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For The Love Of A'se'k: Piktukowaq's (Re)Assertion Of Autonomy In Pursuit Of A Healthier Community, Lands, Waters, And Future Generations

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A thesis submitted in partial fulfillment of the requirements for the Master of Arts degree in Geography and Environment

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ABSTRACT

Pictou Landing First Nation (PLFN) has experienced the impacts of being exposed to the effluent treatment facility for a pulp mill for decades, but in 2020, it was announced that the treatment facility would finally close. In my research, I will investigate and compare two sets of PLFN health data from 2014 and 2019 to answer the following research questions: 1) Does community health for the PLFN improve over time when community members have more autonomy over environmental decision-making?; and 2) Does Pictou Landing First Nation's relationship to place improve with more autonomy in environmental decision making? I will use the lens of environmental dispossession, repossession, and the *Piktukowaq* environmental health cultural framework as a guiding theoretical framework to position PLFN relationships to land, autonomy, and each other. I will use community-based participatory research (CPBR) as a guiding methodology to emphasize the relationship between researchers and community and employ quantitative methods comparing secondary data from the 2014 and 2019 surveys. Through my findings, physical health, mental health, and relationship to place improve when *Piktukowaq* have more autonomy over their environmental decision-making.

Key words: Environmental repossession, environmental dispossession, autonomy, self-determination, Indigenous health, Indigenous geographies, Indigenous health geographies, community-based participatory research

LAY SUMMARY

Indigenous peoples face harm to their environments and health through the negative impacts of development and are trying to gain more control of their territories for their health and well-being. Pictou Landing First Nation (PLFN) is a *Mi'kmaw* community in Nova Scotia. PLFN's sacred water source is called *A'se'k*. In 1967, Nova Scotia constructed a pulp and paper mill, and the Boat Harbour Effluent Treatment Facility (BHETF) on *A'se'k*. The construction of BHETF on *A'se'k* has caused ongoing community concerns regarding their health and well-being.

With the community wanting to know more about the environmental impacts of the effluent, their women's group created a community survey tool to provide more insights into their health. After an effluent leak in 2014, Nova Scotia announced a commitment to stop the effluent flow and start Boat Harbour remediation (stopping/reversal). Looking into the impact, the government came to PLFN to determine their health assessment, giving more control to PLFN in managing their environmental decision-making. In 2019, PLFN decided their community would conduct another survey as the second phase of health data.

In my research, I will compare the two community health surveys to see if PLFN health and relationship to place improves when PLFN has more control over environmental decision-making. I will use the framework of environmental repossession (the ways Indigenous peoples are reclaiming their territories, knowledge, ties to place) to position PLFN's act of control. I will also use the *Piktukowaq environmental health cultural framework* to position PLFN relationships to place, self-determination, culture, and knowledge. As a guiding methodology to lead my research, I will use community-based participatory research (CPBR) to show the necessity of relationships between the community and the researcher. I will also use quantitative methods (surveys) to compare the data from the surveys to answer my research questions. My study found that with more control over environmental decision-making, PLFN physical health, mental health, and relationship to place improve. Through my study, I plan to inform government policy to create more space and freedoms for Indigenous communities in environmental decisions for health outcomes and relationships to place to improve.

DEDICATION

To my family and community who have resisted colonial structures since time immemorial.

To my Lickers side – my Nanny Lu who is the epitome of kindness even when the Mohawk Institute wanted to take that away. She never let those systems impact her warm and loving nature. To my Grandpa Boo, whose energy, excitement, and love radiates across generations, and inspires me to go around the world, but always come home to Six Nations.

To my Mamá in Panama who works tirelessly for her family to have the most opportunity in life and has sacrificed everything for us to thrive today. You make me incredibly proud to be a chola.

To my matrilineal line – my Totah who went off the rez and worked as a live-in nanny to receive a high school education – all my determination comes from the women in this line. We know what we want, and we go after it. Self-determination comes from the fierce line of Cayuga Wolf woman I come from.

To my parents, who were both homeless as teenagers, and embodied a life of resistance to make sure their coming faces can have a place to call home. I would not be who I am today without either of you, and will work for the rest of my life so others will not have to struggle, by making a world where we can live as healthy, joyful Indigenous peoples on our lands.

To my community – the generational land defenders, water protectors, warriors, and traditional governance, I dedicate my life and work for all Indigenous peoples on the frontlines of change and resistance - creating a sovereign world for all human and non-human kin.

TABLE OF CONTENTS

ABSTRACT	i
LAY SUMMARY	ii
DEDICATION	iii
TABLE OF CONTENTS	iv
LIST OF TABLES	vi
LIST OF FIGURES	vii
LIST OF ABBREVIATIONS USED	ix
GLOSSARY	x
ACKNOWLEDGEMENTS	xi
CHAPTER 1 INTRODUCTION	1
1.1 Background	4
1.2 Research Questions and Objectives	6
1.3 Thesis Overview	7
1.4 Positionality	10
CHAPTER 2 – STUDY CONTEXT	13
2.1 Environmental Dispossession and Loss of Autonomy	13
2.2 Re-Asserting Autonomy	17
CHAPTER 3 – LITERATURE REVIEW & THEORETICAL FRAMEWORK	22
3.1 Indigenous Geographies	23
3.2 Indigenous Determinants of Health	25
3.3 Indigenous Health Geographies	27
3.4 Theoretical Frameworks	30
3.4.1 Environmental Dispossession and Repossession	30
3.4.2 Piktukowaq Environmental Health Theoretical Framework (Framework)	34
3.5 Conclusion	37
CHAPTER 4 METHODOLOGY	38
4.1 Community-Based Participatory Research Methodology	39
4.1.1. Two Eyed Seeing	40
4.1.2 OCAP	41
4.2 Quantitative Methods	42
4.3 Outcome Measures	44
4.3.1 Physical Health	45
4.3.2 Mental Health.....	45
4.3.3 Emotional Health	46
4.3.4 Spiritual Health	47
4.4 Explanatory Measures from 2014/2019 EHS Data	48

4.4.1 Environment.....	49
4.4.2 Autonomy.....	50
4.4.3 Community Well-Being.....	51
4.5 How the Data were Analyzed.....	52
4.6 Conclusion.....	53
CHAPTER 5 – RESULTS.....	55
5.1 Introduction.....	55
5.2 Overall Health.....	55
5.3 Health Outcomes as a Factor of Connection to Environment.....	59
5.3.1 Physical Health.....	61
5.3.2 Emotional Health.....	61
5.3.3 Spiritual Health.....	62
5.3.4 Mental Health.....	63
5.4 Health as a factor of Autonomy.....	64
5.4.1 Health outcomes and autonomy – I feel listened to.....	65
5.4.2 Health outcomes and autonomy – I have control over decisions that affect my life.....	66
5.4.3. Health outcomes and autonomy – We are protecting PLFN for Future Generations.....	66
5.4.4 Mental Health and Autonomy.....	67
5.4.4.1. Mental health and autonomy – I feel listened to.....	68
5.4.4.2 Mental health and autonomy – I have control over decisions that affect my life.....	69
5.4.4.3 Mental health and autonomy– We are protecting PLFN for future generations.....	69
5.5 Community wellbeing.....	70
5.5.1. Health outcomes and community well-being – I like living in PLFN.....	70
5.5.2. Health outcomes and community well-being – I have a cultural connection to the area.....	71
5.5.3 Health Outcomes and community well-being – PLFN gives me a sense of community.....	72
5.5.4 Mental Health outcomes and community well-being.....	72
5.5.4.1 I like living in PLFN.....	72
5.5.4.2 I have a cultural connection to the area.....	73
5.5.4.3 PLFN gives me a sense of community.....	74
5.6 Relationship to Place and Autonomy.....	74
5.5.5.1 I like living in PLFN.....	75
5.5.5.2 I have a cultural connection to the area.....	75
5.5.5.3 PLFN gives me a sense of community.....	76
5.6 Conclusion.....	77
Chapter 6 Discussion and Conclusions.....	79
6.1 Introduction.....	79
6.2 Overall Health of the <i>Piktukowaq</i>.....	80
6.3 Relationship to Place, Environment, and Autonomy.....	81
6.4 Health as a factor of Autonomy.....	83
6.5 Relationship to Place and Community Well-being.....	85
6.6 Relationship to Place and Autonomy.....	86
6.7 Theoretical Contribution.....	87
6.8 Substantive Contributions.....	90
6.9 Limitations and Challenges.....	93

6.9.1. Mental health and spirituality variables EHS/WBBS.....	93
6.9.2 COVID-19, Community Research & Changing Thesis Directions	94
6.10 Recommendations for Future Research	94
6.11 Conclusion	95
References	97
APPENDIX A	114
Variables & Responses for Thesis Study	114

LIST OF TABLES

Table: 5.1 Pictou Landing First Nation Health Outcomes – 2014/ 2019..... 56

Table 5.2 Comparing PLFN Health Outcomes – Environment – 2014/2019..... 61

LIST OF FIGURES

Figure 2.1 Location of the Northern Pulp Mill, Boat Harbour Effluent Treatment Facility, and Pictou Landing First Nation (Source: PLNWG et al., 2016).....**Error! Bookmark not defined.**

Figure 3.1 Piktukowaq Environmental Health Cultural Framework (Lewis 2018, 2020a).....	36
Figure 5.1 - PLFN Mental Health Outcomes (2014 EHS; 2019 WBBS).....	58
Figure 5.2 PLFN Environment Outcomes (2014 EHS /2019 WBBS).....	60
Figure 5.3. PLFN Environment / Mental Health Outcomes (2014 EHS & 2019 WBBS)	63
Figure 5.4 PLFN Autonomy Outcomes (2014 EHS /2019 WBBS)	64
Figure 5.4.1 I feel listened to (2014 EHS/2019 WBBS).....	65
Figure 5.4.2 PLFN Control over decisions (2014 EHS/ 2019 WBBS)	66
Figure 5.4.3 PLFN Health Outcomes & We are protecting PLFN for future generations (2014 EHS / 2019 WBBS)	67
Figure 5.4.4.1 Mental Health & I feel listened to (2014 EHS/2019 WBBS)	68
Figure 5.4.4.2 Mental Health & Control over decisions (2014 EHS/2019 WBBS).....	69
Figure 5.4.4.3 Mental Health & Protecting PLFN for future generations (2014 EHS/2019 WBBS).....	70
Figure 5.5.1 Health Outcomes - I like living in PLFN – Agree Responses (2014 EHS / 2019 WBBS).....	71
Figure 5.5.2 Health Outcomes – I have a cultural connection to the area – Agree Responses (2014 EHS/ 2019 WBBS).....	71
Figure 5.5.3 Health Outcomes & PLFN gives me my sense of community – Agree Responses (2014 EHS/2019 WBBS).....	72
Figure 5.5.4.1 Mental health & I like living in PLFN (2014 EHS/ 2019 WBBS).....	73
Figure 5.5.4.2 Mental health & Cultural Connection to Area (2014 EHS/ 2019 WBBS).....	73
Figure 5.5.4.3 Mental health & Sense of community (2014 EHS/ 2019 WBBS)	74
Figure 5.5.5.1 Relationship to place and autonomy (like living in PLFN) (2014 EHS/ 2019 WBBS).....	75
Figure 5.5.5.2 Relationship to place and autonomy (cultural connection is to the area) (2014 EHS/ 2019 WBBS)	76

Figure 5.5.5.3 Relationship to place and autonomy (PLFN gives me a sense of community)
(2014 EHS/ 2019 WBBS)..... 76

LIST OF ABBREVIATIONS USED

BHETF - Boat Harbour Effluent Treatment Facility

CBPR - Community-Based Participatory Research

CEAA - Canadian Environmental Assessment Agency
EHS - Environmental Health Survey (2014)
EIS - Environmental Impact Statement
FNIGC - First Nations Information and Governance Centre
IAAC - Impact Assessment Agency of Canada
IK - Indigenous Knowledge
JEHMC - Joint Environmental Health Monitoring Committee
NAHO - National Aboriginal Health Organization
NS - Nova Scotia
OCAP - Ownership, Control, Access, Possession
PLFN - Pictou Landing First Nation
PLNWG - Pictou Landing Native Women's Group
RHS - First Nations Regional Health Survey
UNDRIP - United Nations Declaration on the Rights of Indigenous Peoples
WBBS - Pictou-Landing First Nation Well-Being Baseline Study (2019)

GLOSSARY

<i>A'se'k</i>	Boat harbour or the 'other room'
<i>Epekwithk aq Piktuk,</i>	One of the seven districts of the Mi'kmaw - Home of the <i>Piktukowaq</i>
<i>Eskikewa'kik,</i>	One of the seven districts of the Mi'kmaw

<i>Kespek</i>	One of the seven districts of the Mi'kmaw
<i>Kespukwitk,</i>	One of the seven districts of the Mi'kmaw
<i>Kisu'lk</i>	Creator
<i>Kisu'lt melkiko'tin</i>	Place of Creation/Nature
<i>Ko'kmanaq</i>	Our relations or our relatives
<i>Mi'kma'ki</i>	Traditional territory of the Mi'kmaw people.
<i>Netukulim</i>	Values and norms for being on the land
<i>Piktukowaq</i>	Person from the traditional territory of <i>Piktuk</i>
<i>Siknikt</i>	One of the seven districts of the Mi'kmaw
<i>Sipekni'katik</i>	One of the seven districts of the Mi'kmaw
<i>Tlilnuo'ti'k</i>	How we will be Mi'kmaq
<i>Unama'kik,</i>	One of the seven districts of the Mi'kmaw
<i>Weji-sqalia'timk</i>	Where we sprouted from or emerged from

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To the most beautiful community of Pictou Landing First Nation – thank you for entrusting me with your stories, your health, and your community's life work. I am incredibly grateful to learn from a community of resistance – ones creating a new world where our people can be healthy and thriving. You have truly inspired me to work towards the betterment of Indigenous peoples across Turtle Island and support environmental health endeavours as the key to our health and

well-being as Ogwehoweh. Thank you for letting me a part of your journey in bringing *A'se'k* back to what it once was.

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CHAPTER 1 INTRODUCTION

Many Indigenous peoples live in a transformational era where solidarity for Indigenous sovereignty movements is increasing worldwide. Indigenous resistance to contemporary colonial forces is garnering the understanding of the wider non-Indigenous public and is leading to transformation for the future of Indigenous nations (Butler, 2021). Although participation in Crown-led environmental decision-making processes is not new to Indigenous peoples, it is becoming more and more evident over the last decades that these processes are increasingly used to reassert jurisdiction over ancestral territories (Kotaska 2013; Zurba et al. 2019). Indigenous communities like Pictou Landing First Nation (PLFN), across what we now know as Canada, have been actively exercising their rights and standing up to settler governments and industries as resistance to environmental harms caused by development, and the subsequent health impacts they experience. From pipelines to hydro dams, from mining and deforestation, Indigenous nations are on the frontlines resisting ecological degradation, as they know how these processes impact their culture, foods, languages, and identities (Butler, 2021; United Nations, 2022).

In April 2022, the Chair of the United Nations Permanent Forum on Indigenous Issues reflected on the rights of Indigenous peoples and how non-consensual extractive operations on Indigenous peoples' territories will cause irreparable harm to Indigenous health (United Nations, 2022). Indigenous rights are supposed to be protected, but most often they are not even acknowledged as most nation-states pave the way for settler governments to pillage resources or ways of life through harmful business activities (United Nations, 2022).

In Canada, the rights of Indigenous people are acknowledged through the Canadian Constitution but are ignored by multiple levels of government in pursuit of resource extraction, development, and industry. Indigenous rights in what is now known as Canada are

acknowledged through Section 35 of the Canadian Constitution. Section 35(1) outlines 'existing aboriginal and treaty rights of the aboriginal peoples of Canada are hereby recognized and affirmed' (Government of Canada, n.d.). Even though Canada acknowledges these special rights for Indigenous peoples in their Constitution, there are many cases of the country disrespecting Indigenous rights in terms of resource extraction, development, and industry. The UN Human Rights Committee has made numerous recommendations for fundamental changes in Canadian law and policy in respect to the treatment of First Nations, Inuit and Métis peoples (Union of B.C. Indian Chiefs, n.d.). The Committee has expressed concern about the violation of Indigenous Peoples' land rights, but the country is still seeing these incidents of power dynamics and abuse today (Union of B.C. Indian Chiefs, n.d.).

Not only does Canada go against Indigenous rights that they have acknowledged and affirmed, but many issues arise in Canada from the divisions of power between the federal and provincial governments. While the government is liable to commitments made through treaty, the federal government also has Section 91(24) of the *Constitution Act, 1867*. Section 91(24) provides Parliament with exclusive legislative authority regarding "Indians, and Lands reserved for the Indians" (Fryer & Leblanc-Laurendeau, 2019, pp.1). For the purposes of section 91(24), the Supreme Court of Canada has concluded that "Indian" includes Inuit (1939), status and non-status First Nations, and Métis people (2016) (Fryer & Leblanc-Laurendeau, 2019, pp.7). The federal government has jurisdiction over Indians, lands reserved for Indians, and upholding treaties, (Fryer & Leblanc-Laurendeau, 2019) but through the divisions of power with provincial governments, these obligations can get confusing. Provincial governments in Canada have jurisdiction over resources and energy on traditional territories and have jurisdiction over the delivery of health services required by Indigenous peoples who live

off-reserve (Fryer & Leblanc-Laurendeau, 2019). When federal governments have jurisdiction over Indians, lands reserved for Indians, and treaty obligations, but provinces have jurisdiction over energy, resources, and health, conflict arises between the federal government, provincial government, and Indigenous nations. Many projects like British Columbia's Site C Dam have caused issues in terms of Indigenous rights as the mega dam project has been approved by both the federal and provincial government, despite the considerable objections of First Nations and high profiled environmental assessment processes (Union of B.C. Indian Chiefs, n.d.). With colonial encroachment through various tactics of assimilation and dispossession, Indigenous peoples have still maintained their exertion of autonomy and continue to do so under contemporary constraints.

The *Piktukowaq* (*Mi'kmaw*¹ name for those who live in Pictou Landing First Nation (PLFN)) re-assertion of environmental health autonomy, evidenced in the collection of data for the Pictou Landing Native Womens' Group's (PLNWG) *2014 Identifying, Documenting Mapping, and Mobilizing Environment and Health Knowledge in Pictou Landing: An Environmental Health Survey* (EHS) and *Pictou Landing First Nation Well-Being Baseline Study* (WBBS), as part of the Boat Harbour Remediation Project, is just one example of Indigenous people asserting their autonomy over environmental decision-making. In the case of PLFN, the First Nation has a long history of enduring the environmental health impacts resulting from the presence of a pulp and paper mill on their territory. In 2010, the *Piktukowaq* re-asserted their autonomy by starting a research process to collect their own environmental health data and pave a new path forward to protect their health and the health of their surrounding environment. They continue to do so today. The *Piktukowaq* pursuit of a healthier community signals a deep

¹ *Mi'kmaw* is the singular of *Mi'kmaq* or is an adjective when it precedes a noun (e.g. *Mi'kmaw* people). (*Mi'kmaw* Resource Guide, n.d.).

commitment to self-determine their own health and well-being, now and into the future. After years of pressure by the *Piktukowaq*, the pulp and paper mill is closed and the Boat Harbour Effluent Treatment Facility (BHETF), which bordered their community, is undergoing a federal environmental assessment. Focusing on the case of the *Piktukowaq*, this study is intended to demonstrate the potential for Indigenous communities and nations to radically rethink the potential for autonomous decision-making in the face of environmental degradation.



Figure 2.1 Location of the Northern Pulp Mill, Boat Harbour Effluent Treatment Facility, and Pictou Landing First Nation (Source: PLNWG et al., 2016).

1.1 Background

Mi'kma'ki is the traditional homeland of the *Mi'kmaw* people (Sable, Francis, Lewis, & Jones, 2012). *Mi'kma'ki* is made up of seven traditional districts: *Kespukwitik*, *Sipekni'katik*, *Eskikewa'kik*, *Unama'kik*, *Epekwithk aq Piktuk*, *Siknikt*, and *Kespek* (Sable et al., 2012). *Epekwithk aq Piktuk* is the traditional place of the *Piktukowaq*, a *Mi'kmaw* community on the northern shore of mainland of Nova Scotia, facing the Northumberland Strait (Pictou Landing First Nation,

n.d.). Most of *Piktuk* spanned coastal and riverine landscapes surrounding the Northumberland Strait, sources of abundant food (Confederacy of Mainland Mi'kmaq, 2008; Davis & Brown, 1996 as cited in Bennett 2013). PLFN neighbours a sacred place with cultural significance known as *A'se'k*, a tidal “estuary where the ancestors of the” *Piktukowaq* “once seasonally fished, clammed, hunted, played, and prayed” (The Nova Scotia Environmental Rights Working Group, n.d., p. 1). Translated to English, *A'se'k* means "over there" or "the other room" (Lewis, 2020a, p. 68). The values and obligations of the *Mi'kmaq* stem from their kinship ties. *Ko'kmanaq*, an essential concept to the *Mi'kmaq*, translates to "our relations" or "our relatives" (Sable et al., 2012, p. 23), and signifies the interrelation between all living and non-living parts of the world.

In the 1960s, a pulp and paper mill was built near PLFN at Abercrombie Point. To separate the mill from where the effluent would be dumped, PLFN's sacred water source, *A'se'k* was picked as the chosen site for the mill's effluent. The location of the effluent facility (BHETF) has led to severe pollution of their territory and ongoing concern around the environment and health of the *Piktukowaq* for decades (PLN WG, 2016; Pictou Landing First Nation, 2019). In 2020, the mill was ordered to close by government. I will provide further detail in Chapter two.

Historically, the *Mi'kmaw* Nation engaged in governance practices centred on participatory consensual decision-making and reciprocity through a traditional Grand Council governing structure, with representatives from the seven traditional districts of *Mi'kma'ki* (Paul, 2006). Although the Grand Council structure continues to function today, it has been supplanted by an Indian Act governance structure, therefore, PLFN is currently governed by an Indian Act elected Chief and Band Council, who serve a two-year term (Indigenous and Northern Affairs Canada, 2019). The Chief and Council are leading the community as they participate in the

remediation of the BHETF. Today, PLFN has 675 registered members; 494 residents live on reserve in PLFN, and 181 live off reserve (Indigenous and Northern Affairs Canada, 2019).

1.2 Research Questions and Objectives

With the closure of the BHETF, the community of PLFN is in a crucial period of reasserting autonomy and self-determination over environmental decision-making. The United Nations Declaration on the Rights of Indigenous Peoples, in Article 4, states that “Indigenous peoples, in exercising their right to self-determination, have the right to autonomy or self-government in matters relating to their internal and local affairs” (United Nations, n.d., p. 8), vital to the sustainability and continuance of Indigenous nation identity. Autonomy and self-determination of the *Piktukowaq* has been restricted by the encroachment of settlers into their traditional territory since 1783, consequently impacting *Piktukowaq* sovereignty (Pictou Landing First Nation, 2019). The *Piktukowaq* believe the environmental degradation and dispossession of *A’s’e’k* as a result of the siting of mill nearby and the BHETF adjacent to their community is a continuation of the colonization processes that began before the 1800s (Pictou Landing First Nation, 2019). Although colonization may have restricted the *Piktukowaq* to make decisions over their territory in the past, changes are underway. This study is intended to explore how power and control over environmental decision-making may impact the health and well-being of PLFN.

PLFN have found methods to be autonomous by leading two environmental health surveys for their community. In 2014, the women in the community conducted *Identifying, Documenting, Mapping, and Mobilizing Environment and Health Knowledge in Pictou Landing: An Environmental Health Survey* (EHS). The leadership led the 2019 *Pictou-Landing First Nation Well-Being Baseline Study* (WBBS). By exploring the relationship between Indigenous

autonomy and health, I seek to answer the following research questions: 1) Does community health for the Pictou Landing First Nation improve over time when community members have more autonomy over environmental assessment processes on their traditional territory?; and 2) Does Pictou Landing First Nation's relationship to place improve with more autonomy in environmental decision-making? To answer my research questions, three objectives guide my thesis: to assess if autonomy impacts the physical, mental, emotional, and spiritual health of the PLFN community; to assess the relationship between connection to place and the four health variables, and to assess the relationship between connection to place and autonomy. To address these objectives, I will compare the data coming from the PLFN 2014 EHS and 2019 WBBS. I now turn to how I will present my study.

1.3 Thesis Overview

In Chapter 2, I will introduce the context of my study. I will discuss the history of the *Piktukowaq*'s relationship to place, and their eventual relationship to the BHETF on their territory. The beginning of the chapter gives background on who the *Piktukowaq* are, and their first encounters with settlers. I then focus on how the *Piktukowaq* experienced environmental dispossession, and subsequently their loss of autonomy over their territory. Next the study context explores the *Piktukowaq*'s re-assertion of autonomy through their environmental health endeavours with the 2014 EHS and the 2019 WBBS.

In Chapter 3, I introduce the literature foundational to the research. Firstly, the Indigenous geographies literature guides my understanding of geography and Indigenous people's relationship to their natural environments. Secondly, I look to the growing literature on Indigenous health geographies to articulate that Indigenous health must be understood as beyond

the colonial understandings of health; it calls for a more nuanced understanding of the holistic nature of Indigenous relations (de Leeuw et al., 2015). Indigenous autonomy and the collective right to self-determination are enveloped within traditional Indigenous knowledge systems — the spiritual ways, languages, cultural practices, legal systems, and social, economic, and political structures of Indigenous Peoples. Finally, I will be positioning my thesis within the growing literature on Indigenous autonomy in environmental decision-making as reflected in the theoretical concepts of environmental dispossession and environmental repossession. Grounding the experience of PLFN in an understanding of environmental dispossession will illuminate how the BHETF interfered with the *Piktukowaq* relationship to *A'se'k*. Environmental dispossession is the process through which traditional access to the resources of the environment is reduced, and is characterized by displacement, environmental contamination, unprecedented resource extraction or land rights disputes, and forced assimilation (Big-Canoe and Richmond 2014; Richmond and Ross 2009; Tobias and Richmond 2014). As PLFN begins to regain control over their health, I want to explore the sense of autonomy they experience participating in the remediation process. I will explore this process as environmental repossession, defined as the global shift led by Indigenous peoples to reclaim their territories, ways of knowing, and ties to place (Big-Canoe and Richmond, 2014; Nightingale & Richmond, 2021, p. 1). In Chapter 3, I also explore the *Piktukowaq* environmental health theory as developed by Lewis (2018) that centres *Piktukowaq* place-based epistemological, ontological, and axiological understanding of their place in the world to orient the reader to how the *Piktukowaq* understand their world. This theory will guide interpretation of the data coming from the surveys.

Chapter 4 explains the methodological tools I employ to answer my research questions and meet the objectives of the study. Both the EHS and the WBBS were guided by a community-

based participatory research methodology, so I will briefly address the process for both survey process. The collection of the data also adhered to the First Nations principles of OCAP® (Ownership, Control, Access, and Possession), so I will briefly explain this concept. I employ quantitative methods to present the survey data from the two PLFN community health datasets, the 2014 EHS and the 2019 WBBS. I explain my decision to present my outcome measures using a definition of health that is appropriate for Indigenous people. The National Aboriginal Health Organization defines Indigenous health, “as the balance among the physical, mental, emotional and spiritual realms, as well as the environment, culture, family, and community, and that Indigenous well-being flows from balance and harmony among all these elements of personal and collective life” (National Aboriginal Health Organization, 2007, p.1). I present four (4) explanatory measures that represent external factors that may impact Indigenous peoples' health. Finally, in Chapter 4 I present how the data will be analyzed.

In Chapter 5, I present my results, first by comparing the 2014 EHS and the 2019 WBBS, using the variables of physical, mental, emotional, and spiritual health. I will then present health outcomes as a factor of autonomy, environment, and community well-being. I analyze the data using Stata and present descriptive statistics and cross-tabulations. I did not test for significance in the data that is presented. Further work will test for significance. To contextualize impacts of what happened at *A'se'k*, I will employ the *Piktukowaq* environmental health cultural framework as developed by Lewis (2018) to further elaborate how the *Piktukowaq* were harmed when *A'se'k* was destroyed.

In Chapter 6, I will discuss my key findings, theoretical contributions, and substantive contributions of my research. In this chapter, I discuss noticeable improvements in physical health and mental health when PLFN re-asserted autonomy over environmental decision-making

in relation to environment, community well-being, and autonomy. I then discuss how concern for the environment can be explained through a lens of care and love for territory. I also discuss the key theoretical findings around *Piktukowaq* understandings of autonomy. And through the substantive contributions, I find in answering my research questions, that I discover that autonomy, perceived through traditional notions of protecting the environment for future generations, has important implications for health. In my next section, I will touch on my own positionality as an Indigenous, Cayuga-Panameñas community member and research in how it relates to the research I am doing with PLFN.

1.4 Positionality

As an Indigenous researcher, Kovach (2009) and Tuhiwai Smith (2012) would suggest that I must position myself in the research I am about to undertake. I am a *Gayogohó:nq²-Panameñas* (Cayuga-Panamanian) Wolf Clan woman and youth raised in the Six Nations of the Grand River Territory. Being empowered in community research has led me back home to Six Nations to partake in environmental health and autonomy research in my community to support the sovereignty of our traditional governance, the Haudenosaunee Confederacy. I have a responsibility, as a Cayuga-Panamanian Wolf Clan woman and a member of the sovereign Haudenosaunee Confederacy, to my nation, my clan, my confederacy, and *Yethinihstenha Onhwentsya* (Mother Earth). As a youth, I am dedicated to working every fibre of my being to create a healthy future for the coming faces. As I work for my community, I bring the lessons I learn from others to create a reciprocal relationship to the knowledge of the people I am working with.

In 2020, I graduated from Western University with a Bachelor of Arts in Media, Information, & Technoculture and Indigenous Studies. Growing up in Haudenosaunee Territory

on the Haldimand Tract, as a young Indigenous person, I quickly learned to navigate the exploitation and urbanization of our surrounding lands from settler entities. Many people along my territory know this feeling because we are subject to environmental dispossession attributed to the loss of our lands through energy and resource development projects, such as dams and pipelines, and development policies of settler governments such as those coming from the Government of Canada or local municipalities. As someone interested in climate justice, I started working at the Six Nations Development Corporation in 2018 as a Corporate Affairs Assistant, supporting communications, community engagement and education for clean energy and economic development. There was a contentious energy project, the Niagara Reinforcement Line, in dispute by community members demanding consultation and asserting nothing should happen without community consent. I was excited to work somewhere focused on the clean energy transition, but something felt uneasy. Although it was empowering to work towards a mandate of a healthier community, I began to see the gaps in autonomy and governance around the environmental decision-making going on in our territory.

To many, these developments are devastating to our ways of life, and it made me want to search for more answers about the contemporary relationship between my community's health and the economic development in our territory. Despite community concerns and opposition, the energy project was eventually completed. But I was still interested in understanding more the connection between autonomy and health outcomes.

In my third year of university, I was introduced to community-based research. I was allowed to work alongside a couple of Elders from the urban Indigenous community in London, ON, to archive their 20-year-old Indigenous radio show called Smoke Signals. They were the first people I have ever called community partners, and our relationship became much more than

just research. It was an ongoing friendship and mentorship provided by Elders in a community I lived in while studying away from home.

During this time, my relationship with my home territory began to shift as I explored and understood how our health as Indigenous peoples depends on our environment's health. I was a media student, but suddenly I had a change in passion because this was the first time that what I was learning was directly related to my own life as a Haudenosaunee person impacted by environmental dispossession. My relationship with research was also beginning to change, and I started to see myself as a youth community-based researcher that wanted to support communities in their endeavours to understand the impacts of energy or industry on their health and well-being.

As my interest began to focus in on Indigenous health and well-being, I started to work in community based environmental health research. Working in a community-based research approach with other Indigenous communities, I came to understand what it is to work for the best interest of a community, and their coming faces, and giving back research in a good way that serves the interest of the community, and Indigenous nations more broadly. I continue in the next chapter to discuss how my positionality contributes to understanding how PLFN's journey to re-assert autonomy impacts the health of their community and the attachment to their ancestral territory.

CHAPTER 2 – STUDY CONTEXT

In the previous chapter, I discussed my positionality as a young Indigenous woman living in a Haudenosaunee community severely impacted by development, industry, and government decisions. It is important to understand my interest in autonomy and self-determination to put my study into context. Experiencing first-hand the challenges of achieving autonomy and self-determination with clean energy development in my community, I want to explore further the relationship between Indigenous health and development in a context outside of my community. I will provide the history of the *Piktukowaq*'s relationship to place, and their experiences of having the BHETF sited on their territory to demonstrate how environmental dispossession was also a loss of autonomy over decisions that could impact health as a consequence of development on their territory.

2.1 Environmental Dispossession and Loss of Autonomy

Through processes of environmental dispossession, much has changed in the traditional territory known as *Epekwith aq Piktuk*. The territory originally extended between what is now known as Buctouche, New Brunswick, and Alton, and Truro, Nova Scotia (Lewis, 2020a). Most people know only what is left today - Pictou Landing First Nation (PLFN), a small reserve community only 143 hectares total in size from individual parcels in NS (Indigenous and Northern Affairs Canada, 2019). For the *Mi'kmaq* it is a completely different world since 1504 when the *Mi'kmaq* first saw European ships coming to the shores of North America in their efforts to exploit the plentiful fish (Bennett, 2013). Sustained settler interference with the *Mi'kmaq* began shortly after the signing of the Peace and Friendship Treaties in the Atlantic region in the 1700s, signed by the *Mi'kmaw* with the intent to protect their sovereignty (Pictou Landing Native Women's Group et al., 2016). Treaties are signed nation-to-nation and are sacred

agreements founded in living promises, mutual obligations, with benefits for both signatories (Government of Canada, 2015).

The first documented interference with *Piktukowaq* sovereignty was in 1783 when the Government of Nova Scotia (NS) granted the *Mi'kmaq* a license of occupation on their homelands, with free liberty to hunt, fish, and roam, even though they had been sovereign on their territory for millennia (Patterson, 1877; Pictou Landing First Nation, 2019). The *Mi'kmaq* Nation soon came to be seen as a barrier for growth of the new colony, which would become an inherent problem for further expansion of settlement in Nova Scotia (Bennett, 2013; Lewis, 2018). Over time, through the processes of environmental dispossession, "when Indigenous peoples' access to the resources of the traditional environment is reduced" (Richmond and Ross, pp. 403), the *Piktukowaq* were primarily dispossessed of their homelands through active measures taken by settler governments. The *Piktukowaq* finally asked for land to be set aside and received a small 50-acre parcel of their land around *A'se'k* in February 1864, and the *Piktukowaq*'s presence in their homelands was affirmed (Bennett, 2013). Shortly after, the *Indian Act, 1876*, targeted Indigenous sovereignty by enacting a new colonial governance structure for Indian reserves, eliminating traditional governance structures across what we know today as Canada (Palmater, 2014). The Indian Act Band Elected Council system operates under the jurisdiction of the federal government of Canada (Palmater, 2014).

One influential piece of the *Indian Act 1876* is *Section 35 (Lands Taken for Public Purposes)*, as it allows a provincial legislature to obtain federal reserve lands through the consent of the Canadian government, subject to an amount agreed upon by relevant parties for the Band (Lewis 2020b), thereby allowing the province to utilize reserve lands with the permission of Canada for a public purpose. Canada's Indian Act legislation continued an attack on *Piktukowaq*

autonomy and paved the way in the province of Nova Scotia for the most flagrant attack on *Piktukowaq* identity, health, and sovereignty - the creation of the BHETF bordering their lands.

In 1957, the NS government leased lands to Scott Paper Company Ltd. to build a bleached kraft pulp and paper mill at Abercrombie Point, with construction beginning in 1965 (Cameron, 1972, as cited in Lewis 2020b). The mill required a location to dump the toxic effluent that is a product of the pulping process (Bennett, 2013; Paul, 2006). The Nova Scotia Water Authority, who in 1966 regulated water bodies in the province, saw *A'se'k* as the perfect location for the proposed effluent facility. Still, the province needed to secure rights to *A'se'k* through the federal government (jurisdiction over lands reserved for Indians), who convinced the Indian Act elected band council to sign over the rights to the province for \$60,000 (Paul, 2006). *A'se'k* became the BHETF, and the mill would dump 85 million litres of treated effluent a day on the shores of PLFN (Paul, 2006; Pictou Landing Native Women's Group et al., 2016). Under regulations in the Indian Act, such an agreement should have required a community-wide referendum, which did not occur (Bennett, 2013).

Soon after the mill started running, the *Piktukowaq* experienced “a malodorous stench, mass fish deaths, and the exterior of their houses turned black from air pollution; they had lost the livelihood, spiritual, and recreational functions once provided at *A'se'k*, and anecdotal fears of ill-health caused by the mill's pollution and the Boat Harbour Treatment Facility began to circulate in news stories of the 1970s” (Hale, 1970 as cited in Bennett, 2013, p. #).

Even though there were severe environmental health impacts evident, and the Water Authority was warned the treatment facility plans were not sound, the mill became a source of economic identity for the settler community around PLFN, and the settler government's financial benefit

from the operation overrode anything else (Osmond 2019; Paul, 2006). Scott Paper may have been enjoying the influx of profit from the mill, but the *Piktukowaq* were reminded daily of the environmental and health impacts in PLFN (Osmond 2019).

The *Piktukowaq* stayed opposed to the harm of the effluent for decades, and even the Union of Nova Scotia Indians and the National Indian Brotherhood became involved in trying to force the province into remediation (Bennett, 2013; Hale, 1970). Despite PLFN's resistance, in the 1970s, the NS government entered a 25-year agreement with the mill to license their dumping of the effluent until 1995, without consulting PLFN (Bennett, 2013). In 1986, Pictou Landing First Nation initiated a lawsuit against the federal government for failing to meet its fiduciary duty to protect the Band (Bennett, 2013).

In the 1990s, the NS government repeatedly committed to decommissioning the BHETF (Nova Scotia Legislature, 2017). In 1995, the 1993 *Pictou Landing Indian Band Settlement Agreement* was ratified in Parliament, awarding PLFN \$35 million, but also ensuring that the Government of Canada would never be held liable again for damages related to the BHETF (Lewis, 2020b). The agreement also established a Joint Environmental Health Monitoring Committee (JEHMC) comprised of representatives of Canada and PLFN (Lewis, 2020b). JEHMC's mandate was to oversee how *Piktukowaq*'s health might be impacted by exposure to the pulp and paper mill, and the effluent dumped into A'se'k (Lewis, 2020b). PLFN had little influence or control over the studies that were conducted, which were supposed to reflect the concerns of their community but concluded there were no negative or threatening health impacts from the BHETF on PLFN members, even though the community knew otherwise (Lewis 2020b). Despite the provincial government's commitments and promises, nothing changed in terms of closing Boat Harbour down and cleaning it up (Nova Scotia Legislature, 2017). Instead,

the degradation of A'se'k and attack on *Piktukowaq*'s autonomy over their lands and health continued.

2.2 Re-Asserting Autonomy

By 2010, the Pictou Landing First Nation Women's Group (PLNWG) had had enough. The women decided they would take matters into their own hands to protect PLFN for future generations because they feared the impacts of the BHETF (Pictou Landing Native Women's Group et al., 2016). Since the federally mandated JEHMC was not responding to their concerns, the women needed to do something themselves (Pictou Landing First Nation, 2019; Pictou Landing Native Women's Group et al., 2016). Through personal and academic contacts, PLNWG would soon meet with university researchers to explore the possibility of working together on a health research project to determine whether the community was getting sick from Boat Harbour.

These discussions led to a relationship between the parties to develop a long-standing community-based participatory project to collect baseline health data in PLFN for the first time since the creation of the BHETF in the 1960s (Pictou Landing Native Women's Group et al., 2016). The 2014 EHS was developed with the PLNWG to assess the current health of PLFN community members. Before the survey, no independent scholarly study had explicitly examined the relationship between the environmental contamination at Boat Harbour and its influence on the health of the people who live in PLFN (Pictou Landing Native Women's Group et al., 2016). The PLNWG developed a survey instrument that would provide reliable community health data. PLNWG felt health had been impacted, and through the 2014 EHS, the PLNWG proved their health was being affected by the pulp and paper mill.

In the summer of 2014, a community member in PLFN found a leak in the pipeline holding effluent going to Boat Harbour (Pictou Landing Native Women's Group et al., 2016). The pipe had leaked around 47,000,000 litres of effluent into the East River and Pictou Harbour (Pictou Landing Native Women's Group et al., 2016, p.71). The discovery of the large effluent leak was followed by large opposition from PLFN through a community blockade (Thomas-Muller, 2014). Elected Chief of PLFN, Andrea Paul, contacted the Nova Scotia government and Northern Pulp to inquire about the spills clean up, but the province refused to share any information (Thomas-Muller, 2014). In concern for their territory and burial sites near the spill, Pictou Landing First Nation's elected government ignited a peaceful blockade, effectively shutting down the Northern Pulp Mill (Patterson, 2014; Thomas-Muller, 2014). The blockade brought critical media attention to the spill and represented a re-assertion of *Piktukowaq* autonomy. This re-assertion of autonomy led to a promise from the province to set a legally mandated deadline to stop the effluent flow and start to plan for the remediation of the BHETF (Pictou Landing Native Women's Group et al., 2016, p. 5). In 2015, the *Boat Harbour Act* passed, which committed the province to close the BHETF by January 31, 2020 (Pictou Landing Native Women's Group et al., 2016, p. 5).

NS Lands filed a project description for the remediation of Boat Harbour, which then became a federal assessment because of pressure. On February 7, 2018, the Canadian Environmental Assessment Agency (CEAA) (which was renamed the Impact Assessment Agency of Canada in 2019) received a request from a member of the public to require the project to undergo a federal environmental assessment, expressing concerns for local fisheries and First Nations (Government of Canada, 2019). Following the first request, the Impact Assessment Agency of Canada has received over 3200 letters of concern from the public, including the

elected council of Pictou Landing First Nation, asking the federal government to step in (Government of Canada, 2019). In May 2019, after going back and forth between the Province of Nova Scotia, and consultation with external parties such as the elected council of Pictou Landing First Nation, the CEAA made a decision that the Boat Harbour Remediation Project triggered a federal environmental assessment (Government of Canada, 2019) and released the Guidelines for the Preparation of an Environmental Impact Statement (Guidelines) for the project (Remediation Project) (Pictou Landing First Nation, 2019, pp.7). CEAA directed NS Lands, the proponent of the Boat Harbour Remediation Project, to take a holistic approach to assess the environmental impact to the environment by highlighting Indigenous knowledge and perspectives (Pictou Landing First Nation, 2019). After much negotiation, the province supported the *Piktukowaq* to lead the preparation of the WBBS for inclusion into the Environmental Impact Statement.

With the planned closure of the BHTEF in 2020, many PLFN community members, demanded that the harbour be returned to its former state – to *A'se'k*, the tidal estuary that was a crucial part of *Mi'kmaw* life in Pictou County (Osmond, 2019; Pictou Landing First Nation, 2019). The Nova Scotia Government said that Boat Harbour is one of the worst examples of environmental racism in the province and one of Nova Scotia's biggest ecological remediation projects (Baxter, 2020). They plan to restore the waterway to its natural state (Baxter, 2020).

In November 2019, PLFN re-asserted their autonomy over their community health and the health of their environment when they conducted the WBBS (Pictou Landing First Nation, 2019). The WBBS furthered the work of the PLNWG by becoming the second phase of the EHS, also with a qualitative component to contextualize results even more (Pictou Landing First Nation, 2019). There was an agreement between PLFN and NS Lands Inc. that all findings

would be OCAP® compliant (Pictou Landing First Nation, 2019). I will explain more on OCAP in the methodology chapter.

Through the WBBS, the community determined the spatial boundaries of the effects of the BHETF to include the *Piktukowaq* traditional territory, including *A'se'k* (Pictou Landing First Nation, 2019). “The temporal boundaries extend from the time that the effluent started to flow into *A'se'k* until the full remediation brings *A'se'k* back to the state that *Kisu'lk*² created” (Pictou Landing First Nation, 2019, p. 7). The *Piktukowaq* also established a culturally relevant determination of significance. An impact would no longer be considered significant if they were able to get back to conducting themselves as *Mi'kmaq* and being able to live the life *Kisu'lk* intended. That is, if the *Piktukowaq* cannot get back to how *Kisu'lk* intended they live in their traditional territory and around *A'se'k*, the government will not be deemed successful in their remediation of Boat Harbour (Pictou Landing First Nation, 2019).

NS Lands Inc. Boat Harbour Remediation Project team reports that the work they are proposing for the cleanup of Boat Harbour comes as a result of consultation with local stakeholders, federal and provincial regulators, technical advisors, and scientists, (NS Lands Inc., 2020). The assessment is still in progress as the Impact Assessment Agency of Canada (IAAC) gave an extension on June 23rd, 2022, to a three-year time limit for NS Lands Inc. to provide the proper information or studies for the environmental assessment for the remediation project (Government of Canada, 2022).

Even though the remediation process is underway, and PLFN has gained more autonomy over assessing the community health and well-being as defined in an Indigenous context, PLFN still does not feel like they are listened to. From data gathered in the WBBS, community

² *Kisu'lk* is the word for Creator in the *Mi'kmaw* language.

members expressed that they did not feel listened to throughout the remediation process. One question in the 2019 WBBS asked was if participants felt the province listens to their concerns; approximately two-thirds responded no. A man participating in one of the focus groups said, "The government doesn't hear us. Nobody hears us," while a young woman shared:

"I don't overly trust the province cause of the fact that they did put [Boat Harbour] there.

So, I mean, it would really be nice to trust them to believe that they would clean it up, but my personal view on it is I don't overly trust them" (Pictou Landing First Nation, 2019, pp. 33).

These comments were made before the community knew of the January 2020 announcement by the provincial government that not only would the BHETF close, but that the mill itself would also have to close its' operations entirely within the next three (3) months. This research is focused, however, only in relation to the closure of the BHETF.

In the next chapter, I will explore autonomy through the determinants of health literature as well as ideas from Indigenous geographies, Indigenous health geographies, environmental dispossession, and repossession, and the *Piktukowaq* environmental health theory.

CHAPTER 3 – LITERATURE REVIEW & THEORETICAL FRAMEWORK

Indigenous nations' access to their land and autonomy over their territories continue to be impacted by colonization and processes of dispossession despite ongoing care and kinship, consequently impacting the multi-faceted relationship Indigenous people have to their lands and environments and their overall health and well-being (de Leeuw et al., 2012; Kelm, 1998; Lewis et al., 2020; Richmond, 2015; Richmond & Ross, 2009). Experiences of dispossession disengage communities from their traditional governance and cultural systems, reinforcing colonial policies that impact nation to nation relationships, their connections to land, and the health and well-being of their people (Castleden et al., 2017; Reading, 2015). Through the process of environmental dispossession that PLFN experienced when the Boat Harbour Effluent Treatment Facility (BHETF) became operational in 1967, the community is fearful of losing their cultural connection to *A'se'k*, and the health consequences this will have on their identities as *Piktukowaq* (Lewis et al., 2020). Despite processes intended to disconnect the *Piktukowaq* from their traditional territories, PLFN continues to resist by protecting the health and well-being of their community (Lewis et al., 2020; Pictou Landing First Nation, 2019; Pictou Landing Native Women's Group et al., 2016).

In this chapter, I will guide you through the current literature informing my research and analysis. I start by introducing the evolving literature around Indigenous geographies. I will then look to the Indigenous determinants of health literature evolving into the emerging landscape of Indigenous health geographies. The study context will provide the background necessary to situate my research through Indigenous health geographies lens focusing the rest of the chapter on my theoretical frameworks of environmental dispossession, environmental repossession, and the *Piktukowaq* environmental health theory. My research is rooted and situated within an

Indigenous health geographies approach to investigate the perceived health implications of PLFN as it lives with the impacts of a pulp and paper mill.

3.1 Indigenous Geographies

Indigenous geographies are inherently place-based and are operating within a relational worldview representing innate spatial and temporal connections between Indigenous peoples and the land (Castleden et al. 2017; Daigle 2016; Daigle and Ramírez 2019; Lewis et al., 2020). Indigenous geographies highlight Indigenous experiences of colonization and the subsequent environmental dispossession of their lands and waters, capturing the detrimental impacts these experiences have on the intimate and spiritual connections Indigenous people have to place (LaDuke 1994; Richmond and Ross, 2009). The emergence of Indigenous geographies has paved the way for a productive dialogue in the discipline of geography that reevaluates Indigenous absence within mainstream geographical discourse, and refocuses attention on the influence of dispossession, erasure, and reconciliation, shifting to Indigenous-led assertions of persistence, presence, and rights within geographic research (Big Canoe & Richmond, 2014; Coombes et al., 2011; Coombes et al., 2012; Howitt et al., 2009; Howitt & Jackson, 1998).

Within the last few decades, Indigenous geographies have transformed the discussion from the absence of Indigenous voices in the discipline, into a meaningful inclusion of Indigenous knowledges (IK) within geographic research, safeguarded by community led or participatory research processes, with the goal of supporting self-determining futures for Indigenous nations (Frantz & Howitt, 2010; McGregor, 2004; Peach et al., 2020). IK refers to “the culturally and spiritually based ways in which Indigenous peoples relate to their ecosystems and with one another” (LaDuke, 1994, pp. 127). IK illuminate the foundational relationships between humans, more than humans, and beyond physical kin that ensures nurturing, healthy,

and sustainable Indigenous ways of living (Berkes, 2012; LaDuke, 1994). To foster the interconnected nature of IK within geographic landscapes, utilizing IK in geography has worked to provide an understanding of Indigenous perceptions and relationships to the world around them. IK are cyclical and are viewed as part of the ecosystem of creation and re-creation; Indigenous peoples must bring their knowledges back full circle, back to where IK are lived within Indigenous peoples as individuals, within Indigenous communities, within Indigenous nations, and within the next generations (McGregor, 2004). Centering IK in Indigenous peoples' lives, around the interconnection of kinship networks to Indigenous lands, will foster the holistic nature of Indigenous identity and Indigenous health and well-being (Lewis et al., 2020a; McGregor 2004; Richmond & Ross, 2009)

Indigenous geographies make the interdependence of IK explicit, demonstrating how worldviews, spirituality, cultures, and languages are in relation to strong connections to the land and environment (de Leeuw et al., 2015). A shift within geography is moving past the idea of Indigenous peoples as only stewards of the land, or as environmentalists, to Indigenous geographies that recognizes individual and collective identity and well-being is an interconnected and sacred part of the relationship to land (Pierotti & Wildcat, 2000, Richmond & Ross, 2009). For Indigenous peoples, their land and traditional territories are the place from which their IK are produced and practiced making them inherently geographic (McGregor, 2004).

More recently, Indigenous geographers are grounding their work in Indigenous epistemologies, ontologies, and relationships for greater understandings of Indigenous relationships to the land and environments, since IK stems from their lands and environments. Daigle (2016) reflects on the importance of living according to Indigenous place-based

worldview, ontology, and values coming from her experiences as Omushkegowuk Cree. Daigle (2016) utilizes the law of *awawanenitakik*, to maintain the understanding of upholding responsibilities to the land as kin (Daigle 2016). For example, Daigle (2016) juxtaposes state forms of recognition to Indigenous law and governance by looking at the federal government's proposed *1969 White Paper* created to “dismantle the Indian Act, eliminate Indian as a distinct status, and make all Indigenous peoples Canadian citizens with the same rights and opportunities” as a form of nation recognition, in relation to *awawanenitakik*, where nation members are recognized through their kinship networks and traditional practices such as hunting and harvesting (p.4). McGregor (2018) illustrates the need for frameworks centered in Indigenous knowledges and worldviews using *mino-mnaamodzawin*, an Anishinaabe worldview of living well with the world, informed by Anishinaabe intellect and traditions, knowledge systems, and laws—including upholding appropriate relations with all of Creation. Awāsis (2020) employs an Anishinaabe worldview, *Gwaabaw*, the practice of harvesting energy, in her research on Anishinaabe energy governance. *Gwaabaw* translates “to pick something out (of water/fire) with an instrument” (Valentine, 2001, pp. 448). Awāsis (2020) found that using *Gwaabaw* to rebalance human relationships with the land and account for nonhuman participation in energy decision-making could have a range of positive implications if practised.

The use of *Piktukowaq* IK informs my analysis in my research and provides a basis to understand the *Piktukowaq* perceptions of health, autonomy, and connection to environment. Before I situate my research in *Piktukowaq* perceptions, however, I will turn to Indigenous determinants of health to illustrate, in a broader context, the inherent interconnection Indigenous health and well-being has to the environment and place.

3.2 Indigenous Determinants of Health

Indigenous peoples face major health inequities, ranking lowest in every social determinant of health in Canada - having the highest morbidity rates, gaps made even more concerning because of the historic lack of health data collected in Indigenous communities, if any data was collected at all (Gracey & King, 2009; Jardine & Lines, 2018; Nettleton et al., 2007; Stephens et al., 2005). Further, previous research on Indigenous health has been deficit-centred, focused on issues such as poor physical health or higher susceptibility to disease (Gracey & King, 2009). Recent Indigenous health research takes a turn toward a strengths-based approach that focuses on the social determinants of health (e.g., income, education, living conditions, employment, health services access) to contextualize health disparities (de Leeuw et al., 2015; Durkalec et al., 2015). While a social determinants of health approach has been productive, de Leeuw et al. (2015) question if the uptake has taken our attention away from other determinants of health, determinants that may be specific to the Indigenous experience in a colonial state like Canada, such as compounding intergenerational effects of residential schools, or the effects of being marginalized off the land.

Understanding Indigenous health means looking into the broader context of factors impacting Indigenous individuals and communities to consider factors such as how colonial history impacts connections to land, culture, and knowledges (de Leeuw et al., 2015). One thing in common for all Indigenous determinants of health is their relationship to colonialism, which acts as the largest determinant of health for Indigenous peoples overall (de Leeuw et al., 2015). Beyond the social determinants of health, one must consider structural determinants, including how colonialism continues to impact the social, economic, and governance structures of Indigenous communities, which are health impacts in and of themselves (de Leeuw et al., 2015).

To address this concern, I position my own research on Indigenous health starting with the National Aboriginal Health Organization's (NAHO) definition of Indigenous health, which states that "health is understood as the balance among the physical, mental, emotional and spiritual realms, as well as the environment, culture, family, and community, and that Indigenous well-being flows from balance and harmony among all these elements of personal and collective life" (NAHO, 2007, p.1). Indigenous health inequities are created and exacerbated by Indigenous-specific determinants related to colonization, which has and continues to result in losses of culture, autonomy, land, and health (Gracey and King, 2009, King et al., 2009).

By centering the cultural and geographic dimensions of well-being, the connection to land is recognized as a key determinant of Indigenous identities, nationhood, and futures (Nightingale & Richmond, 2021; Pasternak et al., 2019). "In Canada, Indigenous health inequalities are sustained by colonial structures that create social disadvantage and limit Indigenous self-determination" (Nightingale & Richmond 2021, p. 1). Utilizing the broader context of Indigenous determinants of health and Indigenous geographies, Indigenous health geographers are building a deeper understanding and appreciation for the relationship between Indigenous peoples' health and their environments.

3.3 Indigenous Health Geographies

The growing field of Indigenous health geographies emphasizes the intersection of the land and well-being (Richmond, 2018; Nightingale & Richmond, 2021) and highlights how the continued interference from colonization relates to the underlying health inequities Indigenous peoples face today (Brown et al., 2012; Simpson et al., 2009; Tobias and Richmond, 2014). Indigenous health geographies build on the methodological and theoretical need to prioritize how Indigenous determinants of health are related to the connections to the environment with

processes of environmental dispossession and environmental repossession at the forefront of geographic research (Coombes et al., 2011; Herman, 2008; Louis, 2007; Richmond & Big Canoe, 2018). From an Indigenous health geographies perspective, the land is the foundational component of Indigenous culture and knowledge and central to the health and well-being of Indigenous communities (King et al., 2009; Richmond & Ross, 2009; Wilson, 2003). Within an Indigenous geographic context, we must work to capture the deep and sacred connection of land and environment to Indigenous health and well-being especially through culture, tradition, and language (de Leeuw et al., 2015; Wilson, 2003).

As Indigenous health geographers, Richmond and Big Canoe (2018) focus on the interconnectedness between Indigenous peoples, lands, and health and well-being, and their work is at the intersection between Indigenous knowledge, connection to land, and the unique health of Indigenous peoples. Through the Indigenous health geographies subdiscipline, we begin to understand the vulnerability of Indigenous peoples to processes of environmental dispossession as an interference to the health benefits of the sacred link and connections between Indigenous peoples and their lands (Ford, 2012; Richmond & Big Canoe 2018; Richmond & Ross, 2009). Without opportunities to access lands or culture, Indigenous peoples suffer health consequences we have come to understand as inherently connected to processes of environmental dispossession (Adelson, 2005; Frohlich, Ross & Richmond, 2006; Richmond & Ross, 2009).

Indigenous health geographers have extended their work beyond the relationship between environment and health: they have also connected discourses of Indigenous health and environment to decision making, power structures, and autonomy. Teegee (2018), Tribal Chief of Carrier Sekani Tribal Council in British Columbia (BC), extends the literature on Indigenous health and environment by bringing in the health impacts of resource extraction on Indigenous

communities, particularly through their own experiences. Teegee (2018) states that the public must become informed as to how resource extraction impacts Indigenous health and the responsibilities as caretakers and stewards that Indigenous people hold to the land (Teegee, 2018). Teegee (2018) explicitly connects resource extraction and development in BC, such as the Northern Gateway Pipeline, to impacts on First Nations health. Although this example is in the context of climate change, it serves to illustrate the interconnection between environment and health outcomes in Indigenous populations. In the northern Inuit community of Nain, Durkalec et al. (2015) investigated the relationship between sea ice and the community, and its diverse connections to health and well-being (Durkalec et al., 2015). Being able to access and be out on the sea ice means Inuit autonomy, and contributes to mental, cultural, and social health benefits (Durkalec et al., 2015). When researchers asked what sea ice meant to the Inuit regarding health, the most common response was ‘freedom’ – freedom of movement forming highways to access different places, freedom of decision-making and autonomy, including the freedom to be themselves, and freedom from pressures, routine, and social issues (Durkalec et al., 2015, pp. 23). Durkalec et al. (2015) found that autonomy is not only important at the individual level, but also cultural autonomy through the increased value and privileging of Inuit knowledge of the land, and the increased freedom from colonizing and assimilationist Eurocentric societal structures (pp. 24). Durkalec et al. (2015) might suggest that for the *Piktukowaq* maintaining their sacred connection to *A’s’e’k*, like the connection the Inuit try to maintain to ice, represents a necessary aspect of their health and well-being, and their autonomy as *Piktukowaq* people.

I will be using the concepts of environmental dispossession and repossession to theoretically frame what has happened to the *Piktukowaq*, and present-day understandings of *Piktukowaq* relationships to land and place. My research, however, extends the framing of

environmental dispossession and environmental repossession to understand the role that autonomy plays as a determinant of health and well-being in respect to industrial development, further contextualizing the impact that the BHETF has had on the health of the *Piktukowaq*, and what the *Piktukowaq* need to be healthy. Through environmental repossession, I will demonstrate how *Piktukowaq* re-assertion of autonomy through environmental health governance has had an impact on health and well-being of the community more recently.

Recent studies emphasize the place-based needs of Indigenous individuals, communities, and nations to be healthy and well (Big-Canoe & Richmond, 2014; Hatala et al., 2019; Tobias & Richmond, 2016), but no previous study has quantitatively assessed what the process of moving from environmental dispossession to environmental repossession might look like in practice. In the next section, I will frame my research using theories of environmental dispossession and environmental repossession, and the *Piktukowaq* environmental health theoretical framework as developed by Lewis (2018).

3.4 Theoretical Frameworks

The Pictou Landing Native Women's Group's purpose of embarking on their research journey in 2010 was to ensure a healthy future for the next generations of their community. As I frame my research through a lens of Indigenous health and autonomy, I will center the sacred relationship the *Piktukowaq* have to place and environment first through the concepts of environmental dispossession and environmental repossession, and then through the theoretical framing of health in connection to how the BHETF impacted *A'se'k*, and subsequently the entire *Piktuk* community.

3.4.1 Environmental Dispossession and Repossession

Indigenous peoples stand in the way of colonial settler-state possession of lands needed for western-centric economic growth and expansion; that is, for settler -state governments to gain lands, Indigenous peoples must be taken from their lands, both physically and jurisdictionally (Palmer, 2014; United Nations, 2022). Environmental dispossession is the process through which traditional access to the lands and resources of the environment is reduced, and is characterized by displacement, environmental contamination, unprecedented resource extraction or land rights disputes, and forced assimilation (Big-Canoe & Richmond 2014; Richmond & Ross 2009; Tobias & Richmond 2014). These processes have uprooted Indigenous social, spiritual, and cultural ways of life around the world (Richmond & Ross, 2009). Environmental repossession is the global shift led by Indigenous peoples to reclaim their territories, ways of knowing, and ties to place (Big-Canoe & Richmond, 2014; Nightingale & Richmond, 2021, p. 1).

Direct forms of environmental dispossession (e.g., physical forms) involve processes that physically restrict use of the land, such as industrial activities or contamination events that sever ties to traditional foods or resources required for sustaining daily activities. One of the most illustrative examples is of Grassy Narrows, an Anishinaabe community exposed to methylmercury in the 1960s and 70s. The community was located downstream from a chloralkaline plant that pumped mercury laden effluent into the English-Wabigoon River system, impacting Grassy Narrows culture, food security, and ways of life (Richmond & Ross, 2009; Wheatley, 1997). Another example of chemical dumping occurred near the Mohawk Nation of Akwesasne, a community on the St. Lawrence River, where contamination such as mercury or polychlorinated biphenyl was dumped in the St Lawrence River, thereby raising community concerns about the safety of consuming fish coming from the river. The pollution not only

impacted sustenance activities, but it also impacted food security, and had consequences on maternal-infant bonding, as mothers withheld from breastfeeding due to fears of passing contaminants in their breastmilk to their newborns (LaDuke, 1999).

Indirect forms of dispossession (e.g., political or social) occur because of policies or regulatory decisions that lead to the severance of Indigenous peoples' link to the land, and the IK it fosters. For example, it is well known that Indigenous peoples have been subject to policies that forced attendance at Indian residential schools throughout Canada to alienate them from their lands. The indirect forms of environmental dispossession are used to destabilize the relationship that Indigenous communities have with the land through the policies of acculturation and assimilation (Bartlett, 2003; Richmond & Ross, 2009).

The experiences of the *Piktukowaq* with the BHETF is an example of environmental dispossession. For the *Piktukowaq*, when the mill became operational in 1967 and effluent started to flow to the BHETF, the *Piktukowaq* were quickly dispossessed from their relations, and their relative, *A'se'k* (Lewis et al., 2020; Pictou Landing First Nation, 2019). The creation of the BHETF disrupted what they believed to be 'their place of creation', as their practices based on thousands of years of existing in their territory abruptly ended, changing their ways of life because of what they feared was in the air, land, and water (Lewis et al., 2020; Pictou Landing First Nation, 2019). I will explain this in greater detail in the next section.

I now turn to the relatively new theoretical framework of environmental repossession, a concept responding to a global shift led by Indigenous peoples to reclaim their territories, ways of knowing, and ties to place (Big-Canoe & Richmond, 2014; Nightingale & Richmond, 2021, p. 1). Big-Canoe and Richmond (2014) suggest that processes of environmental repossession are self-determining actions in hopes of improving and protecting health and well-being like

ceremonial and traditional knowledge practices, re-occupying spaces to create spaces for community rebuilding (McCarthy, 2016; Peach et al., 2020; Simpson, 2014). Nightingale and Richmond (2021) take a case study approach to explore the practice of environmental repossession - how the Anishinaabe community of Biigtigong Nishnaabeg built local cabins to support processes of repossession. In this case, Biigtigong's Department of Sustainable Development (DSD) hosted a week-long camp on Mountain Lake which for many of their community members' was their first time in this part of their traditional territory, and during the camp, they built cabins on their traditional territory to re-assert jurisdiction (Nightingale & Richmond, 2021). The Biigtigong camp provided a space for the DSD staff to teach camp participants about self-determination over their territory and to re-make relationships between community members to their traditional territory (Nightingale & Richmond, 2021).

Nightingale and Richmond (2021) share these lessons and experiences with Indigenous communities seeking self-determination over land, identity, and well-being, by exploring the experiences, responsibilities, and everyday work of those who went to the camp. By supporting Biigtigong's self-determination over research and reconnecting with the land (page 3), Nightingale and Richmond (2021) were supporting the foundational building of community self-determination over their lives, lands, and well-being through economic development, law, and policy – and supporting the community vision to be self-sustaining and self-governed by decolonizing the economic and political structures in their community (page 6).

I look to the case study developed by Nightingale and Richmond (2021) to suggest that in the same way as the Anishinaabe community of Biigtigong Nishnaabeg, the *Piktukowaq* may have taken multiple ways to repossess A'se'k and have utilized their reclaimed autonomy to revitalize their sacred relationships to their traditional territory. In the process, they have taken control of

the narrative about the health and well-being of their community by collecting their own environmental health data and exerted their autonomy into the provincial and federal environmental assessment processes and the remediation of the BHETF back to *A'se'k*.

Lewis et al. (2021) argues that by strengthening self-determination over territories, Indigenous peoples are not only reclaiming physical access to their territories but can be viewed as a cultural and spiritual reclamation of history, culture, and responsibilities tied to these places, that reinforce the fundamentals of Indigenous sovereignty and identity. As the *Piktukowaq* continue to gain more access to their territories through mechanisms of environmental repossession, as represented in their autonomy and self-determination to collect and own their own environmental health data, I will use the *Piktukowaq* environmental health theory to frame my analysis of that data, as they aspire to a healthier future.

3.4.2 Piktukowaq Environmental Health Theoretical Framework (Framework)

The *Piktukowaq* environmental health theoretical framework highlights the sacred relationship the *Piktukowaq* have to their traditional place and conveys the multidimensional nature of their identities. The Framework represents the *Piktukowaq*'s reclamation of autonomy over their health and well-being. To fully encapsulate *Piktukowaq* health and well-being, I position the *Piktukowaq* in relation to their territory which forms the basis for the *Piktukowaqs*' place in the world.

The development of the Framework was guided by the Knowledge Holders in PLFN to convey more appropriately what happened when the *Piktukowaq* were dispossessed of *A'se'k* by the BHETF, and to express what the *Piktukowaq* experienced when they were displaced from their land and environment (Lewis et al., 2018). For PLFN to encapsulate the impact BHETF has on their community, they needed to create a framework that reflected their relationship to place.

Smith (2012) might suggest that the use of an Indigenous theoretical framework reflects the real understanding and lived experiences of Indigenous peoples. For the *Mi'kmaq*, their ways of knowing and being are rooted in their lands, languages, and customs (Sable et al., 2012).

I use the Framework for the same reason the community created it: to ground the audience in the *Piktukowaq* understanding of their world and how they relate to the environments and places around them. The premise of the Framework is that the *Mi'kmaw* worldview stems from the lived experiences of living in *Mi'kmaki* since time immemorial (Lewis et al., 2020; Youngblood Henderson 2000). As Walter and Andersen (2013) might suggest when using Indigenous statistics, grounding the work in an Indigenous worldview makes the work meaningful to the group you are working with. The Framework is a product of the PLFN Knowledge Holders guidance through the sharing of their oral histories and is grounded in *Piktukowaq* ways of being, knowing, and doing (Lewis et al., 2020)

Figure 3.1 presents the Framework of how the *Piktukowaq* relate to *A'se'k* and reflects the close relationship the PLFN community had with the area before it was interfered with. The framework uses the *Mi'kmaw* language to represent the innate connection *Piktukowaq* have to their environment, and to provide insight into how intense environmental impact can disrupt *Piktukowaq* relationships to *A'se'k* (Lewis, 2018). In research it is essential to understand the impacts of BHETF on the *Piktukowaq* through an environmental health cultural lens that centres a place-based worldview for *Mi'kmaw* people (Lewis, 2018). Therefore, my research is guided by the Framework to center my research and analysis in a place-based epistemological and ontological understanding of the *Piktukowaq* place and worldview.

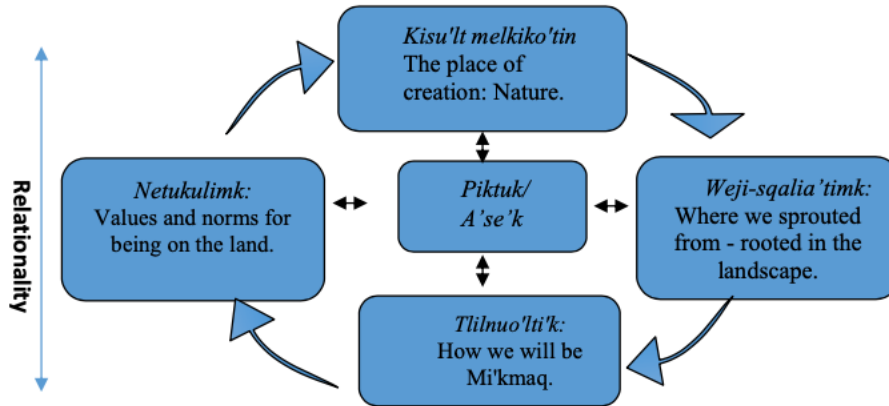


Figure 3.1 Piktukowaq Environmental Health Cultural Framework (Lewis 2018, 2020a)

The Framework is grounded in the *Mi'kmaw* language. The *Mi'kmaw* word for the place of creation/nature is *kisu'lt melkiko'tin*, representing the *Piktukowaq* assertion of their view of the world – from where the world was created – in nature (Battiste & Youngblood Henderson 2000; Youngblood Henderson 2000). *Weji-sqalia'timk* translates to “where we sprouted or emerged from” and expresses the *Mi'kmaw* understanding of the origin of people as rooted in the land; that their identity derives from the land (Lewis, 2018, page 54; Sable et al. 2012). The word *tlilnuo'ti'k* reflects *Mi'kmaw* ontology, translating to “how we maintain our consciousness” (Battiste & Youngblood Henderson, 2000, p. 35), and “the process of maintaining the *Mi'kmaw* worldview” (Battiste, 2000, p. 263), and reflects the relational nature of the *Mi'kmaw* language, which connects beyond the individual, to the collective and environment (Lewis 2018; Sable et al. 2012). *Netukulimk* reflects the reciprocal existence between the *Mi'kmaq* and nature by emphasizing the cultural norms for being on the land and the sustainable use living in reciprocity and giving thanks (Lewis 2018; Prosper et al. 2011). *Ko'kmanaq* means “our relations,” conveys an understanding of how *Mi'kmaq* extend a relationship to both human and non-human kin, creating a relationship of mutual respect and kinship (Sable et al. 2012). Figure 3.1 demonstrates

the *Piktukowaq* way of being stemming from their place and traditional territory, as *A'se'k* was an inherent part of this ecosystem.

3.5 Conclusion

The literature I use prioritizes the interconnected relationship Indigenous peoples have to their lands and environments, and how Indigenous determinants of health reflect this interconnectedness. Throughout my thesis, I theoretically position my research using an environmental dispossession and repossession lens, as the *Piktukowaq* work towards living a life with *A'se'k* being reclaimed back to its original state, using the Framework to further the reader's understanding of what is needed for the *Piktukowaq* to be healthy and well.

CHAPTER 4 METHODOLOGY

Through the self-determination of the Pictou Landing Native Women's Group (PLNWG) and the community, Pictou Landing First Nation (PLFN) now has baseline and second phase community health data to continue understanding and governing the environmental health impacts of the Boat Harbour Effluent Treatment Facility (BHETF). In 2010, PLNWG set out to understand the effects of the BHETF on their health, and the community of PLFN has continued to fight for the re-assertion of autonomy over their environments, health, and well-being. Now that the BHETF is undergoing a remediation process, there is potential to explore the community's vision of self-determination – that the *Piktukowaq* and *A'se'k* get back to being what and who *Kisu'lk* (the Creator) intended them to be (Pictou Landing First Nation [PLFN], 2019). The 2014 Environmental Health Survey (EHS) and 2019 *Pictou Landing First Nation Well Being Baseline Study* (WBBS) data can contribute to decisions about this vision of the future and will be instrumental in contributing to the leadership's insight into understanding community perspectives to empower their work. The 2014 EHS and 2019 WBBS data provides the knowledge base to understand if health has improved over time and how autonomy over decisions about their environments may lead to better health outcomes. When PLFN participants engaged in the first survey in 2014, they were unaware of the closure of the BHETF. The 2019 WBBS resulted from PLFN's participation in the preparation of the federal environmental impact statement (EIS) for the remediation process.

In this chapter, I present my study design, the methodological tools I employ to answer my research questions and meet the objectives of the study. Both the EHS and the WBBS were guided by a community-based participatory research methodology, so I will briefly address the process for both survey processes. The collection of the data also adhered to the principles of

OCAP®, so I will briefly explain this concept. I employ quantitative methods to interpret the survey data from the two PLFN community health datasets, the 2014 EHS and the 2019 WBBS, and I will present my outcome measures using a definition of health that is more appropriate for Indigenous people, that *Piktukowaq* health is a balance between the physical, mental, emotional, and spiritual aspects of health. I will present four (4) explanatory measures that represent external factors that may impact Indigenous peoples' health; that is, connection to environment, influenced by feelings of autonomy, and community well-being.

4.1 Community-Based Participatory Research Methodology

At the core of community-based participatory (CBPR) research as a methodological approach is a commitment to mutual learning and benefit, and prioritizing community knowledge, participation, and practices in the research process itself (Hacker, 2013; Wallerstein and Duran, 2010). CBPR is not a new research method, but its application to Indigenous geographies has become more commonplace in the field. In an Indigenous context, CBPR fosters the relationship between community and researcher to create meaningful research (Flicker et al., 2007; Israel et al., 2010; Tobias et al., 2014). CBPR is an appropriate method when working alongside Indigenous communities, as the research processes are grounded in a continual, reciprocal relationship, shared power and learning between partners, which allows for community autonomy through the prioritization of community objectives, perspectives, and knowledge in all phases of the study (Castleden, et al., 2008; Castleden, et al., 2012; Simonds & Christopher, 2013). As a methodology, CBPR ensures the community research partner has an equal and active role throughout the entire research process (Castleden et al., 2008; Castleden et al., 2012; Tobias et al., 2014).

CBPR was used in both the 2014 and 2019 survey processes (Lewis, 2016, 2020a; Pictou Landing Native Women's Group [PLNWG] et al., 2016, PLFN, 2019). From their first research meeting in 2010, PLNWG co-led the partnership with Dalhousie researchers to focus on the collection of their environmental health data. In 2014, the PLNWG and research team developed and administered a community-specific survey: *Identifying, Documenting Mapping, and Mobilizing Environment and Health Knowledge in Pictou Landing: An Environmental Health Survey* (EHS) (Lewis et al., 2016). Researchers worked very diligently with the PLNWG for almost a year to develop the survey instrument that met the needs of the community (PLNWG et al., 2016). With a majority of trained RA's coming from PLFN (Lewis et al., 2016), this approach met the core tenet of CPBR, that building community capacity is essential to sustaining longevity in community research (Bull, 2010; Castleden et al., 2008; Castleden et al., 2012). In 2019, a Community Advisory Committee provided direction to ensure the data that was collected in the WBBS phase highlighted their fundamental interests and concerns about the remediation of Boat Harbour. In 2019, the WBBS, as a part of the federal EIS for the Boat Harbour Remediation project, could be viewed as a continuation of PLFN self-determining their own community-led research (PLFN, 2019). PLFN elected council managed the WBBS for PLFN, focusing on how the community was experiencing the remediation process (PLFN, 2019).

I view my research and the secondary analysis of the data as a continuation of PLFN self-determination in environmental health autonomy. I was given permission to conduct the research with the PLFN environmental health data by Chief Andrea Paul and will share my results with leadership.

4.1.1. Two Eyed Seeing

My research study with PLFN embodies an *Etuaptmumk* (Two-Eyed Seeing) approach. The concept of *Etuaptmumk*, created by Mi'kmaw Elders Albert and Murdena Marshall, and Dr. Cheryl Bartlett, combines the strengths of Indigenous and Western world knowledge systems to gain greater understanding of complex issues such as Indigenous health and environment (Bartlett, Marshall, & Marshall, 2012; Iwama et al., 2009). Through the use of CPBR, we not only prioritize community needs, but prioritize *Piktukowaq* knowledge through the *Piktukowaq Environmental Health Cultural Framework*. To understand *Piktukowaq* relationship to place, I use the *Piktukowaq Environmental Health Cultural Framework* to encapsulate *Piktukowaq* epistemology, ontology, and axiology in relation to A'se'k, their sacred place of creation. While applying the *Piktukowaq Environmental Health Cultural Framework* to the development of my research study, and the analysis of the data collected, I also use quantitative methods, a western way of knowing. By using both the 2014 EHS and the 2019 WBBS, I compare the quantitative surveys to see if health or relationship has improved over time. By using both the *Piktukowaq Environmental Health Cultural Framework* and quantitative methods, I employ two-eyed seeing throughout my research study.

4.1.2 OCAP

The 2014 and 2019 studies adhere to the OCAP principles, the First Nations' principles of ownership, control, access, and possession. The First Nations Information Governance Centre's National Steering Committee developed OCAP in 1998 (First Nations Information Governance Centre, 2022). OCAP supports First Nations' assertion to have ownership and control over the data collection processes that impact them, and that they continue to have control how this information is stored and used (First Nations Information Governance Centre, 2022). In my

study, I did not collect the data and use it as secondary source, but my project still relates to OCAP because I was given permission by the community to use their data and conduct an analysis. As a researcher from a different Indigenous nation than the *Piktukowaq*, I want to be accountable to the community of PLFN throughout our research relationship; therefore, at the end of my thesis, I will create a report for PLFN, summarizing my analysis and a providing a guide for next steps that could follow my recommendations.

4.2 Quantitative Methods

There is an urgent need to indigenize quantitative methods to address the health inequities Indigenous peoples face because of the brunt force of colonial structures (Hayward et al., 2021). There is a history leading to a lack of trust in government-led processes that has resulted in the lack of accurate and complete data around Indigenous health in Canada (Hayward et al., 2021; Walter & Anderson, 2013). Furthermore, when non-Indigenous people analyze Indigenous data, they risk inaccurate analysis due to the lack of understanding or contextualization of Indigenous populations (Hayward et al., 2021).

To counter this, the 2014 EHS and 2019 WBBS employed the National Aboriginal Health Organization's (NAHO) definition that health is a balance between the "physical, mental, emotional and spiritual realms as well as the environment, culture, family, and community, and that Indigenous well-being flows from balance and harmony among all these elements of personal and collective life" (NAHO, 2007, p. 1). Only in the last decade have environmental impacts been recognized in relation to Indigenous health outcomes (de Leeuw et al., 2015), but the NAHO definition states the four dimensions of Indigenous health are influenced by external relationships to environment, culture, and community.

I conducted a comparative analysis using the secondary source data coming from the 2014 EHS and 2019 WBBS surveys. The 2014 EHS was informed by the Communities for a Better Environment Survey (Cohen et al., 2012) and included culturally valid questions coming from the PLFNWG and the First Nations Information and Governance Centre (FNIGC) First Nations Regional Health Survey (RHS) (Lewis et al., 2016). The Communities for a Better Environment Survey is “a health survey conducted by a community-based participatory research partnership between academic researchers and community organizers to consider environmental health and environmental justice issues in four neighbourhoods of Richmond, California, a low-income community of colour living along the fence line of a major oil refinery and near other industrial and mobile sources of pollution” (Cohen et al., 2012, p. 198; Lewis, 2018). “The Richmond health survey aimed to assess local concerns and perceptions” of health and well-being of residents of Richmond (Cohen et al., 2012, p.198; Lewis, 2018). The FNIGC RHS is the only national, First Nations culturally appropriate health survey in Canada, focusing on on-reserve populations (FNIGC, 2018). The RHS was initially created to measure First Nations and Inuit health and well-being while simultaneously affirming Indigenous self-determination to data and information governance (FNIGC, 2018). The PLNWG used both surveys due to their wide range of appropriate questions (PLNWG et al., 2016). Community members from the PLNWG were trained by Dalhousie researchers to administer the EHS (PLNWG et al., 2016). The paper survey was administered by members of the PLNWG themselves, tapping into family and friend networks, who were present as participants filled out the surveys in case there were any questions, or someone needed translation to Mi’kmaw (Lewis et al., 2016). The survey's final response rate was 59%, or 279 participants out of a population of 470 (Lewis et al., 2016; PLNWG et al., 2016).

The 2019 WBBS builds upon the 2014 EHS as the second phase of a community-led health data gathering process, managed by the PLFN elected council. As part of the EIS, the WBBS included questions focused on perceptions about the remediation process and included questions required by NS Lands Inc. (the proponent of the Boat Harbour Remediation Project) on food and land use (PLFN, 2019). The 2019 survey instrument was a 269-question, 45-page data collection document co-created by PLFN with the support of Dr. Lewis, Mindy Denny, and Chyloe Healy. (PLFN, 2019). FNIGC uploaded the questionnaire to mobile tablets for data collection in PLFN, and trained research assistants administered the surveys across PLFN (PLFN, 2019). PLFN achieved a response rate of 87% (261) based on the projected target of 300 surveys for the potential participation of an on-reserve population of 491 (PLFN, 2019). In the 2014 EHS and 2019 WBBS, there are 81 similar variables, and for my thesis, I will specifically look at 13 similar variables in my analysis.

In the following two sections, I present the outcome and explanatory measures from the 2014 EHS and 2019 WBBS. The outcome measures stem from the NAHO definition of the four dimensions of health, and the explanatory measures should be viewed as an extension of *Piktukowaq* worldview, and the connection to environment, well-being of community, and self-determination.

4.3 Outcome Measures

Indigenous peoples like PLFN continue to struggle with the ongoing impacts of their forced environmental dispossession resulting in lower health outcomes over generations in their communities (Alfred, 2009; Richmond & Ross, 2009). PLFN began investigating their environmental health to support their assertion that there was a severe environmental impact on their community health from the pulp and paper mill's BHETF on their territory. As Durie

(2004) might suggest, a more meaningful way of measuring health for PLFN would be to use the NAHO four health measures of physical health (health rating), mental health (depression), emotional health (happiness), and spiritual health, which I present here as outcome, or dependent variables (See Appendix A for a list of all variable questions and answers).

4.3.1 Physical Health

Even though physical health rating may not fully encapsulate Indigenous notions of health, PLFN used self-rated health in their 2014 EHS and 2019 WBBS to compare health outcomes to other populations (Lewis, 2018; PLFN 2019). The First Nation Information Governance Centre, who is mandated to conduct on-reserve surveys in Canada, uses the self-reported health measure to allow comparisons to data coming from other Canadian surveys, and adds additional cultural measures that make the data more appropriate to First Nation experiences (FNIGC, 2022a). The physical health rating was measured in the EHS by asking, "Overall, how would you rate the household member's health?" In the 2014 EHS³, response choices included excellent, good, fair, or poor, don't know, refused, or missing, and was previously recoded into the categories 'good to excellent' and 'poor to fair,' excluding 'don't know, refused or missing'. In the 2019 WBBS, the physical health rating was measured by the question, "How would you rate your physical health?" The response options were excellent, good, fair, poor, don't know, refused. I recoded the responses to 'good to excellent' and 'poor to fair' and excluded 'don't know and refused'.

4.3.2 Mental Health

³ The 2014 EHS data file had previously been recoded to exclude not applicable, don't know, refused, and missing from all variables.

The loss, grief, and collective trauma from colonial structures, and the impacts caused by legislation such as the *Indian Act*, are reflected in the mental health crisis many Indigenous communities across Canada face today (Kirmayer et al., 2000). Indigenous peoples are experiencing mental health issues at a higher rate than non-Indigenous peoples (Kirmayer et al., 2000). The lack of Indigenous perspectives in contemporary mental health discourse has contributed to misinformation about mental health in Indigenous communities such as lack of sufficient, accessible information; lack of resources and supports in place; and misunderstanding of the mental health crises happening in Indigenous communities (Bombay et al., 2009; Nelson, 2012; Nelson & Wilson, 2017; Waldram, 2004). Mental health impacts will only be amplified amongst Indigenous populations with the impacts of colonialism compounded by climate change, further altering connections to environments (Middleton et al., 2020). For many reasons, therefore, it is important to ask about mental health.

Mental health in the first EHS (2014) was measured by using, "In the past year, have you or a household member felt down or depressed?" because depression can act as an indicator of mental health (Bombay et al., 2009). Participants responded with often, sometimes, never, don't know, refused, and missing. The measure was previously recoded to a response of no or yes, and to exclude don't know, refused or missing. In the WBBS (2019), mental health was measured by asking participants, "How would you rate your mental health? Response options were excellent, good, fair, poor, don't know, or refused. I recoded the measure to a response of good to excellent and poor to fair, and I recoded to exclude don't know and refused.

4.3.3 Emotional Health

When it comes to speaking about what happened to *A'se'k* and what the BHETF has done to the residents of PLFN, the conversation elicits varying emotions amongst community

members and Elders (PLFN, 2019). Indigenous peoples' emotional health and well-being are impacted through processes of environmental dispossession and land displacement, and by the imposition of Western ways of knowing on Indigenous ways of life (Cunsolo Willox et al., 2012; Richmond & Ross, 2009). For Indigenous communities and nations, connection to the land is vital to their individual and collective emotional health and well-being (Cunsolo Willox et al., 2012, 2013; Rigby et al., 2011; Tobias & Richmond, 2014). Kinship as a means of positive support and mentorship from close ones such as parents, grandparents, and elders, are essential to the well-being of emotional health in Indigenous communities (Fijal & Beagan, 2019; Isaak & March- assault, 2008; Petrusek MacDonald et al., 2015; Sasakamoose et al., 2016). Emotional health is supported through activities such as using your mind, body, and soul, and through traditional activities, such as spending time with Elders, in sharing circles, and being on the land (Fijal & Beagan, 2019; Petrusek MacDonald et al., 2015; Sasakamoose et al., 2016). As Lewis (2018) noted, emotional health can be measured by asking how a respondent feels or if they are satisfied with life.

In the 2014 EHS, the emotional health variable was the question, "Do you or your household member normally feel happy, interested in things?". The response options were no, yes, don't know, refused, and missing. The measure was previously recoded to a response of no or yes, and to exclude don't know, refused or missing. In the 2019 WBBS, the emotional health variable was, "How would you rate your emotional health?". The response options were excellent, good, fair, poor, don't know or refused. The measure has been recoded to a response of good to excellent and poor to fair and I recoded to exclude don't know and refused.

4.3.4 Spiritual Health

It is vital to address the impact of Euro-western colonial structures on Indigenous spirituality and worldviews (de Leeuw et al., 2015), for example, Canadian legislation, such as the *Indian Act*, 1876, banned Indigenous peoples from participating in their spiritual ceremonies (Lavalee & Poole, 2010). Spirituality is essential to Indigenous health and well-being. It is interwoven with Indigenous relationships with the land, the ability to engage in cultural activities, and the ability to steward the lands and waters (Ford et al., 2010; Greenwood & de Leeuw, 2007; Lewis, 2018; Richmond, 2009; Wilson, 2003). Structures detrimental to health, such as residential schools or racism, contribute to the oppression of Indigenous worldviews, spirituality, and self-determination over the decisions that impact health (Reading, 2015). From an Indigenous perspective, everything concerns the spiritual realm (Sasakamoose et al., 2017). Indigenous spiritual well-being is connected to physical, emotional, and mental well-being, so if there is harm to spirit, physical, mental, and emotional conditions are also impacted because they are interconnected (Lavalee & Poole, 2010).

Spiritual health in the 2014 EHS was measured by asking the participants, "How important is traditional spirituality to you or another household member?" with response choices including not important, important, somewhat important, very important, don't know, refused, and missing. The measure was previously recoded to a response of not important, important and to exclude don't know, refused or missing. Spiritual health in the 2019 WBBS was measured by asking, "Is spirituality important to you?". The response options were yes, no, don't know, or refused. I recoded to exclude don't know and refused.

4.4 Explanatory Measures from 2014/2019 EHS Data

Throughout the 2014 EHS and 2019 WBBS phases of data collection, PLFN has determined what they needed to collect to have a holistic understanding of what to consider as

potentially impacting their health. In this next section I present the explanatory variables that demonstrate how Indigenous health can be impacted by external factors such as relationship to environment, community factors, and a sense of autonomy. Building on the NAHO definition of health, I present concern for environment (air, land, and water), autonomy (I feel listened to; I have control over decisions that affect my life; and I feel we are protecting PLFN for future generations), and community well-being (I like living in PLFN; my cultural connection to this area; PLFN gives me my sense of community) and as explanatory factors for the health outcomes we find in PLFN.

4.4.1 Environment

The health and well-being of Indigenous nations are inextricably connected to their ancestral territories, which not only are the source of daily sustenance, but also support cultural traditions, knowledge, and values (King et al., 2009; Richmond & Ross, 2009; Tobias & Richmond, 2014; Wilson, 2003). Indigenous environments mean more than a physical landscape; Indigenous environments are perceived as a being a relative with agency, a relative who provides and teaches Indigenous peoples about their sacred relationships of responsibility (Daigle, 2016; Nightingale & Richmond, 2021; Styres, 2017). Through processes of environmental dispossession, it is a challenge to maintain cultural practices and knowledge. Through environmental dispossession and land displacement, Indigenous relationships with their territories have been under constant impact (King et al., 2009; Richmond & Ross, 2009; Tobias & Richmond, 2014). Strengthening access and restoring connections to natural environments, through traditional practices such as harvesting and gathering, provide sustenance and help Indigenous peoples and communities meet their physical, mental, emotional, and spiritual needs (Nightingale & Richmond, 2021; Wilson, 2003).

For the EHS (2014) and the WBBS (2019), PLN WG used different elements of their natural environment as variables: *Mi'kmaq's* understand their relationship with the environment is to the air, and land, water around them (Prosper et al., 2011). For *Mi'kmaq*, their relationship to the ground is deeply tied to their obligation to protect the natural abundance of their home (Henderson, 1995). *Mi'kmaq* relationships to the air, land, water, and all life are part of a cyclical and systematic spiritual relationship captured in their collective existence alongside all living things (Prosper, 2009; Prosper et al., 2011). Indigenous identity and knowledge cannot be separated from the environments around them, as their relational worldview connects all aspects of their culture to the natural world (Big-Canoe & Richmond, 2014; McGregor, 2004; Wilson, 2003). Big-Canoe and Richmond (2014) would argue that the *Piktukowaq* access to their environment provides a vital connection to the health and well-being of their nation.

To represent the PLFN environment, I will use the three variables: air, water, and land. The 2014 survey environment directed the head of household to respond to the statement, "How do you feel about the things around you?" using three separate variables air, water, and land. Response choices ranged from very concerned, somewhat concerned, concerned, not concerned, don't know, refused, and missing. Each variable was previously recoded to a response of not concerned, concerned, and to exclude don't know, refused or missing. In the 2019 survey, participants were asked, "How do you feel about the things around you?" with the three environmental variables: air, water, and land. Response choices ranged from very concerned, somewhat concerned, not concerned, don't know, and refused. I recoded very concerned and somewhat concerned to concerned and I recoded to exclude don't know and refused.

4.4.2 Autonomy

Most Indigenous peoples worldwide have their own intellectual and legal traditions to generate a self-determined future that involves living well with the Earth (McGregor, 2004; McGregor, 2009; Whyte, 2017). There are many international forums and instruments such as the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP), working to support Indigenous autonomy and self-determination (McGregor et al., 2020). But while UNDRIP provides vital support for Indigenous peoples' sovereignty, it is increasingly apparent that Indigenous governance has much to offer (Reed et al., 2020). Currently, international rights are not being honoured or applied in most nation states, allowing settler governments to continue their extractive activities (United Nations, 2022), while the health and well-being of nations are at risk because of the rapid nature of environmental dispossession (Tobias & Richmond, 2014). Having autonomy over decisions that impact their own communities may lead to improvements in Indigenous health and well-being.

To explore autonomy, I use three variables from the 2014 EHS and 2019 WBBS to represent autonomy: "I feel we are protecting PLFN for future generations, "I feel listened to", and "I have control over decisions that affect my life." Response options were strongly agree, agree, neither agree nor disagree, disagree, strongly disagree, don't know, refused, or missing. Each variable was previously recoded to a response of agree, neutral, and disagree, and to exclude don't know, refused or missing. In the 2019 WBBS response options were agreed, neutral, disagree, don't know, or refused. I recoded to exclude the don't know and refused responses.

4.4.3 Community Well-Being

"Community well-being is the collective well-being of a group or nation representing a given community" (Cloutier, Ehlenz, & Afinowich, 2019, p. 278). Through environmental

dispossession, many Indigenous peoples feel disconnected from their traditional territories or contemporary communities due to state intervention in their familial or community connections, but processes of environmental repossession are revitalizing ways communities used to live before (Richmond & Ross, 2009; Tobias & Richmond. 2014). Many studies have found community well-being comes from multiple intersecting relationships such as land, culture, and family impacting a community's quality of life (Berman and Phillips, 2000; Cloutier, Ehlenz, & Afinowich, 2019, p. 278; Merriam and Kee, 2014; Wiseman and Brasher, 2008). As a result of the alienation from Indigenous ways of life, nations like PLFN are looking to reconnect through collaborative community-led self-determining futures "grounded in local understandings of community well-being" (Navarrete & Zohar, 2021, p.1; Stefanelli et al., 2019).

PLFN designed the survey questions in both surveys to represent their understanding of community well-being. I use three variables in both the 2014 EHS and 2019 WBBS to represent community well-being. The community well-being variables were: "I like living in PLFN," "my cultural connection is to this area," and "PLFN gives me a sense of community." Responses to all three variables include strongly agree, agree, neither agree nor disagree, disagree, strongly disagree, don't know, refused or missing. In the 2014 EHS, replies were collapsed to agree, neutral, and disagree, and the responses of don't know, refused or missing are recoded to be excluded. In the 2019 WBBS, the answers to the questions were agree, neutral or disagree, and don't know, or refused. I recoded to exclude don't know and refused.

In the next section, I present how the data were analyzed using Stata statistical software with descriptive statistics and cross-tabulations.

4.5 How the Data were Analyzed

In my analysis, and to fully understand the impacts of what happened to the *Piktukowaq* when *A'se'k* turned into the Boat Harbour Effluent Treatment Facility, I was guided by the *Piktukowaq* Environmental Health Theoretical Framework to encapsulate the relationship the *Piktukowaq* had to *A'se'k*, and to illustrate the actual harm that was caused when they lost their 'other room' (Lewis, 2020a). I used the statistical software program Stata 17.0, an all-purpose statistical software developed by StataCorp for data manipulation, visualization, statistics, and automated reporting (Stata, 2022). In analyzing the 2014 EHS and 2019 WBBS data, I used descriptive statistics and cross-tabulations using the 13 variables presented above. Using the data from both surveys, I present descriptive statistics for the outcome measures to show NAHO's four dimensions of health. I then present cross-tabulations between the explanatory and outcome measures to see how factors such as environment, community well-being, and autonomy impact the physical, mental, emotional, and spiritual aspects of health to see if health has improved from 2014 to 2019. Cross-tabulation is a method to quantitatively analyze the relationship between multiple variables (Aprameya, 2019). I did not do a test of significance on the results. As you will read in my limitations and challenges section of Chapter 6, Covid necessitated that I change direction in my research. I was not trained in statistics prior to the shift. Future work will include a test of significance.

4.6 Conclusion

Throughout this chapter, I have summarized my approach to secondary analysis of the data from the 2014 EHS and 2019 WBBS. In chapter 1, I presented the research questions I was seeking to answer: 1) Does community health for the Pictou Landing First Nation improve over time when community members have more autonomy over environmental assessment processes on their traditional territory?; and 2) Does Pictou Landing First Nation's relationship to place

improve with more autonomy in environmental decision-making? Three objectives guide my research: to assess if autonomy impacts the physical, mental, emotional, and spiritual health of the PLFN community; to assess the relationship between connection to place and the four health variables; and to assess the relationship between connection to place and autonomy. In the next chapter I will present my findings from my analysis.

CHAPTER 5 – RESULTS

5.1 Introduction

In this chapter, I will present the comparative analysis of PLFN health and well-being outcomes from the 2014 Environmental Health Survey (EHS) and 2019 Pictou Landing First Nation Baseline Well-Being Study (WBBS). I will present the results from both 2014 and 2019 according to three (3) primary themes: health outcomes as a factor of connection to environment; community health and well-being as a factor of autonomy; and finally, relationship to place as a factor of autonomy. In my analysis, I was unable to present mental health outcomes within the tables, as the question about mental health status was not asked the same in 2014 and 2019, therefore I will discuss 2014 and 2019 mental health outcomes separately rather than compare them.

To remind the reader, and as noted in Chapters 3 and 4, the National Aboriginal Health Organization's (NAHO) definition that health that guides my research is a balance between the "physical, mental, emotional and spiritual realms as well as the environment, culture, family, and community, and that Indigenous well-being flows from balance and harmony among all these elements of personal and collective life" (NAHO, 2007, p. 1). To start the analysis, I will first compare the overall health of the community members between the two surveys.

5.2 Overall Health

Table 5.1 compares the physical, emotional, and spiritual health outcomes of survey participants from the 2014 EHS and 2019 WBBS. Figure 5.1 compares mental health outcomes.

Table: 5.1 Pictou Landing First Nation Health Outcomes – 2014/ 2019.		
	2014	2019
	%	%
Physical Health		
Poor to Fair	33.6	39.0
Good to excellent	66.4	61.0
Emotional Health (normally happy)		
No	7.8	15.3
Yes	92.2	84.7
Spiritual Health		
Not important	26.9	20.4
Important	73.1	79.6
<small>Note: Sources: EHS, 2014; WBBS, 2019. 2014 - n=279; 2019- n= 261</small>		

As we can see from the data, more participants reported good to excellent physical health outcomes in 2014 (66.4%) than in 2019 (61%), and conversely, poor to fair physical health outcomes increased from 2014 (33.6%) to 2019 (39%). In 2019, data was being collected during an intense phase of community preparation for the remediation process of the Boat Harbour Effluent Treatment Facility (BHETF), and people were more educated on the potential health consequences of the remediation process itself and were reflecting on the health status of the community as a consequence of being exposed to the BHETF for so long. One young man shared “Our community members are sick, or suffering from cancer, autoimmune diseases. Some young women can’t even have children” (Pictou Landing First Nation, 2019, p. 58).

Further, if racism is connected to poorer health outcomes, not surprisingly participants responded that their physical health was better in 2014 than in 2019 (see Table 5.2). After the passing of the *Boat Harbour Act* in 2015 that would see the closure of the BHETF, there was a higher amount of environmental racism in the area from residents in bordering towns stemming from their worries of job loss (Gormon, 2018). Green (2022) defines environmental racism as a

systemic form of racism where Indigenous, Black, and communities of colour experience disproportionate levels of environmental harm and are chronically underrepresented in environmental decision-making and the benefits of resource development. One resident in PLFN shared this comment in 2019, “Some residents are worried to go into town and are afraid to make a statement about their support for the remediation in public” (Pictou Landing First Nation, 2019, p. 44). One third of the participants in the 2019 survey reported they felt their personal safety was at risk because of the remediation of *A’s’e’k* (Pictou Landing First Nation, 2019). In an Indigenous context, interactions and experiences of racism are directly linked with poor physical (and mental) health outcomes (Bombay et al., 2010, 2014), as health will continue to decrease the more frequently people are exposed to racism (Krieger, 1999; Krieger & Sidney, 1996).

Emotional health decreased over time, as those who reported being normally happy decreased from 92.2% in 2014 to 84.7% in 2019, with those not happy increasing over time (7.8% in 2014 to 15.3% in 2019). In the women’s focus group in 2019, one woman shared “we’re always on [the] defence...or we’re laughing. We’re laughing alongside them because we don’t know how to respond, or we don’t know how to react” (Pictou Landing First Nation, 2019, p. 40). There was an aspect of the remediation project that was of concern to the community. The proponent was recommending that the toxic sludge at the bottom of Boat Harbour be held in a containment cell on site in PLFN after the remediation process was completed. Asked if this made them happy, “almost all participants responded that it does not make them happy, nor does it make them feel optimistic. Many report that they are angry or sad about it” (Pictou Landing First Nation, 2019, p. 28).

Lastly, those who found spirituality important increased from 2014 (73.1%) to 2019 (79.6%). This is a surprising finding given that in 2019 many reflected on how spirituality had

been harmed by the BHETF. For example, one woman, reflecting on those harms shared, “They don’t understand how it affects us spiritually”; another shared “when I look at that question about your ceremonies and traditional *Mi’kmaw* spirituality, our generation doesn’t know what it looks like. Because we haven’t been able to practice it all these years” (Pictou Landing First Nation, 2019, p. 42). Lewis (2018) noted that this question also must be contextualized within the historical importance of Catholicism to the community due to the missionary presence in their community since 1758 and the experience of some members in the community having attended residential schools (Lewis 2018). In Lewis (2018) a knowledge holder was asked about traditional spirituality and replied, “there was a lot more people going to church” (page 118). It was noted, that although harms had occurred, “[i]t is not irreparable though, it can be reclaimed when the land, air, and water are healed (Pictou Landing First Nation, 2019, p. 25), which perhaps reflects optimism. If I were to explore this outcome through the lens of environmental repossession, as the *Piktukowaq* are reclaiming A’se’k, they are hopeful to reclaim their ways of knowing and being.

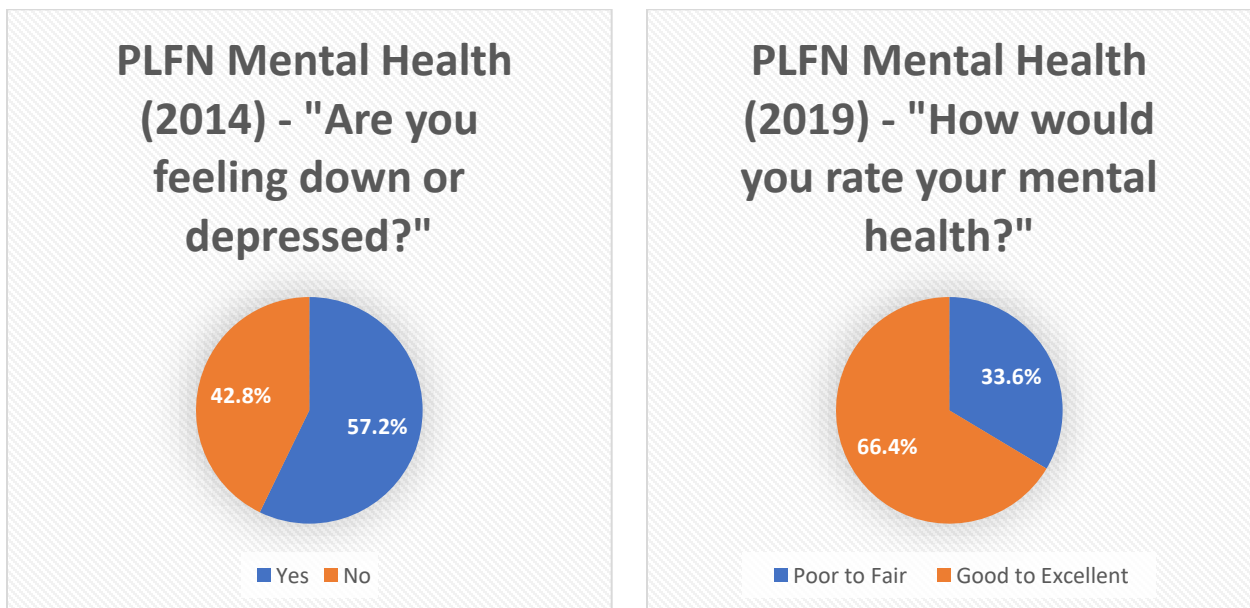


Figure 5.1 - PLFN Mental Health Outcomes (2014 EHS; 2019 WBBS)

Although the questions were not asked the same, we can get a sense of how people were feeling in terms of their mental health. In 2014, when participants were asked if they have felt down or depressed (may suggest poor mental health) in the last twelve months, 57.2% of participants reported yes. In 2019, when participants were asked how they would rate their mental health, 33.6% reported that they had poor to fair mental health (may suggest feeling down) (see Figure 5.1). What might be taken from these results is that mental health seemingly is improving from 2014 to 2019 with fewer people reporting mental health concerns in the final data collection phase. Nonetheless, one-third of the community is continuing to experience poor mental health outcomes. As noted above, it could be linked to experiences of racism (Bombay et al., 2010; 2014). The trauma of colonialism, and the subsequent environmental dispossession it has led to, has created a mental health crisis in Indigenous communities (Kirmayer et al., 2000). Michelle Francis-Denny, Community Liaison for the Boat Harbour Remediation Project, wondered if PLFN suicide rates or drug and alcoholism rates would be so high if they still had *A'se'k*, as she believes her community has just been trying to survive (Baxter, 2020).

5.3 Health Outcomes as a Factor of Connection to Environment

In Chapter 4, I noted that *Mi'kmaw* people understand that their relationship with the environment is to the air, and land, water around them (Prosper et al., 2011). In this section I present how participants in the surveys felt about their connection to the air, land, and water around them (see Figure 5.2). As an indicator of connection to environment, the participants were asked “how do you feel about the air, water, and land around you?” in both the 2014 EHS and the 2019 WBBS.

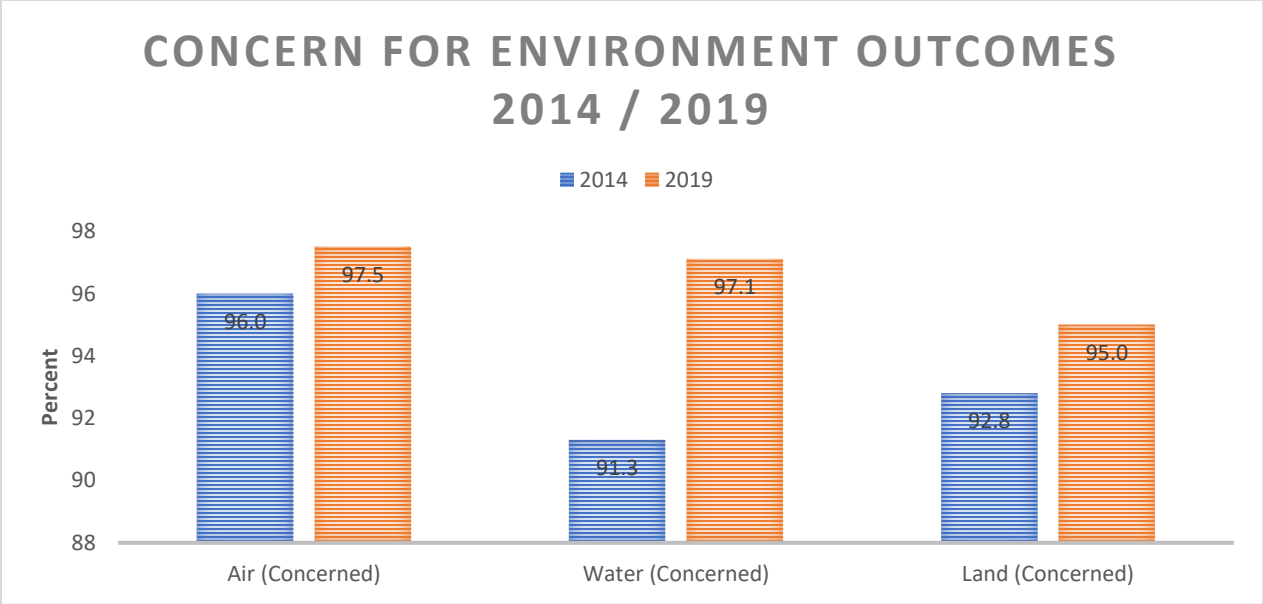


Figure 5.2 PLFN Environment Outcomes (2014 EHS /2019 WBBS)

Those who were concerned about the air around them increased slightly from 2014 to 2019. In 2014, 96.0% of participants are concerned about the air around them while in 2019, 97.5% were concerned. Those who are concerned about the water around them increased from 2014 to 2019, that is, more people were concerned about the water in 2019 (97.1%) than those who were concerned in 2014 (91.3%). Those who are concerned about the land around them increased from 2014 to 2019, that is, in 2014, 92.8% were concerned about the land around them compared to 95.0% in 2019. According to McCarthy (2016), Indigenous understandings of concern means care and love for the environment, rooted in their love of who they are, and where they come from as the original stewards of their lands. So, when asked about concern, it may be a nuance of interpreting the question not as ‘concern about’ but as “concern – do you have care and love for the air, water, and land?”. McCarthy (2016) uses the example of Six Nations of the Grand River’s occupation of their lands against development as upholding their responsibilities to the land and love for the coming faces who will inherit the territory.

Table 5.2 Comparing PLFN Health Outcomes – Environment – 2014/2019

Measure	Physical Health (2014)	Physical Health (2019)	Emotional Health (2014)	Emotional Health (2019)	Spiritual Health (2014)	Spiritual Health (2019)
	Good to Excellent	Good to Excellent	Happy Yes	Happy Yes	Important	Important
Environment	%	%	%	%	%	%
Air						
Not concerned	80.0	50.0	80.0	100.0	60.0	80.0
Concerned	46.7	60.7	86.7	58.7	82.5	80.1
Water						
Not concerned	81.8	57.1	90.9	66.67	63.6	85.7
Concerned	44.7	60.7	86.0	59.57	83.3	80.2
Land						
Not concerned	66.7	50.0	77.8	81.8	37.5	63.6
Concerned	46.6	60.5	87.2	58.7	84.7	80.9

Note: Sources: EHS, 2014; WBBS, 2019.

N (2014)= 279; *n*(2019)= 261.

5.3.1 Physical Health

In 2014, 80% of participants who are not concerned about the air around them had good to excellent physical health, compared to 50% in 2019. In 2014, 46.7% of those concerned about the air around them had good to excellent physical health, which increased to 60.7% in 2019. More participants (81.8%) who are not concerned about the water around them had good to excellent physical health in 2104 compared to 57.1% in 2019. In 2014, 44.7% of participants who were concerned about the water had good to excellent physical health, compared to 60.7% in 2019. Of those not concerned about the land around, more reported good to excellent physical health in 2014 (66.7%) than in 2019 (50.0%). In 2014, 46.6% of those concerned about the land around them had good to excellent physical health compared to 60.5% in 2019. Overall, even when concerned, participants seemingly are reporting better health outcomes.

5.3.2 Emotional Health

Of those not concerned about the air around them, 80.0% in 2014 reported that they are normally happy, compared to 100.0% in 2019. Of those participants who were concerned about the air around them, more (86.7%) reported feeling normally happy in 2014 than in 2019

(58.7%). Less participants in both 2014 and 2019 reported they normally feel happy whether they are concerned or not about the water around them. When it comes to concern about the land, 77.8% of participants reported feeling happy when they are not concerned compared to 81.8% in 2019. And finally, more participants in 2014 (87.2%) reported feeling happy when they were concerned about the land than 2019 (58.7%). Overall, the trend is that less people are happy in 2019 than 2014 when they are concerned. Emotional health outcomes when concerned are not unexpected given the knowledge that the community was gaining about the remediation process.

5.3.3 Spiritual Health

Spiritual health increased from 2014 (60.0%) to 2019 (80.0%) when participants were not concerned about the air around them but decreased when they were concerned (82.5% in 2014 compared to 80.1% in 2019). Spiritual health increased from 2014 (63.6%) to 2019 (85.7%) when participants were not concerned about the water around them but decreased when they were concerned (83.3% in 2014 compared to 80.2% in 2019). Spiritual health increased from 2014 (37.5%) to 2019 (63.6%) when participants were not concerned about the land around them but decreased when they were concerned (84.7% in 2014 compared to 80.9% in 2019). Spirituality increased the most when participants were not concerned.

My research does not preclude an interpretation of concern as ‘concern about’ however, as I explore the findings in emotional and spiritual health, which in all instances of concern for air, water and land, there is a decrease in health outcomes from 2014 to 2019. Lewis et al. (2020b) notes that “Indigenous people are not meant to be afraid of their environment” (p. 4). But, as Walter and Suina (2019) would suggest, when Indigenous data is interpreted, we consider interpretations that might be more culturally relevant to Indigenous populations and from a strengths-based perspective. In the case of emotional and spiritual health, where they were not

afraid, these health outcomes improved from 2014 to 2019 in most cases, with the exception of the concern about the water. In 2019, participants expressed ongoing concerns about the water source around their community, despite the remediation and prior studies showing the tap water as safe to drink (Pictou Landing First Nation, 2016; 2019).

5.3.4 Mental Health

Again, I remind the reader that the way the questions were asked around mental health were not the same in 2014 and 2019. I present in Figure 5.3 the proportion of those who reported poor mental health outcomes (feeling down or depressed or poor to fair mental health) when asked if they were concerned about the air, water and land around them.

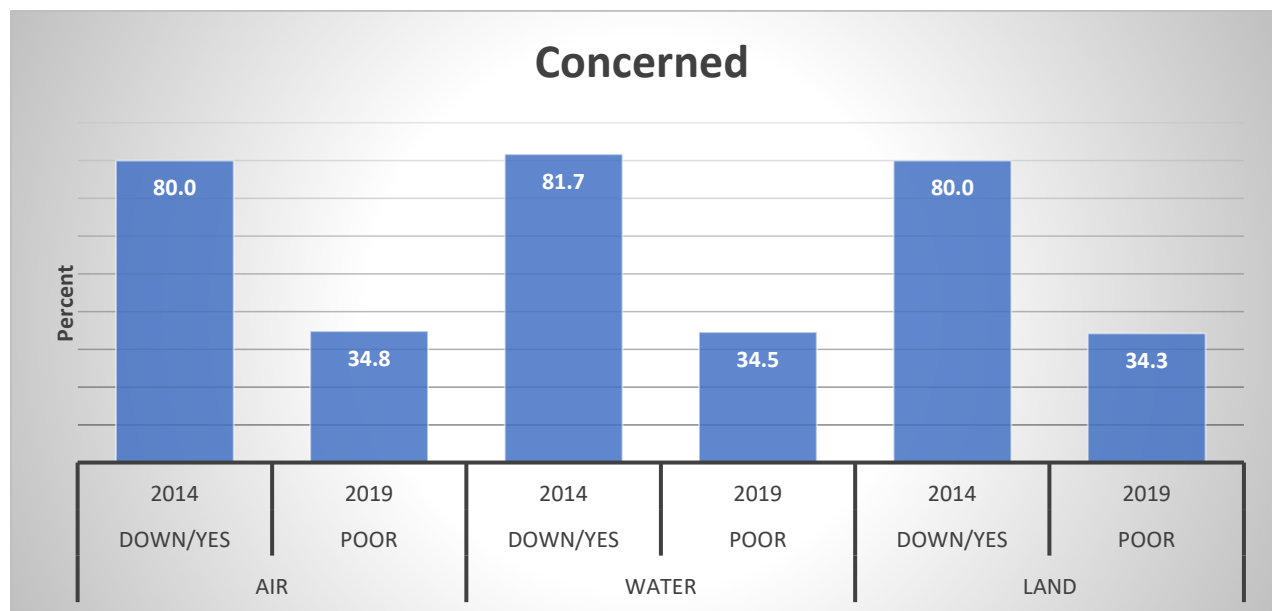


Figure 5.3. PLFN Environment / Mental Health Outcomes (2014 EHS & 2019 WBBS)

In 2014, 80.0% of participants said they had been down or depressed in the past year when they are concerned about the air around them, compared to 34.8% reporting poor to fair mental health in 2019. I would suggest, again, the feeling down and depressed could be viewed as having poor mental health. In 2014, 81.7% of participants said they were down or depressed in the past year when they are concerned about the water around them, compared to 34.5%

reporting poor to fair mental health in 2019. And 80.0% of participants in 2014 said they were down or depressed in the past year when they are concerned about the land around them, compared to 34.3% reporting poor to fair mental health in 2019. Here, it appears that mental health is improving over time. This is a key finding that I will discuss in Chapter 6.

5.4 Health as a factor of Autonomy

I now start to answer my research questions. The first research question is as follows: Does community health for the Pictou Landing First Nation improve over time when community members have more autonomy over environmental assessment processes on their traditional territory? The community in 2014 did not know the BHETF or the mill would ever close. In 2019 the BHETF is closing and they are participating in a remediation project. I first present the autonomy variables which are organized and presented as “I feel listened to,” “I have control over decisions that affect my life,” and “We are protecting PLFN for future generations” (see Figure 5.4). Participants were asked if they agreed or disagreed with each statement, and I present outcomes for the participants who agreed.

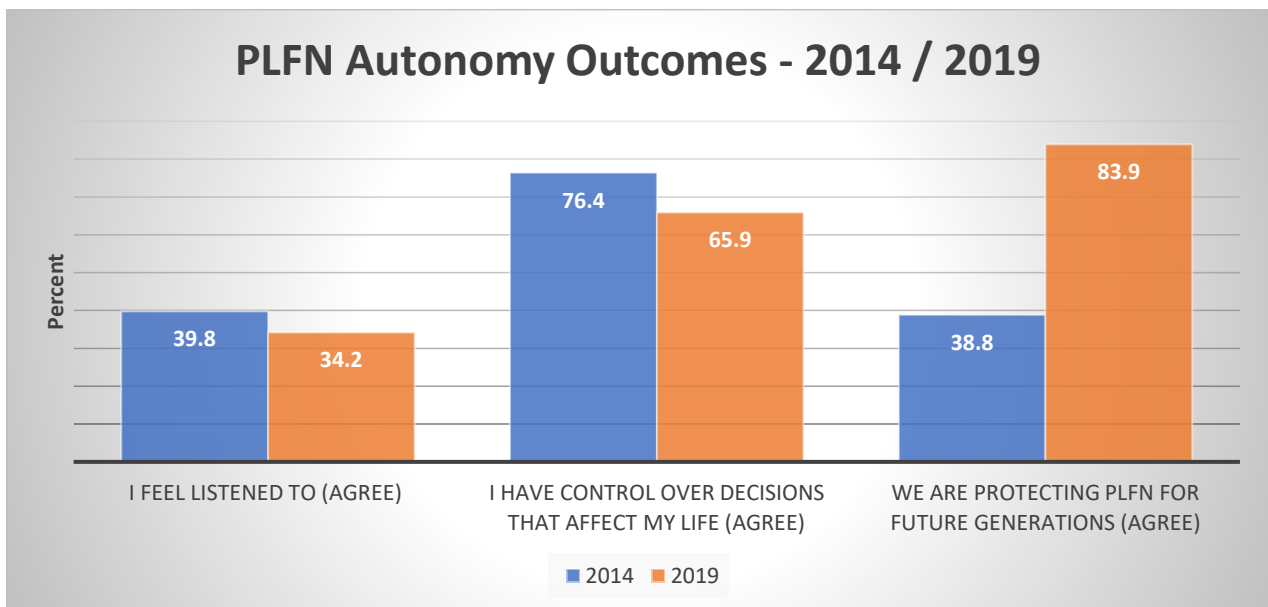


Figure 5.4 PLFN Autonomy Outcomes (2014 EHS /2019 WBBS)

Fewer people felt listened to in 2019 than 2014 (39.8% 2014; 34.2% in 2019). Less people felt control over decisions impacting them in 2019 than 2014 (76.4% in 2014; 65.9% 2019). This is consistent with what was stated previously, that PLFN community members do not feel the government is listening to their input to the remediation process. In a 2019 focus group, one man shared, “The government doesn’t hear us. Nobody hears us.” (PLFN, 2019, p. 32). However, more people felt they were protecting the environment for future generations in 2019 than in 2014 (38.8% 2014; 83.9% 2019). This finding would support the theory of environmental repossession, that community members may have felt they were getting back to their traditional roles. So now I wish to explore health outcomes as a factor of autonomy.

5.4.1 Health outcomes and autonomy – I feel listened to

Participants were asked in both the 2014 EHS and the 2019 WBBS if they felt listened to, and the responses were recoded to agree, neutral, or disagree. Here I present the responses for agree.

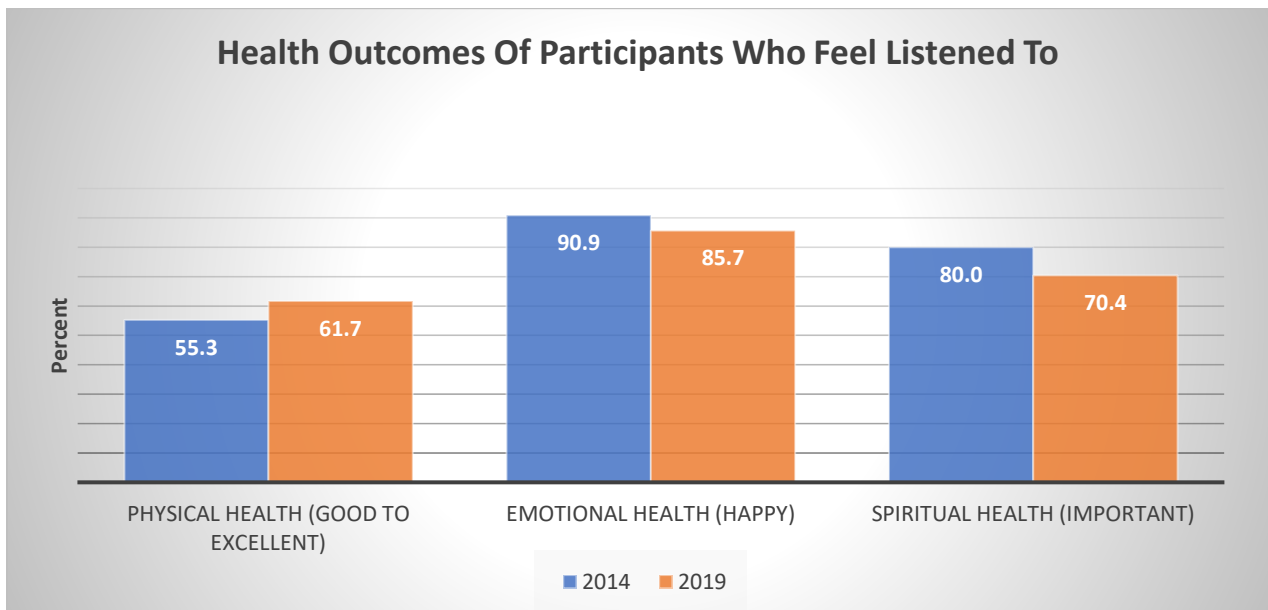


Figure 5.4.1 I feel listened to (2014 EHS/2019 WBBS)

Physical health of participants who felt listened to increased from 2014 (55.3%) to 2019 (61.7%). Emotional health of those who felt listened to slightly decreased in 2019 from 90.9% to 85.7% in 2014. Spiritual health of those who felt listened to decreased from 80.0% in 2014 to 70.4% in 2019.

5.4.2 Health outcomes and autonomy – I have control over decisions that affect my life

Participants were asked in both the 2014 EHS and the 2019 if they felt have control over decisions that affect them, and the responses were recoded to agree, neutral, or disagree. Here I present the responses for agree.

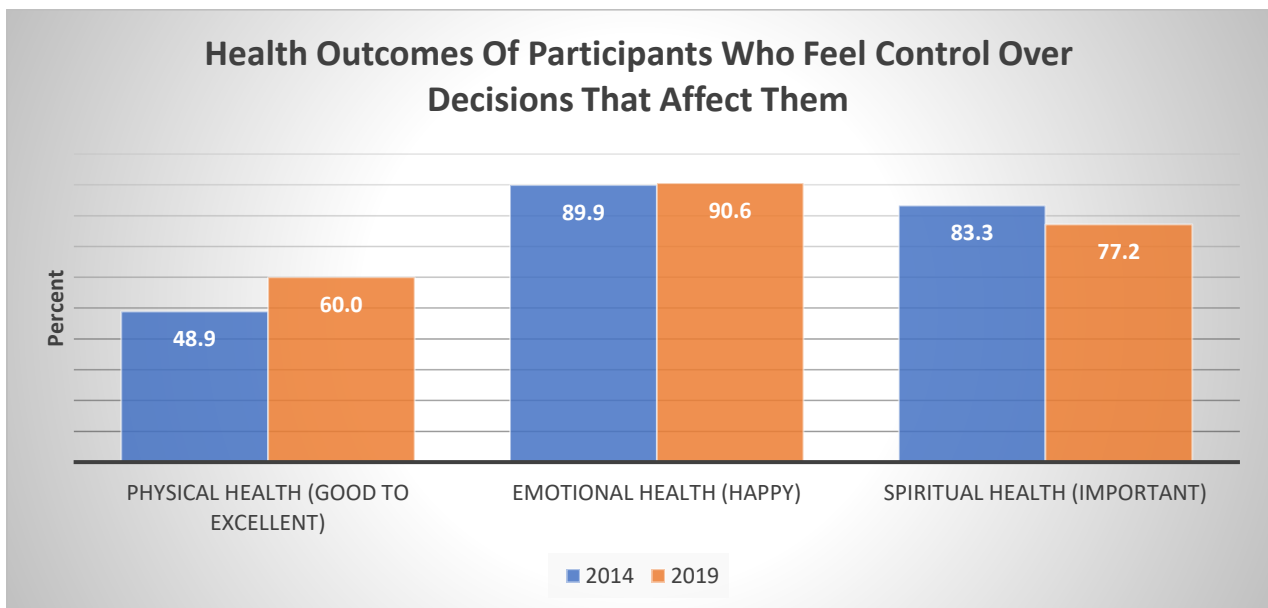


Figure 5.4.2 PLFN Control over decisions (2014 EHS/ 2019 WBBS)

Participants who felt control over decisions that affect them see physical health improved from 48.9% in 2014 to 60.0% in 2019. Emotional health of those who felt control over decisions that affect them slightly increased from the 89.9% in 2014 to 90.6% in 2019. Spiritual health decreased from 83.3% in 2014 to 77.2% in 2019.

5.4.3. Health outcomes and autonomy – We are protecting PLFN for Future Generations

Participants were asked in both the 2014 EHS and the 2019 if they felt they were protecting PLFN for future generations, and the responses were recoded to agree, neutral, or disagree. Here I present the responses for agree.

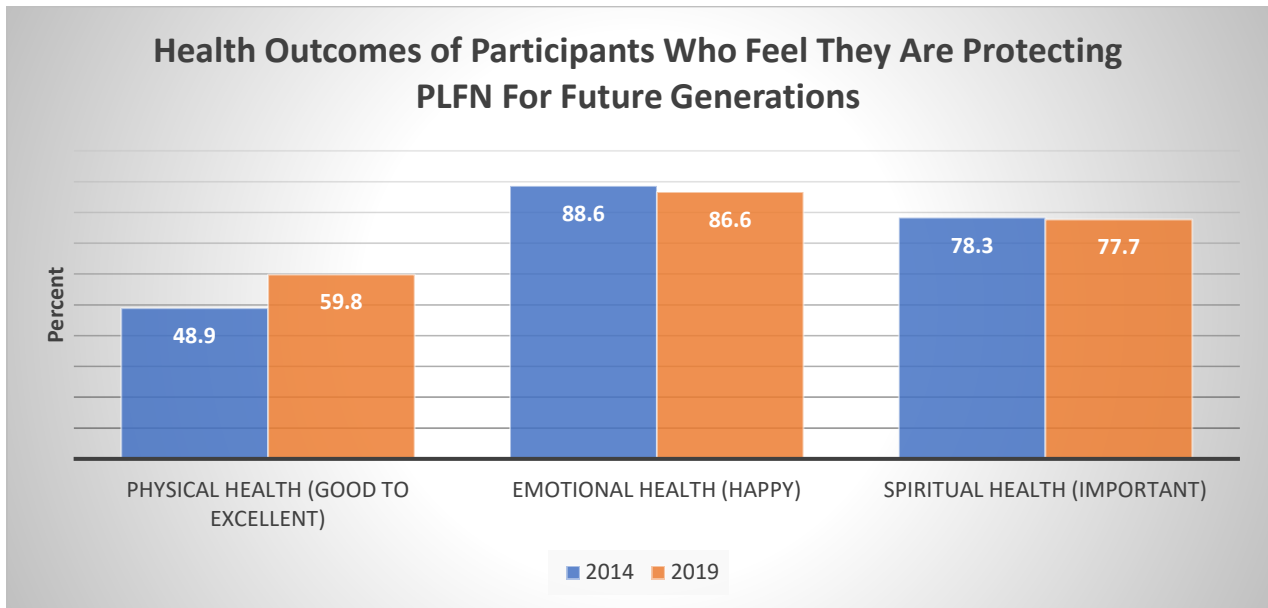


Figure 5.4.3 PLFN Health Outcomes & We are protecting PLFN for future generations (2014 EHS / 2019 WBBS)

Physical health improved in 2019 for those who feel they are protecting PLFN for future generations, while both emotional and spiritual health slightly declined. Physical health increased from 48.9% in 2014 to 59.8% in 2019. Emotional health slightly decreased from 2014 (88.6%) to 2019 (86.6%). Spiritual health also slightly declined in importance from 2014 (78.3%) to 2019 (77.7%).

5.4.4 Mental Health and Autonomy

Now I will present the 2014 and 2019 mental health variables as a factor of autonomy, reminding the reader again that the mental health question was not asked the same in 2014 and 2019. In the EHS (2014) mental health was measured by using, "In the past year, have you or a household member felt down or depressed" and participants responded with often, sometimes,

never, don't know, refused, and missing. The measure was previously recoded to a response of no or yes' and to exclude don't know, refused or missing. In the WBBS (2019), mental health was measured by asking participants, "How would you rate your mental health? Response options were excellent, good, fair, poor, don't know, or refused, recoded to a response of good to excellent and poor to fair, and I recoded to exclude don't know and refused.

5.4.4.1. *Mental health and autonomy – I feel listened to*

The question “I feel listened to” was asked in connection to the community section of the 2014 EHS and 2019 WBBS. The question was asked as a statement, and participants were to answer to the statement with agree, neutral, or disagree.

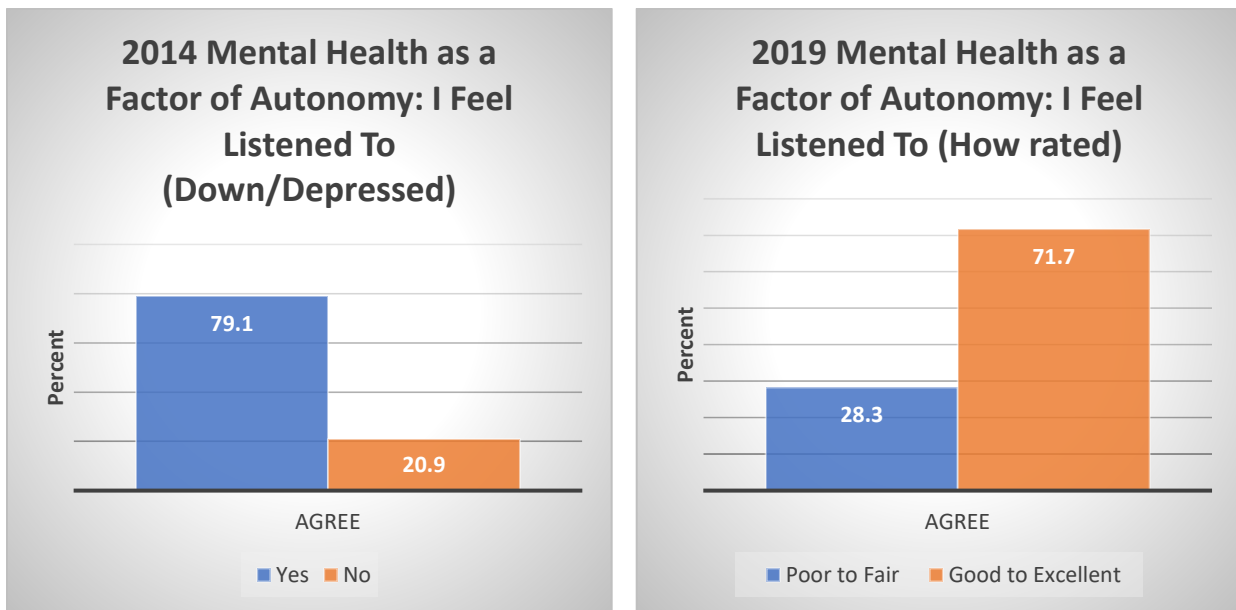


Figure 5.4.4.1 Mental Health & I feel listened to (2014 EHS/2019 WBBS)

The mental health of those who agreed with the statement that they felt listened to improved from 2014 to 2019, with poor to fair health outcomes decreasing from 79.1% in 2014 to 28.3% in 2019, and good to excellent health outcomes improving from 20.9% in 2014 to 71.7% in 2019.

5.4.4.2 Mental health and autonomy – I have control over decisions that affect my life

I have control over decisions that affect my life was included as a statement in the connection to community section of the 2014 EHS and 2019 WBBS, and participants were to answer to the statement with agree, neutral, or disagree.

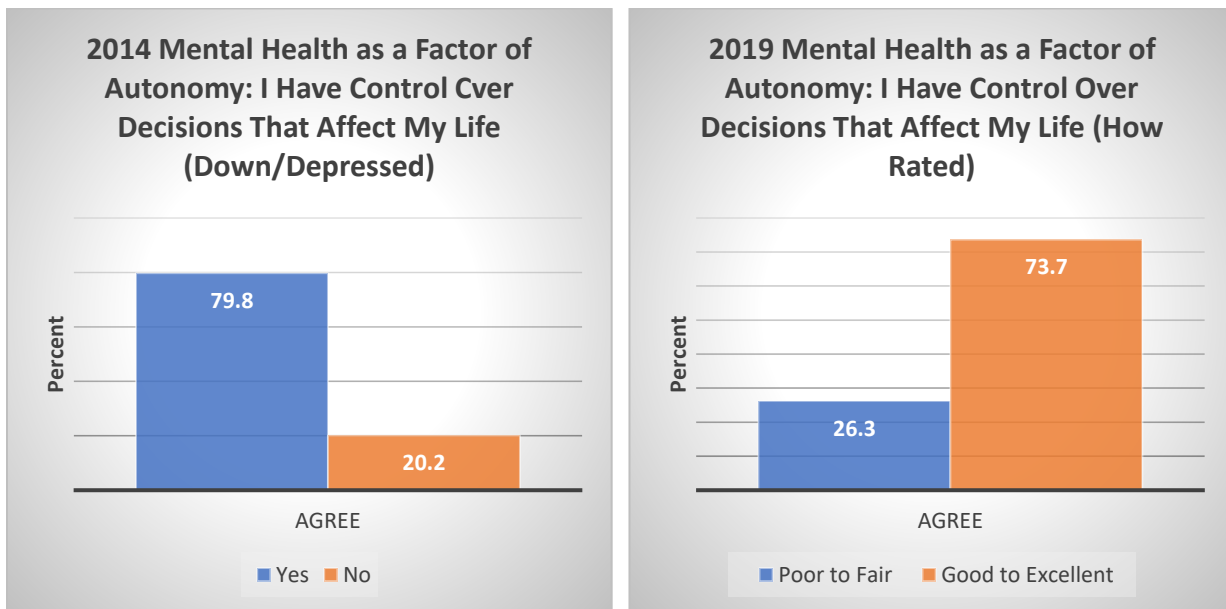


Figure 5.4.4.2 Mental Health & Control over decisions (2014 EHS/2019 WBBS)

The mental health of those who agreed with the statement that they felt they had control over decisions that affect their life improved from 2014 to 2019, with poor to fair mental health outcomes decreasing from 79.8% in 2014 to 26.3 % in 2019, and good to excellent mental health outcomes improving from 20.2% in 2014 to 73.7% in 2019.

5.4.4.3 Mental health and autonomy-- We are protecting PLFN for future generations

The question ‘We are protecting PLFN for future generations’ was asked as a statement in the connection to community section of the 2014 EHS and 2019 WBBS, and participants’ answer options were agree, neutral, or disagree.

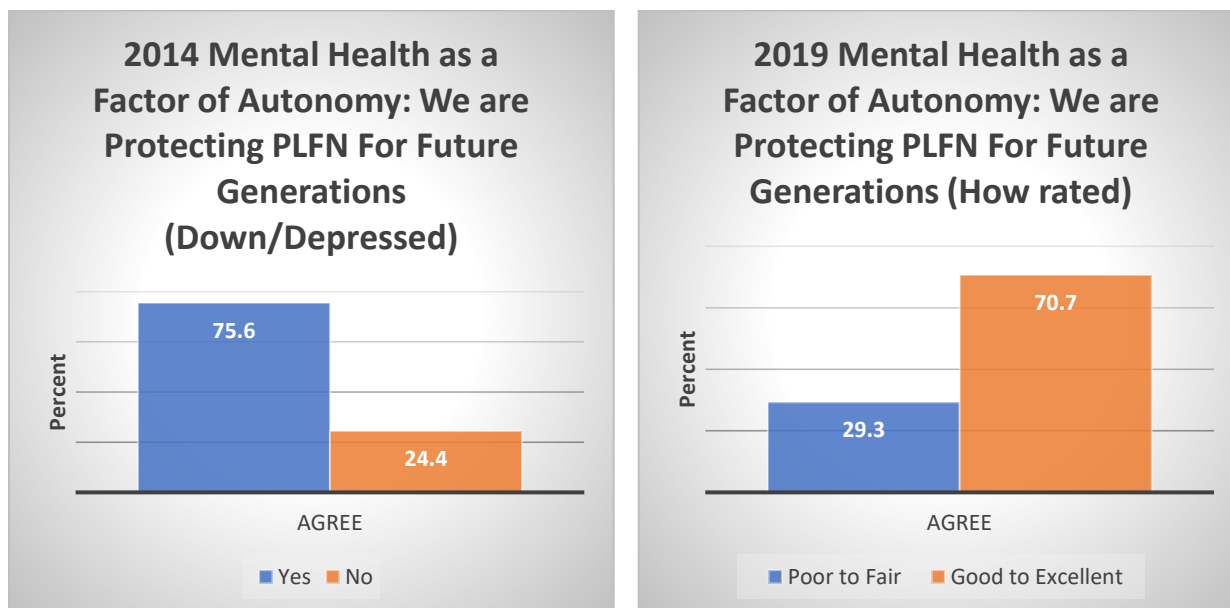


Figure 5.4.4.3 Mental Health & Protecting PLFN for future generations (2014 EHS/2019 WBBS)

In 2014, 75.6% of those who agreed they are protecting PLFN for future generations have poor to fair mental health, compared to only 29.3 in 2019. But only 24.4% of those who agreed they are protecting PLFN for future generations had good to excellent mental health compared to 70.7% in 2019. I will interpret and explain this data in relation to the first question further in the next chapter.

5.5 Community wellbeing

As I seek to answer my second research question, I first explore relationship to place, that is, how PLFN provides community well-being. Relationship to place is measured using the variables “I like living in PLFN”, “I have a cultural connection to the area”, and “PLFN gives me my sense of community”. Responses to all three variables were recoded to agree, neutral, and disagree. I present the agree response to these statements across the dimensions of health.

5.5.1. Health outcomes and community well-being — I like living in PLFN

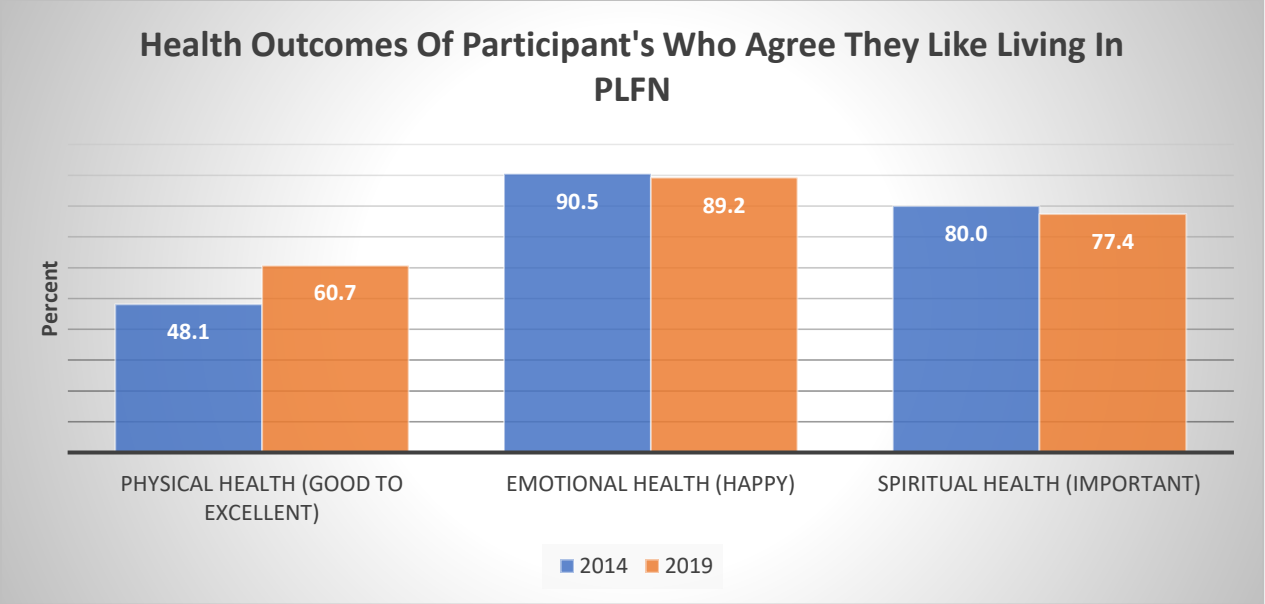


Figure 5.5.1 Health Outcomes – I like living in PLFN – Agree Responses (2014 EHS / 2019 WBBS)

When participants agreed they like living in PLFN, those reporting good to excellent physical health increased from 2014 (48.1%) to 2019 (60.7%). The emotional and spiritual health of participants who like living in PLFN slightly decreased from 2014 to 2019. Emotional health of participants who agreed they like living in PLFN decreased from 90.5% in 2014 to 89.2% in 2019. Spiritual health decreased from 80.0% in 2014 to 77.4% in 2019.

5.5.2. Health outcomes and community well-being – I have a cultural connection to the area

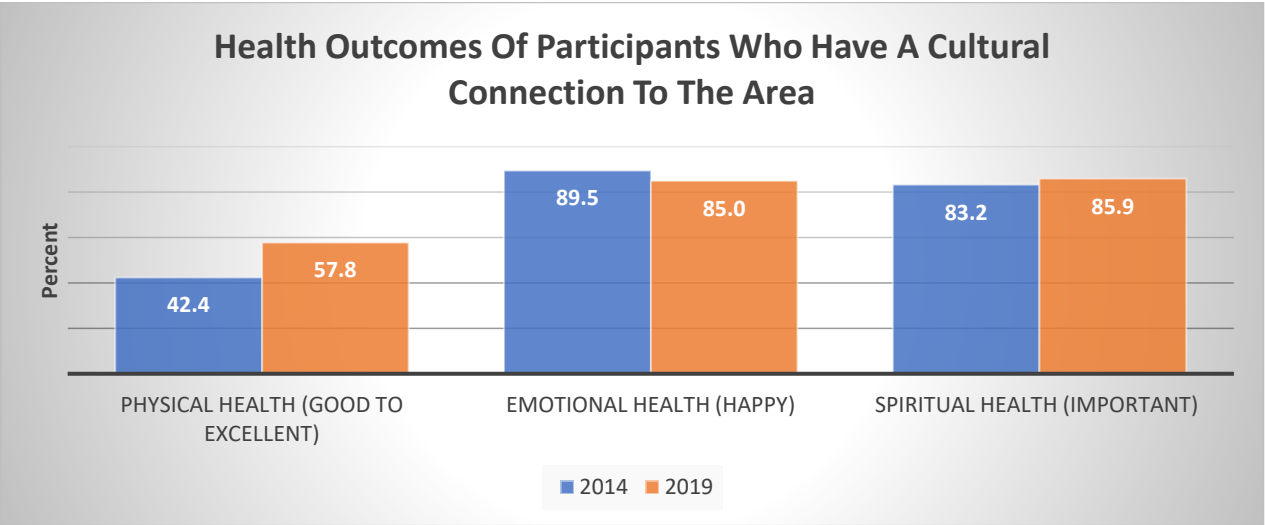


Figure 5.5.2 Health Outcomes – I have a cultural connection to the area – Agree Responses (2014 EHS/ 2019 WBBS)

Of participants who agreed they have a cultural connection to the area, those reporting good to excellent physical health increased from 42.4% in 2014 to 57.8% in 2019. Participants who had a cultural connection to the area and who report they are normally happy and interested in things decreased from 2014 to 2019 from 89.5% to 85.0%. Those who had a cultural connection to the area and think spirituality is important slightly increased from 2014 (83.2) to 2019 (85.9%).

5.5.3 Health Outcomes and community well-being -- PLFN gives me a sense of community

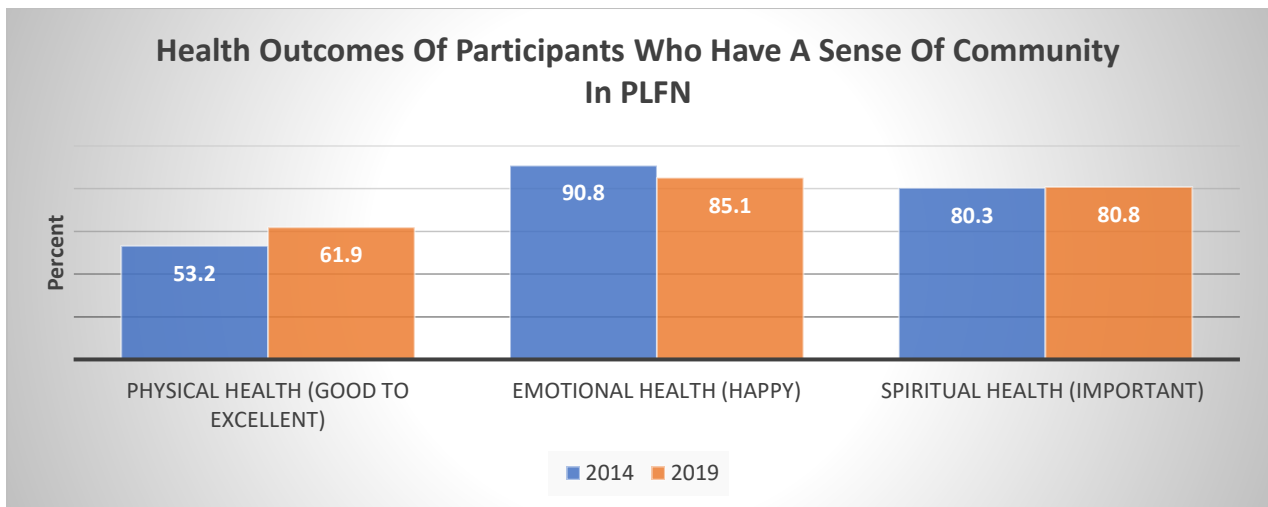


Figure 5.5.3 Health Outcomes & PLFN gives me my sense of community – Agree Responses (2014 EHS/2019 WBBS)

Those participants who had a sense of community in PLFN saw their physical health improve from 2014 to 2019, from 53.2% to 61.9%. Emotional health of participants who have a sense of community in PLFN slightly decreased from the 90.8% in 2014 to 85.1% in 2019. From 2014 to 2019, those who report that spirituality is important remains virtually the same, with 80.3% in 2014 and 80.8% in 2019.

5.5.4 Mental Health outcomes and community well-being

5.5.4.1 I like living in PLFN

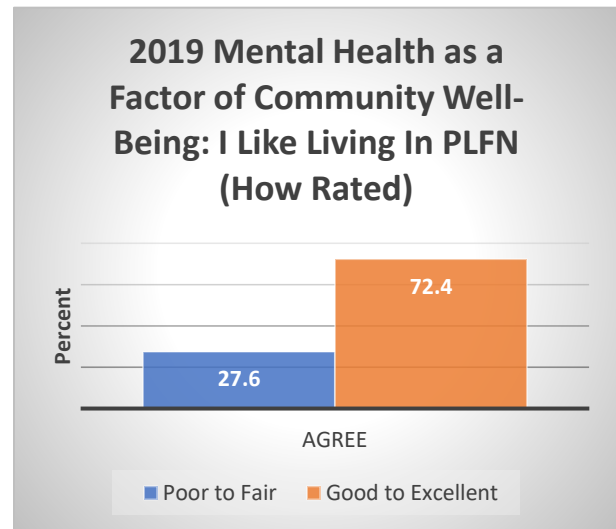
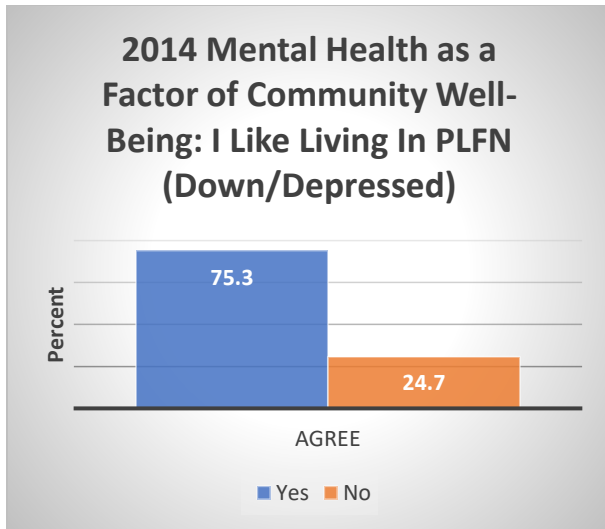


Figure 5.5.4.1 Mental health & I like living in PLFN (2014 EHS/ 2019 WBBS).

In 2014, most participants who answered the question “I like living in PLFN” had poor to fair mental health outcomes. For participants in 2014 who agreed to liking to live in PLFN, 75.3% had poor to fair mental health, and 24.7% had good to excellent mental health.

The proportion of those who liked living in PLFN experience the highest percentage (72.4%) of good to excellent mental health in 2019 compared to only 27.6% who liked living in PLFN having poor to fair mental health.

5.5.4.2 I have a cultural connection to the area

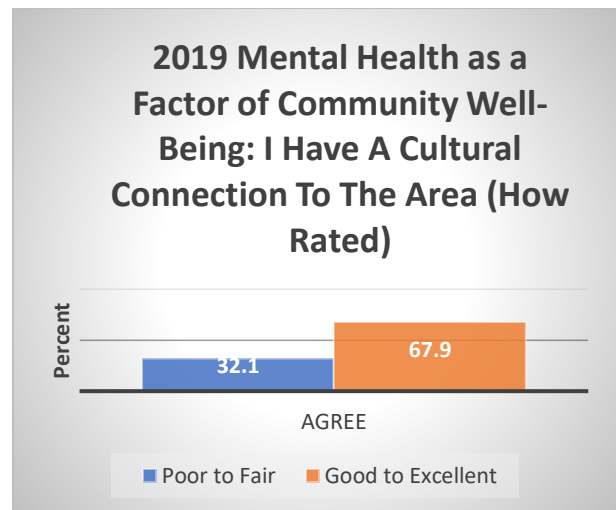
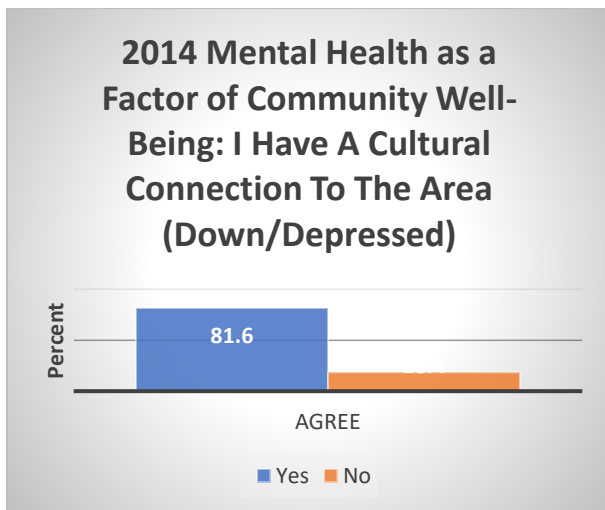


Figure 5.5.4.2 Mental health & Cultural Connection to Area (2014 EHS/ 2019 WBBS)

Most participants in 2014 who had a cultural connection to the area had poor to fair mental health with 81.6%, and only 18.4% who had a cultural connection had good to excellent mental health. In 2019, the highest proportion of participants who had good to excellent mental health are those who agreed to having a cultural connection to the area (67.9%) with 32.1% of those who had a cultural connection had poor to fair mental health.

5.5.4.3 PLFN gives me a sense of community

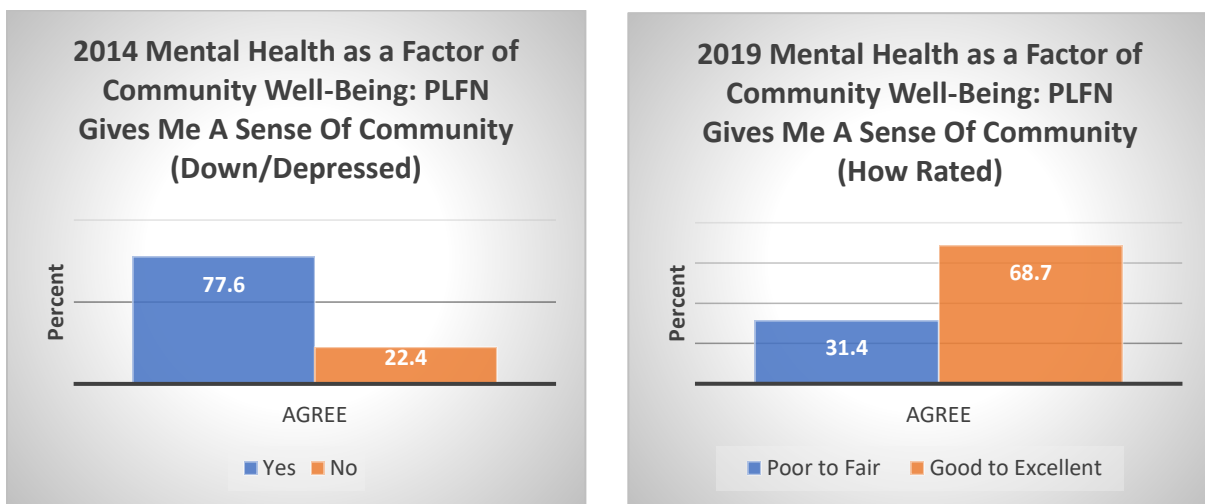


Figure 5.5.4.3 Mental health & Sense of community (2014 EHS/ 2019 WBBS)

More participants (77.6%) who agreed that PLFN gives me a sense of community had poor to fair mental health in 2014 than in 2019 (31.4%). Conversely, less (22.4%) reported good to excellent health in 2014 than in 2019 (68.7%) when they reported that PLFN gives me a sense of community.

5.6 Relationship to Place and Autonomy

I now turn to my second research question: does relationship to place improves with more autonomy in environmental decision making? In this section, I cross tabulate relationship to place indicators, “I like living in PLFN,” “My cultural connection is to this area,” and “I have a sense of community in PLFN” with autonomy variables, “I feel listened to,” I have control over

decisions that affect my life,” and “We are protecting PLFN for future generations”. For each crosstabulation, I present the agree response.

5.5.5.1 I like living in PLFN

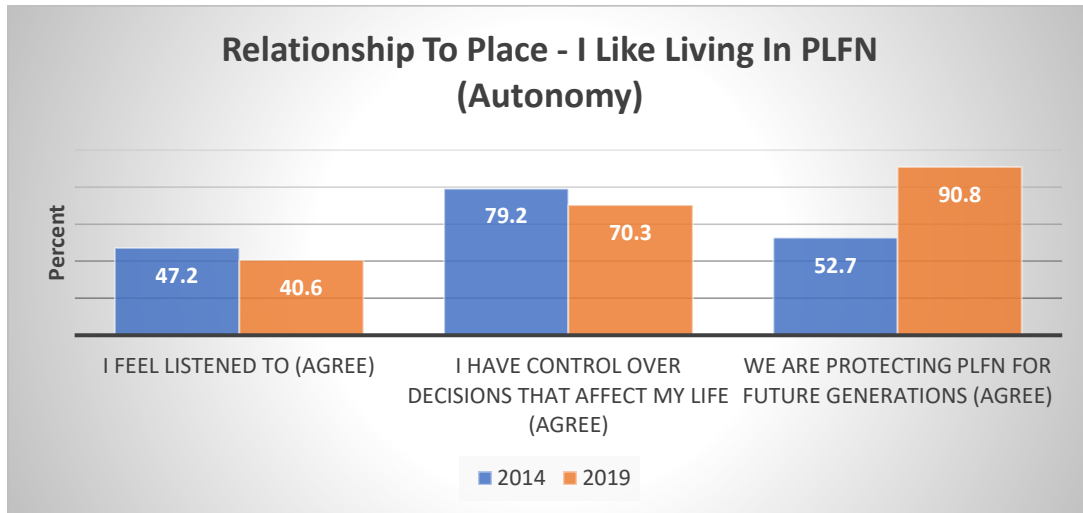


Figure 5.5.5.1 Relationship to place and autonomy (like living in PLFN) (2014 EHS/ 2019 WBBS)

In 2014, 47.2% of participants who liked living in PLFN felt listened to, compared to only 40.6% of participants in 2019. In 2014, 79.2% of participants who liked living in PLFN felt they had control over decisions that affect their life, but in 2019, only 70.3% feel the same. In 2014, 52.7% of participants who liked living in PLFN felt they are protecting PLFN for future generations, but in 2019 there is an increase to 90.8% who felt the same.

5.5.5.2 I have a cultural connection to the area

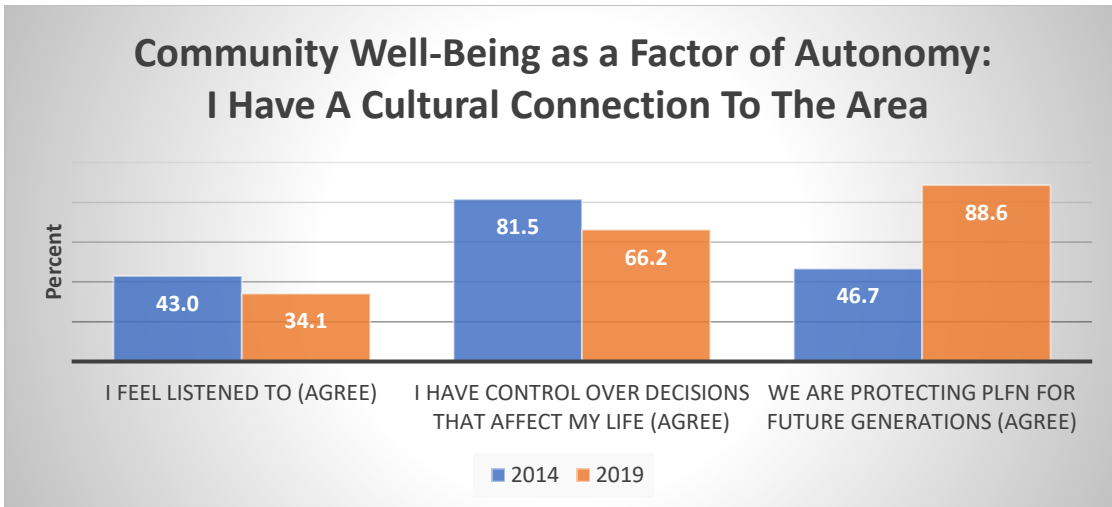


Figure 5.5.5.2 Relationship to place and autonomy (cultural connection is to the area) (2014 EHS/ 2019 WBBS)

In 2014, 43.0% of participants who had a cultural connection to the area felt listened to, compared to only 34.1% in 2019. In 2014, 81.5% of participants who had a cultural connection to the area felt they had control over decisions that affect their life, compared to only 66.2% in 2019. In 2014, 46.7% of participants who had a cultural connection to the area felt they are protecting PLFN for future generations, but in 2019 it almost doubles to 88.6%.

5.5.5.3 PLFN gives me a sense of community

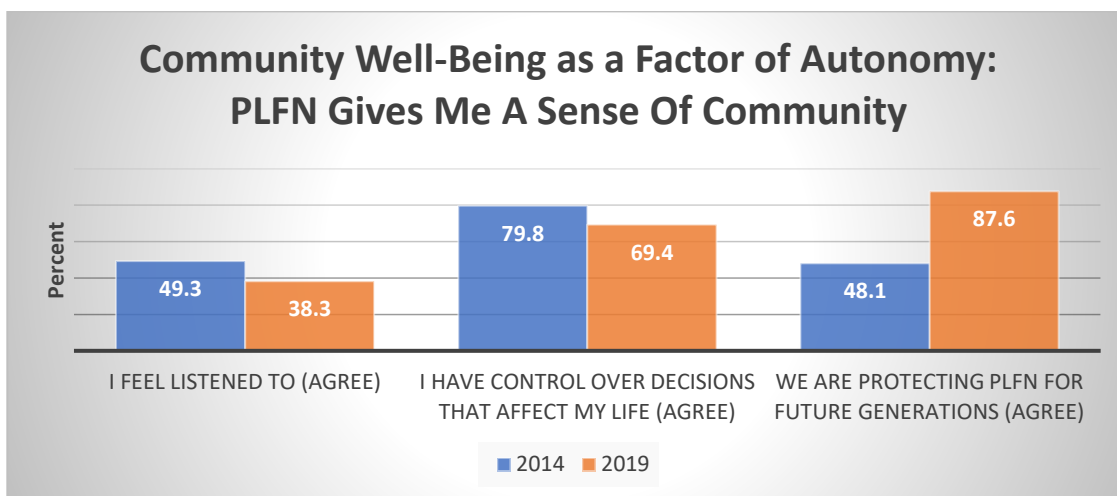


Figure 5.5.5.3 Relationship to place and autonomy (PLFN gives me a sense of community) (2014 EHS/ 2019 WBBS)

About 49.3% of participants who said PLFN gives them their sense of community felt listened to in 2014, but only 38.3% do in 2019, while 79.8% of participants who said PLFN gives them their sense of community report they felt they have control over decisions that affect their life to in 2014, compared to only 69.4% in 2019. And finally, 48.1% of participants in 2014 who say PLFN gave them their sense of community felt they are protecting PLFN for future generations, compared to 87.6% in 2019.

5.6 Conclusion

In summary, throughout my results there are both expected and unexpected findings. Regarding general health outcomes, I notice physical health, emotional health, and spiritual health decline, but mental health improves in 2019. Concern for the environment drastically increases in 2019, and I believe through a lens of care and love for territory, these results show a stronger tie PLFN has to their traditional territory by wanting to protect it showing relationship to place improves. For health outcomes as a factor of environment, physical and mental health improves when they have concern for the environment, while emotional and spiritual health does not. Regarding community health and well-being as a factor of autonomy, when participants feel listened to, feel control over decisions that affect them, and feel they are protecting PLFN for future generations — physical and mental health do improve in 2019, but again emotional and spiritual health do not. Similarly in relation to participants who like living in PLFN, have a cultural connection to the area, and have a sense of community, physical health and mental health improve while emotional and spiritual health decrease. In PLFN relationship to place as a factor of autonomy, community well-being in relation to autonomy shows that participants who like living in PLFN, have a cultural connection to the area, and have a sense of community in

PLFN still do not feel listened to or feel control over decisions that affect them, but do feel they are protecting PLFN for future generations.

I have now assessed the health, autonomy, and relationship to place. In 2014, Pictou Landing Native Women's Group set out to see if the health of the community was impacted by the siting of the BHETF on their land. Little did they know then that five years later there would be another data collection process, this time against the backdrop of the BHETF closing and the community getting closer to getting their beloved *A'se'k* back. I now move to a discussion of the results to determine if health improves when given more autonomy over environmental decision-making, and if the relationship to place improves when given more autonomy. I present my key findings and some recommendations for further research.

Chapter 6 Discussion and Conclusions

6.1 Introduction

In my thesis, I set out to understand if, as the Pictou Landing First Nation (PLFN) community got more autonomy over environmental decision-making, did health outcomes and their relationship to place improve. Exploring health outcomes through the lens of Indigenous geographies and Indigenous health geographies helps us understand how colonization continues to impact *Piktukowaq* conceptions of health and their ability to have healthy connections to the air, land, and water around them. I further explored this relationship through the theoretical lens of environmental dispossession, to reflect a period of alienation from *A'se'k* in 2014 as effluent continued to flow into the Boat Harbour Effluent Treatment Facility (BHETF), and environmental repossession, which reflected a future in 2019 that might reconnect the *Piktukowaq* to *A'se'k*, at a time when the BHETF was about to close and undergo a remediation process. I am guided by the *Piktukowaq* environmental health theoretical framework to understand if the relationship to place was being reclaimed as community members respond to whether they felt they had more autonomy over the decisions that were being made about their lands.

In this chapter, I will first discuss my key findings about PLFN health outcomes comparing data from the 2014 Environmental Health Survey (EHS) and the 2019 Pictou Landing First Nation Baseline Well-Being Study (WBBS). I will then discuss my key findings according to three (3) primary themes laid out in Chapter 5: health outcomes as a factor of connection to environment; community health and well-being as a factor of autonomy; and finally, relationship to place as a factor of autonomy. I close the chapter by presenting the theoretical and substantive

contributions of my research, the limitations of my research and challenges I encountered on my research journey and conclude with some recommendations for future research.

6.2 Overall Health of the *Piktukowaq*

In Chapter 5 I noted that physical health outcomes declined between 2014 (66.4%) than in 2019 (61%), I think it is important to highlight just how racism may relate to poorer health outcomes. After it was clear that the Boat Harbour Effluent Treatment Facility (BHETF) would be closing, the community and its' members were subjected to more intense racist experiences (Gormon, 2018). They were worried to go into town and felt their personal safety at risk. In an Indigenous health context, and in these processes of environmental impact assessment, experiences of racism must be accounted for, as Krieger and Sidney (1996) and Krieger (1999), note, and health will continue to decrease the more frequently people are exposed to racism.

I mentioned in Chapter 5 how spirituality had been harmed by the BHETF, with one woman reflecting on the harms the community experienced, shared “They don’t understand how it affects us spiritually”; while another shared “when I look at that question about your ceremonies and traditional *Mi’kmaw* spirituality, our generation doesn’t know what it looks like. Because we haven’t been able to practice it all these years” (Pictou Landing First Nation, 2019, p. 42). And, then I noted possibly how the historical importance of Catholicism to the community due to the missionary presence in their community since 1758 might have blurred the understandings of what traditional spirituality means to the community members, it was noted, that although harms had occurred, “[i]t is not irreparable though, it can be reclaimed when the land, air, and water are healed (Pictou Landing First Nation, 2019, p. 25). The key finding here is that if I were to explore this outcome in the future through the lens of environmental repossession as the *Piktukowaq* are reclaiming A’se’k, knowing they are hopeful to reclaim their

ways of knowing and being, I would ensure that the spirituality question is asked in a way that is very clear. Given the history of the community the question or questions should distinguish between what is being asked about Catholicism practices with the church and what is being asked about the traditional spiritual practices connected to who they are as *Piktukowaq*.

Although the questions for mental health were not asked the same between 2014 and 2019, mental health seemingly is improving from 2014 to 2019 with fewer people reporting mental health concerns in the final data collection phase. Research undertaken by Nightingale and Richmond (2022) would suggest that by regaining more access to environment through the re-assertion of autonomy over their territories, the *Piktukowaq*'s mental well-being will improve by simply going back to the land and their traditional ways of knowing. As suggested above, if participants feel like they are getting back to caring for *A'se'k* and reconnecting with, and caring for, their own environment, we could expect to see mental health outcomes improve, since relationships to land are foundational to the mental health of Indigenous peoples (Nightingale & Richmond, 2022). Nightingale and Richmond (2022) show that through the act of environmental repossession with the community of Biigtigong Nishnaabeg, their Mountain Lake Camp strengthened social bonds between community, centered Anishinaabe knowledge, and created a space of community pride fostered in Anishinaabe identity. Through land-based relationships and the transmission and practice of Indigenous knowledge, the reclamation of land fosters mental well-being with personal, community, and kinship meanings interconnected through the shift from Indigenous survival to self-determination over traditional territories (Nightingale & Richmond, 2022).

6.3 Relationship to Place, Environment, and Autonomy

In 2019, participants were more concerned about the air, land, and water around them than in 2014 (see Figure 5.2). Yet, those reporting good to excellent physical health even when concerned about the air, water, and land around them, increases approximately 14% to 16% from 2014 to 2019 (see Table 5.2). Research has shown that health and well-being is closely linked to cultural and spiritual connection in caring for the land and the ability to engage in traditional activities (Ford et al., 2010; Greenwood & de Leeuw, 2007; Lewis, 2018; Pictou Landing First Nation, 2019; Richmond, 2009). In Australia, Burgess et al. (2009) investigated the connection between Indigenous peoples' care for their country and how this relates to their health. For Indigenous peoples in Australia, the use of the word 'country' represents the interdependent relationship between Indigenous peoples and their ancestral territories, a connection between all human and non-human kin such as animals, plants, etc. (Burgess et al., 2008; Rose, 1996). Evidence shows that participating in caring for country led to significant improvements in health (Burgess et al., 2009). Morrison (2007) believes caring for country, the Indigenous participation of community-driven interconnective activities on traditional Indigenous territories, promotes spiritual, environmental, and overall Indigenous human health. I interpret this to be that as the concern or 'care' grows for their home territories, the *Piktukowaq*'s physical health significantly improves.

Mental health outcomes improve from 2014 to 2019 (see Figure 5.3.4) when participants are asked if they are concerned about the air, water, and land around them. If argued from a place of care and love, I would argue that as the *Piktukowaq* reclaim their relationship to environment and can care for their territory, their mental health is improving because their relationship to their environment is strengthening. Concern could be coming from a place of environmental repossession, reclamation, and love and the hope for the potential impact that environmental

repossession, reclamation, and love could have on long-term social, cultural, physical sustainable economic development and conservation of traditional territories (Burgess et al., 2009; Morrison, 2007). Trzepacz et al. (2014) note that Indigenous Elders recommend returning to homelands to revitalize sacred connection to place to improve mental health, just as the *Piktukowaq* are doing. Kirmayer et al. (2009) show that mental health and healing of northern Inuit is influenced by relationships to the land and waters, and all non-human kin. Reclaiming an attachment to environment and place is found to have major benefits for mental health (Bishop et al., 2012; Guerin & Guerin, 2012; Trzepacz et al., 2014).

6.4 Health as a factor of Autonomy

In this section, I revisit my first research question, “Does community health for the Pictou Landing First Nation improve over time when community members have more autonomy over environmental assessment processes on their traditional territory?”. For Indigenous peoples, self-determination is considered the most foundational determinant of health impacting health (Boyer, 2006; Maar, 2006; Madden et al., 2005; Mignone, 2003; Reading & Wein, 2009). Yet, Indigenous rights, knowledges, and approaches to environmental protection are systematically excluded from the implementation of environmental policies and plans (Indigenous Climate Action, 2021).

My contribution to the literature is a focus on health outcomes, when given an opportunity to participate in environmental decision-making as the *Piktukowaq* self-determine their participation in the environmental assessment process for the remediation of the BHETF. Across Turtle Island, Indigenous health inequities persist because colonial governments limit Indigenous self-determination (Nightingale & Richmond, 2022). In 2019, the *Piktukowaq* were preparing for the closure of the BHETF and the province, as proponent, was including them in

the remediation project. As they continue to re-assert more autonomy over environment and resource management on their territory, they need to understand if there is a relationship between their health and well-being as *Piktukowaq* assert their sovereignty in environmental decision making.

This section summarizes much of the findings for autonomy: when I explore health as a factor across the autonomy variables, autonomy does not operate uniformly across all dimensions of health. For example, physical health outcomes improve across autonomy variables (feel listened to, control over decisions, when they feel they are protecting PLFN for future generations). Kirmayer et al., (2009) might argue that the improvement in physical health was directly linked to the local control the participants garnered through their environmental health autonomy. Emotional health (happy) and spirituality (important) do not operate as physical health, with little or no change between 2014 and 2019. Mental health improves across autonomy variables from 2014 to 2019 (see Figures 5.4.4.1 – 5.4.4.3) (feeling listened to, have control over decisions, and feeling one is protecting PLFN for future generations) and relationship to place (I like living in PLFN, I have a cultural connection in PLFN, and PLFN gives me my sense of community). For Indigenous peoples, caring for the land, waters, and places we come from are for the ancestors whose shoulders we stand on in the present, and the environments we must preserve for the next generations (Colomeda & Wenzel, 2000). As many would note, as the *Piktukowaq* felt more autonomy and were able to fulfill their traditional role to care for *A'se'k*, the community was getting back to their spiritual obligations to the environment (McCarthy, 2016; Protect the Tract, 2022; Recio & Hestad, 2022; Sable et al., 2012; Shrinkhal, 2021).

To restore self-determination over territories, Indigenous peoples not only reclaim physical access to their environments, but also the history, knowledge and responsibilities tied to

these places that uphold the fundamentals of their distinct identities (Lewis et al., 2021). Chandler and Lalonde (1998) noted the relationship between self-determination and mental health, that as communities became more self-determining, the incidence of youth suicide decreased dramatically. As Forster (2016) might argue that PLFN's community environmental health governance acts as resistance and is critical for the re-emergence of autonomy over their environment and creating more opportunities for the exertion of local governance. To rid Indigenous peoples of the colonial structures that limit their self-determination for healthy lives and futures, they must break free from the forced dependence – financial, mental, physical – created by colonization and colonial institutions (Alfred 2009; Nightingale & Richmond, 2022; Woons, 2014). Self-determination is the “most important determinant of health” and to ensure the best outcomes, Indigenous peoples need to participate in decision-making and have control over their lands (Reading & Wien, 2009, p. 24).

6.5 Relationship to Place and Community Well-being

As I seek to answer my second research question, I first explore relationship to place, how place provides for well-being. When participants have good community well-being and strong relationship to place by liking to live in PLFN, having a cultural connection to the area, and having a sense of community in PLFN, their physical health improved from 2014 to 2019. The importance of this understanding for programming and planning purposes in the community cannot be understated. Effective health promotion interventions are critical to addressing the health needs of Indigenous people (Arabena et al., 2007). The research conducted by the Pictou Landing Native Women's Group and by the PLFN community can inform community health promotion in the pursuit of health improvement. Using research in this way is a vital tool in determining more targeted actions where needed most (Arabena et al., 2007). Understanding that

improvements to physical health for Indigenous peoples must be understood from an interconnected system where balance is beyond the individual, and that good health requires kinship with others, community, and the spirit world (King et al., 2009). Getting back to healthy Indigenous environments provide the resources, activities, and sustenance that support physical health (Nightingale & Richmond, 2021; Parlee et al., 2005).

Mental health improves from 2014 to 2019 as a measure of relationship to place (I like living in PLFN, I have a cultural connection in PLFN, and PLFN gives me my sense of community). When participants have a strong relationship to place and higher community well-being by liking to live in PLFN, having a cultural connection to the area, and having a sense of community in PLFN, low mental health decreases, and good to excellent mental health improves in the community from 2014 to 2019.

As de Leeuw et al. (2015) suggest, researchers need to look past the social determinants of health, to include Indigenous ways of being and knowing, critical to understanding the core of Indigenous health and well-being. Going beyond current mainstream understandings of health, environmental stewardship has been widely recognized as fundamental to Indigenous health and well-being (Reading & Wein, 2009). Cajete (2000) argues any disassembly of this essential component of being with environment has implications for Indigenous peoples' health and well-being; disconnection to place leaves a community wounded (Duran & Duran, 2000). Processes of environmental dispossession and displacement and impacts from contamination have forced Indigenous peoples from their natural environments that once sustained community health (Reading & Wein, 2009, p. 20), like what the *Piktukowaq* have experienced.

6.6 Relationship to Place and Autonomy

In this section, I revisit my second research question, “Does Pictou Landing First Nation's relationship to place improve with more autonomy in environmental decision-making?”. It is interesting to note that in 2014, when PLFN does not know that the BHETF will close one day, participants felt slightly more control than in 2019, except for when asked if they agree with the statement “I feel we are protecting PLFN for future generations”, with almost twice as many agreeing that yes, they do they feel they are protecting PLFN for the future (see Figure 5.4). When I measured relationship to place as a factor of liking to live in PLFN, the same pattern repeats: less participants feel listened to or have control over decisions that affect them in 2019 than in 2015 but more participants who like living in PLFN in 2019 feel they are protecting PLFN for future generations. There are similar findings when asked if they feel a cultural connection to the area (see Figure 5.5.5.2), and if PLFN gives one a sense of community (see Figure 5.5.5.3). Participants may not still be feeling listened to or feel they have complete control, but through the environmental assessment process, they do feel like they are protecting PLFN for future generations which correlates with their love for their territory and community. As mentioned previously, acts of environmental repossession reinforces social relationships, center Indigenous knowledge, and create space for Indigenous peoples to be proud of who they are, fostering their unique identities (Nightingale & Richmond, 2022) strengthening one’s cultural connection to place and their sense of community. Through the re-assertion of the environmental assessment process, my findings show how acts of environmental repossession reinforce Indigenous relationships to land and their identities with their concern growing for their place, and their need to protect PLFN for future generations. These findings show the importance of environmental repossession for the well-being of PLFN for generations to come.

6.7 Theoretical Contribution

The most significant contribution of my research, drawing on Indigenous health geographies, is coming to an understanding of the relationship between how Indigenous health is impacted under processes of environmental dispossession compared to how health is impacted under processes of environmental repossession using measures of autonomy, and how important it is to contextualize that understanding within a cultural lens of the Indigenous group that is impacted, in this case using *Piktukowaq* environmental health theoretical lens to understand whether relationship to place improves as there is more autonomy.

I look to studies of Indigenous autonomy and environment to understand how attachment to place needs to be contextualized within local understandings of health for the complexity of impacts to be fully appreciated. From an early example, Vecsey (1987) demonstrates loss of autonomy through environmental dispossession with the mercury pollution impacting the community of Grassy Narrows. Vecsey (1987) reflects that through the loss of control over lands from processes of environmental degradation by external forces such as industry or government, there is a loss of sovereignty. Without being able to utilize their lands and waters, the way they always have in Grassy Narrows, this creates a loss of their ways of life creating a looming socio-economic disaster (Vecsey, 1987) severely impacting the health of their community in many facets such as their economy, social relationships, and health of their environments and people. The only way to recover from such dispossession is through self-determination, and the only way for that is for Grassy Narrows to gain more autonomy over their traditional environments to rebuild their sacred relationships (Vecsey, 1987). Forster (2016) shows through a Maori perspective how the colonization over lands of what is now known as New Zealand has led to a diminishment of Maori autonomy, belonging and identity in their own territories. Through multiple different claims through the Waitangi Tribunal, the Maori have shown how government

regulations have allowed industry to discharge effluent in the Kaituna River, pollute their Te Atiawa fishing reefs, and discharge waste sewage into the Manukau Harbour, a consequence of the Maori being restricted from self-determining environmental decisions on their own territories. Forster (2016) explains how the re-assertion of autonomy will allow the Maori to flourish, and also protect their environments for future generations. Durkalec et al. (2015) found that as climate change impacts the Inuit relationship with ice, this process is having unexpected consequences. Sea ice to Inuit means autonomy or freedom, that is, being able to get out on the ice means the freedom to escape social pressures at home or in the community or having autonomy over decisions about what activities to pursue (Durkalec et al., 2015). The Inuit had not experienced a loss of autonomy to go out on the ice, where decisions now must now be made as to whether “going off on the ice could be bad” (Durkalec et al., 2015, p. 21). From environmental dispossession to repossession, Big Canoe and Richmond (2014) explored the relationship between environmental repossession and community health with Indigenous youth in Pic River First Nation. In their findings, Big Canoe and Richmond (2014) found that Anishinaabe youth in Pic River First Nation are extremely concerned about their community’s health and believe the Anishinaabe way of life is the key to addressing low community health. Anishinaabe ways of life are interconnected to the lands they come from, and the only way for health to improve is to address the community’s concerns around the land such as impacts from local mining sites and the need to get back to a traditional diet through hunting and harvesting (Big Canoe & Richmond, 2014). Big Canoe & Richmond (2014) show that the youth in Pic River First Nation believe health to have been better in the past than in present day because of the ways Anishinaabe used to live before: with the land. By moving towards environmental repossession, Anishinaabe youth in Pic River First Nation believe issues of community health

can improve through not only the repossession of land itself, but their culture, traditional practices, and ways of knowing (Big Canoe & Richmond, 2014). In recent community development, the Haudenosaunee Confederacy at Six Nations of the Grand River is re-asserting their autonomy over the Haldimand Proclamation lands in order to protect their territories for the coming faces (Protect the Tract, 2022). Through their traditional governance, the Haudenosaunee Confederacy are exercising their jurisdiction for their lands and waters to maintain the delicate balance between Creation and humans by addressing sustainability and climate change to protect waterways and ecologically sensitive area, for the Haudenosaunee to thrive for generations to come (Protect the Tract, 2022). By re-asserting their autonomy through environmental repossession, the Haudenosaunee are creating a future where their sacred relationship to Mother Earth will come back into balance outside of resource extraction and development.

A'se'k had never harmed the *Piktukowaq*, and the environmental dispossession they experienced shifted the way they could think of themselves as *Piktukowaq*. In the 2019 WBBS, the community members envisioned that to be healthy and well, they as *Piktukowaq* must be able to live the life *Kisu'lk* intended. The development of the *Piktukowaq Environmental Health Cultural Framework* by Lewis (2018) embodies this. If Boat Harbour does not go back to *A'se'k*, the *Piktukowaq* are unable to live that life, and thereby are not autonomous on their lands (Lewis et al., 2018; PLFN, 2019). To be autonomous for the *Piktukowaq*, is to be healthy – and to be healthy as *Piktukowaq* is to be autonomous. *A'se'k* means *Piktukowaq* health, and *A'se'k* means *Piktukowaq* autonomy.

6.8 Substantive Contributions

Building off the work of Indigenous health geographers beginning to look at environmental repossession (Big Canoe & Richmond, 2014; Nightingale & Richmond, 2021;

Nightingale & Richmond, 2022; Tobias et al., 2014), I chose to further investigate the impact and influence autonomy and self-determination have on Indigenous health through a community-based, quantitative perspective. Reading and Wein (2009) explore health and self-determination using national level data to measure the relationship between the two, informing mental health and self-determination on a national level. My study furthers Reading and Wein (2009)'s exploration by taking their national data approach and adapting it to be the first to measure autonomy and health on a community level to inform environmental decisions impacting individual Indigenous communities. Through my study, I explicitly explore the relationship between community health of the *Piktukowaq* and the re-assertion of their autonomy through the 2014 EHS and 2019 WBBS. Through my results, I use autonomy as an indicator to measure the health and well-being of the *Piktukowaq* through a community scale and begin showing the dynamic relationship between self-determined environmental decision making and Indigenous health. By providing a concrete analysis of community data in relation to autonomy in environmental decision making and health, the data explicitly shows the positive impact having more autonomy can have on Indigenous health in community.

While measuring the relationship between autonomy over environmental decision making and health, I also measured the relationship between attachment or relationship to place and autonomy over environmental decision making. Indigenous health geographers have explicitly shown the relationship between Indigenous health and environment through environmental dispossession severing sacred relationships to the lands and water consequently impacting Indigenous health and well-being (Big Canoe & Richmond, 2014; Richmond & Ross, 2009; Tobias et al., 2014). Nightingale and Richmond (2021) continue to explore how acts of environmental repossession can strengthen social relationships, knowledge, and identity – all

intimately tied to place. I further their work by measuring relationship to place and autonomy through quantitative methods. Using the community data from the 2014 EHS and the 2019 WBBS, I explore if *Piktukowaq* relationship to place has improved through their act of environmental repossession with gaining more control over their environmental decision making. My study further contributes to Indigenous health geographies literature by demonstrating the direct relationship between relationship to place and autonomy through a quantitative community study to help inform how autonomy over environmental decision-making can influence Indigenous communities sacred relationship to the places they come from.

When looking at relationship to place, and the concern for the environment the *Piktukowaq* have for their traditional territory, the way words like concern are used to needs to be looked at more critically, coming from an Indigenous worldview of relationship, interconnection, and love instead of one of concern being portrayed as negative. In Lewis (2020a) looking at environmental health issues, she believes western epistemologies and methodologies are applied with little to no consideration of Indigenous ones but presents the need for heuristics in approaches to health research to better understand socio-ecological relations (Berbés- Blázquez et al. 2014) Berbés-Blázquez et al. (2014, 290), “heuristics are tools that enable people to discover for themselves new knowledge, usually through applying a trial and error process and then reflecting on what has been learned.” Using the English does not always encapsulate the relationships or epistemologies, but utilizing the *Piktukowaq Environmental Health Cultural Framework*, we are able to see the sacred relationship the *Piktukowaq* have to place and *A'se'k*. Using heuristic tools helps to inform a better understanding of language being used in research, in this case being able to understand concern as love and care. For how data is interpreted especially in Indigenous statistics, we need to

contextualize interpretation in ways survey participants may understand concepts through Indigenous perspectives like throughout this study understanding concern as care and love - not fear. To address these different ways of knowing we need to use heuristic processes in language used and rethink how we are asking questions.

6.9 Limitations and Challenges

I now wish to explore some of the limitations and challenges of my research, or that I encountered during my research process. First, there are several limitations that I must note.

6.9.1. Mental health and spirituality variables EHS/WBBS

The mental health questions asked in 2014 and again in 2019 were not the same question. In 2014, the question to measure mental health was “Are you or your household member feeling down or depressed?”, with responses of 57.2% of participants answering yes, they are down or depressed. In 2019, the question to measure mental health was “How would you rate your mental health” with responses of 66.4% of participants saying they have good to excellent mental health. Without the variables being the same, I was unable to compare the responses. But I did, however, feel I was able to gather insight into changes in mental health. In the next phase of the survey, I recommend continuing with the same mental health question as the 2019 WBBS, “How would you rate your mental health”, in order for a direct comparison of mental health outcomes in PLFN to better inform the community. In future phases of the survey, it will be beneficial to have the same question so the community can follow the health patterns in the future.

Spiritual health in both surveys is measured by the question ‘Is spirituality important to you?’ As noted in Chapter 5, it is not clear if participants in the survey were responding to spirituality in the context of Catholicism, or traditional spirituality from the *Piktukowaq* cultural context. In future iterations of the community health surveys, I recommend using the questions

“How would you rate your spiritual health” and providing examples of what spiritual health means from a *Pikutkovaq* to better encapsulate the meaning behind the question regarding spirituality for the *Pikutkovaq*, so there will be greater understanding provided for the participants, and therefore better outcomes in regard to spiritual health.

6.9.2 COVID-19, Community Research & Changing Thesis Directions

In March 2020, the world stopped due to the COVID-19 pandemic. When I first started my research journey, I intended to work with another community. For several years prior, I had been building a relationship with the Tobique First Nation (TFN) community in New Brunswick and had intended to continue working with TFN on an environmental health survey that they wanted to conduct in their community focused on renewable energy. My role was to conduct baseline health survey, collecting health, energy, and environment data. Once the pandemic hit, we were forced into lockdown, and within academia, our typical research processes had to be put on hold. First Nations erected barriers on their borders. My master's research was put on hold. I waited over a year to go to the community, and by fall of 2021, I realized I would be unable to continue with TFN. To complete my degree, I decided to continue with my supervisor's previous research in PLFN and was able to access data that had previously been collected. I was not trained in statistics and did not do a test of significance on my research findings. Future work will include a test of significance.

6.10 Recommendations for Future Research

From the limitations noted in my study, I make several recommendations concerning survey measure design. When measuring mental health outcomes going forward, it is necessary to ask the same question from the baseline to subsequent survey phases so that exact comparisons can be made, and so that change can be measured over time. Further, given the

colonial experience that Indigenous communities have historically experienced with Christianity in Canada, when we measure spiritual health, we need to be more explicit about what we are asking, that is, are we asking about traditional spirituality in the cultural context of the participating Indigenous community, or are we asking about the colonial imposition of spirituality.

From my theoretical contributions, my research underscores the need for other Indigenous communities to undertake environmental health surveys to collect baseline data to inform decision-making on their territories. It is clear, that reclaiming our cultures, languages, and connections to land lead to healthier Indigenous communities (Nightingale & Richmond, 2021; Tobias et al., 2014). Having data to measure this process will be important to evaluate success.

6.11 Conclusion

My research alongside PLFN sought to answer the following two questions: 1) Does community health for the Pictou Landing First Nation improve over time when community members have more autonomy over environmental assessment processes on their traditional territory? and 2) Does Pictou Landing First Nation's relationship to place improve with more autonomy in environmental decision making? Through the 2014 and 2019 surveys, the community can garner a better understanding of impacts, health, and autonomy. In conclusion, I was able to understand that *Piktukowaq* health is multifaceted and cannot improve fully as one when there are many different parts to what makes *Piktukowaq* healthy and whole, but still shows the potential for healthier peoples and futures as we see physical and mental health improve, but emotional and spiritual health do not change too much. While health may or may not fully improve in relation to autonomy in their community, *Piktukowaq*'s concern for the air,

water, and land has grown as well – showing this love for their future generations. The concern grows from the place of love and desire for their homelands, and the life *Kisu'lk* intended for them as *Pitukowaq*. The *Pitukowaq* set an example for Indigenous nations working to come back to their homelands, and make sure there is a place for the future generations through their unique avenue of health assessment. The love for their home and each other has brought them together as a community, showing what true kinship looks like. Even though there may not be a drastic change in health or autonomy, the spark has been lit, and they know they are protecting PLFN for future generations. If that means anything, it means their work needs to continue and be sustainable because it is bringing them back to their true selves as the caretakers of their lands and waters, but also each other.

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APPENDIX A

Variables & Responses for Thesis Study

Variables & Responses for Thesis Study	
Variables	Responses
Outcomes Measures (2014/2019)	
<p>2014 Physical Health</p> <p>“Overall, how would you rate the household member’s health?”</p>	<p><i>Response options:</i> Excellent, Good, Fair, or Poor, don't know, refused, or missing, and was previously recoded into the categories ‘good to excellent’ and ‘poor to fair,’ excluding ‘don't know, refused or missing’.</p>
<p>2019 Physical Health</p> <p>“How would you rate your physical health?”</p>	<p><i>Response options:</i> Excellent, good, fair, poor, don't know, refused. I recoded the responses to ‘good to excellent’ and ‘poor to fair’ and I excluded ‘don’t know and refused’.</p>
<p>2014 Mental Health</p> <p>"In the past year, have you or a household member felt down or depressed?"</p>	<p><i>Response options:</i> Often, sometimes, never, don't know, refused, and missing. The measure was previously recoded to a response of no or yes, and to exclude don't know, refused or missing.</p>
<p>2019 Mental Health</p> <p>"How would you rate your mental health?"</p>	<p><i>Response options:</i> excellent, good, fair, poor, don't know, or refused. I recoded the measure to a response of good to excellent and poor to fair, and I recoded to exclude don't know and refused.</p>

<p>2014 Emotional Health</p> <p>"Do you or your household member normally feel happy, interested in things?".</p>	<p><i>Response options:</i> No, yes, don't know, refused, and missing. Recoded to a response of no or yes, and excluding don't know, refused or missing</p>
<p>2019 Emotional Health</p> <p>"How would you rate your emotional health?"</p>	<p><i>Response options:</i> Excellent, good, fair, poor, don't know or refused. Recoded to a response of good to excellent and poor to fair and to exclude don't know and refused.</p>
<p>2014 Spiritual Health</p> <p>"How important is traditional spirituality to you or another household member?"</p>	<p><i>Response options:</i> Not important, important, somewhat important, very important, don't know, refused, and missing. Recoded to a response of not important and important, and to exclude don't know, refused or missing.</p>
<p>2019 Spiritual Health</p> <p>"Is spirituality important to you?"</p>	<p><i>Response options:</i> Yes, no, don't know, or refused. Recoded to exclude don't know and refused.</p>
<p>Explanatory Outcomes</p>	
<p>2014/2019 Environment</p> <p>"How do you feel about the ____ around you?"</p> <ul style="list-style-type: none"> - Air (Variable 1) - Water (Variable 2) 	<p>In 2014, response choices ranged from very concerned, somewhat concerned, concerned, not concerned, don't know, refused, and missing. Recoded to a response of not</p>

<ul style="list-style-type: none"> - Land (Variable 3) 	<p>concerned, concerned, and to exclude don't know, refused or missing.</p> <p>In the 2019, response options ranged from very concerned, somewhat concerned, not concerned, don't know, and refused. Recoded very concerned and somewhat concerned to concerned and recoded to exclude don't know and refused.</p>
<p>2014 / 2019 Autonomy</p> <ul style="list-style-type: none"> - "I feel we are protecting PLFN for future generations" (Variable 1) - "I feel listened to" (Variable 2) - "I have control over decisions that affect my life" (Variable 3) 	<p>In 2014, response options were strongly agree, agree, neither agree nor disagree, disagree, strongly disagree, don't know, refused, or missing. Recoded to agree, neutral, and disagree, and to exclude don't know, refused or missing. In 2019, response options were agreed, neutral, disagree, don't know, or refused. Recoded to exclude the don't know and refused responses.</p>
<p>2014/2019 Community Well-Being</p> <ul style="list-style-type: none"> - "I like living in PLFN" (Variable 1) - "My cultural connection is to this area" (Variable 2) - "PLFN gives me a sense of community" (Variable 3) 	<p>Responses to all three variables include strongly agree, agree, neither agree nor disagree, disagree, strongly disagree, don't know, refused or missing. In the 2014 EHS, responses were recoded to agree, neutral, and disagree, and the responses of don't know,</p>

	<p>refused or missing are recoded to be excluded. In the 2019 WBBS, the answers to the questions were agree, neutral or disagree, and don't know, or refused. Recoded to exclude don't know and refused.</p>
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