging given the time and consultation required in establishing province-wide guidelines according to GPAC procedures. With regard to compliance, this option lacks substantial mechanisms to actually enforce a SET limit, especially in cases where patients prefer MET in either a publicly or privately funded cycle.

### **11.2.3. Summary and Recommended Embryo Limit Option**

A summary of the analysis is displayed in Table 11.2.3 on the following page. Given its effectiveness and comparable strengths, it is recommended that a SET policy be implemented alongside any public funding model. This supports a reduced IVF-MBR while potentially decreasing healthcare costs in the medium- and long-term.

**Table 11.2.3. Summary of analysis for embryo transfer limit options**

| 1 = undesirable<br>2 = neutral<br>3 = desirable   | <b>SET Policy</b>   | <b>Provincial Guidelines</b>   |
|---|---|--|
| <b>Effectiveness and Health</b><br><i>Reduced occurrence of multiple births</i>             | Projected to substantially reduce the IVF-MBR in line with Ontario (2016=12.6%) and Quebec (2016=4.4%) (3)  | May elevate IVF-MBR given increased patient access to IVF by way of public funding without constraints on embryo transfers (1)                                       |
| <b>Cost</b><br><i>Reduced healthcare costs associated with multiple births</i>              | Reduced healthcare costs for government due to decrease in NICU admissions and long-term healthcare costs associated with multiple births (3)<br><br>Costs per birth in Ontario (CIHI):<br>Singleton: \$2,326<br>Multiple: \$12,486 | Likely to increase healthcare costs as a result of elevated IVF-MBR associated with increased access to IVF without constraints on embryo transfers (1)              |
| <b>Freedom</b><br><i>Patient autonomy</i>   | Significant infringement on patient choice with public funding tied to constraints on embryo transfers (1)  | Minimal infringement on public choice; providers more likely to push for SET, but guidelines not mandatory with no strict transfer limits tied to public funding (2) |
| <b>Implementation/ Enforcement</b><br><i>Ease of implementation and clinical compliance</i> | Clinics likely to accept Province-wide policy for publicly funded cycles though some potential for admin/enforcement challenges (2)   | Complex implementation; lack of enforcement mechanism except for patients' reduced financial incentive for MET due to availability of public funding (1)             |
| Total   | 9   | 5  |



## 11.3. Analysis of Policy Aspect 3 – Funding Model Options

This section analyzes the three proposed public funding models outlined in Chapter 9: an income-tested tax credit, provincially funded cycles through clinics, and special assistance fund grants. Analysis is conducted with reference to section 11.1 and 11.2 recommendations that public funding be available to medical and circumstantial infertility and tied to a SET policy.

**Table 11.3. Summary of evaluation criteria for funding model options**

| Criteria  |  |   |  |
|---|--|---|--|
| <b>Cost</b><br>Costs to government and certainty of costs | <b>Income Equity</b><br>Progressive equity | <b>Regional Equity</b><br>Geographic equity | <b>Administrative Complexity</b><br>Ease of implementation and maintenance |

### 11.3.1. Funding Model Option 1 – BC Fertility Treatment Credit: Income-tested tax credit

In terms of cost, an income-tested BC fertility tax credit is projected to cost the government approximately \$3.1 million annually, based on the estimates on the following page (Table 11.3.1). Using figures obtained from Quebec’s current model to approximate costs for BC, the Province could anticipate roughly 1,145 claimants per year, with an average credit of \$2,715 (Finances Québec, 2018).<sup>17</sup> These credits, totalling \$3.1 million, represent 0.015% of the Ministry of Health’s 2019/20 fiscal plan (BC Ministry of Finance, 2018). There is, however, a lack of certainty with regard to costs, given the fact that residents would apply after having received treatment, with government unable to set a budget and instead offering the credit through the income tax process. While the maximum credit of \$16,000 provides some parameters for costing, this option does not allow government to establish a budget cap or preapprove the number of beneficiaries or cycles allocated in the Province.

<sup>17</sup> Costing uses a per capita ratio for all three options. This is in part due to the fact that this study could not obtain an exact figure for the number of IVF cycles undertaken in BC on an annual basis. As previously noted, CARTR Plus is unable to provide provincial-level data without the permission of all clinics due to privacy concerns.

**Table 11.3.1. Estimated costs for the income-tested tax credit**

| Estimated costs: BC Fertility Treatment Credit |   |  |
|--|---|--|
| QC   | Quebec's population: 8.5 million  | Quebec's annual costs (2016): \$5.2 million        |
|  | Annual number of beneficiaries (2016): 1,915  | Average tax credit per beneficiary (2016): \$2,715 |
|  | Beneficiaries per capita: $1,915 / 8,485,000 = 0.00022569239$                                       |  |
| BC   | BC 2019 population: 5.07 million  |  |
|  | Beneficiaries per capita (using Quebec's per capita figure): $0.00022569239 * 5,071,000 = 1,145$    |  |
|  | Annual costs (beneficiaries receiving average QC credit of \$2,715): $1145 * \$2,715 = \$3,108,675$ |  |
|  | \$3.1 million to provide ~ 1,145 credits of \$2,715   |  |

In terms of income equity, with a specific focus on whether this model increases access for lower-income residents, the tax credit performs well. The rates are income tested, with those in lower income brackets receiving up to 80% of their costs reimbursed, with a maximum credit of \$16,000 available. However, because patients pay out of pocket prior to receiving any reimbursement, treatment will likely still be difficult for lower-income earners to access, given the need to initially self-fund any procedures. It is also noteworthy that while access may still be difficult, this option does not limit the number of cycles or credits, meaning that all those pursuing IVF would be eligible for the credit and not reliant on waitlists or beneficiary caps.

With regard to regional equity, this option helps to reduce geographic barriers by way of providing credits for travel and accommodation expenses. Regardless of income levels, those living outside of the Lower Mainland and Vancouver Island face additional financial challenges associated with travelling for their treatments. As fertility clinics in Prince George and Kelowna have established partnerships with clinics in the Lower Mainland, credits that recognize travel costs would help to account for some of the more pronounced barriers faced by those living outside of IVF treatment centres.

Finally, when considering administrative complexity, implementing the tax credit would likely be highly complex, given the changes to income tax policy and the coordination needed to develop the process in conjunction with current taxation procedures. Minimal stakeholder engagement would be needed for maintaining the credit, however, as the option would not necessitate the involvement of the Ministry of

Health or clinics, except where patients would need to provide documentation to show expenses or embryo transfer records.

### 11.3.2. Funding Model Option 2 – BC Fertility Program: Provincially funded cycles

In keeping with costs per cycle in Ontario, the BC Fertility Program is anticipated to start with an annual budget of \$17.2 million and provide approximately 1,700 cycles. The number of cycles is in line with Ontario’s program on a per capita basis and could be altered each year to account for either under- or oversupply of cycles, though the former is more likely. While this option is considerably more expensive than the other two funding models under review, it does provide government with budgetary certainty, allowing the program to establish a spending cap and pre-approve the number of cycles administered to each clinic. The annual program costs of \$17.2 million represent 0.082% of the Ministry of Health’s 2019/20 fiscal plan (BC Ministry of Finance, 2018).

**Table 11.3.2. Estimated costs for provincially funded cycles**

| Estimated costs: BC Fertility Program |  |   |
|---------------------------------------|--|---|
| ON                                    | Ontario’s population: 14.57 million  | Ontario’s annual budget: \$50 million           |
|                                       | Cycles per year: 5,000   | Cost per cycle: \$50,000,000 / 5,000 = \$10,000 |
|                                       | Cycles per capita: 5,000/14,570,000 = 0.00034  |   |
| BC                                    | BC 2019 population: 5.07 million   |   |
|                                       | Cycles per year in BC (using Ontario’s per capita figure): 0.00034 * 5,071,000 = 1,724 |   |
|                                       | BC’s annual budget (using Ontario’s cost per cycle): \$10,000 * 1,724 = \$17,241,400   |   |
|                                       | \$17.2 million to provide ~ 1,700 cycles   |   |

When examining this option in terms of equity, two points are worth noting. First, as the Province fully funds the cycles, the model does not account for income levels, providing low- and high-income earners with the same level of coverage. However, because the cycles are allocated through clinics and funded directly by the Province, patients are not required to assemble up-front costs, making treatment for lower-income individuals more accessible, should they be allocated a spot on a clinic’s list. Second, while full cycle costs would be covered, those living outside of major treatment centres

would still face unique financial challenges in paying for travel and accommodation costs, creating further stratification across not only urban and rural lines but regional lines as well. This is an important consideration when noting that of those survey respondents who could not pursue IVF, 31% indicate that it was due to the procedure not being available in their city.

Finally, when examining the option's ability to address the policy problem at hand, administrative complexity acts as a key barrier. As with Ontario's model, a BC Fertility Program would require high levels of collaboration across ministries, health authorities, and clinics to not only design the program (i.e., clinical eligibility requirements, waitlists, funding transfers, reporting, and protocols), but in administering the cycles in partnership with clinics that would continue to offer privately funded treatments. The time, stakeholder coordination, and personnel required to implement the program render this option highly complex.

### **11.3.3. Funding Model Option 3 – BC Infertility Grant: Special assistance fund**

Modelled after New Brunswick's special assistance fund, the BC Infertility Grant is projected to cost government \$4.9 million and provide approximately 980 patients with grants of up to \$5,000 (Figure 11.3.3). This cost represents 0.023% of the Ministry of Health's 2019/20 fiscal plan and scores relatively well, especially compared to provincially funded cycles offered through clinics (BC Ministry of Finance, 2018). The option also provides government with a high level of budgetary certainty, with budget and grant caps reviewed and determined on an annual basis depending on both met/unmet demand for the grants, as well as any financial constraints facing government.

**Table 11.3.3. Estimated costs for the special assistance fund**

| Estimated costs: BC Infertility Grant |   |   |
|---------------------------------------|---|---|
| NB                                    | New Brunswick's population: 776,827   | New Brunswick's infertility grant budget: \$750,000 |
|                                       | Grants per year: 150 at \$5,000 max   | Actual usage in 2018: 70% (105/150 grants)          |
|                                       | Grants per capita: $150 / 776,827 = 0.00019309318$                                  |   |
| BC                                    | BC 2019 population: 5.07 million  |   |
|                                       | Grants per capita (using NB's per capita figure): $0.00019309318 * 5,071,000 = 979$ |   |
|                                       | BC's annual budget (using \$5,000 max): $\$5,000 * 979 = \$4,895,000$               |   |
|                                       | \$4.9 million to provide ~ 980 grants   |   |

In terms of income equity, this option has neutral impacts given that grants are unattached to income levels, providing all applicants with reimbursements up to a maximum grant of \$5,000. Patients would, however, have to pay out of pocket for treatment initially, which, as with the status quo, introduces additional barriers for lower-income individuals. This option does, however, perform well when looking at regional equity. As with the tax credits, this model accounts for geographic barriers faced by those living outside of the Lower Mainland and Victoria and includes travel and accommodation costs as eligible expenses for the grant application. As fertility clinics in Prince George and Kelowna have established partnerships with clinics in the Lower Mainland, grant funding that recognizes travel costs would help to account for some of the more pronounced barriers faced by those living outside of IVF treatment centres.

Lastly, the administrative complexity of this option is expected to be the lowest of all the proposed funding models, with minimal coordination needed in implementing the special assistance fund. Administered through the BC Ministry of Health, budgeting and maintenance would not necessarily require broad stakeholder engagement across health authorities, clinics, or tax authorities, and would instead operate as an independent fund overseen by a relatively small administrative team. Clinics would be involved insofar as they would be required to provide patients with documentation for expenses and embryo transfer records.

#### **11.3.4. Summary and Recommended Funding Model Option**

A summary of the analysis is displayed on the following page in Table 11.3.4. Throughout the analysis, the options perform well, scoring between 8-11 out of a possible (non-empirical) 12 points, with minimal variation, especially when comparing the income-tested tax credit and the special assistance fund. While these two options yield similar results, the special assistance fund is recommended given its desirable projections across three criteria compared to the tax credit's two, and because, on average, it offers more significant financial support. Further, the cost certainty of the special assistance fund also lends itself to this model being the preferred option. Though no additional weighting was given to certainty of costs, this consideration is critical to introducing any type of public funding model. As such, it is recommended that grants of up to \$5,000 be made available through a special assistance fund to those British Columbians experiencing either medical and/or circumstantial infertility to help with the costs of fertility treatments, and that eligible expenses be limited to those costs incurred as part of an approved SET policy.

**Table 11.3.4. Summary of analysis for funding model options**

| 1 = undesirable<br>2 = neutral<br>3 = desirable                                   | <b>BC Fertility Tax Credit:<br/>                     Income-tested tax credit</b>   | <b>BC Fertility Program:<br/>                     Funded cycles</b>   | <b>BC Infertility Grant:<br/>                     Special assistant fund</b>  |
|---|---|---|---|
| <b>Costs</b><br><i>Costs to government and certainty of costs</i>                 | Low projected costs of \$3.1 million for 1,145 credits of \$2,715 but low degree of certainty given ex-post reimbursement (2)<br><br>Cost effectiveness per patient: \$2,715  | High annual budget of \$17.4 million for 1,740 cycles at \$10,000 but high degree of certainty given government's ability to set budget cap (2)<br><br>Cost effectiveness per patient: \$10,000 | Low annual budget of \$4.9 million for 980 grants of \$5,000 and high degree of certainty given government's ability to set budget cap (3)<br><br>Cost effectiveness per patient: \$5,000 |
| <b>Income Equity</b><br><i>Progressive equity</i>                                 | Progressive impacts insofar as the credit is income tested, offering significant support to lower-income patients (3)<br><br>Maximum available:<br>Lowest income bracket= \$16,000<br>Highest income bracket= \$4,000 | Neutral impacts as funding is not attached to income levels, but funded cycles limit upfront costs for patients (3)<br><br>Maximum available:<br>Full cycle covered, untied to income           | Neutral impacts related to income as funding is not attached to income levels (2)<br><br>Maximum available:<br>\$5,000 grant, untied to income  |
| <b>Regional Equity</b><br><i>Geographic equity</i>                                | Reduced geographic barriers by way of providing credits for travel and accommodation expenses to those living outside of cities offering IVF (3)  | No impact on geographic barriers as travel and accommodation expenses for those living outside of cities offering IVF are not covered (2)   | Reduced geographic barriers by way of providing credits for travel and accommodation expenses to those living outside of cities offering IVF (3)  |
| <b>Administrative Complexity</b><br><i>Ease of implementation and maintenance</i> | High degree of complexity in implementing changes to income tax policy but minimal stakeholder engagement needed for implementation (2)   | High degree of complexity and stakeholder engagement in implementing new program and allocating funding among clinics on an annual basis (1)  | Low degree of complexity in establishing special assistance fund and minimal stakeholder engagement needed for implementation (3)   |
| Total   | 10  | 8   | 11  |

## Chapter 12.

### Recommendation and Conclusion

As demonstrated by the research, including survey responses from patients in BC as well as the perspectives of clinicians and subject matter experts, options to increase access to ART present a number of considerations and trade-offs. First, societal objectives around social and developmental equity are key, bringing about important consideration for eligibility. Second, the health and cost implications of multiple births resulting from IVF require careful analysis and highlight the need for policy intervention in terms of embryo transfer limits. Finally, the economic and equity aspects of different funding models present unique challenges and opportunities, with costs to government and equity across regions and income levels being critical factors for analysis.

The assessment of options across three unique policy aspects demonstrates that responding to the policy problem at hand requires a comprehensive approach, one that applies learnings from other Canadian provinces who have taken steps to address the inequities faced by those experiencing infertility. In doing so, this study has demonstrated that BC should establish a special assistance fund through which it would administer the BC Infertility Grants. These grants should be made available to those experiencing medical and/or circumstantial infertility and who adhere to the fund's SET policy, as determined by clinical experts in the Province. This systematic and sustainable approach would not only help to address the financial and geographic challenges facing British Columbians pursuing IVF but also contribute to reducing the Province's elevated MBR associated with the procedure.

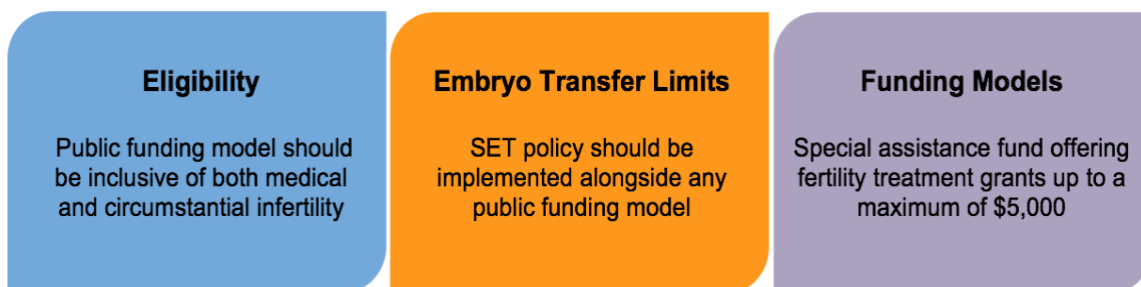


Figure 12. Summary of general recommendation



## References

- Asplund, K. (2019). Use of in vitro fertilization—Ethical issues. *Upsala Journal of Medical Sciences*, 1–8. <https://doi.org/10.1080/03009734.2019.1684405>
- Assal, A., Chauhan, N., Shin, E.-J., Bowman, K., & Jones, C. (2019). Patients' perspectives on allocation of publicly funded in vitro fertilization in Ontario: A qualitative study. *CMAJ Open*, 7(2), E385–E390. <https://doi.org/10.9778/cmajo.20180182>
- Bell, A. V. (2016). The margins of medicalization: Diversity and context through the case of infertility. *Social Science & Medicine* (1982), 156, 39–46. <https://doi.org/10.1016/j.socscimed.2016.03.005>
- Bhalotra, S., Clarke, D., Mühlrad, H., & Palme, M. (2018). Multiple Births, Birth Quality and Maternal Labor Supply: Analysis of ivf reform in sweden. 66.
- Biggers, J. D. (2012). IVF and embryo transfer: Historical origin and development. *Reproductive BioMedicine Online*, 25(2), 118–127.
- Branch, I. T., Division, R., & Finance, M. of. (2019). Personal Income Tax Rates—Province of British Columbia. <https://www2.gov.bc.ca/gov/content/taxes/income-taxes/personal/tax-rates>
- Brigham, K., Cadier, B., & Chevreul, K. (2013). The diversity of regulation and public financing of IVF in Europe and its impact on utilization. *Human Reproduction*, 28(3), 666–675. <https://doi.org/10.1093/humrep/des418>
- Brown, R. C. H., Rogers, W. A., Entwistle, V. A., & Bhattacharya, S. (2016). Reframing the Debate Around State Responses to Infertility: Considering the Harms of Subfertility and Involuntary Childlessness. *Public Health Ethics*, 9(3), 290–300. <https://doi.org/10.1093/phe/phw005>
- Bushnik, T., Cook, J. L., Yuzpe, A. A., Tough, S., & Collins, J. (2012). Estimating the prevalence of infertility in Canada. *Human Reproduction* (Oxford, England), 27(3), 738–746. <https://doi.org/10.1093/humrep/der465>
- Canadian Assisted Reproductive Technologies Register Plus (CARTR Plus), (2018). Final treatment cycle and pregnancy outcome data for 2017. Better Outcomes Registry & Network Ontario. Ottawa ON.
- Canadian Assisted Reproductive Technologies Register Plus (CARTR Plus), (2019). Preliminary treatment cycle data for 2018. Better Outcomes Registry & Network Ontario. Ottawa ON.
- Canadian Assisted Reproductive Technologies Register Plus (CARTR Plus), (2020). Re: CFAS AGM Stats - Multiple Births Rate. Email communication, January 23, 2020.

- Canada Revenue Agency (2017). Medical Expenses Tax credit (METC) – Reproductive Technologies [Financial material]. <https://www.canada.ca/en/revenue-agency/programs/about-canada-revenue-agency-cra/federal-government-budgets/budget-2017-building-a-strong-middle-class/medical-expenses-tax-credit-metc-reproductive-technologies.html>
- Canadian Fertility and Andrology Society (1994). Response to the report of the Royal Commission on New Reproductive Technologies: A Summary. *CMAJ : Canadian Medical Association Journal = Journal de l'Association Medicale Canadienne*, 151(10), 1425–1430.
- Canseco, M. (2019, August 1). Almost Two Thirds of Canadians OK with Same-Sex Marriage. Research Co. <https://researchco.ca/2019/08/01/i-want-the-world-to-know-got-to-let-it-show/>
- Cattapan, A. (2019). Medical Necessity and the Public Funding of In Vitro Fertilization in Ontario. *Canadian Journal of Political Science/Revue Canadienne de Science Politique*, 1–17. <https://doi.org/10.1017/S000842391900074X>
- CBC Archives. (1983). Canada's Very Own Test Tube Baby. <https://www.cbc.ca/archives/entry/canadas-very-own-test-tube-baby>
- Chambers, G. M., Sullivan, E. A., Ishihara, O., Chapman, M. G., & Adamson, G. D. (2009). The economic impact of assisted reproductive technology: A review of selected developed countries. *Fertility and Sterility*, 91(6), 2281–2294. <https://doi.org/10.1016/j.fertnstert.2009.04.029>
- Chibber, R., Fouda, M., Shishtawy, W., Al-Dossary, M., Al-Hijji, J., Amen, A., & Mohammed, A. (2013). Maternal and neonatal outcome in triplet, quadruplet and quintuplet gestations following ART: A 11-year study. *Archives of Gynecology and Obstetrics*, 288(4), 759–767. <https://doi.org/10.1007/s00404-013-2796-x>
- Clua, E., Roca-Feliu, M., Tresánchez, M., Latre, L., Rodriguez, I., Martínez, F., Barri, P. N., & Veiga, A. (2019). Single or double embryo transfer? Decision-making process in patients participating in an oocyte donation program. *Gynecological Endocrinology*, 0(0), 1–5. <https://doi.org/10.1080/09513590.2019.1653845>
- Collins, J. M. (2002). An international survey of the health economics of IVF and ICSI. *Human Reproduction Update*, 8(3), 265–277. <https://doi.org/10.1093/humupd/8.3.265>
- Connolly, M. P., Ledger, W., & Postma, M. J. (2010). Economics of assisted reproduction: Access to fertility treatments and valuing live births in economic terms. *Human Fertility*, 13(1), 13–18. <https://doi.org/10.3109/14647270903401747>
- Deckha, M. (2015) Situating Canada's Commercial Surrogacy Ban in a Transnational Context: A Postcolonial Feminist Call for Legalization and Public Funding. *McGill Law Journal*, (61),1.

- Dulberg, C.s. & Stephens, T. (1993). The Prevalence of Infertility in Canada, 1991–92: Analysis of Three National Surveys. Royal Commission on New Reproductive Technologies, Research Volume 6, Chapter 2.
- El-Toukhy, T., Bhattacharya, S., & Akande, V. A. (2018). Multiple Pregnancies Following Assisted Conception: Scientific Impact Paper No. 22. *BJOG : An International Journal of Obstetrics and Gynaecology*, 125(5), e12–e18.  
<https://doi.org/10.1111/1471-0528.14974>
- Fauser, B. C. J. M., Boivin, J., Barri, P. N., Tarlatzis, B. C., Schmidt, L., & Levy-Toledano, R. (2019). Beliefs, attitudes and funding of assisted reproductive technology: Public perception of over 6,000 respondents from 6 European countries. *PLoS ONE*, 14(1). <https://doi.org/10.1371/journal.pone.0211150>
- Fertility New Zealand (2019). Public funding of fertility treatment.  
<https://www.fertilitynz.org.nz/information/fertility-treatment-options/public-funding-fertility-treatment/>
- Finances Québec (2018). Crédit d'impôt remboursable pour le traitement de l'infertilité. Dépenses fiscales 2018. <http://www.budget.finances.gouv.qc.ca/Budget/outils/dépenses-fiscales/fiches/fiche-110603.asp>
- Gillett, W. R., Peek, J. C., & Herbison, G. P. (2012). Development of clinical priority access criteria for assisted reproduction and its evaluation on 1386 infertile couples in New Zealand. *Human Reproduction*, 27(1), 131–141.  
<https://doi.org/10.1093/humrep/der372>
- Ginsburg, F. & Rapp, R. (1995). *Conceiving the new world order: The global politics of reproduction*. Berkeley, University California Press.
- Goddard, M., & Smith, P. (2001). Equity of access to health care services: Theory and evidence from the UK. *Social Science & Medicine* (1982), 53(9), 1149–1162.  
[https://doi.org/10.1016/S0277-9536\(00\)00415-9](https://doi.org/10.1016/S0277-9536(00)00415-9)
- Government of British Columbia (2019). Infoline Key Indicators - Issue 19-114 Household Income. BC Key Indicators Database.  
<https://www2.gov.bc.ca/gov/content/data/statistics/infoline/infoline-2019/19-114-household-income>
- Government of Ontario, Raising Expectations (2009). Ministry of Children and Youth Services.  
<http://www.children.gov.on.ca/htdocs/English/professionals/infertility/index.aspx>
- Government of New Zealand (2001). Gynaecology Referral Guidelines and Priorisation Criteria. Health Funding Authority, Elective Services.
- Government of New Zealand (2019). Auckland District Health Board – Public funding fertility clinical priority assessment criteria (CPAC) system.  
<https://nationalwomenshealth.adhb.govt.nz/our-services/fertility/public-funding/>

- Guidelines and Protocols Advisory Committee Handbook (2017). Ministry of Health.  
<https://www2.gov.bc.ca/assets/gov/health/practitioner-pro/bc-guidelines/gpac-handbook/gpachandbook2017.pdf>
- HealthLinkBC (2018). In Vitro Fertilization for Infertility. HealthLink BC.  
<https://www.healthlinkbc.ca/health-topics/hw227379>
- Hui, A. (2018). How does the Medical Expense Tax Credit work in Canada?  
<https://www.olympiabenefits.com/blog/how-does-the-medical-expense-tax-credit-work-in-canada>
- IVF Australia (2019). IVF Treatment Costs Medicare Rebate. Virtus Health.  
<https://www.ivf.com.au/ivf-cost/medicare-rebate>
- Inhorn, M. C., & Patrizio, P. (2015). Infertility around the globe: New thinking on gender, reproductive technologies and global movements in the 21st century. *Human Reproduction Update*, 21(4), 411–426. <https://doi.org/10.1093/humupd/dmv016>
- Jain, T. (2006). Socioeconomic and racial disparities among infertility patients seeking care. *Fertility and Sterility*, 85(4), 876–881.  
<https://doi.org/10.1016/j.fertnstert.2005.07.1338>
- Janvier, A., Spelke, B., & Barrington, K. J. (2011). The Epidemic of Multiple Gestations and Neonatal Intensive Care Unit Use: The Cost of Irresponsibility. *The Journal of Pediatrics*, 159(3), 409–413. <https://doi.org/10.1016/j.jpeds.2011.02.017>
- Keane, M., Long, J., O’Nolan, G., & Faragher, L. (2017). Assisted reproductive technologies: International approaches to public funding mechanisms and criteria. An evidence review [Report]. Health Research Board.  
<https://www.lenus.ie/handle/10147/621436>
- Klitzman, R. (2016). Deciding how many embryos to transfer: Ongoing challenges and dilemmas. *Reproductive Biomedicine & Society Online*, 3, 1–15.  
<https://doi.org/10.1016/j.rbms.2016.07.001>
- Kocourkova, J., Burcin, B., & Kucera, T. (2014). Demographic relevancy of increased use of assisted reproduction in European countries. *Reproductive Health*, 11, 37.  
<https://doi.org/10.1186/1742-4755-11-37>
- Kraemer, S., & Steinberg, Z. (2016). In Hope’s Shadow: Assisted Reproductive Technology and Neonatal Intensive Care. *Journal of Infant, Child, and Adolescent Psychotherapy*, 15(1), 26–39.  
<https://doi.org/10.1080/15289168.2015.1127737>
- Larsen, L. T. (2015). The problematization of fertility treatment: Biopolitics and IVF policy in Denmark. *Distinktion: Scandinavian Journal of Social Theory*, 16(3), 318–336.  
<https://doi.org/10.1080/1600910X.2015.1089520>

- Mahboob, T., & January 3, 2020 11:47 AM ET | Last Updated: (2020, January 3). No national plan for fertility treatment remains challenge for Canadians hoping to conceive | CBC Radio. CBC. <https://www.cbc.ca/radio/outintheopen/inside-infertility-1.5411669/no-national-plan-for-fertility-treatment-remains-challenge-for-canadians-hoping-to-conceive-1.5411676>
- Makuch, M. Y., Simônia de Padua, K., Petta, C. A., Duarte Osis, M. J., & Bahamondes, L. (2011). Inequitable access to assisted reproductive technology for the low-income Brazilian population: A qualitative study. *Human Reproduction* (Oxford, England), 26(8), 2054–2060. <https://doi.org/10.1093/humrep/der158>
- Mamo, L., & Alston-Stepnitz, E. (2015). Queer Intimacies and Structural Inequalities: New Directions in Stratified Reproduction. *Journal of Family Issues*, 36(4), 519–540. <https://doi.org/10.1177/0192513X14563796>
- Maxwell, E., Mathews, M., & Mulay, S. (2018). More Than a Biological Condition: The Heteronormative Framing of Infertility. *Canadian Journal of Bioethics / Revue Canadienne de Bioéthique*, 1(2), 63–66. <https://doi.org/10.7202/1058269ar>
- Mcleod, C. (2017). Does Reproductive Justice Demand Insurance Coverage for IVF?: Reflections on the Work of Anne Donchin. *IJFAB: International Journal of Feminist Approaches to Bioethics*, 10(2), 133–143.
- Meldrum, D. R., Adashi, E. Y., Garzo, V. G., Gleicher, N., Parinaud, J., Pinborg, A., & Voorhis, B. V. (2018). Prevention of in vitro fertilization twins should focus on maximizing single embryo transfer versus twins are an acceptable complication of in vitro fertilization. *Fertility and Sterility*, 109(2), 223–229. <https://doi.org/10.1016/j.fertnstert.2017.12.005>
- Mercure, K. (2019). Crédit d'impôt pour le traitement de l'infertilité. CFFP. <http://cffp.recherche.usherbrooke.ca/outils-ressources/guide-mesures-fiscales/credit-impot-traitement-infertilite/>
- Michelle, C. (2006). Transgressive technologies? Strategies of discursive containment in the representation and regulation of assisted reproductive technologies in Aotearoa/New Zealand. *Women's Studies International Forum*, 29(2), 109–124. <https://doi.org/10.1016/j.wsif.2006.03.009>
- Milligan, K. (2005). Subsidizing the Stork: New Evidence on Tax Incentives and Fertility. *Review of Economics and Statistics*, 87(3), 539–555. <https://doi.org/10.1162/0034653054638382>
- Mills, M., Rindfuss, R. R., McDonald, P., & Velde, E. (2011). Why do people postpone parenthood? Reasons and social policy incentives. *Human Reproduction Update*, 17(6), 848–860. <https://doi.org/10.1093/humupd/dmr026>
- Mladovsky, P., & Sorenson, C. (2010). Public Financing of IVF: A Review of Policy Rationales. *Health Care Analysis*, 18(2), 113–128. <https://doi.org/10.1007/s10728-009-0114-3>

- Mohr, S., & Koch, L. (2016). Transforming social contracts: The social and cultural history of IVF in Denmark. *Reproductive Biomedicine & Society Online*, 2, 88–96. <https://doi.org/10.1016/j.rbms.2016.09.001>
- National Perinatal Epidemiology and Statistics Unit (NPESU). (2016). Assisted reproductive technology in Australia and New Zealand 2016. <https://npesu.unsw.edu.au/surveillance/assisted-reproductive-technology-australia-and-new-zealand-2016>
- National Women's Health (2019). Government of Auckland, New Zealand. Public Funding of Fertility Plus. <https://nationalwomenshealth.adhb.govt.nz/our-services/fertility/public-funding/>
- Nisker, J. (2008). Distributive Justice and Fertility treatment in Canada. *Journal of Obstetrics and Gynaecology Canada*, 30(5), 425-3. [https://doi.org/10.1016/S1701-2163\(16\)32828-](https://doi.org/10.1016/S1701-2163(16)32828-)
- Okun, N., Sierra, S., Douglas Wilson, R., Audibert, F. (2014). Pregnancy Outcomes After Assisted Human Reproduction. *Journal of Obstetrics and Gynaecology Canada*, 36(1), 64–83. [https://doi.org/10.1016/S1701-2163\(15\)30685-X](https://doi.org/10.1016/S1701-2163(15)30685-X)
- Ontario Fertility Program (2019). Health and Wellness - Get fertility treatments. <https://www.ontario.ca/page/get-fertility-treatments>
- Ontario Health Services Branch (2015). Changes to publicly funded fertility services. Bulletin #4663. <http://www.health.gov.on.ca/en/pro/programs/ohip/bulletins/4000/bul4663.pdf>
- Pison, G., Monden, C., & Smits, J. (2015). Twinning Rates in Developed Countries: Trends and Explanations. *Population and Development Review*, 41(4), 629–649. <https://doi.org/10.1111/j.1728-4457.2015.00088.x>
- Präg, P., & Mills, M. C. (2017). Assisted Reproductive Technology in Europe: Usage and Regulation in the Context of Cross-Border Reproductive Care. In M. Kreyenfeld & D. Konietzka (Eds.), *Childlessness in Europe: Contexts, Causes, and Consequences* (pp. 289–309). Springer International Publishing. [https://doi.org/10.1007/978-3-319-44667-7\\_14](https://doi.org/10.1007/978-3-319-44667-7_14)
- Pratt, K. (2019). The Curious State of Tax Deductions for Fertility Treatment Costs (SSRN Scholarly Paper ID 3335420). Social Science Research Network. <https://papers.ssrn.com/abstract=3335420>
- Rothmayr Allison, C., & L'Espérance, A. (2017). Regulating Assisted Reproduction in Canada, Switzerland, and the USA: Comparing the Judicialization of Policy-Making. *Journal of Comparative Policy Analysis: Research and Practice*, 19(3), 262–276. <https://doi.org/10.1080/13876988.2016.1183281>

- Sazonova, A., Källen, K., Thurin-Kjellberg, A., Wennerholm, U.-B., & Bergh, C. (2013). Neonatal and maternal outcomes comparing women undergoing two in vitro fertilization (IVF) singleton pregnancies and women undergoing one IVF twin pregnancy. *Fertility and Sterility*, 99(3), 731–737. <https://doi.org/10.1016/j.fertnstert.2012.11.023>
- Scala, F. (2014) IVF Policy and the Stratification of Reproduction in Canada. In S. Paterson, *Fertile Ground: Exploring Reproduction in Canada* (p. 24). McGill-Queen's Press.
- Scala, F. (2019). Should We Publicly Fund IVF in Canada? Policy Options. <https://policyoptions.irpp.org/magazines/april-2019/publicly-fund-ivf-canada/>
- Shanley, M. L., & Asch, A. (2009). Involuntary Childlessness, Reproductive Technology, and Social Justice: The Medical Mask on Social Illness. *Signs: Journal of Women in Culture and Society*, 34(4), 851–874. <https://doi.org/10.1086/597141>
- Shaulov, T., Belisle, S., & Dahan, M. H. (2015). Public health implications of a North American publicly funded in vitro fertilization program; lessons to learn. *Journal of Assisted Reproduction and Genetics*, 32(9), 1385–1393. <https://doi.org/10.1007/s10815-015-0530-2>
- Snow, D. (2018). *Assisted Reproduction in Canada: Framing, Federalism, and Failure*. University of Toronto Press.
- Statistics Canada (2017a). British Columbia and Canada Household and dwelling characteristics Census Profile. 2016 Census. Statistics Canada Catalogue no. 98-316-X2016001. Ottawa. Released November 29, 2017.
- Statistics Canada (2017b). Immigration and Ethnocultural Diversity Highlight Tables—Visible minority (visible minority), both sexes, age (total), Canada, British Columbia and census subdivisions (municipalities) with 5,000-plus population, 2016 Census – 25% Sample data. <https://www12.statcan.gc.ca/census-recensement/2016/dp-pd/hltfst/imm/Table.cfm?Lang=E&T=44&SP=1&geo=59&vismin=2&age=1&sex=1>
- Statistics Canada (2018). Fertility: Overview, 2012 to 2016. <https://www150.statcan.gc.ca/n1/pub/91-209-x/2018001/article/54956-eng.htm>
- Statistics Canada (2019). Annual Demographic Estimates: Subprovincial Areas, July 1, 2019 (Catalogue number 91-214-X). <https://www150.statcan.gc.ca/n1/daily-quotidien/200213/dq200213a-eng.htm>
- Strengthening Rural Canada (2015). *Fewer & Older: The Population and Demographic Dilemma in Rural British Columbia*. <http://strengtheningruralcanada.ca/file/Executive-Summary-Fewer-and-Older-The-Population-and-Demographic-Dilemma-in-Rural-BC.pdf>

Velez, M. P., Connolly, M. P., Kadoch, I.-J., Phillips, S., & Bissonnette, F. (2014). Universal coverage of IVF pays off. *Human Reproduction*, 29(6), 1313–1319. <https://doi.org/10.1093/humrep/deu067>

Victoria Department of Health and Human Services (2018). Review of assisted reproductive treatment. Government of Australia. <https://www2.health.vic.gov.au/hospitals-and-health-services/patient-care/perinatal-reproductive/assisted-reproduction/regulatory-review>

Zaresani, A., & Schmidt, L. (2019). Generosity of Health Insurance Coverage and Intensive and Extensive Margin Effects on Utilization.



## Appendix A.

### Survey Questions

1. Do you consent to participate in this survey?\*
  - Yes
  - No
  
2. Which of the following best describes your experience with IVF?\*

  - I am currently pursuing IVF
  - I have previously undergone IVF
  - I have not undergone IVF

  
3. Which of the following factors, if any, were reasons for not undergoing IVF? Please select all that apply.\*
  - Other fertility methods/treatments were pursued
  - The costs were too high
  - Health or medical reasons
  - IVF was not offered in my city/region
  - Other (please specify)
  
4. If IVF was publicly funded (i.e., paid for by government), would you have undergone IVF?\*

  - Yes
  - No

  
5. How many cycles of IVF have you undergone? \*This includes all retrievals and related transfers. \*
  - 0, I have not completed any cycles as of yet
  - 1 cycle
  - 2 cycles
  - More than 2 cycles
  
6. How embryos did you have transferred?\*

  - None
  - 1 embryo
  - 2 embryos
  - 3 embryos
  - More than 3 embryos
  - I don't know

7. How many embryos did you have transferred during your first cycle of IVF?\*
- None
  - 1 embryo
  - 2 embryos
  - 3 embryos
  - More than 3 embryos
  - I don't know
8. How many embryos did you have transferred during your second cycle of IVF?\*
- None
  - 1 embryo
  - 2 embryos
  - 3 embryos
  - More than 3 embryos
  - I don't know
9. Considering all of your attempted IVF cycles, what was the greatest number of embryos transferred during one cycle?
- None of my attempted cycles resulted in the transfer of any embryos
  - 1 embryo
  - 2 embryos
  - 3 embryos
  - More than 3 embryos
  - I don't know
10. Have you undergone any IVF cycles that have resulted in the birth of one or more babies?\*
- Yes
  - No
11. Considering your most recent IVF cycle that resulted in the birth of one or more children, please indicate the number of babies born.
- Singleton
  - Twins
  - Triplets
  - Quadruplets or more
12. What was or will be the approximate total cost to you or your partnership in undergoing IVF?\*
- Less than \$7,000
  - \$7,000 - \$13,999
  - \$14,000 - \$20,999
  - \$21,000 - \$27,999
  - \$28,000 - \$35,000
  - If more than \$35,000 please indicate the approximate total cost:

13. While undergoing IVF (either currently or previously), did your insurance cover the cost of IVF medications?
- No
  - Yes, partial coverage for IVF medications
  - Yes, full coverage for IVF medication
14. While undergoing IVF (either currently or previously), did your insurance cover the cost of the IVF procedure?
- No
  - Yes, partial coverage for the IVF procedure
  - Yes, full coverage for the IVF procedure
  - Please explain:
15. Did you experience or are you experiencing any barriers in accessing IVF? Please select all that apply and where comfortable, please describe:
- Financial
  - Emotional
  - Geographical
  - Health/physical
  - Cultural
  - Workplace challenges
  - I/We did not experience any barriers
16. If IVF was publicly funded (i.e., paid for by government), would you have undergone additional cycles?\*
- Yes
  - No
  - I don't know
17. What is your age?\*
- 18 to 19
  - 20 to 24
  - 25 to 29
  - 30 to 34
  - 35 to 39
  - 40 to 44
  - 45 to 49
  - 50 or older
18. What is your combined annual household income?\*
- Less than \$30,000
  - \$30,000 - \$59,999
  - \$60,000 - \$89,999
  - \$90,000 - \$114,999
  - \$115,000 - \$149,999
  - \$150,000 to \$199,999
  - \$200,000 or more

19. Thinking of the person in your household who has completed the highest level of education, what level of education have they completed?\*
- High school or less
  - College or trade diploma/certificate
  - Undergraduate degree
  - Graduate degree
  - Doctorate degree
20. Are you currently employed?\*
- Yes, full-time (30 or more hours per week)
  - Yes, part-time (less than 30 hours per week)
  - No
21. Which of the following best describes your marital status while undergoing fertility consultations/treatments?\*
- Married
  - In a domestic partnership or living common-law
  - Divorced
  - Separated
  - Widowed
  - Single, never married
22. Which of the following best describes your partnership status while undergoing fertility consultations/treatments?\*
- Single
  - Male-Female partnership
  - Female same-sex partnership
  - Male same-sex partnership
  - Other (please specify)
23. You may belong to one or more racial or cultural groups on the following list. Please select all that apply. Please note that the following selections are based on the most recent Statistics Canada groupings\*
- Arab
  - South Asian
  - Black
  - Chinese
  - Indigenous (First Nations, Métis, Inuit)
  - Filipino
  - Korean
  - Japanese
  - West Asian
  - Latin American
  - Southeast Asian
  - White
  - Other (please specify)

24. In which region of the Province do you live?\*

- Vancouver Island / Coast
- Lower Mainland / Southwest
- Thompson-Okanagan
- Kootenay
- Cariboo
- North Coast & Nechako
- Northeast

25. How would you categorize your community?\*

- Rural
- Suburban
- Urban

26. How do you identify?\*

- Man
- Woman
- Gender diverse
- Prefer not to say
- Other (please specify)

27. If you accessed this survey through your fertility clinic, please indicate the clinic location.\*

- I did not access this survey through a fertility clinic
- Lower Mainland
- Vancouver Island
- Okanagan
- Northern British Columbia
- Other (please specify)

28. If you or your partnership have experienced infertility, which of the following best describes it?\*

- I/We have not experienced infertility
- Medical infertility (Inability of a sexually active, non-contracepting couple to achieve pregnancy)
- Circumstantial infertility (Inability to achieve pregnancy due to factors associated with one's partnership status. This can include individuals in same-sex partnerships or individuals who do not have a partner)
- Both medical and circumstantial infertility
- Other (please describe)

29. Should you wish to expand on any responses or general themes as they relate to this survey, please do so in the text box below. You are reminded to please avoid including any identifying personal information.

- -

---

## Appendix B.

### Survey Recruitment Poster

A recruitment poster for a 5-minute survey on IVF access in BC. The poster has a green background with white line-art illustrations of leaves and flowers. A white box at the top contains the title. Below the title is an invitation to participate in a survey as part of a graduate study at Simon Fraser University. A large QR code is centered on the page. Below the QR code is the survey URL. At the bottom left is the SFU logo, and at the bottom right is contact information for questions.

**Improving IVF Access in BC**  
**5-minute survey**

As part of a graduate study at Simon Fraser University,  
you are invited to complete a 5-minute survey  
on IVF access in British Columbia.



To take the survey, use your phone's camera  
to scan the QR code or visit  
[www.surveymonkey.ca/r/IVF-BC](http://www.surveymonkey.ca/r/IVF-BC)

**SFU**  
SIMON FRASER  
UNIVERSITY

Questions? Contact [...] 2019-S0367

# Appendix C.

## Quebec Infertility Tax Credit Rates

TP-1029.8.66.2-V (2019-10)

3 of 3

### Rate tables for the tax credit for the treatment of infertility

In the table below that corresponds to your family situation, find the tax credit rate for your family income (line 3 of section 2.1) and enter it on line 15 of section 2.2.

#### Rate of the tax credit if you have a spouse

| Family income (\$) |               | Rate (%) | Family income (\$) |               | Rate (%) | Family income (\$) |               | Rate (%) |
|--------------------|---------------|----------|--------------------|---------------|----------|--------------------|---------------|----------|
| More than          | Not more than |          | More than          | Not more than |          | More than          | Not more than |          |
| 0                  | 52,215        | 80       | 76,995             | 78,233        | 59       | 103,013            | 104,253       | 38       |
| 52,215             | 53,453        | 79       | 78,233             | 79,473        | 58       | 104,253            | 105,492       | 37       |
| 53,453             | 54,693        | 78       | 79,473             | 80,710        | 57       | 105,492            | 106,729       | 36       |
| 54,693             | 55,931        | 77       | 80,710             | 81,950        | 56       | 106,729            | 107,968       | 35       |
| 55,931             | 57,171        | 76       | 81,950             | 83,189        | 55       | 107,968            | 109,207       | 34       |
| 57,171             | 58,409        | 75       | 83,189             | 84,427        | 54       | 109,207            | 110,447       | 33       |
| 58,409             | 59,649        | 74       | 84,427             | 85,667        | 53       | 110,447            | 111,686       | 32       |
| 59,649             | 60,888        | 73       | 85,667             | 86,906        | 52       | 111,686            | 112,926       | 31       |
| 60,888             | 62,127        | 72       | 86,906             | 88,145        | 51       | 112,926            | 114,164       | 30       |
| 62,127             | 63,365        | 71       | 88,145             | 89,384        | 50       | 114,164            | 115,403       | 29       |
| 63,365             | 64,604        | 70       | 89,384             | 90,624        | 49       | 115,403            | 116,642       | 28       |
| 64,604             | 65,844        | 69       | 90,624             | 91,862        | 48       | 116,642            | 117,880       | 27       |
| 65,844             | 67,082        | 68       | 91,862             | 93,101        | 47       | 117,880            | 119,120       | 26       |
| 67,082             | 68,321        | 67       | 93,101             | 94,340        | 46       | 119,120            | 120,358       | 25       |
| 68,321             | 69,559        | 66       | 94,340             | 95,579        | 45       | 120,358            | 121,597       | 24       |
| 69,559             | 70,799        | 65       | 95,579             | 96,819        | 44       | 121,597            | 122,836       | 23       |
| 70,799             | 72,038        | 64       | 96,819             | 98,056        | 43       | 122,836            | 124,076       | 22       |
| 72,038             | 73,277        | 63       | 98,056             | 99,295        | 42       | 124,076            | 125,315       | 21       |
| 73,277             | 74,517        | 62       | 99,295             | 100,534       | 41       | 125,315            | or more       | 20       |
| 74,517             | 75,756        | 61       | 100,534            | 101,774       | 40       |                    |               |          |
| 75,756             | 76,995        | 60       | 101,774            | 103,013       | 39       |                    |               |          |

#### Rate of the tax credit if you do not have a spouse


| Family income (\$) |               | Rate (%) | Family income (\$) |               | Rate (%) | Family income (\$) |               | Rate (%) |
|--------------------|---------------|----------|--------------------|---------------|----------|--------------------|---------------|----------|
| More than          | Not more than |          | More than          | Not more than |          | More than          | Not more than |          |
| 0                  | 26,108        | 80       | 38,497             | 39,117        | 59       | 51,507             | 52,125        | 38       |
| 26,108             | 26,726        | 79       | 39,117             | 39,737        | 58       | 52,125             | 52,746        | 37       |
| 26,726             | 27,346        | 78       | 39,737             | 40,355        | 57       | 52,746             | 53,365        | 36       |
| 27,346             | 27,966        | 77       | 40,355             | 40,976        | 56       | 53,365             | 53,985        | 35       |
| 27,966             | 28,586        | 76       | 40,976             | 41,595        | 55       | 53,985             | 54,604        | 34       |
| 28,586             | 29,205        | 75       | 41,595             | 42,215        | 54       | 54,604             | 55,223        | 33       |
| 29,205             | 29,823        | 74       | 42,215             | 42,834        | 53       | 55,223             | 55,844        | 32       |
| 29,823             | 30,444        | 73       | 42,834             | 43,453        | 52       | 55,844             | 56,462        | 31       |
| 30,444             | 31,063        | 72       | 43,453             | 44,072        | 51       | 56,462             | 57,082        | 30       |
| 31,063             | 31,683        | 71       | 44,072             | 44,691        | 50       | 57,082             | 57,700        | 29       |
| 31,683             | 32,301        | 70       | 44,691             | 45,312        | 49       | 57,700             | 58,321        | 28       |
| 32,301             | 32,921        | 69       | 45,312             | 45,930        | 48       | 58,321             | 58,940        | 27       |
| 32,921             | 33,541        | 68       | 45,930             | 46,550        | 47       | 58,940             | 59,560        | 26       |
| 33,541             | 34,161        | 67       | 46,550             | 47,169        | 46       | 59,560             | 60,179        | 25       |
| 34,161             | 34,780        | 66       | 47,169             | 47,789        | 45       | 60,179             | 60,799        | 24       |
| 34,780             | 35,399        | 65       | 47,789             | 48,409        | 44       | 60,799             | 61,419        | 23       |
| 35,399             | 36,020        | 64       | 48,409             | 49,028        | 43       | 61,419             | 62,038        | 22       |
| 36,020             | 36,638        | 63       | 49,028             | 49,648        | 42       | 62,038             | 62,657        | 21       |
| 36,638             | 37,258        | 62       | 49,648             | 50,268        | 41       | 62,657             | or more       | 20       |
| 37,258             | 37,877        | 61       | 50,268             | 50,888        | 40       |                    |               |          |
| 37,877             | 38,497        | 60       | 50,888             | 51,507        | 39       |                    |               |          |



1220 ZZ 49509048

# Appendix D.

## New Brunswick Infertility Grant Application

|   |                  |   |   |
|---|------------------|---|---|
| Special Assistance Fund for Infertility Treatment<br>Government of New Brunswick<br>Financial Services<br>PO Box 5100<br>Fredericton, NB E3B 5G8<br>Voice Mail Box 1-844-443-3172   |                  | <input type="button" value="Reset"/>          |  |
| <b>APPLICATION FOR SPECIAL ASSISTANCE (FUNDING) FOR INFERTILITY TREATMENT</b>   |                  |   |   |
| <b>Personal Information</b>   |                  |   |   |
| Mr. <input type="checkbox"/>  | Last Name: _____ |   | First Name: _____   |
| Mrs. <input type="checkbox"/> Ms. <input type="checkbox"/>  | _____            |   | _____   |
| Address: _____<br>(Number, Street, Apartment, PO Box, Rural Route)<br>_____<br>(City, Province, Postal Code)  |                  |   |   |
| Home Phone Number: (____) _____   |                  | Email: _____                                  |   |
| Work Phone Number: (____) _____   |                  | _____   |   |
| Medicare Number: _____  |                  | Date of Birth: ____/____/____<br>(mm/dd/yyyy) |   |
| <b>Declarations</b>   |                  |   |   |
| I do solemnly declare that:   |                  |   |   |
| <ul style="list-style-type: none"><li>• I am an ordinarily present, permanent, full time resident of New Brunswick, who has a home in the province.</li><li>• I have been diagnosed by a physician with fertility problems and have received infertility treatment after April 1, 2014.</li><li>• The infertility treatment costs that I am claiming are not eligible for coverage by any other provincial program or private sector insurance plan.</li><li>• I acknowledge and understand that I may claim eligible incurred costs of medical procedures and pharmaceutical products up to 50% of infertility treatments, or \$5,000, whichever is less.</li><li>• I acknowledge and understand that costs associated with infertility treatment incurred outside of the Province of New Brunswick will be eligible, only if the specific treatments are unavailable in-province and confirmation of this, by a New Brunswick fertility clinic, is included with the claim.</li><li>• I have attached documentation indicating that I have been diagnosed with infertility and an original invoice/ receipt from an approved clinic which identifies the date the infertility treatment services (in vitro fertilization, intrauterine insemination) were rendered.</li><li>• I acknowledge and understand that reimbursement is limited to a one-time payout and cannot claim again in subsequent years.</li><li>• I acknowledge and understand that payment of my claim is subject to government funding.</li></ul> |                  |   |   |
| I, the applicant, hereby declare that the information given on this application, and in any documents attached, is correct and complete.  |                  |   |   |
| Signature of Applicant: _____   |                  | Date: _____                                   |   |
| <b>Please send the application to the address noted above</b>   |                  |   |   |