



# Assessing Policy Influencer and General Public Support for Healthy Eating Policies for Chronic Disease Prevention in Newfoundland and Labrador

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## Abstract

Unhealthy food environments result in poor diets and chronic diseases in populations. Addressing upstream determinants of diet through policies supported by policy influencers and the public is proven to be more effective than targeting individual-level determinants. This thesis contains two cross-sectional studies that aimed to assess and compare policy influencer and public support and acceptability for healthy eating policies in Newfoundland and Labrador. The Chronic Disease Prevention Survey was used to collect healthy eating policy support data from both groups. The difference in policy influencer and public support in Study 1 was analyzed using Pearson's  $\chi^2$  test. In Study 2 policy acceptability among both groups was analyzed using the Net Favourable Percentage, and the Nuffield Intervention Ladder was used to categorize policies according to the appropriate intrusiveness level. Results showed  $\geq 80.0\%$  support from both groups for 16/21 policies, and three policies showed significant difference in support ( $p < 0.05$ ). Among both groups, level 2 "provide information" and level 5 "guide choices through incentives" policies were most accepted, while level 6 "guide choices through disincentives" and level 7 "restrict choice" were least accepted. In conclusion, collectively high policy support and acceptability for less intrusive policies were noted among both groups in the province.

## **General Summary**

Unhealthy diets are one of the leading causes of chronic diseases such as type 2 diabetes and obesity. Previously, public health addressed unhealthy diets through individual factors such as behaviour change, however, recent research shows that using policies to improve the surroundings in which people access and consume food is more effective. However, this is difficult to achieve without support from the public and those who influence policy decisions such as government and media personnel. Therefore, this thesis aimed to evaluate and compare the general public and policy influencer support for healthy eating policies for chronic disease prevention in Newfoundland and Labrador, Canada. The results of this research showed high policy support among both groups. The public showed higher support than the policy influencers for more policies. This evidence could be used by public health experts to implement action to improve diet and prevent chronic disease in the population.

## **Co-Authorship Statement**

This thesis has been completed with the contributions of Ellis Lakhani and Dr. Rachel Prowse. Chapters 1, 2, and 5 have been prepared by Ellis Lakhani, with edits suggested by Dr. Rachel Prowse. The studies in Chapters 3 and 4 have been derived from a larger policy support study designed by Dr. Rachel Prowse. Funding for the overall study was obtained by Dr. Rachel Prowse. Dr. Rachel Prowse and Ellis Lakhani managed the ethical clearance as well as the development and programming of the research tool (survey) on the Qualtrics software. The data collection was a joint effort between Ellis Lakhani and Dr. Rachel Prowse. The public sample recruitment was led by Ellis Lakhani, while the policy influencer sample recruitment was led by Dr. Rachel Prowse. The data analysis was mainly completed by Ellis Lakhani, with guidance from Dr. Rachel Prowse. Manuscript writing was completed by Ellis Lakhani, with edits suggested by Dr. Rachel Prowse. The manuscripts found in this thesis have not yet been submitted for publication. Submission of the manuscript will be completed by Ellis Lakhani.

## **Dedication**

I dedicate this thesis to my parents, for their constant love and *support*.

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## **List of Abbreviations**

CDP – Chronic Disease Prevention

CMA – Census Metropolitan Area

Food-EPI – Food Environment Policy Index

INFORMAS – International Network for Food and Obesity/non-communicable diseases  
Research, Monitoring and Action Support

NFP – Net Favorable Percentage

NL – Newfoundland and Labrador

SSB – Sugar-Sweetened Beverages

UK – United Kingdom

USA – United States of America

WHO – World Health Organization

## List of Symbols

CAN\$ - Canadian Dollar

$\chi^2$  - Chi-Square Test

# **Chapter 1: Introduction and Overview**



## **Chapter 1: Introduction and Overview**

This chapter introduces the concept of unhealthy diets and their impact on health, the healthcare system, and the economy. It also discusses the determinants of unhealthy diets and how public policy is necessary to address those determinants.

### **1.1 Poor Diet in Canada**

Unhealthy diets are a highly contributing, but modifiable, risk factor for chronic diseases such as type 2 diabetes, cardiovascular diseases, and cancer (Nishida et al., 2004). An estimated 37% of all global deaths in 2015 were associated with low intakes of vegetables and fruit, and high intakes of sugar-sweetened beverages, processed foods, and sodium (GBD 2015 Risk Factors Collaborators, 2016). Reportedly, about 29% of the Canadian population aged 20 years or older have been diagnosed with at least one major chronic disease including diet-related diseases: cancer, cardiovascular disease and type 2 diabetes (Public Health Agency of Canada, 2017).

Poor diet is Canada's leading risk factor for chronic disease and premature death (Institute for Health Metrics and Evaluation, 2016). The Canadian diet is characterized by high amounts of sodium, free sugars, saturated fats, red and processed meats, and low intakes of fruits, vegetables, whole grains, and legumes (Garriguet, 2009; Moubarac et al., 2014). Over the last decade in Canada, the easy accessibility of low-nutritional quality foods has led to increased consumption of the same (Moubarac et al., 2014). A key source of excessive energy consumption, especially in children, adolescents, and youth, is the high levels of free sugars in foods (World Health Organization [WHO], 2016). Additionally, it is estimated that Sugar-

Sweetened Beverages (SSBs) are consumed by 16% of children and adolescents daily in Canada (Public Health Agency of Canada, 2017).

Measured by the insufficient consumption of fruits and vegetables, the annual economic burden of direct and indirect health costs related to unhealthy diets is estimated to be approximately CAN\$ 3.3 billion in Canada - 30.5% directly related to healthcare costs and 69.0% indirectly related to productivity loss costs (Ekwaru et al., 2017). If Canadian adults met the recommendations for fibre intake, an estimated CAN\$ 1.3 billion per year could be saved in direct and indirect health costs for cardiovascular diseases and CAN\$ 718.8 million per year for type 2 diabetes (Abdullah et al., 2015). It is estimated that Canada will incur a cost of CAN\$ 33.7 billion over the next 25 years as a result of the consumption of sugar-sweetened beverages (Jones et al., 2017). Thus, unhealthy diets result in an increase in chronic diseases at a population level, which not only affects population health but also burdens the economy and healthcare system.

## **1.2 Chronic Disease and Diet in Newfoundland and Labrador**

Newfoundland and Labrador (NL) maintains one of the highest rates of chronic disease in Canada, in part due to its aging population, with 63% of residents over the age of 12 having at least one chronic disease (Public Health Agency of Canada, 2021). Since 1981, there has been a 232% increase in healthcare spending in NL (Health Accord NL, 2022). NL boasts the highest per capita spending on healthcare in Canada, averaging CAN\$ 6,022 in 2019 and 20.5% higher than other Canadian provinces (Health Accord NL, 2022). The total economic cost of chronic diseases, including hospital costs, physician visits, and the cost of drugs, was over CAN\$ 1.88

billion from 2009 to 2010 (Government of Newfoundland and Labrador, 2011). The life expectancy of the population of NL is the lowest compared to other Canadian provinces; 2.3 years lower than the average Canadian female and 2.4 years lower than the average Canadian male (Health Accord NL, 2022). NL was also ranked among the worst in terms of mortality rates due to chronic illnesses such as cardiovascular disease, stroke, and cancer compared to the other provinces (Health Accord NL, 2022). Chronic disease is a prevailing problem in NL and its root causes need to be recognized.

NL diet is considered a major contributing factor to chronic disease in the province as it is high in red meat, cured/processed meats or fish, and SSBs, and has lower amounts of vegetables and fruits (Chen et al., 2015a). The dietary differences between NL and the rest of Canada are associated with its isolated geography (Government of Newfoundland and Labrador, 2006). These differences could result from the province's dependency on food sources outside of NL, which includes the cost of bringing food into the province and its lower quality (Health Accord NL, 2022). The higher price and lower quality of food affect the NL diet as it becomes less accessible to the population, both financially and physically. Furthermore, the reduction in growing and hunting food within the province, which is fundamental to the province's culture, health, and sustainability, is another contributing factor to the province's food insecurity (Health Accord NL, 2022). Hence, factors such as geographic isolation, culture, history, and accessibility of healthy food all influence the diets of people in NL.

### **1.3 Determinants of Diet and Health**

Over the years, individual-level determinants have been the focus of public health research and interventions for improving diet and health (Raine, 2005). Individual-level determinants of diet consist of personal physiological state (such as age), food preferences, nutritional knowledge, perceptions of healthy eating, and psychological factors such as self-esteem and body image range (Raine, 2005). Resnik (2007) argues that while the relationship between lifestyle and disease is well-researched, and holding individuals morally accountable for their health-related choices may be economically and medically logical, this view has several objections. Firstly, holding individuals fully accountable for their health contradicts society's obligation to support its vulnerable members (Cappelen & Norheim, 2005). Secondly, it is unjustifiable to solely hold individuals accountable for their health since everyone cannot be assumed to be mentally competent, free of addictive behaviours and cultural pressure, and knowledgeable (Wikler, 2002). Lastly, it is impractical to introduce a system that holds individuals accountable for their health since disabilities and diseases are a culmination of various factors, not simply individual behaviour (Callahan et al., 2000). Therefore, Resnik (2007) concurs that health is a shared responsibility between individuals and society, where collaborative effort is made by society to promote health and individuals actively care for their health.

Although individual-level determinants are significant for understanding individual eating behaviours, healthy eating is more complex and contextual (Raine, 2005). Environmental and policy determinants can explain the contextual factors affecting eating behaviour (Raine, 2005). The environment which affects an individual's eating behaviours may be intimate such as that created by family and friends, or it may be further out of one's control such as the physical

environment which determines food accessibility and availability (Raine, 2005). Furthermore, the economic environment, which focuses on food as a commodity to be marketed for profit, and the social environment, which is associated with social status and culture milieu, are both environmental determinants that influence eating behaviour (Raine, 2005).

While environmental determinants provide a context for eating behaviours, policy determinants give an outlook on the factors that shape supportive environments for healthy eating (Raine, 2005). Policy is considered to be the most important factor influencing eating behaviour at a population level (Raine, 2005). Policies at the local, regional, and national levels can make significant macrosystem changes that impact food behaviours and choices (Raine, 2005). For instance, Québec's advertisement restriction of lower nutritional quality foods to children is an example of a broader level change brought about by policy, which aims to influence eating behaviour in the child population of the province (Raine, 2005). Policy is capable of moderating multiple environments in various manners such as:

- 1) Dietary guidance to create an environment for informed decision-making and individual choice (Raine, 2005).
- 2) Environmental protection policies for the protection of food supply from the food industry, economic policies to maintain food affordability (Raine, 2005).
- 3) Social policies to protect disadvantaged populations from corporate-driven economic interests and to provide a cultural as well as social context for the promotion of healthy eating (Raine, 2005).

The importance of addressing environmental and policy determinants of health in NL is demonstrated through the establishment of the *Health Accord NL*. In November 2020, NL

Premier Andrew Furey and Minister John Haggie from the Department of Health and Community Services established the *Health Accord NL* task force to reconceptualize health and health care in the province over the next 10 years (Health Accord NL, 2022). The *Health Accord NL* represents a significant movement toward health promotion; notable in NL due to its worse health outcomes compared to other provinces, decreasing younger population, and increasing older population over the age of 65 years, health implications of climate crises such as hurricanes and rainstorms, and shortage of healthcare personnel (Health Accord NL, 2022). There are three elements that the *Health Accord NL* is centred around to transform the health of the province: focusing on the social determinants of health, rebalancing the health system, and improving leadership (Health Accord NL, 2022). The work of the *Health Accord NL* has been guided through three lenses: inclusion, quality of health and social services, and integration within the health system and across all organizations influencing health and health outcomes (Health Accord NL, 2022). The 2022 *Health Accord NL* Final Report presents 57 Calls to Action which direct necessary action to respond to the social determinants of health and to rebalance the health system (Health Accord NL, 2022).

Although the *Health Accord NL* is about health in general, healthy eating is a part of health and contributes to health outcomes in the province. While the 57 Calls to Action of the *Health Accord NL* aim to address various determinants of health, the following Calls to Action for the social determinants of health may influence healthy eating among the NL population:

- Action 6.1 states “Increase awareness and understanding of the social determinants of health to change attitudes and bring about action among decision-makers regarding the direct impact on population health as well as community and economic well-being” (Health Accord NL, 2022, p.57).

- Action 6.2 states “Integrate the social determinants of health together with a rebalanced health system into all governance, policy, program, and infrastructure decisions that influence health” (Health Accord NL, 2022, p.59).
- Action 6.3 states “Ensure that Newfoundlanders and Labradorians have a liveable and predictable basic income to support their health and well-being, integrated with provincial programming to improve food security and housing security” (Health Accord NL, 2022, p.64).

These Calls to Action demonstrate that there is an awareness of the importance of policy action to achieve optimum health in the province. With the increased facilitation of evidence-based research and evaluation programs through Action 6.1 (Health Accord NL, 2022), healthy eating research has a greater chance for support from provincial stakeholders such as the government and health authorities. Action 6.1 also aims for the integration of social determinants of health in public policy decision-making and program delivery (Health Accord NL, 2022), and the evidence generated from the healthy eating research may assist decision-makers in implementing evidence-based public policy for healthy eating in the province. Since Action 6.2 aims to support the community sector and private sector to incorporate the social determinants of health in broader planning areas and business decisions (Health Accord NL, 2022), the determinants of diet, as evidenced by healthy eating research, could be taken into consideration. Action 6.3 directly addresses income as a determinant of food insecurity and aims to support the provision of a reliable and adequate basic income to improve food insecurity in the province (Health Accord NL, 2022). Thus, these Calls to Action are capable of addressing the determinants of diet by creating a supportive environment and implementing necessary policy action.

## 1.4 Policy Action for Improving Diet

According to Kothari et al. (2013), public health strategies such as policy action are necessary to prevent chronic diseases at a population level. Policy action helps target essential social determinants of health, normally distributed unequally among populations, and address systemic factors promoting unhealthy diets and nutrition (Kothari et al., 2013). Poor diet is a collective societal issue since its core determinants are environmental and policy-related, which then influence individual eating behaviours. For example, poverty prevents people from making healthy choices due to the lack of financial and physical accessibility, and the presence of obesogenic environments dominated by fast food chains further restricts the availability of healthy choices (Swinburn et al., 2019). In the 1994 *Strategies for Population Health: Investing in the Health of Canadians* report, public policy is identified as a foundation for action which targets collective factors that impact health, consequently impacting individual factors as well, to achieve optimal population health status (Government of Canada, 1994).

Policy action has previously been used to target population health in other health areas such as maternal health, tobacco use, and Covid-19. The *Earned Income Tax Credits* program in the United States of America provides cash payments to lower-income families, with higher payments for children, increasing the family's adjusted gross income up to 15%; results showed increased self-reported health and decreased poor mental health days among mothers (Evans & Garthwaite, 2014). California's *Proposition 99* tax increase on tobacco led to a rapid reduction in cigarette consumption between January 1, 1989, to June 30, 1992, by approximately 802 million packs of cigarettes (Glantz, 1993). Germany's Covid-19 restrictive lock-down policy between January and mid-May 2020 resulted in a reduction of cases to below 1,000 daily and maintained a minimal death rate (Naumann et al., 2020). Therefore, policy action is an established approach



to address collective factors that impact population health, and it is applicable to addressing poor diet as a population issue as well. Despite growing evidence of policy action's significance for health, research gaps regarding policy action for healthy eating still exist.

Public and policymaker acceptance or support of public health policies is important for policy effectiveness (Proctor et al., 2011; Eykelenboom et al., 2019). Policy acceptability is defined as how agreeable, satisfactory, or palatable a policy is perceived by stakeholders such as the public or policymakers (Proctor et al., 2011). Public health areas such as tobacco and alcohol control have evidence of policy acceptability, whereas evidence of policy acceptability of diet-related policies is insufficient (Diepeveen et al., 2013). Characteristics of the policy and the policy's target audience (the public or policymakers) determine the acceptability of the diet-related policy (Diepeveen et al., 2013). Policies can be classified according to varying levels of intrusiveness using the *Nuffield Intervention Ladder*, where the degree of intrusiveness of policies increases the higher that they are positioned on the ladder (Nuffield Council on Bioethics, 2007). Research suggests that there is a higher acceptability of less intrusive policies such as health media campaigns or warning labels on unhealthy food or drinks, while there is opposition towards strong or restrictive governmental interventions (Diepeveen et al., 2013; Durr, 1993). According to Durr (1993), governmental policies may be rejected by the public if the public perceives the policies as invasive. Therefore, understanding policy intrusiveness and acceptability is necessary for policy adoption, effectiveness, and sustainability.

## **1.5 Research Gaps**

A wide range of literature illustrates the importance of policy action for population health (Epp, 1987; Gagnon et al., 2007; Government of Canada, 1994; Lalonde, 1974; WHO, 2011;

WHO, 2012). Policy support is an impetus for change, and many studies show growing evidence of support for nutrition-related policies (Breda et al., 2020; Drewnowski et al., 2020; Lobstein et al., 2020). Numerous studies have been conducted to assess policy support among policy influencers (individuals or groups of individuals who can influence policy decisions due to their positions at work) and the public in countries such as Canada (Alberta Policy Coalition for Chronic Disease Prevention, 2020; Kongats et al., 2019), Australia (Morley et al., 2012; Watson et al., 2017), the United Kingdom (Beeken & Wardle, 2013), and regions such as the European Union (Breda et al., 2020). Within Canada, policy influencer and public support has been assessed in provinces such as Alberta, Québec, and Manitoba (Alberta Policy Coalition for Chronic Disease Prevention, 2020; Kongats et al., 2019). In NL, a substantial amount of literature exists about healthy eating and healthy eating behaviours and their relation to chronic disease (Chen et al., 2015b; Moores, 2010; Pedram et al., 2013; Prowse & Carsley, 2021; McPhail, 2013). The nutrition-related studies set in NL extend further to food environments and their effects on eating behaviours (Mah et al., 2019; Mah & Taylor, 2018; Mah & Taylor, 2020; Pomeroy et al., 2017).

However, there is no research available to explore the level of healthy eating policy support in NL. Since NL battles with one of the highest chronic disease rates in Canada (Public Health Agency of Canada, 2021), and it is unique in its geography and culture compared to the rest of the country (Government of Newfoundland and Labrador, 2006), it is difficult to apply the policy research from other provinces to NL. Also, the NL Government aims to improve the health of the province over 10 years (Health Accord NL, 2022), and healthy eating policy support evidence could contribute to improving the NL food environment and ultimately health. Therefore, it is essential to conduct healthy eating policy support research within NL, and this

literature gap will be addressed by this project. This thesis will assess healthy eating policy support among policy influencers and the general public in NL.

## **1.6 Research Objectives and Questions**

This thesis aims to evaluate and compare both the general public and policy influencer support for healthy eating policies for chronic disease prevention in NL. The objectives of this thesis include:

1. To measure the support for healthy eating policies among the policy influencers and the general public in NL.
2. To compare the support for healthy eating policies between the general public and policy influencers in NL.
3. To examine and compare policy influencer and general public acceptability of healthy eating policies according to the level of intrusiveness in NL.

The research questions are:

1. What is the level of support for healthy eating policies in NL?
2. How does the level of support for healthy eating policies in NL differ by figure (public or policy influencer) and differ by policy type?

This thesis consists of a total of 5 chapters:

1. Introduction and Overview – This provides a background and summary of the effects of unhealthy diets on health, its determinants, and how public policy can be used to address the issue.
2. Literature Review – This will discuss the existing literature concerning healthy public policy, policy change, and the role of policy in improving the food environment and diet.
3. Study 1 – This study will assess and compare policy influencer and general public support for healthy eating policies in NL.
4. Study 2 – This study will examine and compare policy influencer and general public acceptability of healthy eating policies according to the associated level of intrusiveness in NL.
5. Discussion and Conclusion – This will summarize both studies and critically discuss the contribution of this project to science from a broader perspective.

## **1.7 Conclusion**

This introduction provided a background of the impact of unhealthy diets on health and how policy action is a recommended and effective strategy to address the problem. The introduction also illustrated how policy change can be implemented for an improvement in the food environment and depicted the significance of policy influencers and general public support for the process. The next chapter will focus on the literature review.

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## **Chapter 2: Literature Review**

## **Chapter 2: Literature Review**

This section will examine the existing literature regarding the topics of policy for population health and healthy eating. It will consist of discussions on healthy public policy, healthy eating policy, policy change, and healthy eating policy support. The sources included in this review were found in the Memorial University of Newfoundland Library Database and Google Scholar using search phrases such as “healthy public policy”, “healthy public policy in Newfoundland and Labrador”, “healthy eating”, “healthy eating in Newfoundland and Labrador”, “food environment”, “diet policy”, “healthy eating policy”, “policy support”, “policy support for healthy eating policies”, “general public support for health policy”, and “policy influencer support for health policy”. This literature review will discuss the movement for healthy public policy in Canada, the process of policy change, and the role that healthy eating policies play in building a healthy food environment.

### **2.1 Movement for Healthy Public Policy in Canada**

The 1960s-1970s traditional approach to health focused on improving health through the advancement of science and medicine (Tulchinsky, 2018). In Canada, the focus was on medical insurance for universal health coverage (Tulchinsky, 2018). While public health was less of a priority in Canada, countries such as the UK and the USA were advancing in public health research on smoking and other cardiovascular disease risk factors (Tulchinsky, 2018). Publications such as the 1964 *US Surgeon General's Report on Smoking* and the *Framingham Study* in Massachusetts elaborated on the contributions of lifestyle factors such as diet, smoking, and physical activity to disease (Tulchinsky, 2018).

Upon the publication of *A New Perspective on the Health of Canadians* in 1974, also known as the *Lalonde Report*, improving public health in Canada was, for the first time, regarded beyond biomedical methods of treatment (Tulchinsky, 2018). The document introduced the Health Field Concept which recognized that four major elements contribute to public health: human biology, healthcare systems, environment, and lifestyle (Tulchinsky, 2018). Furthermore, it emphasized the importance of public health policy to address the elements contributing to health (Tulchinsky, 2018). Policy can be described as a defined set of principles that direct a course of action (Stone & Norton, 2001; Vernick, 2006). After a period of uncertainty regarding the document, Canada adopted the new perspective introduced by the report and focused on health behaviours such as smoking, diet, and physical activity, and paid attention to inequalities in the health system (Tulchinsky, 2018).

Another movement supporting the public policy wave in Canada followed the publication of the 1974 *Lalonde Report*, in the form of the 1986 report *Achieving Health for All: A Framework for Health Promotion*. Adding to the importance of public health policy demonstrated in the *Lalonde Report*, this report identified that public policies are necessary for health promotion as they create healthy environments which make healthy choices possible or easier for people (Government of Canada, 2006). Public policies are formed by the government and mostly are legally binding, implying that individuals and organizations must comply with them (Porter et al., 2018). The document states that all policies influence health, whether they relate to income security, employment, education, housing, business, agriculture, transportation, justice, or technology (Government of Canada, 2006). This “health-in-all-policies” concept would prove of great significance in the 1986 *Ottawa Charter for Health Promotion*.

The works of the 1974 *Lalonde Report* and the 1986 *Achieving Health for All: A Framework for Health Promotion* were emulated in the 1986 *Ottawa Charter for Health Promotion*. The *Ottawa Charter* has 3 main strategies at its core for health promotion: advocacy for health, enabling everyone to achieve optimal health, and mediating coordinated action for health by all stakeholders (World Health Organization [WHO], 2012). As presented in Figure 1 below, the 3 strategies work collectively to promote health through strengthening community action, developing personal skills of communities, creating supportive environments, and reorienting health services, all encompassed and possible through building healthy public policy.



*Figure 1 The Ottawa Charter Health Promotion Model*

This work “The Ottawa Charter Health Promotion Model” is adapted from “[Ottawa charter for health promotion](#)” by WHO (2012), used under [CC BY-NC-SA 3.0 IGO DEED](#) (free to share and adapt, under the terms of correct attribution, non-commercial use, and distribution of adapted work under the same license as the original). This work “The Ottawa Charter Health Promotion Model” is licensed under [CC BY-NC-SA 3.0 IGO DEED](#) by Ellis Suhel Lakhani.



Although all 5 key action areas are important for health promotion, the impact of building healthy public policy is the most powerful and influential area as it determines the success of the other 4 key action areas (WHO, 2012). Health promotion through building healthy public policy puts health on the agenda of policymakers in various sectors and levels and creates awareness and accountability of the health consequences of their decisions as leaders (Government of Canada, 1986). Policies for health promotion use diverse but complementary approaches such as fiscal measures, taxation, organizational change, and legislation (Government of Canada, 1986). Thus, the *Ottawa Charter* also echoes the significance of policy action and a “health-in-all-policies” approach to addressing critical public health issues.

The *Lalonde Report, Achieving Health for All: A Framework for Health Promotion*, and the *Ottawa Charter* are crucial public health documents for understanding the value that healthy public policy holds in health promotion. Each new publication built onto the previous and they all demonstrate that healthy public policy contributes vastly to addressing health problems. Diet was identified as a key determinant of health since the *Lalonde Report* was published, and it was understood that healthy public policy would be the appropriate strategy to address the problem. To improve eating behaviours among the public, food environments need to improve; this would be possible through policy change.

## **2.2 The Process of Policy Change**

Traditional evidence-based population health approaches help to recognize the factors that contribute to negative health outcomes and formulate interventions or policies to minimize the population's exposure to those factors (Gorski & Roberto, 2015). Evidence-based policies can be

classified into six categories that vary in feasibility and effectiveness: mandates, restrictions, economic incentives, marketing limits, information provision, and environmental defaults (Gorski & Roberto, 2015). To explain, mandates consist of mandatory policies that need to be followed by individuals or industries for protection against the harmful effects of an unhealthy substance or environment (Gorski & Roberto, 2015), for example, COVID-19 vaccination mandates for travellers. Restrictions include policies that limit the public's access to an unhealthy substance or environment (Gorski & Roberto, 2015), for example, zoning for liquor stores. Economic incentive policies align the price of a product with health outcomes, leading to a higher price point for products that are associated with negative health outcomes and vice versa, to encourage lower consumption of unhealthy products and higher consumption of healthy products (Gorski & Roberto, 2015), for example, higher taxing for beverages with added sugar versus beverages with no added sugar. Marketing limit policies involve the limitation of advertisements or promotions of an unhealthy substance or environment (Gorski & Roberto, 2015), for example, advertisement limitations in children's settings. Information provision policies provide health information to the public to encourage healthier behaviour and choices and discourage harmful behaviour (Gorski & Roberto, 2015), for example, prenatal education classes for pregnant individuals. Finally, environmental default policies are those that maintain the freedom of the public and allow exposure to unhealthy substances or environments but make the unhealthy choice avoidable (Gorski & Roberto, 2015), for example, fast-food restaurants making water the default drink in a combo meal, yet customers have the choice of opting for a soda instead.

Public health research targeting the political arena is often conducted without an adequate understanding of the policymaking process (Clavier & de Leeuw, 2013; Mackenbach, 2014).

Public health advocates and professionals must understand the process of policymaking to anticipate limitations and facilitators for policy change (Oliver, 2006). Theories such as *Kingdon's Three Streams* (Kingdon, 1984), the *Punctuated Equilibrium Theory* (Baumgartner & Jones, 2002), and the *Advocacy Coalition Framework* (Sabatier & Weible, 2016) may contribute to building the understanding of the policymaking process before policy adoption (Kuijpers et al., 2019).

*Kingdon's Three Streams* is threefold in nature: 1) the problem stream which refers to society's policy problems that need to be addressed, 2) the policy stream refers to the abundance of possible policy solutions that can be generated by policymakers, experts, and lobby groups, and 3) the politics stream which refers to political factors such as changes in government, legislation turnover, and fluctuations in public opinion (Howlett et al., 2015). Kingdon further states that the three streams are largely independent of each other until circumstances occur to merge the three (Howlett et al., 2015). For instance, in the event of a crisis, a problem will manifest and become the focus, and with the political will to address the problem, policy solutions that were previously lower on the priority list become of higher priority, hence merging the three streams (Howlett et al., 2015).

The *Punctuated Equilibrium Theory* states that political systems can be both stable and dynamic, where the majority of policies remain stable for long periods while others change fast and dramatically (Cairney, 2012). This theory pertains to explaining these long periods of stability punctuated by short but intense periods of change (Cairney, 2012). As policymakers cannot prioritize all issues simultaneously, only a few get promoted to the top of their agenda while most others get ignored (Cairney, 2012). This insufficient attention could explain why

most policies may remain the same, while intense periodical attention on other problems may drive policy change (Cairney, 2012).

According to the *Advocacy Coalition Framework*, multiple actors and levels of government are involved in the policymaking process and it is important to focus on the process driven by their beliefs to better understand policy within society (Cairney, 2012). These beliefs bind actors to form advocacy coalitions and different advocacy coalitions compete to secure policy outcomes consistent with their beliefs (Cairney, 2012). These theories focus on various aspects of the policymaking process and apply to the different stages of policymaking (Cairney, 2012; Kuijpers et al., 2019).

The policymaking process can be separated into six stages: agenda setting, policy formulation, legitimation, implementation, evaluation, and policy maintenance, succession, or termination (Cairney, 2012). Agenda setting involves the identification of problems that require government attention, prioritizing problems, and framing the nature of the problem (Cairney, 2012). Within policy formulation, objectives are established, costs are identified, potential effects of solutions are explored, and solutions and policy instruments are selected (Cairney, 2012). Legitimation ensures that support is available for the selected policy instruments through methods such as legislative approval, executive approval, seeking consent through consultation with interest groups, and referenda (Cairney, 2012). During the implementation stage, an organization is given the responsibility for the implementation of the solution after ensuring adequate resources (including funds, legal authorization, and staff) are provided to it, and the plan execution is overseen (Cairney, 2012). The evaluation stage assesses the success of the policy, and the effectiveness of the implementation, and determines whether the selected policy decision was appropriate for the problem (Cairney, 2012). Lastly, policy maintenance,

succession, or termination examines whether the policy should be maintained, modified, or discontinued (Cairney, 2012).

Within these policymaking stages, policy actors or stakeholders are directly and indirectly involved (Shannon, 2003). Policy actors can be defined as individuals or groups that are affiliated with or affected by the policymaking process at any given point (Shannon, 2003). They can influence the outcome of a policymaking process through direct or indirect action and also be affected both positively and negatively by the policymaking process (Shannon, 2003). Governments, businesses, non-governmental organizations, civil authorities/organizations, communities, and individuals are some examples of common policy actors (Shannon, 2003). Policy support from the policy actors is vital for effective policy implementation by acting as a facilitator or a barrier to the policymaking process (Cairney, 2012; Pettigrew et al., 2022). Policy support is an important dimension of the subjective cognition of policy actors and comprises their thoughts, awareness, perceptions, attitudes, beliefs, and social constructions of reality, impacting their behaviour in the policymaking process and influencing policy change (Berger & Luckmann, 2016; Newell, 1994; Pettigrew et al., 2022; Zhou et al., 2022).

The policy change that is implemented by policy influencers in their various settings affects healthy eating among communities (Kongats et al., 2019). As internal considerations are inadequate to influence policy change, governments usually make policy decisions for their jurisdictions based on the policy actions implemented in fellow jurisdictions (Shipan & Volden, 2012). Governments do this through a process known as the *Policy Diffusion Theory* (Shipan & Volden, 2012). For instance, school and state-level wellness policies including smoke-free areas by law have moved between Alberta and Ontario municipalities through policy diffusion (Nykiforuk et al., 2008).

Politis et al. (2014) state that governments have four main mechanisms within policy diffusion that encourage them to adopt a policy: learning, imitation, coercion, and competition. To elaborate, learning is when governments try to understand the successes and failures of a policy used by another jurisdiction to learn about the consequences of its implementation before adopting it (Grossback et al., 2004). For example, criminal justice policies are usually adopted between different jurisdictions using this mechanism (Grossback et al., 2004). When governments use the imitation mechanism, they adopt a policy used by other jurisdictions based on the similarities between their political and ideological environments rather than the success or failure of the policy (Karch, 2007). In addition, the imitation mechanism can also be used when a policy has an overwhelming perception of being the social norm (Shipan & Volden, 2008). Next, coercion is the mechanism by which governments are forced to adopt a policy due to pressure from another agent such as internal organizations or financial institutions using threats or incentives (Dobbin et al, 2007; Shipan & Volden, 2012). Lastly, competition is where governments struggle between themselves to obtain economic advantages through policies involving taxes and business (Baybeck et al., 2011; Berry & Baybeck, 2005; Boehmke & Witmer, 2004).

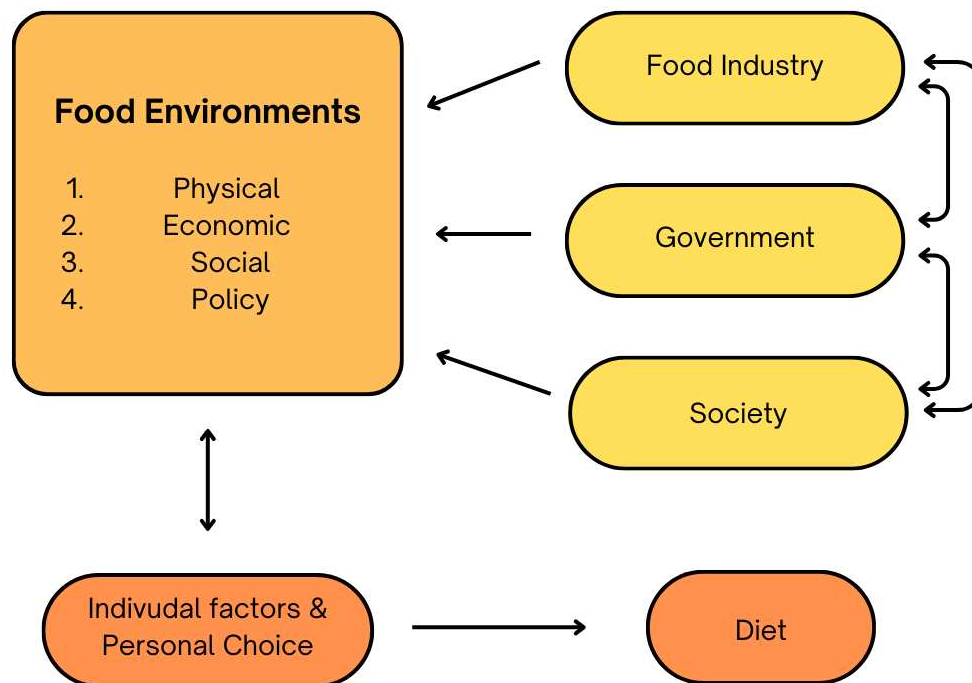
Usually, in the promotion of healthy eating, policy approaches involve dietary guidance and the enhancement of nutritional knowledge and perceptions of healthy eating (Raine, 2005). Some of the WHO's "best buy" actions for nutrition, which are guaranteed cost-effective and highly efficient policy interventions, are reducing salt intake and salt content of food and replacing trans-fat in food with polyunsaturated fat (WHO, 2011). For instance, in 2006, New York City's Board of Health restricted restaurants from cooking with trans-fat due to rising cases of coronary heart disease (Gorski & Roberto, 2015; New York City Global Partners, 2014). The

results of this “best buy” policy showed a decrease in the use of trans-fat by restaurants from 50% in 2005 to 1.6% in 2008, and 94% restaurant compliance (New York City Global Partners, 2014). Hospitalizations due to cardiovascular events and cardiac arrests were reduced by approximately 6.2% and 7.8% respectively, after 3 years of the policy implementation (Brandt et al., 2017). Other cost-effective and low-cost nutrition-related policy interventions include promoting adequate breastfeeding and complementary feeding, restrictions on the marketing of foods that are high in salt, fats, and sugar, especially to children, as well as food taxes and subsidies that promote healthy diets (WHO, 2011). Therefore, it is possible to promote healthy eating by using policy approaches to improve food environments, to then improve health and reduce chronic disease at a population level.

### **2.3 The Role of Healthy Eating Policy in Food Environments**

Unhealthy diets are related to unhealthy food environments which allow access to extensively promoted inexpensive, nutrient-poor, and energy-dense foods, contributing to the development of chronic diseases (Swinburn et al., 2011; Swinburn et al., 2013). Swinburn et al. (2013) show in their study that the food industry, government, society, and individual factors interact together and play a key role in influencing the food environment (see Figure 2 below). The food industry is a leader in food supply, including the determination of food cost, availability, and quality (Swinburn et al., 2013). Furthermore, it encourages the consumption of processed and fast foods and also contributes to societal beliefs and norms about food (Swinburn et al., 2013). Governments at all levels guide the food industry through policy, law, and regulation (Sacks et al., 2009). For example, governments implement fiscal policies such as

taxation and subsidies which impact the price of food (Swinburn et al., 2013). Similarly, when governments promote health, societal norms can be influenced (Swinburn et al., 2013). Society determines the cultural milieu and traditions that influence individual food choices (Swinburn et al., 2013). It is also important to note that individuals interact with the food environment through various personal factors such as habits, preferences, education, and income, which ultimately shape their diets (Swinburn et al., 2013).



*Figure 2 Influences on Food Environments*

This work “Influences on Food Environments” is adapted from “[Figure 1 Food environments and their four main components; the major influences of the food industry, governments and society on food environments \(and their interactions\); and the interaction between individual factors and food environments to shape diet](#)” by Swinburn et al. (2013), used under [CC BY-NC 3.0 DEED](#) (free to share and adapt, under the terms of correct attribution and non-commercial use). This work “Influences on Food Environments” is licensed under [CC BY-NC 3.0 DEED](#) by Ellis Suhel Lakhani.



Beyond the food environment, the food industry, government, society, and individual factors further interact in the areas of policymaking, research funding, lobbying, and agenda-setting (Swinburn et al., 2013). For instance, growing concerns surround the influence that the food industry has on the decision-making of governments, especially in regulation and fiscal policies, because of its large lobby power (Hastings, 2012; Swinburn et al., 2013). Hence, the support of policy influencers (such as the government and food industry), and the general public (forming the society), is necessary to successfully adopt and implement healthy public policies that influence diet.

Global research demonstrates that nutrition-related policies are increasingly gaining support from the general public (Beeken & Wardle, 2013; Mazzocchi et al., 2015; Morley et al., 2012; Pollard et al., 2013). Nutrition-related policies concerning food availability, labelling, reformulation, affordability, and advertising are highly supported by the general public (Blakely et al., 2020; Broeks et al., 2020; Gressier et al., 2020; Hansen et al., 2022; Lobstein et al., 2020; Mytton et al., 2020; WHO, 2017). These policies are mainly focused on improving the food environment instead of trying to target individual behaviour change (Roberto, 2020). From a psychological perspective, Thaler and Sunstein (2009) explain that altering the environment in which people make food decisions is essential for eating behaviour change. Within a psychological framework, there are two systems which people use to process information: System 1 is where quick decisions are made due to emotions and associations, and System 2 is where people take on slow, deliberate, and effortful reasoning to make decisions (Kahneman, 2013; Slovic, 1996). Generally, eating decisions are made using System 1 (Roberto, 2020). Thus, if the food environment in which these eating decisions are made is healthier, people will automatically make healthier eating decisions (Roberto, 2020).

Public support for policy change is equally important to policy influencer support. Public support can contribute to policy adoption, implementation, or change in various manners (Pettigrew et al., 2022). For instance, once a nutrition-related policy is adopted, implemented, or changed by the government, public support can help challenge industry opposition which may occur due to restricted market freedom (UK Health Forum, 2018). Furthermore, the public can increase community compliance after policy implementation (Giesbrecht & Livingston, 2014). Finally, when the public is supportive of policy change, they can work together with the government to inform decisions in policy implementation (Dekker et al., 2020). This may include assisting in designing communication methods to address the concerns of the less-supportive members of the public (Dekker et al., 2020). Therefore, policy influencers and the public can influence policy action and for successful healthy eating policy change, policy influencer and public support is critical.

## **2.4 Conclusion**

This literature review provided insight into the research available on healthy public policy, the process of policy change, and the role of healthy eating policy in food environments. The literature illustrates that healthy eating among a population can be improved by improving the food environment. Food environments can be improved by implementing healthy eating policy changes. However, healthy eating policy change is heavily dependent on both policy influencer and general public support. The following chapters will assess the level of support for healthy eating policies among policy influencers and the general public in NL.

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**Chapter 3: Healthy Eating Policy Support among Policy  
Influencers & General Public**

## **Co-Authorship Statement**

This chapter has been co-authored by Ellis Lakhani and Dr. Rachel Prowse. The study within this chapter has been derived from a larger policy support study designed by Dr. Rachel Prowse. Funding for the overall study was obtained by Dr. Rachel Prowse. Dr. Rachel Prowse and Ellis Lakhani managed the ethical clearance as well as the development and programming of the research tool (survey) on the Qualtrics software. The data collection was a joint effort between Ellis Lakhani and Dr. Rachel Prowse. The public sample recruitment was led by Ellis Lakhani, while the policy influencer sample recruitment was led by Dr. Rachel Prowse. The data analysis was mainly completed by Ellis Lakhani, with guidance from Dr. Rachel Prowse. Manuscript writing was completed by Ellis Lakhani, with edits suggested by Dr. Rachel Prowse. This manuscript has not yet been submitted for publication. Submission of the manuscript will be completed by Ellis Lakhani.

# **Healthy Eating Policy Support for Chronic Disease Prevention: Perspectives of Policy Influencers and General Public in Newfoundland and Labrador**

## **3.1 Introduction**

The contribution of poor diet to the global burden of chronic diseases such as cancer, cardiovascular and circulatory diseases, and type 2 diabetes surpasses the combined impact of alcohol, tobacco, and physical activity on chronic disease risk (Lim et al., 2012). Within Canada, Newfoundland and Labrador (NL) has some of the highest rates of chronic disease: 63% of the population over the age of 12 years suffers from at least one chronic disease (Government of Newfoundland and Labrador, n.d.). The high consumption of red meat, cured and processed meats and fish, and sugar-sweetened beverages, and the lower consumption of vegetables and fruits in the NL diet increases the risk of chronic disease in the population (Chen et al., 2015). Poor diets reflect unhealthy food environments which are abundant in processed foods and foods rich in sugar, saturated fats, and sodium (Lim et al., 2012). Although personal responsibility for food choices and eating behaviours is associated with chronic disease risk in a population (Brownell et al., 2010), the role that food environments play in influencing diet at a population level and the importance of addressing food environments as a determinant of poor diet is gaining recognition (Sacks et al., 2009).

To improve the food environment and ultimately prevent chronic disease in a population, upstream public health strategies such as policy action are necessary (Kothari et al., 2013). Governments can improve food environments through a range of policies, from voluntary to mandatory (Hansen et al., 2022). Implementing healthy eating policies creates regulations, priorities, and a framework for the government and food industry to follow, resulting in healthier

eating and overall better health outcomes among the public (Vanderlee et al., 2017). Despite several policy recommendations suggested by health advocates and organizations for improving food environments and diet (Hawkes et al., 2013; World Health Organization [WHO], 2013), support for healthy eating policy action remains low among policy influencers (Millstone and Lobstein, 2007). Food industry lobbying and fewer health advocacy resources are some of the barriers to healthy eating policy support among policy influencers (Clarke et al., 2016; Cullerton et al., 2016).

Additionally, another barrier to effective policy implementation is the lack of strong public support (Diepeveen et al., 2013). There is increasing awareness of understanding the significance of public support for policy action and its impact on policy acceptance among a population (Robles & Kuo, 2017). Documenting public support for various policy actions can assist policy influencers and decision-makers in prioritizing key action areas and policy action strategies to improve the health of a population (Robles & Kuo, 2017). Without evident public support, governments may prioritize economic growth by encouraging market and personal freedoms instead of implementing necessary policy action (Clarke et al., 2016; Cullerton et al., 2016; Diepeveen et al., 2013).

There is well-established evidence of effective policies that address unhealthy eating within a population (Gupta et al., 2023). For instance, fiscal policies such as taxation of unhealthy foods, food reformulation such as banning the use of trans fats in packaged foods, regulation of food advertisements and labelling such as restrictions of unhealthy food advertisements on children's television show times, zoning policies such as limiting fast-food restaurants in school areas, and subsidizing fresh produce are all proven to be effective healthy eating policy strategies (Mozaffarian et al., 2018; Gupta et al., 2019). Policy influencers and

general public support for such nutrition-related policies is published in a variety of literature in Canada (Alberta Policy Coalition for Chronic Disease Prevention, 2020; Kongats et al., 2019; Nykiforuk et al., 2014; Pettigrew et al., 2022), Australia (Morley et al., 2012; Pettigrew et al., 2022; Watson et al., 2017), India (Pettigrew et al., 2022), the United Kingdom (Beeken & Wardle, 2013; Pettigrew et al., 2022), and the United States (Pettigrew et al., 2022). Within Canada, research assessing support for healthy eating policies has been conducted in Alberta, Manitoba, Québec, and the Northwest Territories (Alberta Policy Coalition for Chronic Disease Prevention, 2020; Kongats et al., 2019; Nykiforuk et al., 2014). However, no healthy eating policy support studies have been conducted in NL. NL lacks evidence on which healthy eating policies are supported (and to what extent), which is vital for improving the food environment, food choices, and eating behaviours among the public, and reducing chronic disease risk. Understanding policy influencers and general public support for healthy eating policies may help address the existing policy support evidence gap to address chronic disease risk.

### Objective

This study aims to assess and compare policy influencer and general public support for healthy eating policies in NL.

### **3.2 Methods**

The cross-sectional study design was used for this study, and a population-based survey assessed policy influencer and general public support for public policies in NL. This study is an adaptation of similar studies conducted in other Canadian provinces and a part of a larger funded

project (which will be further discussed below). Ethics approval was obtained from the Health Research Ethics Board of Newfoundland and Labrador (HREB-NL file number 20221807).

### ***3.2.1 Participants and Sampling***

This study included two participant groups –policy influencers and general public (hereon referred to as the public). For this study, policy influencers were defined as individuals with the power to influence policy decisions and included members of the provincial government, municipality authorities, regional health authorities, school board trustees (English and French school districts), print and digital media (local radio stations, news networks, and newspapers), Indigenous community leaders and regional wellness coalitions. Although not included in previous versions of this study conducted in the other provinces, regional health authorities, Indigenous community leaders, and regional wellness coalitions were included in this version because these health practitioners and leaders are often consulted on health-related policy decisions, therefore their inclusion in this study was deemed important. For participant recruitment, purposive sampling was used; government reports and directories were used to obtain the contact information (email addresses and telephone numbers) of all mayors and ministers at the municipal and provincial levels (Government of Newfoundland and Labrador, 2022). Official organization/authority websites were used to gather contact information for the other policy influencers such as school board trustees, wellness coalition members, media personnel, and Indigenous community leaders. Three hundred and fifty-two policy influencers (272 mayors, the Premier, 15 ministers, 12 members of regional health authorities and wellness coalitions, 20 school board members, 15 media personnel, and 17 Indigenous community



leaders) were contacted to participate in this study through personalized emails containing the online survey link. No incentives were provided to the policy influencers.

The public was defined as constituents of the NL population. A sample size of 1200 members of the public was calculated based on previous versions of this study in other Canadian provinces (Alberta Policy Coalition for Chronic Disease Prevention, 2020; Kongats et al., 2019; Nykiforuk et al., 2014). Additionally, this sample size was determined based on an objective of the larger funded project from which this study has been derived, by which 1200 is deemed sufficient to detect a proportion of 60% that is supportive of taxing Sugar-Sweetened Beverages (SSBs) and to detect a 5 percentage point difference in support between high and low consumers of SSBs (Select Statistical Services, 2021). The eligible sample for the public included everyone 19 years and older living in NL at the time of the study. Public participants were recruited using convenience sampling through paid advertisements on social media (Facebook and Instagram), based on previous successful cross-sectional studies conducted in NL (Shaver et al., 2019; Shi et al., 2020). The sampling was completed through multiple advertisements (containing the online survey link) categorized by sociodemographic groups to recruit a representative age, gender, and distribution of urban-rural residence sample. The NL Census Metropolitan Area (CMA), including St. John's, Mount Pearl, Paradise, Conception Bay South, Torbay, and Portugal Cove-St. Philip's (Statistics Canada, 2012), was used as the definition for urban residence, while other subdivisions were categorized as rural residence. This study strove for equal distribution of urban-rural participants to reflect the high proportion of respondents living in rural communities in NL. Participants were offered the option to enter into a draw to win one of five \$100 gift cards by providing their email addresses in a separate survey.

### **3.2.2 Data Collection**

This study used the Chronic Disease Prevention (CDP) Survey which was initially developed and tested in 2009 by the Policy, Location, and Access in Community Environments (PLACE) Lab at the University of Alberta, and administered in 2010, 2011, 2014, 2016, 2017, and 2019 in several Canadian jurisdictions such as Alberta, Manitoba, Québec, and the Northwest Territories (Alberta Policy Coalition for Chronic Disease Prevention, 2020; Kongats et al., 2019; Nykiforuk et al., 2014). This survey assesses the knowledge, beliefs, and attitudes of healthy public policies for chronic disease prevention relating to four modifiable risk factors: unhealthy eating, tobacco, alcohol, and physical inactivity (Kongats et al., 2019). The survey obtains quantitative information on perspectives on the causes of chronic disease, views on health promotion, responsibility for health, and support for healthy public policies, mostly through Likert scale-style and multiple-choice questions (PLACE Research Lab, 2021). This survey had not been administered in NL prior to this study. For the purpose of this study, only support for healthy eating policies among NL policy influencers and the public was explored.

Two surveys, one each for the policy influencers and the public (found in Appendices I and II respectively), were administered via Qualtrics Survey Software (Qualtrics, 2023). Although the survey was developed for the Canadian context, NL is geographically and culturally different from the rest of the country (Government of Newfoundland and Labrador, 2006). Newfoundland is an isolated island off the Eastern coast of Canada, while Labrador is part of the mainland, and both parts of the province have a cultural history rooted in Irish, British, French, and Indigenous ancestors, who were mainly fishermen and hunter-gatherers (Newfoundland and Labrador Heritage, 2000). Thus, it was important to adapt the survey to the NL context. Policy options about support for hunting support services, zoning for animal husbandry, agricultural subsidies

for food production and distribution, and rural-urban public transportation improvement were added to the original survey after group consultations with members of government, non-government, and non-profit organization members, at least one per topic area. For healthy eating policies, five individuals provided input including, one government employee, one non-profit employee, two employees of a health agency, and one member of the public. The original survey contained 26 healthy eating policy options and eight policy options relating to the NL context were added. Also, the word “diet” in the original survey questions was replaced with the phrase “culturally appropriate diet” in the adapted version to acknowledge the difference in the NL food culture compared to the other Canadian provinces as recommended in the stakeholder consultations.

The policy influencers and the public were presented with healthy eating policy options on the survey, for which they had to rank their support. The policy influencers and public indicated their support for each healthy eating policy option on a four-point Likert Scale measuring support versus opposition, where 1= “strongly support”, 2= “somewhat support”, 3= “somewhat oppose”, and 4= “strongly oppose”. The options “unsure/don’t know” and “prefer not to say” were also provided to the participants. The policy influencer survey ranked their support for 34 policy options, whereas the public sample ranked their support for 20 healthy eating policy options. A smaller subset of the survey was chosen for the public to minimize respondent fatigue.

All participants were also presented with sociodemographic questions to answer, including *age* (textbox response), *gender* (man/woman/gender diverse/please specify/prefer not to say), *total yearly household income* (under \$20,000/\$20,000 to just under \$40,000/\$40,000 to just under \$70,000/\$70,000 to just under \$100,000// \$100,000 to just under \$125,000/\$125,000 or

more/unsure or don't know/prefer not to say), *education* (did not complete high school/high school/trade school/some college, technical school, or university/college or technical school/university undergraduate certificate, diploma, or degree/university graduate or professional degree/unsure or don't know/prefer not to say), *political ideology* (scale of 1-extreme left to 11-extreme right/unsure or don't know/prefer not to say), *self-reported mental and physical health* (excellent/very good/good/fair/poor/unsure or don't know/prefer not to say), *minority racial identification* (yes/no/unsure or don't know/prefer not to say), *residence* (textbox response), and *family history of chronic disease* (yes/no/unsure of don't know/prefer not to say). Policy influencers were also asked to select their *sector of work* (media/school or school board/municipal authorities/provincial government/community health organization/ community non-health organization/ other (please specify)/unsure or don't know/prefer not to say). The majority of the questions that collected the sociodemographic data were in a multiple-choice form that required the respondent to select only one answer. The questions about age and residence were in text/number form and required the respondent to type their answer.

Data was collected from October 25, 2022, to January 17, 2023 for the policy influencers, and from June 1, 2022, to August 23, 2022 for the public. The policy influencers received six reminder emails to complete the survey in order to obtain the largest sample size possible and reduce non-response bias. For three weeks, policy influencers received reminder emails once a week to complete the survey. A two-week gap period was observed for the Christmas holidays, followed by three more reminder emails sent over the course of three weeks.

### 3.2.3 Data Analysis

Since the data was collected online, data quality was maintained through the use of reCAPTCHA on the Qualtrics Survey Software (Qualtrics, 2023). To ensure that all participants were human and not bots, the length of time taken to complete the survey and feedback comments at the end of the survey were inspected. To better understand the sociodemographic characteristics of the sample, descriptive statistics in the form of frequency counts were run for the sociodemographic variables. Proportions were calculated for categorical sociodemographic variables. To situate the policy options according to policy type, the *Food Environment Policy Index (Food-EPI) Framework*, an evidence-based tool developed by the International Network for Food and Obesity/non-communicable diseases Research, Monitoring and Action Support (INFORMAS) was used to categorize the policy options into the seven policy areas related to healthy food environments: food composition, food labelling, food promotion, food prices, food provision, food retail, and food trade and investment (as defined in Table 1 below) (Vanderlee et al, 2017). Frequencies were calculated to determine the distribution of policies across the Food-EPI Framework to improve interpretation of results by policy sector.

*Table 1 The Policy Areas Categorized by the Food-EPI Framework*

<b>Food-EPI Framework Policy Areas</b>	<b>Definition by INFORMAS</b>
Food composition	Includes policies related to minimizing energy density and nutrients of concern (for example sodium and added sugar) in out-of-home meals and processed food.
Food labelling	Concerns policies relating to food package and menu labelling.
<i>Table 1 Continues Below</i>	

Food promotion	Entails policies concerning marketing and unhealthy food promotion through all media to children.
Food prices	Relates to food pricing policies such as taxes and subsidies to promote healthy choices.
Food provision	Involves policies that ensure the availability of healthy food services in public settings.
Food retail	Concerns policies that support the availability of healthy foods and limit the availability of unhealthy foods in communities.
Food trade and investment	Relate to healthy agricultural and protective food sovereignty policies that favour healthy food environments

To assess the support for healthy eating policies among the policy influencers and the public, the Pearson  $\chi^2$  test at the  $\alpha=0.05$  significance level was used in the Statistical Package for the Social Sciences (SPSS) (International Business Machines Corporation, 2021). Since the Pearson  $\chi^2$  test requires a binary variable, the binary variable “support/oppose” was created by combining “strongly support” and “somewhat support” to represent “support”, and “strongly oppose” and “somewhat oppose” to represent “oppose”. The option “unsure/don’t know” was included in the descriptive analysis only as it still provided valuable insight into the participant’s thought process or perspective on a policy, even though they did not clearly “support” or “oppose” it (responses ranged from 0.0% to 13.5%). The option “prefer not to say” did not add any insight to this study, therefore it was categorized as a missing value and excluded from the inferential analyses (responses ranged from 0.0% to 3.7%). The Pearson  $\chi^2$  test was used to find any differences in the level of support between the policy influencers and the public. Fisher’s Exact test was used when the Pearson  $\chi^2$  test was an inappropriate method of analysis in some cases. The Pearson  $\chi^2$  test becomes an inappropriate method of analysis if the sample size is too small, such as if  $n$  is less than 20 and the expected frequency count is less than five, hence violating the Pearson  $\chi^2$  test assumption that the expected frequency count would be at least five

(Daniel & Cross, 2013). In such circumstances, it is recommended that Fisher's Exact test is used instead (Daniel & Cross, 2013).

The policy options “prohibit advertising and promotion of unhealthy foods and beverages to children (<13 years old)” and “prohibit advertising and promotion of unhealthy foods and beverages to youth (13 - 17 years old)” were provided in the policy influencer survey, however, the two options were combined into one as “prohibit advertising and promotion of unhealthy foods and beverages to children and youth” in the public survey to reduce the number of questions for the public to answer. The two policy influencer survey options were each compared to the public survey option during the Pearson  $\chi^2$  test. Hence, support for 21 healthy eating policy options between the policy influencers and the general public was obtained. The policy influencers ranked their support for 13 extra policy options.

### **3.3 Results**

#### *3.3.1 Participants*

A total of 1200 members of the public and 54 policy influencers completed the surveys and were included in the analyses. The combined missing policy influencer data for all the sociodemographic variables ranged from 1.9% to 16.7%, and the combined missing public data for all the sociodemographic variables ranged from 0.3% to 9.7% (breakdown of missing data per variable found in Table 2 footnotes). The percentage of policy influencers and public that answered “unsure/don't know” on the survey questions ranged from 1.9% to 14.8%, and 0.1% to 13.2% respectively.

The sociodemographic characteristics of the public and the policy influencers who completed the survey are shown in Table 2. Among the policy influencers, the majority were men (51.9%), while the majority of the public participants were women (63.3%). More than 60% of both the policy influencers and the public reported having some form of post-secondary education. The majority of the policy influencers and the public reported having an annual gross household income of  $\geq$  \$70,000 (78.0% and 59.8% respectively). Both sample groups largely did not identify as a racial minority; 87.2% of the policy influencers and 92.2% of the public reported not being a part of a racial minority. The majority of the policy influencers and the public identified with a liberal political ideology (29.7% and 48.6% respectively) compared to a conservative political ideology (8.1% and 9.1% respectively). The largest proportion (57.1%) of the policy influencers worked within municipal authorities, while there were no policy influencers who worked for the media and community health organizations.

*Table 2 Sociodemographic Characteristics of the CDP Survey Participants*

<b>Sociodemographic Characteristic</b>	<b>CDP Survey Participants (n = 1254)</b>	
	<b>Policy Influencers n (%) (n = 54)</b>	<b>Public n (%) (n = 1200)</b>
<b>Age (Years)<sup>1</sup></b>		
19 - 34	1 (1.9%)	279 (23.3%)
35 - 64	43 (81.1%)	722 (60.2%)
$\geq$ 65	9 (17.0%)	199 (16.6%)
<b>Gender Identification<sup>2</sup></b>		
Man	27 (51.9%)	407 (33.9%)
Woman	25 (48.1%)	763 (63.6%)
Other <sup>a</sup>	0 (0.0%)	18 (1.5%)

*Table 2 Continues Below*



<b>Highest Education Level<sup>3</sup></b>		
Attended high school (and/or completed)	5 (9.8%)	84 (7.1%)
Post-secondary certificate, diploma, or undergraduate degree	31 (60.8%)	727 (61.0%)
Graduate or professional degree	15 (29.4%)	380 (31.9%)
<b>Gross Household Income (Per Annum)<sup>4</sup></b>		
< \$70,000	11 (22.0%)	430 (40.2%)
≥ \$70,000	39 (78.0%)	637 (59.8%)
<b>Minority Racial Identification<sup>5, b</sup></b>		
No	41 (87.2%)	1059 (92.2%)
Yes	6 (12.8%)	89 (7.8%)
<b>Residence<sup>6, c</sup></b>		
Rural	47 (92.2%)	594 (49.8%)
Urban	4 (7.8%)	598 (50.2%)
<b>Self-Reported Physical Health<sup>7</sup></b>		
Excellent	2 (3.9%)	71 (6.0%)
Very good	17 (33.3%)	325 (27.2%)
Good	24 (47.1%)	415 (34.7%)
Fair	7 (13.7%)	264 (22.1%)
Poor	1 (2.0%)	120 (10.0%)
<b>Self-Reported Mental Health<sup>8</sup></b>		
Excellent	10 (19.6%)	107 (9.0%)
Very good	24 (47.0%)	336 (28.2%)
Good	11 (21.6%)	381 (32.0%)
Fair	6 (11.8%)	258 (21.6%)
Poor	0 (0.0%)	110 (9.2%)
<b>History of Family Chronic Illness<sup>9</sup></b>		
No	11 (22.4%)	285 (24.6%)
Yes	38 (77.6%)	873 (75.4%)
<b>Political Ideology<sup>10</sup></b>		
Liberal	11 (29.7%)	470 (48.6%)
Neutral	23 (62.2%)	409 (42.3%)
Conservative	3 (8.1%)	88 (9.1%)
<b>Sectors of Work<sup>11</sup></b>		
Community non-health organization	2 (4.1%)	-
Municipal authorities	28 (57.1%)	-
Provincial government	6 (12.2%)	-
School or School board	4 (8.2%)	-
Media	0 (0.0%)	-
Community health organization	0 (0.0%)	-
Other (specify) <sup>d</sup>	9 (18.4%)	-

**Missing Public n (%)**: <sup>2</sup>12 (1.0%), <sup>3</sup>8 (0.7%), <sup>4</sup>116 (9.7%), <sup>5</sup>24 (2.0%), <sup>6</sup>8 (0.7%), <sup>8</sup>3 (0.3%), <sup>9</sup>11 (0.9%), <sup>10</sup>75 (6.3%)

**Missing PI n (%)**: <sup>1</sup>1 (1.9%), <sup>2</sup>2 (3.7%), <sup>3</sup>3 (5.6%), <sup>4</sup>4 (7.4%), <sup>5</sup>5 (9.3%), <sup>6</sup>3 (5.6%), <sup>7</sup>1 (1.9%), <sup>8</sup>1 (1.9%), <sup>9</sup>4 (7.4%), <sup>10</sup>9 (16.7%), <sup>11</sup>5 (9.3)

**“Unsure/Don’t know” Public Responses n (%)**: <sup>3</sup>1 (0.1%), <sup>4</sup>17 (1.4%), <sup>5</sup>28 (2.3%), <sup>7</sup>5 (0.4%), <sup>8</sup>5 (0.4%), <sup>9</sup>31 (2.6%), <sup>10</sup>158 (13.2%)

**“Unsure/Don’t know” Policy Influencer Responses n (%)**: <sup>5</sup>2 (3.7%), <sup>9</sup>1 (1.9%), <sup>10</sup>8 (14.8%)

<sup>a</sup>Any gender that the responder identifies as, for example, gender diverse or non-binary.

<sup>b</sup>If the responder identifies as a person of a minority race such as Asian, Hispanic, Black, or Native, they would check “yes”.

<sup>c</sup>The Census Metropolitan Area including St. John’s, Paradise, Mount Pearl, Torbay, and Conception Bay South are considered urban areas, while all other subdivisions are considered rural.

<sup>d</sup>If the sector that the responder works in was not part of the given options, they had the option to specify it in a textbox. Responses received included volunteers, Indigenous organizations, the private sector, and regional authorities.

### 3.3.2 Policy Areas Categorization

The 21 policy options in Table 3, rated by all participants, were categorized by six policy areas found in the *Food-EPI Framework*: food composition, food labelling, food promotion, food prices, food provision, and food retail (Vanderlee et al, 2017). No policy options were categorized under “food trade and investment”. The majority of the policy options were categorized as “food provision” (n=8 policies, 38.1%). The least number of policy options were categorized as “food composition” and “food labelling” (n=1 policy, 4.8% each). The 13 policy options in Table 4, rated only by policy influencers, were also categorized by six policy areas found in the Food-EPI framework: food labelling, food promotion, food prices, food provision, food retail, and food trade and investment (Vanderlee et al, 2017). No policy options were categorized as “food composition”. The majority of the policy options were categorized as “food prices” and “food retail” (n=3 policies, 23.1%). The least number of policy options were categorized as “food promotion” (n=1 policy, 7.7%).

### *3.3.3 Policy Support*

Overall policy support among the policy influencers and the public was high. Among the policy influencers and the public in Table 3, 10 of the 21 policy options (or 47.6%) received greater than 90.0% support. The policy influencers and the public demonstrated between 80.0% to 89.9% support for 3 of the 21 policy options (or 14.3%). Both groups showed  $\leq 69.9\%$  support for 4 of the 21 policy options (or 19.0%). In total, 16 of the 21 policy options (or 76.2%) received the high support of  $\geq 80.0\%$  from both the policy influencers and the public. Among the policy influencers only, as seen in Table 4, 8 of the 13 policy options (or 61.5%) received more than 90.0% support; 2 of 13 (or 15.4%) received 80.0% to 89.9% support; 1 of 13 (or 7.7%) received 70.0% to 79.9% support, and the rest (n=2 policies or 15.4%) received  $\leq 69.9\%$  support.

Table 3 Pearson Chi-Square Test Comparing Support for Policy Options among the Policy Influencers and the Public, Categorized by the Food-EPI Framework Policy Areas (where Public n=1200; Policy Influencer n=54)

Policy Option	Policy Influencer Support n (%) <sup>+</sup>	Public Support n (%) <sup>+</sup>	Difference in Support (PI Support % - Public Support %)	$\chi^2$ Test Statistic	p-value
<b>Food Composition</b>					
1. Educate the public on the sugar content of beverages and impacts of consuming sugar <sup>1</sup>	53 (100.0%)	1139 (96.2%)	3.8%	n/a	0.257 <sup>tt</sup>
<b>Food Labelling</b>					
2. Mandate nutrition information on all restaurant menus <sup>2</sup>	49 (92.5%)	1041 (89.5%)	3.0%	0.473	0.492
<b>Food Promotion</b>					
3. Prohibit advertising and promotion of unhealthy foods and beverages to children (<13 years old) <sup>3</sup>	44 (86.3%)	988 (85.3%)	1.0%	0.036	0.850
4. Prohibit advertising and promotion of unhealthy foods and beverages to youth (13 - 17 years old) <sup>4</sup>	41 (78.8%)	988 (85.3%)	-6.5%	1.639	0.200
<b>Food Prices</b>					
5. Ensure income support rates are adequate to cover basic needs, including a healthy, culturally appropriate diet <sup>5</sup>	49 (90.7%)	1127 (96.0%)	-5.3%	n/a	0.730 <sup>tt</sup>
6. Reduce the price of healthy foods for consumers by subsidizing staples, such as rice or bread <sup>6</sup>	49 (92.5%)	1107 (95.3%)	-2.8%	n/a	0.315 <sup>tt</sup>
7. Tax sugary drinks including energy drinks on top of sales taxes <sup>7</sup>	27 (50.9%)	769 (66.2%)	-15.3%	5.250	0.022*

Table 3 Continues Below

8. Implement hunting support services that allow supplies (e.g., ammo, gas) to be fundable expenses for programs investing in food access <sup>8</sup>	43 (87.8%)	819 (79.1%)	8.7%	2.137	0.144
9. Ensure minimum wage is adequate to cover basic needs, including a healthy, culturally appropriate diet <sup>9</sup>	52 (98.1%)	1154 (97.1%)	1.0%	n/a	1.000 <sup>tt</sup>
<b>Food Provision</b>					
10. Provide free fruit and vegetable subscription programs for schools and childcare settings	53 (98.1%)	1151 (97.0%)	1.1%	n/a	1.000 <sup>tt</sup>
11. Implement a universal school food program that provides a free or low-cost healthy meal to every student every day <sup>10</sup>	54 (100.0%)	1135 (96.3%)	3.7%	n/a	0.257 <sup>tt</sup>
12. Mandate provision of healthy foods and beverages in all public buildings <sup>11</sup>	44 (83.0%)	1032 (89.4%)	-6.4%	2.087	0.149
13. Mandate comprehensive nutrition curriculum in schools <sup>12</sup>	51 (96.2%)	1151 (97.0%)	-0.8%	n/a	0.675 <sup>tt</sup>
14. Mandate policies that support breastfeeding people and families ensuring that facilities are available in all public buildings <sup>13</sup>	53 (98.1%)	1132 (97.3%)	0.8%	n/a	1.000 <sup>tt</sup>
15. Restrict sugary drink sales in all public buildings <sup>14</sup>	34 (64.2%)	787 (68.1%)	-3.9%	0.370	0.543
16. Ban sugary drinks in children's settings (schools, childcare, recreation) <sup>15</sup>	44 (81.5%)	996 (84.7%)	-3.2%	0.408	0.523
17. Enact zoning to allow home gardens and animal husbandry (e.g., chicken coops) <sup>16</sup>	45 (86.5%)	1093 (93.9%)	-7.4%	n/a	0.044 <sup>tt*</sup>
<b>Food Retail</b>					
18. Improve urban public transportation to increase the accessibility of grocery stores <sup>17</sup>	50 (96.2%)	1106 (95.4%)	0.8%	n/a	1.000 <sup>tt</sup>

*Table 3 Continues Below*

19. Improve rural public transportation to increase the accessibility of grocery stores <sup>18</sup>	49 (92.5%)	1078 (93.5%)	-1%	n/a	0.773 <sup>tt</sup>
20. Enact zoning that limits the number of fast-food restaurants per region <sup>19</sup>	28 (58.3%)	690 (62.7%)	-4.4%	0.369	0.544
21. Restrict or ban new fast food restaurant drive-through facilities <sup>20</sup>	15 (30.0%)	501 (46.2%)	-16.2%	5.044	0.025*

**Missing n (%):** <sup>1</sup>3 (0.2%), <sup>2</sup>2 (0.2%), <sup>3</sup>4 (0.3%), <sup>4</sup>4 (0.3%), <sup>5</sup>5 (0.4%), <sup>6</sup>4 (0.3%), <sup>7</sup>2 (0.2%), <sup>8</sup>4 (0.4%), <sup>9</sup>3 (0.2%), <sup>10</sup>1 (0.1%), <sup>11</sup>4 (0.3%), <sup>12</sup>2 (0.2%), <sup>13</sup>1 (0.1%), <sup>14</sup>3 (0.2%), <sup>15</sup>1 (0.1%), <sup>16</sup>3 (0.2%), <sup>17</sup>4 (0.3%), <sup>18</sup>3 (0.2%), <sup>19</sup>5 (0.4%), <sup>20</sup>6 (0.5%)

<sup>†</sup>Policy influencer and public support is colour-coded; green for  $\geq 90.0\%$  support, yellow for 80.0% to 89.9% support, orange for 70.0% to 79.9% support, and red for  $\leq 69.9\%$  support.

\*Statistically significant p-value at the  $\alpha=0.05$  significance level

<sup>tt</sup>Fisher's Exact test was used instead of the Pearson  $\chi^2$  test of asymptotic significance (2-sided) since 25% or more of the expected cell count was less than 5, hence violating the assumption of the Pearson  $\chi^2$  test.

<sup>na</sup>Test statistic not available due to using Fisher's Exact test instead of Pearson  $\chi^2$  test since 25% or more of the expected cell count was less than 5, hence violating the assumption of the Pearson  $\chi^2$  test.

Table 4 Support for Policy Options Presented to Policy Influencers Only (n=54)

<b>Policy Option</b>	<b>Support n (%)<sup>+</sup></b>	<b>Oppose n (%)<sup>+</sup></b>	<b>Unsure/ Don't know n (%)</b>	<b>Total n (100%)</b>
<b>Food Labelling</b>				
Mandate government-led logos or symbols in grocery stores to help identify healthy foods and beverages <sup>1</sup>	48 (92.3%)	4 (7.7%)	0 (0.0%)	52
Mandate government-led front of package nutrition labelling on all processed foods and beverages	49 (90.7%)	4 (7.4%)	1 (1.9%)	54
<b>Food Promotion</b>				
Fund government media campaigns that encourage healthy food and beverage choices <sup>2</sup>	47 (88.7%)	4 (7.5%)	2 (3.8%)	53
<b>Food Price</b>				
Remove sales taxes on pre-cut vegetables and fruits in grocery stores	51 (94.4%)	0 (0.0%)	3 (5.6%)	54
Introduce guaranteed basic income adequate to cover basic needs, including a healthy, culturally appropriate diet	50 (92.6%)	3 (5.6%)	1 (1.9%)	54
Eliminate all forms of subsidies that make unhealthy food cheaper than healthy food	39 (72.2%)	12 (22.2%)	3 (5.6%)	54
<b>Food Provision</b>				
Mandate provision of healthy foods and beverages in all public recreation facilities	50 (92.6%)	3 (5.6%)	1 (1.9%)	54
<b>Food Retail</b>				
Improve active transportation infrastructure (e.g. sidewalks, bike paths) to increase the accessibility of grocery stores	52 (96.3%)	1 (1.9%)	1 (1.9%)	54
Mandate healthy foods and beverages checkouts (e.g., Fruit stand instead of candy “powerwalls”)	48 (88.9%)	4 (7.4%)	2 (3.7%)	54
Restrict availability of unhealthy foods near schools through zoning	34 (63.0%)	19 (35.2%)	1 (1.9%)	54

Table 4 Continues Below

Regulate portion sizes in food outlets	33 (61.1%)	18 (33.3%)	3 (5.6%)	54
<b>Food Trade and Investment</b>				
Financially incentivize the production and distribution of healthy foods and beverages through agricultural input subsidies, or programs and funds for farmers	52 (96.3%)	1 (1.9%)	1 (1.9%)	54
Create incentives to foster local food and beverage producers to provide healthy foods in settings where food is provided such as schools, childcare, hospitals, and long-term care facilities	52 (96.3%)	2 (3.7%)	0 (0.0%)	54

**Missing n (%):** <sup>1</sup>2 (3.7%), <sup>2</sup>1 (1.9%)

<sup>+</sup>Policy influencer support is colour-coded; green for ≥90.0% support, yellow for 80.0% to 89.9% support, orange for 70.0% to 79.9% support, and red for ≤69.9% support.

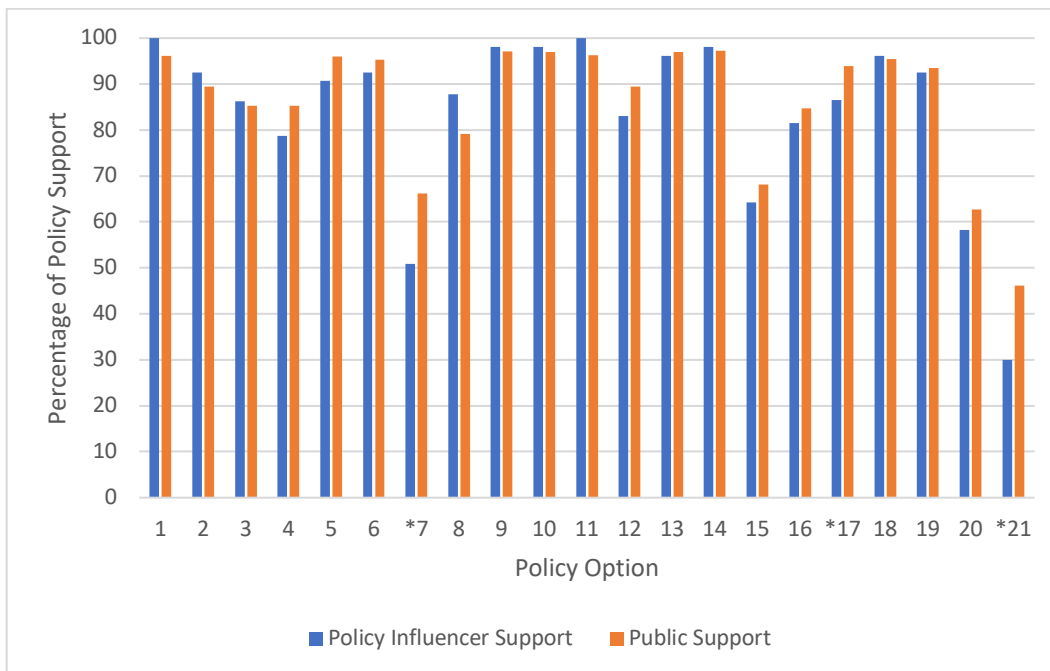
### 3.3.4 Comparison of Policy Support Between the Policy Influencers and the Public

Figures 3 and 4 below illustrate the comparison and difference in support levels between the policy influencers and the public. In Figure 3 the policy options are numbered and correspond to the policy options in Table 3 above. From Figure 3 below, it can be observed that the level of support between the policy influencers and the public was quite similar per the policy option except for three: “tax sugary drinks including energy drinks on top of sales taxes”, “enact zoning to allow home gardens and animal husbandry (e.g., chicken coops)”, and “restrict or ban new fast food restaurant drive-through facilities”. As observed in Table 3, a statistical difference in support between the policy influencers and the public was noted in the three policy options: “tax sugary drinks including energy drinks on top of sales taxes” (where policy influencer support=50.9% and public support=66.2%;  $\chi^2=5.250$ ,  $p=0.022$ ), “enact zoning to allow home gardens and animal husbandry (e.g., chicken coops)” (where policy influencer support=86.5% and public support 93.9%;  $\chi^2=n/a$  due to Fisher’s Exact test,  $p=0.044$ ), and “restrict or ban new



fast food restaurant drive-through facilities” (where policy influencer support=30.0% and public support=46.2%;  $\chi^2=5.044$ ,  $p=0.025$ ).

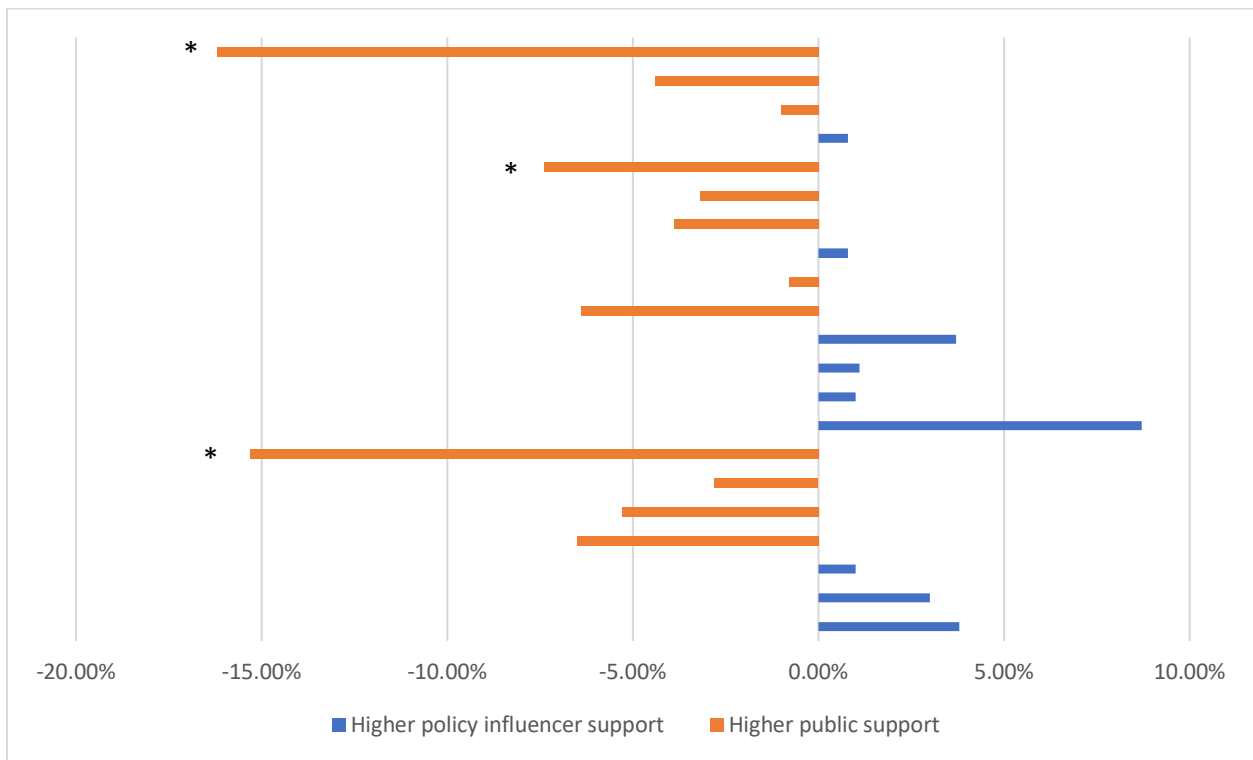
The highest supported policy options among the policy influencers were “educate the public on the sugar content of beverages and impacts of consuming sugar” and “implement a universal school food program that provides a free or low-cost healthy meal to every student every day” (100.0% support each), while “mandate policies that support breastfeeding people and families ensuring that facilities are available in all public buildings” was the highest supported policy among the public (97.3% support). On the other hand, the least supported option between both groups was “restrict or ban new fast food restaurant drive-through facilities” (where policy influencer support=30.0% and public support=46.2%).



\*Policy options with a statistically significant p-value at the  $\alpha=0.05$  significance level  
 Note: Policy options correspond with the policy options presented in Table 3.

Figure 3 A Bar Graph Showing the Comparison of the Percentage of Policy Support between the Policy Influencers (n=54) and the Public (n=1200)

Through Figure 4 it can be seen that the distribution of policy support was slightly skewed towards higher public support since the public demonstrated higher support for 12 of the 21 policy options (or 57.1%) while the policy influencers demonstrated higher support for 9 of the 21 policy options (or 42.9%). As aforementioned, there were 3 policies for which the difference was significant. A larger difference in support per policy option was noted among the policy options that received higher public support compared to the policy options that received higher policy influencer support. Among the three policy options that showed a statistical difference in support, the public was more supportive compared to the policy influencers.



\*Policy options with a statistically significant p-value at the  $\alpha=0.05$  significance level  
 Note: Policy options range from *Policy 1* at the bottom of the figure to *Policy 21* at the top of the figure;  
 Policy options correspond with the policy options presented in Table 3.

*Figure 4 A Chart Showing the Difference in Policy Influencer and Public Support per Policy Option (n=21 policies), Calculated as “Policy Influencer Percentage Support – Public Percentage Support”*

### 3.4 Discussion

This study aimed to assess and compare policy influencer and general public support for healthy eating policies in NL. The results depicted a high level of support among both the policy influencers and the public. There was similar policy influencer and public support within each of the policy options, however, higher public support was noted for more of the policy options. A statistical difference in policy influencer and public support was noted in three policy options: “tax sugary drinks including energy drinks on top of sales taxes”, “enact zoning to allow home gardens and animal husbandry (e.g., chicken coops)”, and “restrict or ban new fast food restaurant drive-through facilities”.

A previous iteration of this study compared healthy eating policy support among policy influencers and the public in Alberta and Québec (Kongats et al., 2019). Among the policy influencers and the public in Alberta, the results showed a statistical difference in support between the two groups in 9 of 13 policy options (or 69.2%), of which the policy influencers showed greater support in 8 of the 9 policy options (or 88.9%) (Kongats et al., 2019). Among the policy influencers and the public in Québec, the results showed a statistical difference in support between the two groups in 5 of 13 policy options (or 38.5%), of which the policy influencers showed greater support in 3 of the 5 policy options (or 60%) (Kongats et al., 2019). Furthermore, the Alberta and Québec policy influencers both demonstrated  $\geq 80.0\%$  support for 7 of the 13 policy options (or 53.8%), while the Alberta and Québec public demonstrated  $\geq 80.0\%$  support for 4 of the 13 policy options (or 30.8%) and 5 of the 13 policy options (38.5%), respectively. Overall, the Alberta and Québec findings highlight that there was less agreement between policy influencer and public support, the policy influencers were more supportive of the healthy eating

policy options compared to the public, and general support for the policies was low (Kongats et al., 2019).

Comparably, the results of this NL study demonstrated overall higher levels of  $\geq 80.0\%$  support for policies from both the policy influencers and the public (76.2%), and higher public support for more policies (57.1%). Also, there was a statistical difference in support between the NL policy influencers and the public in only three of the policy options (14.3%). These findings show that the NL policy influencers and the public support healthy eating policies more than those from Alberta and Québec. The lower number of policies with statistically different support shows higher policy influencer and public support agreement in NL than in Alberta and Québec. While the policy influencers were more supportive of the majority of the policy options in Alberta and Québec, the public was more supportive in NL. This high and mostly collective policy influencer and public support may suggest that healthy food environments are a higher priority for NL than it is for Alberta and Québec; this could be due to NL's isolated geography that restricts food access in the province (Government of Newfoundland and Labrador, 2006). These results also depict that the NL policy influencers may be aware of the need to improve the food environment of the province. This awareness could be related to the policy influencer demographic skew of this study since the majority were part of the government and probably had a better perspective of the population's needs, compared to the Alberta policy influencer demographic which was more fairly distributed (43.6% governmental members and 56.4% non-governmental members) (Kongats et al., 2019).

The sample of this study is comparable to the NL population respective to age, gender, and residence (rural or urban). According to the latest population census, 63.0% of the NL population is categorized as the "working population" aged between 15 and 64 (Statistics Canada, 2022).

Although one of the inclusion criteria of this study was that participants had to be at least 19 years old at the time of the survey, the majority of the policy influencers (83.0%) and public (83.5%) were still part of the “working population” group. The gender distribution of the NL population is 49.0% male and 51.0% women (Statistics Canada, 2022). The gender distribution among the policy influencers in this study (51.9% men and 48.1% women) is highly representative of the NL population, however, the gender distribution of the public is slightly skewed towards women (63.6% women and 33.9% men). Research shows that women are more likely to participate in surveys than men (Becker, 2022), hence obtaining a larger male sample would be difficult. The residence distribution of the NL population is 52.8% residing in urban areas (those categorized as Census Metropolitan Areas [CMAs]) and 47.2% residing in rural areas (those categorized as outside CMAs) (Statistics Canada, 2022). The public sample shows a high representation of the residences (49.8% rural and 50.2% urban), while the policy influencer sample is highly skewed toward rural residences (92.2% rural and 7.8% urban). This skew is expected since there are more jurisdictions outside the NL CMA, therefore more mayors and municipalities represent the rural areas, and there was a high representation of members of municipality authorities in this study.

There were no major differences among the Alberta, Québec, and NL sociodemographic results except in their political ideologies. The political ideology of the Québec policy influencers (the political ideology of the public was not measured for Alberta and Québec) was more liberal (41.0%) than conservative (12.4%), while that of the Alberta policy influencers was rather balanced (36.3% liberal and 38.8% conservative) (Kongats et al., 2019). Similar to the political ideology pattern of Québec, the NL policy influencers identified more with the liberal political ideology (29.7% liberal and 8.1% conservative), along with the NL public (48.6%

liberal and 9.1% conservative). Research suggests that the health behaviours of the public can be dictated by their political ideology, as individuals with conservative political ideologies are more likely to resist health behaviour change and policy adoption than their liberal-identifying counterparts (Gruber & Mullainathan, 2002; Subramanian & Perkins, 2010). Furthermore, conservative policy influencers are also less likely to adopt public health policies that may protect the health of their public to prevent appearing paternalistic (Fox et al., 2017). Hence, the liberal political ideology in the NL sample may suggest that both the policy influencers and the public are open to health improvement through policy changes to the NL food environment.

A noteworthy finding of this study was high support for Sugar-Sweetened Beverages (SSBs) related policies and policies concerning children, such as “educate the public on the sugar content of beverages and impacts of consuming sugar”, “implement a universal school food program that provides a free or low-cost healthy meal to every student every day”, and “ban sugary drinks in children's settings (schools, childcare, recreation)”. This high support aligns with other national and international studies (Carriedo et al., 2021; Diepeveen et al., 2013; Gupta et al., 2023; Kongats et al., 2019; Miller et al., 2019). Although the taxation of SSBs was not very highly supported in this study, it still received >50.0% support from both the policy influencers and the public. While this support is similar to the Alberta public (58.2%), the Québec public demonstrated more support (74.5%) along with the policy influencers (75.6% in Alberta and 85.3% in Québec) (Kongats et al., 2019). On the other hand, the Northwest Territories, has demonstrated opposition to SSB taxation policies (Government of Northwest Territories, 2019), NL became one of Canada’s first provinces to implement an SSB tax in September 2022 (Government of Newfoundland and Labrador & Department of Finance, n.d.).

The province's support for SSB-related policies, as evident in this study, may determine the success of the NL SSB tax in terms of policy acceptability and sustainability.

As for the high support for policies regarding children, children are considered a priority group for program and policy interventions in several countries (UNICEF, 1989). Established evidence shows that early childhood and youth health behaviours have longer-term health effects in adulthood, including being overweight and obese (Nelson et al., 2008; Public Health Agency of Canada, 2011; Public Health Agency of Canada, 2014). The findings of this study suggest that implementing healthy eating policies relating to children may be a priority area among NL policy influencers and that they are well-accepted among the NL public.

Although the *Food-EPI Framework* policy areas were not the focus of this study and analyses were not carried out to determine the level of support for each policy area, they provided some insight into individual policy support under each category. The *Food-EPI NL Report* states that “food provision” is the only policy area in which the government is performing well in the province, while all other policy areas have little to no policy implementation (Vanderlee et al., 2017). The findings of this study reflect high policy influencer and public support for policies within the “food provision” category, while relatively low support for the policies within the “food retail” category. While additional conclusions cannot be drawn regarding support for the *Food-EPI Framework* policy areas, further exploration is encouraged to assess policy influencer and public support for the policy areas in future research.

### 3.5 Strengths, Limitations, and Recommendations

Limitations of this study pertain to its sample. Discretion should be used when interpreting the findings of this study as i) the sample size of the policy influencers could have been too small to produce a variation in the support, and ii) the sampling and recruitment methods could have resulted in a biased public sample. To elaborate, although the response rate among the policy influencers was 15.3%, which was greater than the 10.2% and 3.0% response rates of policy influencers received in Alberta and Québec respectively (Kongats et al., 2019), it may have been too low to provide an accurate representation of all policy influencer perspectives. The lack of non-governmental policy influencers' perspectives, such as school board trustees and media personnel, and their possible lack of support, and the large representation of support from municipality authorities may have overestimated the policy influencer support in this study. Using an English-only survey and social media advertisements to recruit public participants may have resulted in selection bias; important sociodemographic groups such as those residing in remote areas with the lack of technology, those less educated, and immigrants or refugees who cannot communicate in English, may have been unintentionally excluded from the study. This may have resulted in exaggerated policy support. Although the survey language was simplified during the planning process of this study, the level of reading of some of the policies on the survey may have been advanced for some readers, nonetheless. For this reason, the “don't know” option was available for participants to select. While the “don't know” responses were accounted for during the analysis, this may have further excluded the perspectives of support of those who are less educated or are not fluent in English.

Nonetheless, this study is one of the first to explore healthy eating policy support among the policy influencers and the public in NL. The established Chronic Disease Prevention Survey,



adapted to the NL context, generated baseline evidence for healthy eating policy support in the province. The adaptation of the survey to the NL context is the main strength of this study since it assisted in producing provincially relevant evidence to bridge the existing literature gap for healthy eating policy support in the province. The evidence produced through this study could assist health advocates and policymakers in identifying priority areas for targeted chronic disease prevention action in the province. Since policies relating to children were highly supported by both policy influencers and the public, such as “implement a universal school food program that provides a free or low-cost healthy meal to every student every day”, these could be a priority area for health advocates and policymakers. Research shows that child-focused policies are considered to be one of the most cost-effective strategies for optimal health and overall well-being of children throughout their lifetime (Stenberg et al., 2021; Reynolds & Temple, 2008).

For future reference, it is recommended that policy support studies (including future iterations of this study) focus on smaller, more targeted sociodemographic groups, such as immigrants and rural dwellers, to understand the perspectives of those groups that may be unintentionally excluded from similar research. The establishment of better partnerships between health researchers and policy influencers (including policymakers) is also recommended since research and the translation of the research into action cannot exist in silos. The policy influencers have demonstrated high policy support for the healthy eating policies in this study, yet there is minimal healthy eating policy action in the province. Hence, forming meaningful partnerships between health researchers and policy influencers could improve the quality of policy support research and catalyze policy action in the province.

### **3.6 Conclusion**

Unhealthy diets contribute vastly to chronic disease development in populations (Lim et al., 2012), and the chronic disease rates in NL are one of the highest in Canada (Government of Newfoundland and Labrador, n.d.). Food environments play a key role in influencing diets at a population level (Sacks et al., 2009). The presence of healthy eating policies determines the healthiness of a food environment (Kothari et al., 2013). However, the implementation and success of public policies directly relate to the level of policy support received from policy influencers and the public (Clarke et al., 2016; Cullerton et al., 2016; Robles & Kuo, 2017;). The findings of this study demonstrated high levels of support for healthy eating policies among policy influencers and the public in NL. Also, a minimal difference in policy influencer and public support was noted. Therefore, it could be deduced that the NL public and policy influencers want healthy eating policies to be prioritized in the province. While this study has limitations with its sample, it has generated novel evidence to bridge the literature gap concerning policy support in NL. It is recommended that smaller sociodemographic groups be the focus of future policy support research as it is difficult to understand the perspectives of the various sociodemographic groups collectively. Finally, improved partnership between health researchers and policy influencers in NL is also encouraged for enhanced quality of research and speed of policy action.

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**Chapter 4: Policy Intrusiveness & Acceptability among  
Policy Influencers & General Public**

## **Co-Authorship Statement**

This chapter has been co-authored by Ellis Lakhani and Dr. Rachel Prowse. The study within this chapter has been derived from a larger policy support study designed by Dr. Rachel Prowse. Funding for the overall study was obtained by Dr. Rachel Prowse. Dr. Rachel Prowse and Ellis Lakhani managed the ethical clearance as well as the development and programming of the research tool (survey) on the Qualtrics software. The data collection was a joint effort between Ellis Lakhani and Dr. Rachel Prowse. The public sample recruitment was led by Ellis Lakhani, while the policy influencer sample recruitment was led by Dr. Rachel Prowse. The data analysis was mainly completed by Ellis Lakhani, with guidance from Dr. Rachel Prowse. Manuscript writing was completed by Ellis Lakhani, with edits suggested by Dr. Rachel Prowse. This manuscript has not yet been submitted for publication. Submission of the manuscript will be completed by Ellis Lakhani.

# **Policy Influencer and General Public Preferences for Healthy Eating Policies in Newfoundland and Labrador: The Influence of Level of Intrusiveness on Policy Acceptability**

## **4.1 Introduction**

Behaviour changes such as reduced smoking, increased physical activity, and healthier eating can reduce the burden of chronic diseases such as cancer, cardiovascular diseases, and type 2 diabetes (Diepeveen et al., 2013). However, food choices and eating practices are highly influenced by the food environment (Story et al., 2008). The food environment includes social, physical, economic, and political factors such as food access, affordability, and marketing (Glanz et al, 2005; Story et al., 2008) which may have a greater influence on eating practices compared to individual knowledge and motivation to eat healthier (Brambila-Macias et al., 2011; Story et al., 2008). Focusing on Newfoundland and Labrador (NL), the diet mostly consists of high amounts of sugar-sweetened beverages and salt-cured meats and fish, and low consumption of fresh fruits and vegetables, contributing to the province's high rate of chronic disease (Chen et al., 2015). This diet may be a result of NL's food environment where the soil is poor and growing seasons are short; this limits the food produced within the province and encourages importation, resulting in increased food prices, less fresh produce, and reliance on processed foods (Newfoundland and Labrador Heritage, 2011). Furthermore, amenities such as electricity, refrigerators, and freezers were not available in NL until the 1950s, which inclined the population to depend on food preservation methods such as salting and pickling (Newfoundland and Labrador Heritage, 2011), which are now shown to increase chronic disease risk (Zhu et al., 2014).

While individual eating practices have previously been analyzed for diet-related chronic disease prevention, assessing the food environment provides a holistic understanding of factors that impact diets and can advise upstream approaches, such as policy action for population-level chronic disease prevention (Raine, 2005). Therefore, addressing the food environment through intervention strategies such as policy action to encourage responsible food choices and healthier eating practices are gaining the interest of policy influencers such as government decision-makers, researchers, and healthcare leaders (Gortmaker et al., 2011). Policy action can range from public health campaigns to restricting the marketing of unhealthy foods to children (Bos et al., 2015).

Unfortunately, adopting and implementing policies to address food choices and practices is not easy since it can be perceived as limiting individual autonomy and deemed intrusive by policy influencers and the public (Dieteren et al., 2022). Intrusiveness can be viewed as the extent to which a policy intervenes in the public's lives (Nuffield Council on Bioethics, 2007). Dissemination of information about healthy eating is regarded as one of the least intrusive policy actions, whereas restriction of certain foods through regulation or law is regarded as most intrusive (Griffiths & West, 2015; Nuffield Council on Bioethics, 2007). Most healthy eating policies are far less intrusive compared to alcohol and tobacco policies (Dieteren et al., 2022).

The degree to which the public accepts a policy determines its implementation feasibility and effectiveness (Bos et al., 2013). The *Reactance Theory* states that insufficient acceptance of interventions among the public may lead the public to adopt or strengthen attitudes contrary to the policy's aim, consequently increasing their resistance to implementing the desired behaviour changes (Brehm, 1966). Reactance acts both as a negative outcome resulting from the threat to or the loss of freedom among individuals and as a motivator for restoring one's freedom (Steindl et

al., 2015). The amount of reactance is subjective to the significance of the threatened freedom and the perceived magnitude of the threat (Steindl et al., 2015). On the other hand, greater acceptance evokes reasoning, which increases approval of interventions among the public and promotes behavioural change (Laurin et al., 2012). Thus, public acceptability of a policy is critical for implementation (Bos et al., 2013). Public acceptability of interventions is an important condition for implementation as policy influencers may be hesitant to intervene without public support (Schuitema et al., 2011). The lack of evident public support may influence governments to prioritize the economy through personal and market freedoms (Clarke et al., 2016; Cullerton et al., 2016; Diepeveen et al., 2013).

Over the years, many researchers have conducted studies to evaluate the public acceptability of healthy eating policies based on policy intrusiveness level (Bos et al., 2015; Bos et al., 2013; Diepeveen et al., 2013; Dieteren et al., 2022; Lancsar et al., 2022; Mazzocchi et al., 2015). In general, there is a lack of evidence for research regarding policy influencer acceptability for healthy eating policies. In Canada, only a limited number of studies have explored policy influencer and public acceptability of policies in terms of intrusiveness level (Kongats et al., 2019; McGetrick et al., 2019). In NL, no studies have been conducted to explore the acceptability of healthy eating policies. Recently, NL introduced a Sugar-Sweetened Beverage (SSB) tax and became the first Canadian province to do so (Government of Newfoundland and Labrador & Department of Finance, n.d.). NL also published the 10-year Health Accord plan, which provides detailed guidelines to improve the health of its population through a “health-in-all-policies” approach (Health Accord NL, 2022). Considering these new developments on the policy front in NL, varying in levels of intrusiveness, it is the ideal

opportunity to explore healthy eating policy acceptability among the policy influencers and the general public.

### Objective

This study will examine and compare policy influencer and general public acceptability of healthy eating policies according to the associated level of intrusiveness in NL.

## **4.2 Methods**

This cross-sectional study used a population-based survey to understand policy influencer and general public (hereon referred to as the public) acceptance of healthy eating policies based on their level of intrusiveness in NL. This study is an adaptation of similar studies conducted in other Canadian provinces and a part of a larger funded project (which will be further discussed below). Ethics approval was obtained from the Health Research Ethics Board of Newfoundland and Labrador (HREB-NL file number 20221807).

### ***4.2.1 Participants and Sampling***

For the purpose of this study, the policy influencers were defined as individuals from any sector or industry who have the ability to influence healthy eating policy decisions, while the public was defined as constituents of the NL population. The list of policy influencers included



in this study were members of the provincial government, municipality authorities, regional health authorities, school board trustees (English and French school districts), print and digital media (local radio stations, news networks, and newspapers), Indigenous community leaders, and wellness coalitions. Although previous similar studies did not include regional health authorities, Indigenous community leaders, and wellness coalitions, they were included in this study because NL consists of several smaller communities and these leaders often understand smaller community health needs and can influence health-related policy decisions. The inclusion criteria for the public were that all individuals had to be  $\geq 19$  years old and living in NL at the time of the study.

Purposive sampling was used to collect the policy influencer sample. Policy influencer contact information was obtained from the official government directory for government officials such as municipality and provincial leaders (Government of Newfoundland and Labrador, 2022). Official organizational websites were used to gather contact information for the other policy influencers such as media personnel, regional health authorities, Indigenous community leaders, wellness coalitions, and school board trustees. Three hundred and fifty-two policy influencers (272 mayors, the Premier, 15 ministers, 12 members of regional health authorities and wellness coalitions, 20 school board members, 15 media personnel, and 17 Indigenous community leaders) were invited to participate through personalized emails containing the online survey link. The policy influencers were provided with no incentives.

Paid advertisements on Facebook and Instagram were used to recruit the public sample group through convenience sampling. Social media advertisement was chosen as it is a novel technique of sampling that has been used successfully for cross-sectional studies in NL (Shaver et al., 2019; Shi et al., 2020). For the sampling, multiple advertisements that contained a link to

the online survey were posted on the platforms targeting demographic characteristics such as age, gender, and urban-rural residence to improve the representativeness of the sample. The urban locations for this study were defined as the NL Census Metropolitan Area (CMA), which includes St. John's, Paradise, Mount Pearl, Torbay, Portugal Cove-St. Philip's, and Conception Bay South (Statistics Canada, 2012) and all other subdivisions were considered rural locations. This study strove for equal distribution of urban-rural participants to reflect the high proportion of respondents living in rural communities in NL. A sample size of 1200 was used since other versions of this study deemed this sample size sufficient for analysis (Alberta Policy Coalition for Chronic Disease Prevention, 2020; Kongats et al., 2019; Nykiforuk et al., 2014), and was used in the larger funded project from which this study has been derived, as it should also be sufficient to detect a proportion of 60% that is supportive of taxing SSBs and to detect a 5 percentage point difference in support between high and low consumers of SSBs (Select Statistical Services, 2021) (this is an objective of the larger funded project but it is out of scope of this thesis). The public participants were eligible to enter a draw to win one of five \$100 gift cards through a separate survey.

#### ***4.2.2 Data Collection***

The study used the Chronic Disease Prevention (CDP) Survey which was designed at the University of Alberta in the Policy, Location, and Access in Community Environments (PLACE) Lab to assess the knowledge, perspectives, and attitudes of policy influencers and the public regarding healthy public policies for chronic disease prevention through four modifiable yet common risk factors: diet, tobacco, alcohol, and physical activity (Kongats et al., 2019). The

survey was developed and tested in 2009 and administered in 2010, 2011, 2014, 2016, 2017, and 2019 across Canadian jurisdictions such as Alberta, Manitoba, Québec, and the Northwest Territories (Alberta Policy Coalition for Chronic Disease Prevention, 2020; Kongats et al., 2019; Nykiforuk et al., 2014). Using Likert-style and multiple-choice questions, this survey collects information on the perspectives of policy influencers and public perspectives on the determinants of chronic disease, health promotion, healthy public policy support, and responsibility for health (PLACE Research Lab, 2021a). This survey had not been administered in NL prior to this study. This study focused on unhealthy eating as a risk factor for chronic diseases and thus only examined support for policy action related to unhealthy eating.

Two versions of the survey were administered using Qualtrics software (Qualtrics, 2023), one each for the policy influencers and the public (see Appendices I and II). The policy influencer survey included 34 healthy eating policy options, while the general public survey included only 20 healthy eating policy options, to reduce respondent fatigue. The participants rated support for the policy options on a four-point Likert Scale, where 1 = “strongly support”, 2 = “somewhat support”, 3 = “somewhat oppose”, and 4 = “strongly oppose”. The options “unsure/don’t know” and “prefer not to say” were also provided. Demographic characteristic data such as age, gender, income, education, race, residence, self-assessed physical and mental health, family history of chronic disease, and political ideology were collected for both sample groups. The policy influencers were additionally asked to select their sector of work. Most demographic questions were multiple choice in nature and required the selection of only one categorical response, except for age and residence, which were text questions and required a written response (numeric and/or text).

Public data were collected between June 1 and August 23, 2022, and policy influencer data were collected between October 25, 2022, and January 17, 2023. Six reminder emails were sent out to the policy influencers to obtain the largest sample size possible and reduce non-response bias. Three reminder emails were sent to the policy influencers over the period of three weeks, followed by a two-week gap for the Christmas holidays, and then three reminder emails were sent in the following three weeks.

#### ***4.2.3 Data Analysis***

Since the data was collected online, data quality was maintained through the use of reCAPTCHA on the Qualtrics Survey Software (Qualtrics, 2023). To ensure that all participants were human and not bots, the length of time taken to complete the survey and feedback comments at the end of the survey were inspected. To understand the sample characteristics, descriptive analyses (specifically frequencies) were run for the demographic variables. To assess policy support, a binary variable was created by combining “strongly support” and “somewhat support”, and for oppose by combining “strongly oppose” and “somewhat oppose”. It was important to include “unsure/don’t know” in the descriptive analysis even though it was not part of the binary variable (support/oppose) as it still showed the knowledge and perspective of the policy influencers and the public for policies (responses ranged from 0.0% to 13.5%). Since “prefer not to say” did not provide insight into the level of policy support or opposition, it was categorized as “missing” and excluded from the analyses (responses for this ranged from 0.0% to 3.7%). The frequency of responses (support, oppose, and unsure/don’t know) was run for each policy option individually. Then, using the frequency of support and oppose responses, a Net

Favorable Percentage (NFP) was calculated for each policy option. NFPs have been previously used in similar studies to understand how agreeable a policy option is from the perspective of the policy influencers and the public (McGetrick et al., 2019). The NFP was calculated for each of the policy options as follows (Roselius, 1971):

$$\frac{(\text{Sum of "support" responses} - \text{Sum of "oppose" responses})}{\text{Total number of responses}} \times 100\%$$

The Roselius Qualitative Definition of Favourability (Roselius, 1971) was used to interpret the favourability of each policy option (refer to Table 5).

*Table 5 Roselius Qualitative Definition of Favourability Level*

<b>Net Favorable Percentage Range</b>	<b>Qualitative Definition</b>
+100.0 to +71.5	Extremely favourable
+71.4 to +42.9	Very favourable
+42.8 to +14.3	Slightly favourable
+14.2 to -14.1	Neutral
-14.2 to -42.7	Slightly unfavourable
-42.8 to -71.3	Very unfavourable
-71.4 to -100.00	Extremely unfavourable

To further understand the acceptance of healthy eating policies according to the associated level of intrusiveness, the Nuffield Council on Bioethics' Intervention Ladder (hereon referred to as the Nuffield Intervention Ladder) was used. The Nuffield Intervention Ladder is a public health framework that categorizes different types of population-level public policy action according to its level of intrusiveness (Nuffield Council on Bioethics, 2007). For this study, intrusiveness can be defined as government or policy-maker interference or control over public

decisions through more restrictive public policy. The Nuffield Intervention Ladder levels range from 1 to 7 (Nuffield Council on Bioethics, 2007):

1 = “do nothing or simply monitor the situation”

2 = “provide information”

3 = “enable choice”

4 = “guide choices through changing the default policy”

5 = “guide choices through incentives”

6 = “guide choices through disincentives”

7 = “restrict choice”

8 = “eliminate choice”

NL is largely a rural province with a distinct cultural environment from the rest of Canada (Government of Newfoundland and Labrador, 2006) as it is a partially isolated province (the Newfoundland island) that has a culture related to the Irish, English, and French cultures due to early immigration and trade history, and embodies a fishing and hunting lifestyle that its early residents led (Newfoundland and Labrador Heritage, 2000). Thus, new policy options were developed through group consultations with members of government, non-government, and non-profit organization members, at least one per topic area, and included provincially appropriate policy options such as hunting support services, agricultural subsidies for food production and distribution, and rural-urban public transportation improvement. For healthy eating policies, five individuals provided input including, one government employee, one non-profit employee, two

employees of a health agency, and one member of the public. Each policy option was coded by its level of intrusiveness based on the interpretations of the Nuffield Intervention Ladder codebook created by the PLACE Research Lab Project Team (2017) and based on consensus with the research team of this study.

## **4.3 Results**

### *4.3.1 Demographics*

Overall, 1200 complete public survey responses and 54 complete policy influencer responses were recorded and included in this study. The demographic data of the samples are presented in Table 6 below. The age distribution of the sample indicated that 81.1% of the policy influencers and 60.2% of the public were between the ages of 35 and 64. Gender identification revealed that more men in the policy influencer sample group (51.9%) participated in the survey, while more women in the public sample group (63.6%) participated in the survey. The rural-urban distribution of residence among the general public was almost equal (49.8% rural versus 50.2% urban), while 92.2% of the policy influencers were from rural areas of NL. In total, excellent/very good physical health was reported by 37.2% of the policy influencers and 33.0% of the public. Both the policy influencer and general public sample groups reported chronic illness history within their families (77.6% and 75.4% respectively). Also, 57.1% of the policy influencers who responded to the survey worked in municipal authorities. The missing data for all variables entirely ranged from 1.9% to 16.7% for the policy influencers, and from 0.3% to 9.7% for the public. The percentage of policy influencers and the public that answered

“unsure/don’t know” on the survey questions ranged from 1.9% to 14.8%, and 0.1% to 13.2% respectively.

*Table 6 Demographics of the Policy Influencer and the General Public CDP Survey Responders*

<b>Demographics</b>	<b>Policy Influencers n (%) (n = 54)</b>	<b>Public n (%) (n = 1200)</b>
<b><i>Age (Years)<sup>1</sup></i></b>		
19 - 34	1 (1.9%)	279 (23.3%)
35 - 64	43 (81.1%)	722 (60.2%)
≥65	9 (17.0%)	199 (16.6%)
<b><i>Gender Identification<sup>2</sup></i></b>		
Man	27 (51.9%)	407 (33.9%)
Woman	25 (48.1%)	763 (63.6%)
Other <sup>a</sup>	0 (0.0%)	18 (1.5%)
<b><i>Highest Education Level<sup>3</sup></i></b>		
Attended high school (and/or completed)	5 (9.8%)	84 (7.1%)
Post-secondary certificate, diploma, or undergraduate degree	31 (60.8%)	727 (61.0%)
Graduate or professional degree	15 (29.4%)	380 (31.9%)
<b><i>Yearly Household Income (Gross)<sup>4</sup></i></b>		
< \$70,000	11 (22.0%)	430 (40.2%)
≥ \$70,000	39 (78.0%)	637 (59.8%)
<b><i>Minority Racial Identification<sup>5, b</sup></i></b>		
No	41 (87.2%)	1059 (92.2%)
Yes	6 (12.8%)	89 (7.8%)
<b><i>Residence<sup>6, c</sup></i></b>		
Rural	47 (92.2%)	594 (49.8%)
Urban	4 (7.8%)	598 (50.2%)
<i>Table 6 Continues Below</i>		



<b><i>Self-Reported Physical Health<sup>7</sup></i></b>		
Excellent	2 (3.9%)	71 (6.0%)
Very good	17 (33.3%)	325 (27.2%)
Good	24 (47.1%)	415 (34.7%)
Fair	7 (13.7%)	264 (22.1%)
Poor	1 (2.0%)	120 (10.0%)
<b><i>Self-Reported Mental Health<sup>8</sup></i></b>		
Excellent	10 (19.6%)	107 (9.0%)
Very good	24 (47.0%)	336 (28.2%)
Good	11 (21.6%)	381 (32.0%)
Fair	6 (11.8%)	258 (21.6%)
Poor	0 (0.0%)	110 (9.2%)
<b><i>History of Family Chronic Illness<sup>9</sup></i></b>		
No	11(22.4%)	285 (24.6%)
Yes	38 (77.6%)	873 (75.4%)
<b><i>Political Ideology<sup>10</sup></i></b>		
Liberal	11 (29.7%)	470 (48.6%)
Neutral	23 (62.2%)	409 (42.3%)
Conservative	3 (8.1%)	88 (9.1%)
<b><i>Sectors of Work<sup>11</sup></i></b>		
Community non-health organization	2 (4.1%)	-
Municipal authorities	28 (57.1%)	-
Provincial government	6 (12.2%)	-
School or School board	4 (8.2%)	-
Media	0 (0.0%)	-
Community health organization	0 (0.0%)	-
Other (specify) <sup>d</sup>	9 (18.4%)	-

**Missing Public n (%)**: <sup>2</sup>12 (1.0%), <sup>3</sup>8 (0.7%), <sup>4</sup>116 (9.7%), <sup>5</sup>24 (2.0%), <sup>6</sup>8 (0.7%), <sup>8</sup>3 (0.3%), <sup>9</sup>11 (0.9%), <sup>10</sup>75 (6.3%)

**Missing PI n (%)**: <sup>1</sup>1 (1.9%), <sup>2</sup>2 (3.7%), <sup>3</sup>3 (5.6%), <sup>4</sup>4 (7.4%), <sup>5</sup>5 (9.3%), <sup>6</sup>3 (5.6%), <sup>7</sup>1 (1.9%), <sup>8</sup>1 (1.9%), <sup>9</sup>4 (7.4%), <sup>10</sup>9 (16.7%), <sup>11</sup>5 (9.3)

**“Unsure/Don’t know” Public Responses n (%)**: <sup>3</sup>1 (0.1%), <sup>4</sup>17 (1.4%), <sup>5</sup>28 (2.3%), <sup>7</sup>5 (0.4%), <sup>8</sup>5 (0.4%), <sup>9</sup>31 (2.6%), <sup>10</sup>158 (13.2%)

**“Unsure/Don’t know” Policy Influencer Responses n (%)**: <sup>5</sup>2 (3.7%), <sup>9</sup>1 (1.9%), <sup>10</sup>8 (14.8%)

<sup>a</sup>Any gender that the responder identifies as, for example, gender diverse or non-binary.

<sup>b</sup>If the responder identifies as a person of a minority race such as Asian, Hispanic, Black, or Native, they would check “yes”.

<sup>c</sup>The Census Metropolitan Area including St. John’s, Paradise, Mount Pearl, Torbay, and Conception Bay South are considered urban areas, while all other subdivisions are considered rural.

<sup>d</sup>If the sector that the responder works in was not part of the given options, they had the option to specify it in a textbox. Responses received included volunteers, Indigenous organizations, the private sector, and regional authorities.

#### *4.3.2 Healthy Eating Policies Categorized by the Nuffield Intervention Ladder*

The 34 policy options ranked by the policy influencers and the 20 policy options ranked by the public and categorized by the Nuffield Intervention Ladder are presented in Table 7 below. Among the policy options provided to the policy influencers, level 3 “enable choice” was the category with the most policy options (n=8 policies, 23.5%), while level 6 “guide choices through disincentives” had the least policy options (n=2 policies, 5.9%). Among the policy options provided to the public, level 3 “enable choice” had the most policy options (n=6 policies, 30.0%), while level 5 “guide choices through incentives” and level 6 “guide choices through disincentives” had the least policy options (n=1 policy, 5.0% each). None of the policy options were categorized as level 1 “do nothing or simply monitor the current situation”.

#### *4.3.3 Favourability in Relation to the Nuffield Intervention Ladder*

Varying favourability levels were noted for the policy options within each Nuffield Intervention Ladder level between the policy influencers and the public (refer to Table 8 below). However, level 2 “provide information” and level 5 “guide choices through incentives” were the Nuffield Intervention Ladder levels that had the highest favourability among the policy influencers and the public, where 100.0% of the policy options were rated as “extremely favourable”. Also, all the level 3 “enable choice” policy options among the public group were rated “extremely favourable”. High favourability levels (NFP  $\geq 42.9$ ) were observed in level 3 “enable choice”, level 4 “guide choices through changing the default policy”, and level 8 “eliminate choice” policy options in both groups. The lowest favourability levels among both groups were noticed in level 6 “guide choices through disincentives” and level 7 “restrict choice”

policy options (NFP  $\leq 14.3$ , except for one “very favourable” policy option among the policy influencers). There were no policy options that were rated “very unfavourable” and “extremely unfavourable” among both groups. Additionally, no policy options were rated “slightly unfavourable” among the public group.

Figure 5 below illustrates the favourability levels per policy option arranged according to the Nuffield Intervention Ladder levels and compares it between the policy influencers and the public. Similar levels of favourability were observed between the policy influencers and the public. A general decline in favourability levels among the policy influencers and the public was observed as the Nuffield Intervention Ladder level increased, that is to say, the level of intrusiveness increased. However, the policy options in level 8 “eliminate choice”, which is the most intrusive level, were rated highly favorably (NFP  $\geq 42.9$ ). The policy influencers were the most favourable of the “implement a universal school food program that provides a free or low-cost healthy meal to every student every day” policy option (level 4 “guide choices through changing the default policy”, NFP=100.0 and “extremely favourable”). The public was most favourable of the “ensure minimum wage is adequate to cover basic needs, including a healthy, culturally appropriate diet” policy option (level 4 “guide choices through changing the default policy”, NFP=93.5 and “extremely favourable”). The least favoured policy option among the policy influencers and the public was “restrict or ban new fast food restaurant drive-through facilities” (level 7 “restrict choice”, NFP=-37.7 and “slightly unfavourable” and -7.0 and “neutral”, respectively).

*Table 7 Net Favorable Percentage (NFP) for Healthy Eating Policies among the Policy Influencers and the Public, Categorized by the Nuffield Intervention Ladder and Interpreted using Roselius Qualitative Definition of Favourability Level*

		<b>Policy Influencers (n=54)</b>		<b>Public (n=1200)</b>	
<b>Policy Option</b>	<b>Nuffield Intervention Ladder</b>	<b>NFP</b>	<b>Roselius Qualitative Definition of Favourability Level</b>	<b>NFP</b>	<b>Roselius Qualitative Definition of Favourability Level</b>
Educate the public on the sugar content of beverages and impacts of consuming sugar	2 – Provide information	98.1	Extremely favourable	91.4 <sup>7</sup>	Extremely favourable
Mandate comprehensive nutrition curriculum in schools	2 – Provide information	90.7	Extremely favourable	93.1 <sup>8</sup>	Extremely favourable
Mandate government-led logos or symbols in grocery stores to help identify healthy foods and beverages	2 – Provide information	84.6 <sup>1</sup>	Extremely favourable	-	-
Mandate nutrition information on all restaurant menus	2 – Provide information	83.3	Extremely favourable	76.7 <sup>9</sup>	Extremely favourable
Mandate government-led front of package nutrition labelling on all processed foods and beverages	2 – Provide information	81.4	Extremely favourable	-	-
Fund government media campaigns that encourage healthy food and beverage choices	2 – Provide information	81.2 <sup>2</sup>	Extremely favourable	-	-
<i>Table 7 Continues Below</i>					

Provide free fruit and vegetable subscription programs for schools and childcare settings	3 – Enable choice	96.2	Extremely favourable	93.0	Extremely favourable
Mandate policies that support families and people who breastfeed ensuring that facilities are available in all public buildings	3 – Enable choice	96.2	Extremely favourable	91.8 <sup>10</sup>	Extremely favourable
Improve active transportation infrastructure (e.g. sidewalks, bike paths) to increase the accessibility of grocery stores	3 – Enable choice	94.4	Extremely favourable	-	-
Improve urban public transportation to increase the accessibility of grocery stores	3 – Enable choice	90.5 <sup>3</sup>	Extremely favourable	88.0 <sup>11</sup>	Extremely favourable
Mandate provision of healthy foods and beverages in all public recreation facilities	3 – Enable choice	87.0	Extremely favourable	-	-
Improve rural public transportations to increase the accessibility of grocery stores	3 – Enable choice	83.3	Extremely favourable	83.8 <sup>12</sup>	Extremely favourable
Enact zoning to allow home gardens and animal husbandry (e.g., chicken coops)	3 – Enable choice	70.3	Very favourable	85.4 <sup>13</sup>	Extremely favourable

*Table 7 Continues Below*

Mandate provision of healthy foods and beverages in all public buildings	3 – Enable choice	64.8	Very favourable	76.0 <sup>14</sup>	Extremely favourable
Implement a universal school food program that provides a free or low-cost healthy meal to every student every day	4 - Guide choices through changing the default policy	100.0	Extremely favourable	91.0 <sup>15</sup>	Extremely favourable
Ensure minimum wage is adequate to cover basic needs, including a healthy, culturally appropriate diet	4 - Guide choices through changing the default policy	96.2 <sup>4</sup>	Extremely favourable	93.5 <sup>16</sup>	Extremely favourable
Introduce guaranteed basic income adequate to cover basic needs, including a healthy, culturally appropriate diet	4 - Guide choices through changing the default policy	87.0	Extremely favourable	-	-
Mandate healthy foods and beverages checkouts (e.g., Fruit stand instead of candy "powerwalls")	4 - Guide choices through changing the default policy	81.5	Extremely favourable	-	-
Ensure income support rates are adequate to cover basic needs, including a healthy, culturally appropriate diet	4 - Guide choices through changing the default policy	81.4	Extremely favourable	90.4 <sup>17</sup>	Extremely favourable
<i>Table 7 Continues Below</i>					

Implement hunting support services that allow supplies (e.g., ammo, gas) to be fundable expenses for programs investing in food access	4 - Guide choices through changing the default policy	68.5	Very favourable	50.4 <sup>18</sup>	Very favourable
Financially incentivize the production and distribution of healthy foods and beverages through agricultural input subsidies, or programs and funds for farmers	5 - Guide choices through incentives	94.4	Extremely favourable	-	-
Remove sales taxes on pre-cut vegetables and fruits in grocery stores	5 - Guide choices through incentives	94.4	Extremely favourable	-	-
Create incentives to foster local food and beverage producers to provide healthy foods in settings where food is provided such as schools, childcare, hospitals, and long term care facilities	5 - Guide choices through incentives	92.6	Extremely favourable	-	-
Reduce the price of healthy foods for consumers by subsidizing staples, such as rice or bread	5 - Guide choices through incentives	83.3	Extremely favourable	88.1 <sup>19</sup>	Extremely favourable

*Table 7 Continues Below*

Eliminate all forms of subsidies that make unhealthy food cheaper than healthy food	6 - Guide choice through disincentives	50.0	Very favourable	-	-
Tax sugary drinks including energy drinks on top of sales taxes	6 - Guide choice through disincentives	1.9	Neutral	31.5 <sup>20</sup>	Slightly favourable
Regulate portion sizes in food outlets	7 - Restrict choice	27.8	Slightly favourable	-	-
Restrict sugary drink sales in all public buildings	7 - Restrict choice	27.8	Slightly favourable	35.0 <sup>21</sup>	Slightly favourable
Restrict availability of unhealthy foods near schools through zoning	7 - Restrict choice	27.8	Slightly favourable	-	-
Enact zoning that limits the number of fast food restaurants per region	7 - Restrict choice	15.1 <sup>5</sup>	Slightly favourable	23.3 <sup>22</sup>	Slightly favourable
Restrict or ban new fast food restaurant drive-through facilities	7 - Restrict choice	-37.7 <sup>6</sup>	Slightly unfavourable	-7.0 <sup>23</sup>	Neutral
Prohibit advertising and promotion of unhealthy foods and beverages to children and youth	8 - Eliminate choice	-	-	68.4 <sup>24</sup>	Very favourable
Prohibit advertising and promotion of unhealthy foods and beverages to children (<13 years old)	8 - Eliminate choice	68.5	Very favourable	-	-
<i>Table 7 Continues Below</i>					



Ban sugary drinks in children's settings (schools childcare, recreation)	8 - Eliminate choice	63.0	Very favourable	68.1 <sup>25</sup>	Very favourable
Prohibit advertising and promotion of unhealthy foods and beverages to youth (13 - 17 years old)	8 - Eliminate choice	55.5	Very favourable	-	-

**Missing n (%):** <sup>1</sup>2 (3.7%), <sup>2</sup>1 (1.9%), <sup>3</sup>1 (1.9%), <sup>4</sup>1 (1.9%), <sup>5</sup>1 (1.9%), <sup>6</sup>1 (1.9%), <sup>7</sup>3 (0.3%), <sup>8</sup>2 (0.2%), <sup>9</sup>2 (0.2%), <sup>10</sup>1 (0.1%), <sup>11</sup>3 (0.3%), <sup>12</sup>3 (0.3%), <sup>13</sup>3 (0.3%), <sup>14</sup>4 (0.3%), <sup>15</sup>1 (0.1%), <sup>16</sup>2 (0.2%), <sup>17</sup>5 (0.4%), <sup>18</sup>4 (0.3%), <sup>19</sup>4 (0.3%), <sup>20</sup>2 (0.2%), <sup>21</sup>3 (0.3%), <sup>22</sup>4 (0.3%), <sup>23</sup>5 (0.4%), <sup>24</sup>4 (0.3%), <sup>25</sup>1 (0.1%)

*Table 8 The Number and Proportion of Policies by the Nuffield Intervention Ladder Levels, Grouped by the Roselius Qualitative Definition of Favourability Levels, for Policy Influencers and the Public*

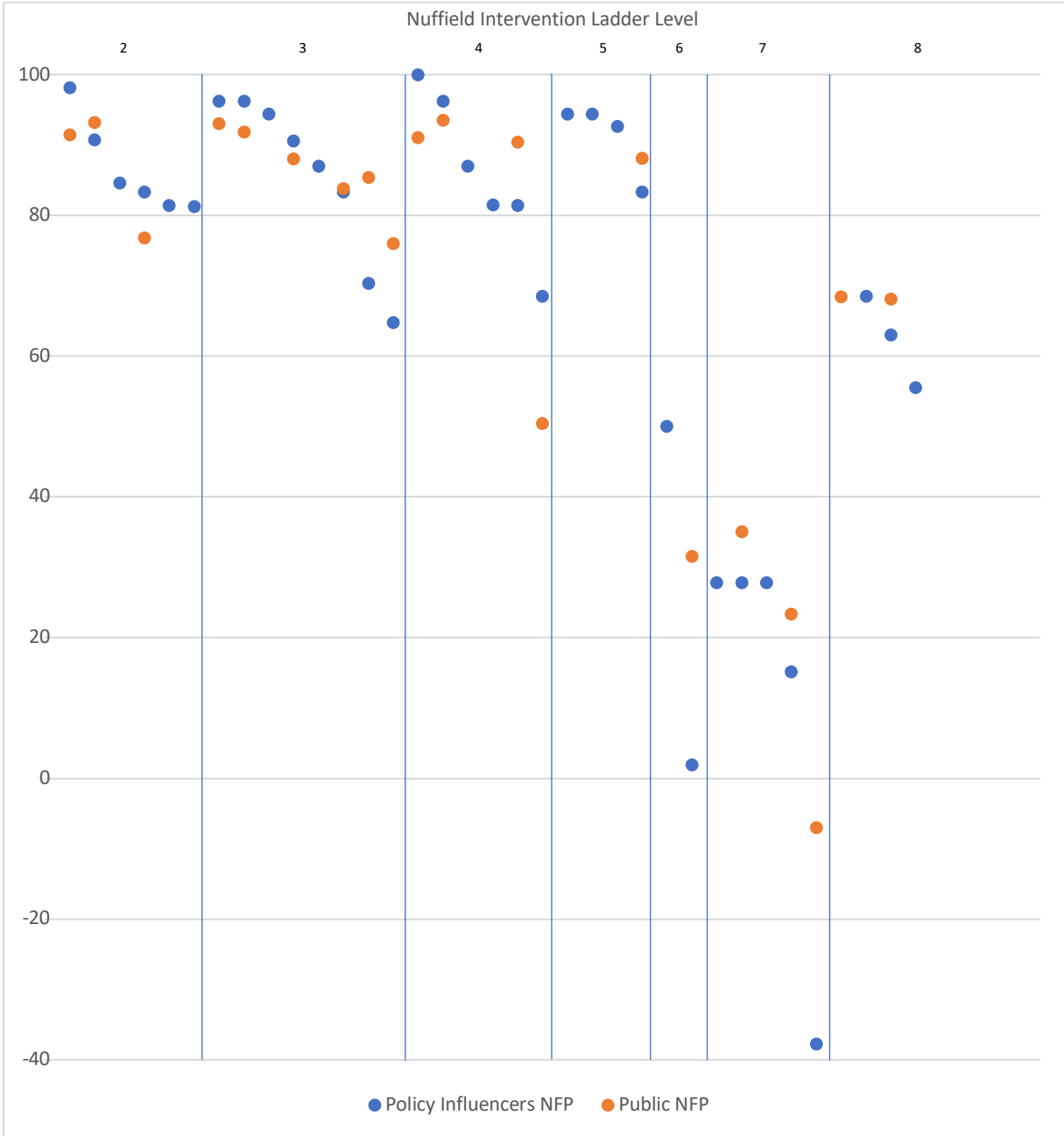
<b>Nuffield Intervention Ladder Level</b>	<b>Group</b>	<b>Extremely favourable</b>	<b>Very favourable</b>	<b>Slightly favourable</b>	<b>Neutral favourable</b>	<b>Slightly favourable</b>
<b>2 – Provide information</b>	PI (n=6 policies)	100.0%	-	-	-	-
	Public (n=3 policies)	100.0%	-	-	-	-
<b>3 – Enable choice</b>	PI (n=8 policies)	75.0%	25.0%	-	-	-
	Public (n=6 policies)	100.0%	-	-	-	-
<b>4 – Guide choices through changing the default policy</b>	PI (n=6 policies)	83.3%	16.7%	-	-	-
	Public (n=4 policies)	75.0%	25.0%	-	-	-
<b>5 – Guide choices through incentives</b>	PI (n=4 policies)	100.0%	-	-	-	-
	Public (n=1 policy)	100.0%	-	-	-	-
<b>6 – Guide choices through disincentives</b>	PI (n=2 policies)	-	50.0%	-	50.0%	-
	Public (n=1 policy)	-	-	100.0%	-	-
<b>7 – Restrict choice</b>	PI (n=5 policies)	-	-	80.0%	-	20.0%
	Public (n=3 policies)	-	-	66.7%	33.3%	-

*Table 8 Continues Below*

<b>8 – Eliminate choice</b>	PI (n=3 policies)	-	100.0%	-	-	-
	Public (n=2 policies)	-	100.0%	-	-	-

\* “Very unfavourable” and “extremely unfavourable” were excluded from this table since no policy options were rated as such.

Note: PI = Policy Influencer



Note: NFP= Net Favourable Percentage; these policies correspond with the arrangement of the policies in Table 7.

Figure 5 Favourability Levels of the Policy Influencers and the Public for the Policy Options, Arranged in Ascending Order of the Nuffield Intervention Ladder Levels

#### 4.4 Discussion

This study examined and compared policy influencer and general public acceptability of healthy eating policies according to the associated level of intrusiveness in NL. The findings of this study demonstrated that overall, both the policy influencers and the public were highly favourable to the policy options that were lower on the Nuffield Intervention Ladder, meaning that both groups were more accepting of less intrusive policy options. Policy options in the level 2 “provide information” and level 5 “guide choices through incentives” categories of the Nuffield Intervention Ladder were the most accepted among both groups, while those in level 6 “guide choices through disincentives” and level 7 “restrict choice” were the least accepted. In general, the results showed that policy acceptability decreased as the intrusiveness level increased. Despite this, level 5 “guide choices through incentives” and level 8 “eliminate choice” policy options were still highly accepted by both groups. Similar policy acceptability was observed between the two groups.

Comparable patterns of policy acceptability among policy influencers and the public were noted in other healthy eating policy support studies as well (Diepeveen et al, 2013; Hilbert et al., 2007; Kongats et al., 2019). These studies depicted high acceptability of less intrusive healthy eating policies, where information provision policies were the most accepted while regulation and taxation policies were least accepted (Diepeveen et al, 2013; Hilbert et al., 2007; Kongats et al., 2019). In the Canadian context specifically, a healthy eating policy support study conducted in Alberta and Québec showed high support for level 2 “provide information” and level 3 “enable choice” policies, and lower support for level 7 “restrict choice” policies (Kongats et al., 2019). Similar to the Alberta and Québec policy influencers and public, the NL policy influencers and the public also demonstrated high support for level 2 and 3 policies and lower

support for level 7 policies, however, the NL sample also showed high support for level 5 “guide choices through incentives” policy options.

To explain, Diepeveen et al. (2013) elaborated that individuals are more hesitant to support healthy public policies that are believed to impede their autonomy for decision-making. Policy influencers may also be doubtful of supporting restrictive policy options, and want to avoid appearing authoritarian and restricting the public's freedom (Diepeveen et al., 2013).

Furthermore, Canada upholds individualism as its principal cultural characteristic, meaning that Canadians prioritize themselves and their immediate families over the wider community (Hofstede, 2001; Hofstede Insights, 2022; Pettigrew et al., 2022). With less intrusive policy options, individuals can decide what they believe is right for themselves and their families, while with more intrusive policy options, this decision-making autonomy is not possible for individuals since the decision is made for the betterment of the community. These findings could explain why level 2 “provide information” policy options, which are extremely low on the intrusiveness level, are more supported than the highly intrusive level 7 “restrict choice” policy options.

Additionally, indulgence is another cultural characteristic of Canada; indulgence involves the prioritization of gratification over restraint (Hofstede, 2001; Hofstede Insights, 2022; Pettigrew et al., 2022). The policy options categorized as level 5 “guide choices through incentives” in this study involve receiving some form of financial incentive for choosing to either eat healthily or produce/distribute healthy food in the province, possibly resulting in gratification among the policy influencers and the general public. This may explain why level 5 “guide choices through incentives” policy options were more supported compared to those in the level 6 “guide choices through disincentives” category.

The higher support for the highly intrusive level 8 “eliminate choice” category could be explained by the fact that the policy options involve marketing unhealthy foods to children. Food marketing, including when present in children’s everyday settings (such as schools), impacts the food behaviours, knowledge, and health of children between the ages of 2 to 17 years (Norman et al., 2016). In 2016, the *Child Health Protection Act (Bill S-228)* was introduced to the Senate in Canada, to reduce the effects of unhealthy food marketing to children, and a draft *Guide to the Application of the Child Health Protection Act (Bill S-228)* was published in December 2018 for stakeholder consultation (Mulligan et al., 2021). However, due to the dissolution of the parliament before the federal re-election, the bill died despite strong parliamentary and public support (Mulligan et al., 2021). While no legal measures currently exist at the federal level in Canada to reduce unhealthy food marketing to children except for the proposed *Child Health Protection Act Bill C-252* (Parliament of Canada, n.d.), Québec remains the only Canadian province to ban all commercial advertising to children under the age of 13 since 1980 (Elliott, 2017). The ban includes all forms of commercial advertisements to children, such as television, radio, internet, cell phones, promotional items, newspapers, and magazines (Elliott, 2017). Hence, the NL policy influencers and the public could be aware of the harmful effects of unhealthy food marketing to children due to these past policy actions and may be inclined to protect the health of the NL children despite the intrusive policy options.

The high acceptability of the policy options “implement a universal school food program that provides a free or low-cost healthy meal to every student every day” and “ensure minimum wage is adequate to cover basic needs, including a healthy, culturally appropriate diet” is reflected in the *Food-EPI NL Results*. The *Food-EPI NL Results* clarify that the NL Government is highly supportive of nutrition-related policy implementation in schools (Vanderlee et al.,

2017). It is also highlighted that a basic income is necessary for supporting a healthy food environment within the province, thus it is recommended as one of the most important and achievable priority policy action areas for NL (Vanderlee et al., 2017). Therefore, the results of this study align with *Food-EPI NL Results* and elucidate the policy options that have the support and require prompt action in the province.

#### **4.5 Strengths, Limitations, and Recommendations**

It is important to recognize the limitations of this study. The Nuffield Intervention Ladder has been faulted for assuming that freedom equates to autonomy, and autonomy equates to non-interference (Griffiths & West, 2015). Griffiths and West (2015) argue that the Nuffield Intervention Ladder promotes the idea that effective public health intervention requires a loss of autonomy. Thus, they propose a “balanced intervention ladder” based on positive autonomy where interventions can also increase autonomy. Despite this, the Nuffield Intervention Ladder has been widely used by researchers over the years (Diepeveen et al., 2013; Haynes et al., 2017; Hillier-Brown et al., 2016; McGetrick et al., 2019; Stok et al., 2015), to understand the different factors that influence policy acceptability (Nuffield Council on Bioethics, 2007). The use of the Nuffield Intervention Ladder was ideal for the scope of this study as the existing research allowed for the interpretation of the results in a broader context. The results and interpretation of this study are aligned with other similar literature.

Another limitation is the design and readability of the Chronic Disease Prevention Survey. The survey was not developed considering levels of intrusiveness, thus limiting the number of policies per ladder category (especially for the public sample). As a result, the acceptability of



the policies per ladder category may have been underestimated or overestimated. The survey was only available in English, thus non-English speakers have been excluded from this study, possibly resulting in incomplete findings. While the policy influencer response rate was 15.3% for this study, which is acceptable since previous iterations of this study had response rates ranging from 9.4% to 14.7% (PLACE Research Lab, 2021b), it is still fairly low. This may have resulted in bias, where only the high support from the policy influencers within selective sectors may have overestimated the overall policy influencer support. If policy influencer support is lower than depicted in this study, this may pose a barrier to policy change in the province. The use of social media for recruitment may have excluded certain important groups of the population who do not have access to technology or adequate knowledge of its usage, such as those who work or live offshore, refugees and immigrants, which may have affected the accuracy of the results. Although the survey language was simplified during the planning process of this study, the level of reading of some of the policies on the survey may have been advanced for some readers, nonetheless. For this reason, the “don’t know” option was available for participants to select. While the “don’t know” responses were accounted for during the analysis, this may have further excluded the perspectives of support of those who are less educated or are not fluent in English.

The strength of this study is its use of an established research tool. The Chronic Disease Prevention Survey has already been successfully used by other researchers in Canada (Alberta Policy Coalition for Chronic Disease Prevention, 2020; Kongats et al., 2019; McGetrick et al., 2019; Nykiforuk et al., 2014), and therefore allows for comparability of results across various Canadian provinces and interpretation in the Canadian context. Although not analyzed in this study, the breadth of policy areas included in the survey (healthy eating, physical activity,

tobacco, and alcohol) allows for comparison of healthy eating policy support to any of the other policy support areas, to understand the strength of healthy eating policy support relative to the others. The adaptation of the survey to the NL context was also advantageous. Before this study, a gap in the literature existed regarding policy support in NL. The adapted version of the Chronic Disease Prevention Survey has assisted in the generation of baseline healthy eating policy support evidence for the province, partially filling the literature gap regarding policy support in NL. This novel evidence is specific to the NL context due to the survey adaptation and may be of ample use to fellow researchers and health advocates in the province.

Further research is suggested to analyze the effectiveness of healthy eating policies based on intrusiveness levels to understand the relationship between policy support and actual policy effectiveness. For future reiterations of this study, it is recommended that the Chronic Disease Prevention Survey is edited to include sufficient and comparable items across levels of the Nuffield Intervention Ladder to support a more comprehensive analysis of intrusiveness and support. Furthermore, research comparing healthy eating policy support to other areas assessed in the Chronic Disease Prevention Policy Survey such as tobacco, alcohol, and physical activity policy support is encouraged in NL to generate more insightful policy support evidence, to be used by health advocates and decision-makers. Lastly, considering the movement towards a healthier province through the guidance of the *Health Accord NL* “Calls to Action” (Health Accord NL, 2022), it is also recommended that this research be repeated in the future to observe the changing pattern of healthy eating policy support over time in NL.

## 4.6 Conclusion

Healthy food policies are the building blocks of a healthy food environment; however, policy acceptability plays a key role in the implementation of policy action (Diepeveen et al., 2013; Vanderlee et al., 2017). Policy influencer and public acceptability is essential for effective policy action (Diepeveen et al., 2013). The results of this study demonstrated high policy influencer and public acceptability of less intrusive healthy eating policy options compared to the highly intrusive policy options. Although the general trend among both groups showed a lowering of acceptability as the intrusiveness increased, intrusiveness levels such as level 5 “guide choices through incentives” and level 8 “eliminate choice” were still widely accepted. Despite its limitations, this is the first of its kind study to be conducted in NL, partially bridging the existing literature gap regarding policy support in the province. Researchers and health advocates are encouraged to continue healthy eating policy support research in the province, for more insightful evidence collection and appropriate course of action implementation.

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## **Chapter 5: Discussion and Conclusion**

## Chapter 5: Discussion and Conclusion

### 5.1 Summary

The research presented in this thesis focused on the significance of policy and policy support among the policy influencers and the general public (hereon referred to as the public) for the improvement of food environments and ultimately diets, for chronic disease prevention in Newfoundland and Labrador (NL), Canada.

The aim of Study 1 (Chapter 3) was to assess and compare policy influencer and public support for healthy eating policies in NL. It used a previously developed and used Chronic Disease Prevention Survey (Alberta Policy Coalition for Chronic Disease Prevention, 2020), adapted for NL, to measure policy influencer and public support data for healthy eating policies. Policy support was analyzed using Pearson's  $\chi^2$  test at the  $\alpha=0.05$  significance level between the policy influencers and the public, and the policy options were categorized by the policy areas found in the *Food-EPI Framework* (Vanderlee et al., 2017a). Upon the analysis of 21 healthy eating policies, very high support was observed among the two groups. The findings further demonstrated strong policy influencer and public agreement in support of the policies, with only three policies differing statistically in policy influencer and public support. The findings also showed greater public support than policy influencer support for more policies, including the three statistically differing policies (“tax sugary drinks including energy drinks on top of sales taxes”, “enact zoning to allow home gardens and animal husbandry (e.g., chicken coops)”, and “restrict or ban new fast food restaurant drive-through facilities”). Other findings and discussion of the study demonstrated: i) how the liberal political ideology of the policy influencers and the public may have contributed to the high policy support; ii) strong support for policies relating to

Sugar-Sweetened Beverages (SSBs) and children; and iii) “food provision” is the *Food-EPI Framework* policy area that is most supported by the policy influencers and the public, and the other policy areas require further attention.

In Study 2 (Chapter 4), the aim was to examine and compare policy influencer and public acceptability of healthy eating policies according to the associated level of intrusiveness in NL. The Chronic Disease Prevention Survey (Alberta Policy Coalition for Chronic Disease Prevention, 2020), which was adapted for the NL context, was used to collect policy support data from NL policy influencers and the public. To analyze the data for acceptability, the Net Favourable Percentage (NFP) was calculated for 35 policies, and the Roselius Qualitative Definition of Favourability Levels was used to interpret the NFP favourability levels per policy (McGetrick et al., 2019; Roselius, 1971). The policies were categorized by the Nuffield Council on Bioethics’ Intervention Ladder on a scale of one to eight, based on each policy’s level of intrusiveness (Nuffield Council on Bioethics, 2007). The findings demonstrated high acceptability among the policy influencers and the public for the less intrusive healthy eating policies. A noticeable pattern of decline in policy acceptability with an increase in policy intrusiveness was displayed among the policy influencers and the public. However, this pattern was not noted among the policies within two higher intrusiveness categories: level 5 “guide choices through incentives” and level 8 “eliminate choice”. Further findings and discussion illustrated that: i) this study reflects the pattern of policy acceptability relative to the level of intrusiveness observed in other similar studies; ii) cultural characteristics of Canada as a society may have implications on policy acceptability based on the level of intrusiveness; iii) more intrusive policies may be highly accepted if they concern children; and iv) basic income has to be addressed as a priority area for healthy eating in NL.

## 5.2 Synthesis and Contributions to Science

This thesis makes notable contributions to public health sciences through its assessment of public policies and support from policy influencers and the public in NL, Canada. Three major contributions are: (i) an analysis of responsibility for health through policy support; (ii) patterns in policy support focusing on income solutions; and (iii) highlighting a mismatch between policies that are supported and policies that are adopted. These will be discussed below.

An underlying theme in this thesis is the responsibility for the health of the NL population. Whether the responsibility for health falls upon individuals (the public) or society (including the government, policymakers, the food industry, and the healthcare system in general) has been debated in several studies (Lake et al., 2022; Resnik, 2007; Voigt, 2013). While individuals should take accountability for their health, it is not fair to hold them fully responsible for it (Resnik, 2007) and society should be held responsible for health promotion and disease prevention (Cappelen & Norheim, 2005; Wikler, 2002). Previous research on society's responsibility for health has focused on society's obligation to provide access to healthcare (Daniels, 2001). Although providing access to healthcare is a societal obligation, recent literature demonstrates other strategies such as health education, urban planning, policy research, and food safety, through which society can ensure health promotion and disease prevention (Daniels et al., 2001; Resnik & Roman, 2007; Robert & Smith, 2004). Research also shows that disease prevention is more cost-effective and beneficial for health than treatment, avoiding the unnecessary burden of disease (Kass, 2001). NL has one of the highest rates of chronic disease in Canada (63% of residents over the age of 12 years suffer from at least one chronic disease), leading to a 232% increase in healthcare spending in NL since 1981, and the highest per capita healthcare spending in Canada, averaging CAN\$ 6,022 in 2019 (Health Accord NL, 2022; Public

Health Agency of Canada, 2021). Therefore, there is a need to shift the focus from simply disease treatment to disease prevention as well in NL.

While individuals can be responsible and take care of their health, they cannot promote health at the population level, thus government action is required (Resnik, 2007). However, the action should empower individuals to take responsibility for their health rather than make them passive and dependent on society (Resnik, 2007). The findings of the studies included in this thesis show that the highest support and acceptability are noted among the policies that enable individuals to make healthy choices through health knowledge and access to healthy food options, rather than the more intrusive policies. Therefore, the concept of shared responsibility for health could be established in the province through policy implementation of less intrusive policies that were highly supported, such as “educate the public on the sugar content of beverages and impacts of consuming sugar” or “provide free fruit and vegetable subscription programs for schools and childcare settings”. The shared responsibility for health between the NL individuals and society may improve health decisions and the overall health of the individuals and reduce the burden on the healthcare system.

Alongside the government, society, and the public, the food industry is known to play a key role in influencing the food environment (Swinburn et al., 2013). The food industry has lobby power which greatly influences government decisions, especially regarding fiscal and regulation policies (Hastings, 2012). Numerous existing food and beverage corporations manufacture and market food which are abundant in sugar, sodium, and fat, and contribute vastly to obesity, type 2 diabetes, and other chronic diseases (Moss, 2013; Nestle, 2015; Stuckler & Nestle, 2012). On the other hand, some food corporations are actively producing healthier products (Tempels et al., 2017), while others are partaking in supporting programs that promote

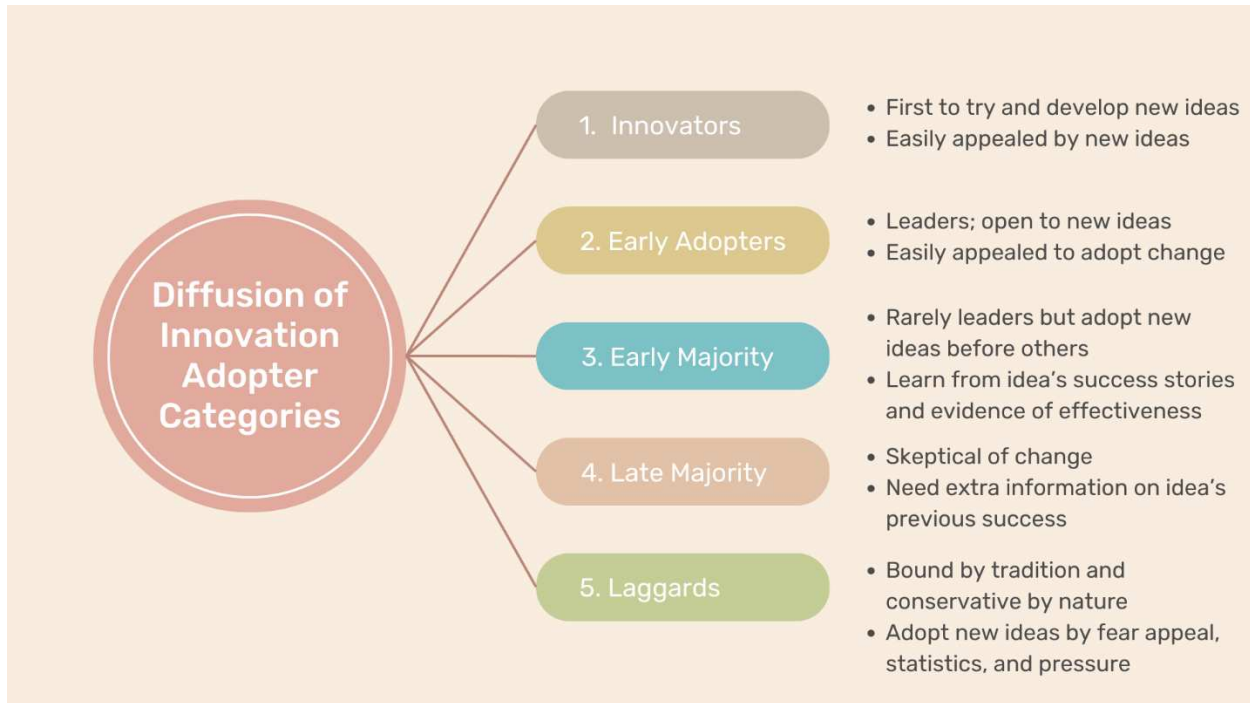


healthier and active lifestyles (Nestlé, 2014; Unilever, 2023). However, this health support is still viewed with skepticism since the ultimate motive of food corporations in a competitive market is to make a profit, even though it is at the expense of consumer health (Tempels et al., 2017). Thus, for healthy eating policy support and food environment-related studies such as those presented in this thesis, the inclusion of the perceptions of the food industry is significant. It is evident that the policy influencers (of whom the majority were part of the provincial government) and the public are keen to drive change in the NL food environment, however, the level of support for the healthy eating policies among the food industry remains unknown. This may pose a barrier to policy action, especially if the food industry shows a lack of support for healthy eating policy change in the province.

Various social and economic factors such as education, income, gender, culture, and race, among many others, impact individual and population health (Government of Canada, 2023). With the establishment of the *Health Accord NL*, there is an increased focus on understanding the social determinants of health in NL to improve the health of its population (Health Accord NL, 2022). Although the studies presented in this thesis did not assess the impact of the social determinants of health on healthy eating policy support, the findings suggested finance as a factor for support. The policies related to income support, minimum wage, healthy food subsidies, and financial incentives were all highly supported by both the policy influencers and the public. This high support illuminates that the policy influencers and the public are aware of the possible financial barriers to eating healthy in NL. The affordability of nutritious food is a growing concern in Canada (Taylor et al., 2023). Global events such as COVID-19, the Ukraine war, supply chain challenges, and climate change have resulted in a steep increase in food prices around the world and in Canada, threatening food insecurity among populations (Taylor et al.,

2023). Though the minimum wage has been steadily increasing in NL, reaching CAN\$15.00 as of October 2023 from CAN\$11.40 in April 2020 (Government of Newfoundland and Labrador, 2022; Government of Newfoundland and Labrador, 2023a), it may still be inadequate to afford nutritious food. According to an analysis of the affordability of the *2019 Canada Food Guide*, an adult female and adult male would have to spend nearly CAN\$7.10 daily and CAN\$8.10 daily respectively, to eat healthy (Taylor et al., 2023). Considering other costs of living such as housing and transportation and the cost of managing a family, or other factors (such as disabilities and old age) that may not enable individuals to work, it may be a challenge for the NL population to afford nutritious food and follow healthy eating guidelines. Hence, income as a barrier to healthy eating in NL should be further studied, and the finance-related policies that received high support in the studies require closer attention.

Considering the high support for healthy eating policies among the policy influencers and the public, the question of why there is no specific plan for healthy eating policy action in NL arises. Theories such as the *Diffusion of Innovation Theory* and *Policy Diffusion Theory* may explain this phenomenon. The *Diffusion of Innovation Theory* explains how ideas diffuse over time and are adopted by a population or social system (Kaminski, 2011; LaMorte, 2022). New ideas are adopted by populations differently, and Figure 6 below shows the five adopter categories and how each category adopts the new idea.



*Figure 6 A Diagram Illustrating the Diffusion of Innovation Adopter Categories and Their Characteristics*

This work “A Diagram Illustrating the Diffusion of Innovation Adopter Categories and Their Characteristics” is created by Ellis Suhel Lakhani using information sourced from Kaminski (2011) and LaMorte (2022). This work is licensed under [CC BY-NC 4.0 DEED](https://creativecommons.org/licenses/by-nc/4.0/) (free to share and adapt, under the terms of correct attribution and non-commercial use).

On the policy front, a few policies regarding school nutrition guidelines and social assistance programs were in place in NL as of 2017, such as a school feeding program through the Kids Eat Smart Foundation and the Mother Baby Nutrition Supplement program for low-income mothers and families (Vanderlee et al., 2017b) and recently the SSB Tax has also been introduced in the province (Government of Newfoundland and Labrador & Department of Finance, n.d.). However, the majority of the policy options that are highly supported in the studies in Chapters 3 and 4 do not seem to have any action plan yet for the province. The high policy support may suggest that the NL policy influencers and the public are open to change and may appear to represent “early adopters” or “early majority”, yet the evidence of the lack of

policy in NL may suggest that decision-makers are “late adopters” who require more evidence on the effectiveness of policies before adopting. Support for policy does not immediately translate to adoption. More information is needed to assess decision-makers’ readiness for change and facilitators and barriers to policy adoption. The *Policy Diffusion Theory* states that a policy can be adopted using one of the four mechanisms: learning, imitation, coercion, and competition (Politis et al., 2014). It may be possible that, as “late adopters”, the NL decision-makers are using the learning mechanism to understand the successes and failures of policies in other jurisdictions, and their consequences, before implementing them in NL, thus leading to a delay in action and an inconsistency between support for polices and current policies.

Besides the process of policy diffusion, other factors may also be acting as barriers to policy adoption in NL. The *Needs/Responses Policy Making Model* states that governments respond to objective needs for a policy, for example, climate change initiatives might be driven more urgently in a community that is more prone to coastal storms (Feiock & West, 1993). Before this research was conducted, there was no evidence available on healthy eating policies and policy support in NL, therefore the need for policy action may not have been apparent. The *Institutional Model* explains that electoral competition and governance structures influence policy choices and adoption (Feiock & West, 1993). Governments may avoid supporting highly intrusive policies which may make them appear paternalistic (Fox et al., 2017) to improve their chances of re-election. The House of Assembly, which is the body that directs the democratic processes of NL, approves legislation, and oversees the government within provincial jurisdiction, largely consists of the Liberal Party members (House of Assembly Newfoundland and Labrador, 2023). Political ideology has a significant influence on health behaviours and decisions (Gruber & Mullainathan, 2002; Subramanian & Perkins, 2010) and this could explain

why certain policies are quick to be adopted while others are not in NL. The *Economic Model* argues that the jurisdictions with greater fiscal resources are the policy innovators (Feiock & West, 1993). If the fiscal resources are lower in NL compared to other jurisdictions, decision-makers are bound to be “late adopters” as aforementioned, since fiscal resources may be limited, and decisions need to be well-planned. The *Interest Group Influence Model* states that demand for policy change is driven by members of the society/constituents (Feiock & West, 1993). Policy support evidence generated from the studies in this thesis may act as drivers for policy change in NL, however, the influence of the food industry on policy adoption in NL is still unknown. Finally, administrative capacity involves personnel and expertise that act as drivers of innovation in policy adoption and implementation (Feiock & West, 1993). The *Health Accord NL* has acknowledged the importance of leadership and expertise for health improvement in NL (Health Accord NL, 2022). This suggests that lack of administrative capacity exists in NL, and this is recognized as a barrier to policy adoption and achieving optimal health in the province.

The 2023 *Public Health Framework for Newfoundland and Labrador* is a recent guiding document for improving overall population health in the province (Government of Newfoundland and Labrador, 2023b). Within this framework, the provincial health authority is stated to be responsible for implementing the following six core public health programs (Government of Newfoundland and Labrador, 2023b):

1. Communicable disease prevention and control
2. Population health assessment, surveillance, and epidemiology
3. Growth and development in the early years
4. Environmental public health
5. Health promotion and non-communicable disease and injury prevention

## 6. Health emergency management

The core public health programs relating to this thesis are “population health assessment, surveillance, and epidemiology”, “growth and development in the early years”, and “health promotion and non-communicable disease and injury prevention”. “Population health assessment, surveillance, and epidemiology” involves the use of data and evidence to make informed public health decisions for program and service action (Government of Newfoundland and Labrador, 2023b). The evidence produced by the studies in this thesis can assist public health practitioners in implementing appropriate healthy eating policy action in the province.

“Growth and development in the early years” focuses on the health of children, youth, and families in settings such as schools, homes, and communities, by creating supportive environments starting from preconception through the early years of children’s development (Government of Newfoundland and Labrador, 2023b). The findings from the studies in this thesis show high support for policies relating to children even though the policies were highly intrusive, and this evidence may contribute significantly to program development for children and youth. The NL policy influencers and public seem to be protective of the health of children in the province, and the evidence of high support for children-related policies in the level 5 “guide choices through incentives” and level 8 “eliminate choice” categories of the Nuffield Intervention Ladder may provide insight and understanding for program development.

“Health promotion and non-communicable disease and injury prevention” focuses on lowering the incidence of non-communicable diseases by facilitating the development of a healthy environment (Government of Newfoundland and Labrador, 2023b). The high healthy eating policy support detected in the studies in this thesis demonstrates that there is a possibility

of reducing the incidence of non-communicable diseases such as obesity and type 2 diabetes by achieving a healthy food environment in NL. Thus, the evidence produced by the studies in this thesis can contribute significantly to public health program planning and implementation in the province.

### **5.3 Strengths, Limitations, and Recommendations**

Many strengths and limitations specific to each study have already been identified and mentioned in Chapters 3 and 4 of this thesis. In general, the limitation of this thesis relates to the lack of perspectives of important population groups in the province. Due to the sampling techniques used and the use of English-only surveys in the studies, perspectives of groups such as immigrants, refugees, the Indigenous, and other non-English speakers may have been overlooked. Thus, the perspectives reflected in the findings of the studies may be incomplete and/or biased, with overestimated results of support. Furthermore, perspectives of the food industry were not investigated, one of the key players that influence the food environment. This may have contributed to the overestimation of support among the policy influencers as policy influencers from only certain sectors of work (mainly municipal authority workers) responded to the survey. The design of the Chronic Disease Prevention Survey also did not enable the statistical analysis of policy support relative to other factors such as policy intrusiveness level or other social determinants of health due to inadequate policy items per Nuffield Intervention Ladder category and insufficient social determinants of health questions; this may have limited the potential for the in-depth discussion regarding the impact of intrusiveness or social determinants of health on policy support that this research may have had due to limited evidence.

Nonetheless, this research remains the first in the province to explore healthy eating policy support in NL. This research is grounded in evidence-based literature proving the necessity for healthy eating policy action in the province. By using a survey tool that has previously been used in other provinces, the evidence generated is comparable to the other provinces to assess the needs of the NL population. Even though the findings of the studies may not be complete due to the missing perspectives of important populations, the evidence produced may encourage and drive some public health action, be it further healthy eating policy research in NL.

Specific recommendations have been included in each of the studies in Chapters 3 and 4. The general recommendations are:

1. Educate and encourage the NL policy influencers (including members of the provincial and regional government, health authorities, media personnel, school board trustees, community leaders, and the food industry) and the public to maintain shared responsibility for health.
2. Public health researchers are encouraged to reiterate this study with a focus on collecting evidence of food industry support for healthy eating policies in NL.
3. Public health practitioners, researchers, and policymakers are encouraged to work closely with the provincial and regional government to provide evidence-based insight into the policy action occurring in other jurisdictions, for the evaluation of the policy action implementation in NL.
4. Public health researchers are encouraged to study the facilitators and barriers to policy adoption in NL, to understand whether policymakers are “late adopters” in actuality and to determine a course of action for efficient policy adoption in NL.



5. The provincial and regional governments, public health practitioners and researchers are encouraged to work harmoniously to develop policy strategies that work coherently to make healthy food more affordable in NL.
6. Public health researchers are encouraged to conduct qualitative research to evaluate the perceptions of the NL public and policy influencers to understand nuances of the highly supported healthy eating policies.
7. Public health researchers are encouraged to conduct knowledge translation through means such as organizing education sessions or sending summary documents on the results of these studies to policy influencers (such as those from Quality NL who assisted with the survey adaptation for this study) to create awareness of policy support and drive policy change.

## **5.4 Conclusion**

The rate of chronic disease in Newfoundland and Labrador is one of the highest in the country (Public Health Agency of Canada, 2021), contributing to exponentially high healthcare spending (Health Accord NL, 2022). While individual-level determinants of health have been at the center of public health research and interventions, policies at all levels are essential in influencing eating behaviour and food choices by improving the food environment (Kothari et al., 2013; Raine, 2005). Unhealthy food environments are known to promote inexpensive, nutrient-poor, and energy-dense foods that lead to chronic disease (Swinburn et al., 2011; Swinburn et al., 2013). The government, society, food industry, and individual factors all play a role in influencing the food environment (Swinburn et al., 2013). Healthy food environments are formed by implementing healthy eating policies that create regulations, priorities, and guidelines for governments and the food industry to follow (Vanderlee et al., 2017a). However, the lack of

policy influencer and public support and acceptability can hinder the implementation of these policies (Diepeveen et al., 2013; Dieteren et al., 2022). Research shows evidence of policy influencer and public support and acceptability for nutrition-related policies across many countries, including Canada (Alberta Policy Coalition for Chronic Disease Prevention, 2020; Dieteren et al., 2022; Kongats et al., 2019; Nykiforuk et al., 2014; Pettigrew et al., 2022). However, no healthy eating policy support research was conducted in Newfoundland and Labrador before the studies included in this thesis.

The findings of these studies demonstrated high policy influencer and public support and acceptability for healthy eating policies, with great support for less intrusive policies. Although the public support was higher, the agreement in support between the policy influencer and the public in NL was comparably higher than in other provinces (Kongats et al., 2019). This finding has ignited the discussion for individual, societal, or shared responsibility for health in NL. The importance of understanding the perceptions of the food industry in the province has also been brought forward since they play a key role in influencing the food environment (Swinburn et al., 2013). The results of the studies further illuminated the significance of income as a social determinant of health and healthy eating in the province, and it needs to be further studied. It is also realized that policy support alone is insufficient for policy adoption; numerous factors such as electoral competition, governance structures, administrative capacity, and fiscal resources, influence policy adoption (Feiock & West, 1993). In conclusion, considering the recent movements for health promotion in Newfoundland and Labrador including the development of the *Health Accord NL*, the *Public Health Framework for Newfoundland and Labrador*, and the Sugar-Sweetened Beverage Tax, the timing of this thesis is appropriate as the new evidence

generated can contribute to assisting public health practitioners, researchers, and leaders to improve the health of the province's population.

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## **Appendices**

### **Appendix I: Chronic Disease Prevention Survey – Policy Influencer**

#### **Introduction**

You have been invited to take part in a survey on chronic disease prevention. Your participation is important to help us understand different perspectives on preventing cancer and other chronic diseases. This survey typically takes about 25 to 30 minutes to complete, and you may pause and resume the survey at any time – however, we encourage you to complete the survey in one sitting. By completing and submitting the questionnaire, you will be providing informed consent to participate the study.

#### **Why am I being asked to join this study?**

This study aims to understand different perspectives of chronic disease prevention in Newfoundland and Labrador (NL). You are invited to complete our survey as a leader in an organization that influences the health of Newfoundlanders and Labradorians through policies, programs, funding, media, and/or advocacy.

#### **How many people will take part in this study?**

This study will take place in NL. We are reaching out to approximately 500 organizational leaders in NL.

#### **What will happen if I take part in this study?**

You will be asked to complete a one time 25-30 minute survey that asks about your organization's perspectives on chronic disease prevention in NL. The information you provide is for research purposes only.

#### **Are there risks to taking part in this study?**

The risks to you participating in the survey are low. You may feel uncomfortable answering questions about your organization. You may choose to not answer any question if you wish.

#### **If I decide to take part in this study, can I stop later?**

If you are unable to complete the survey in one sitting, you can choose to finish the survey at a later time. The survey must be started and completed on the same computer and internet browser. The survey will automatically track your progress and allow you to start where you left off the next time you click the survey link.

You may choose to stop completing the survey at any point by exiting the browser. If you stop filling out the survey and do not return to it at any point, the researchers may use your partially collected data.

You may choose to leave the study at any point and you can request that your data be removed. You can request to have your data be deleted up until the point when your data is combined with

other responses, at which point the researchers are unable to determine which responses were yours.

### **What are my rights when participating in a research study?**

You have the right to receive all information that could help you make a decision about participating in this study, in a timely manner. You also have the right to ask questions about this study at any time and to have them answered to your satisfaction. Your rights to privacy are legally protected by federal and provincial laws that require safeguards to ensure that your privacy is respected. By completing the survey, you give us your consent to be in this study. It tells us that you understand the information about the research study.

### **What about my privacy and confidentiality?**

All individual responses are confidential. The results are reported in aggregate - your email address will never be associated with your responses. You may answer only some questions, or you may choose not to participate in the survey at all.

Your survey has a unique ID number imbedded in its URL address. When you submit the survey, your responses will be protected by encryption and stored on a secure server at Qualtrics (our vendor). Only research staff will have access to this server. The link between e-mail addresses, unique ID numbers, and survey responses will remain confidential and will not be used in analysis and will not be made public. We may follow-up with you if your organization is actively engaged in chronic disease prevention activities.

If you decide to participate in this study, we will collect and use information regarding your gender, education, income, forward sorting code (first three characters of your postal code), Indigeneity, immigration status, and professional position. Neither your name nor organizational name is collected. Any sociodemographic information that may identify participants will not be disclosed in research findings.

Study information collected during the study stored in a secure server and locked cabinets that only the study staff will be able to access. After the study closes, study information will kept for five years. This information will be stored at Memorial University of Newfoundland. Rachel Prowse is the person responsible for keeping it secure.

All information that you provide will be kept confidential, and to the extent permitted by applicable laws, will not be disclosed or made publicly available, except as described in this consent document. Every effort to protect your privacy will be made. Even though the risk of identifying you from the study data is very small, it can never be completely eliminated. If there is a breach of your privacy resulting from your participation in this study you will be notified. You have the right to be informed of the results of this study once the entire study is complete. You may enter your email address after you have completed the survey if you are interested in learning about the results of the survey. Your email address will not be linked to your responses.

There are no conflicts of interest to declare related to this study.



If you have any questions about taking part in this study, you can meet with the principal investigator who is in charge of the study. That person is: Rachel Prowse at 709-864-6622 (rprowse@mun.ca). Or you can talk to someone who is not involved with the study at all, but can advise you on your rights as a participant in a research study. This person can be reached through: Ethics Office at 709-777-6974 (info@hrea.ca).

If you would like to receive more information on findings from this study, please provide your email address at the end of the survey. It will not be connected to the rest of your responses to the survey, in order to protect the confidentiality of your responses.

Thank you for your participation!

## **Start of Block: Healthy eating**

### **Question 7**

Many people think that government regulations, school policies, or workplace policies to **promote healthy eating** can be used to help prevent chronic diseases. Other people would disagree.

We would like to know what **you** think about healthy eating policies.

Please indicate your level of support for each of the following policy approaches related to **healthy eating**.

Please mark the response that best reflects your perspective.

*(Response options will be: Strongly support/Somewhat support/Somewhat oppose/Strongly oppose/Unsure or Don't know/Prefer not to say)*

- Fund government media campaigns that encourage healthy food and beverage choices
- Mandate provision of healthy foods and beverages in all public buildings
- Mandate provision of healthy foods and beverages in all public recreation facilities
- Mandate government-led front of package nutrition labelling on all processed foods and beverages
- Mandate government-led logos or symbols in grocery stores to help identify healthy foods and beverages
- Remove sales taxes on pre-cut vegetables and fruits in grocery stores
- Regulate portion sizes in food outlets
- Eliminate all forms of subsidies that make unhealthy food cheaper than healthy food
- Tax sugary drinks including energy drinks on top of sales taxes
- Financially incentivize the production and distribution of healthy foods and beverages through agricultural input subsidies, or programs and funds for farmers
- Ensure income support rates are adequate to cover basic needs, including a healthy, culturally appropriate diet
- Improve urban public transportation to increase the accessibility of grocery stores

- Enact zoning that limits the number of fast food restaurants per region
- Restrict or ban new fast food restaurant drive-through facilities
- Ban sugary drinks in children's settings (schools childcare, recreation)
- Provide free fruit and vegetable subscription programs for schools and childcare settings
- Create incentives to foster local food and beverage producers to provide healthy foods in settings where food is provided such as schools, childcare, hospitals, and long term care facilities

Q60

Here are a few more policy approaches related to healthy eating. Please indicate your level of support for each of the following.

- Restrict sugary drink sales in all public buildings
- Mandate policies that support families and people who breastfeed ensuring that facilities are available in all public buildings
- Mandate healthy foods and beverages checkouts (e.g., Fruit stand instead of candy "powerwalls")
- Prohibit advertising and promotion of unhealthy foods and beverages to children (<13 years old)
- Mandate nutrition information on all restaurant menus
- Restrict availability of unhealthy foods near schools through zoning
- Mandate comprehensive nutrition curriculum in schools
- Educate the public on the sugar content of beverages and impacts of consuming sugar
- Reduce the price of healthy foods for consumers by subsidizing staples, such as rice or bread
- Ensure minimum wage is adequate to cover basic needs, including a healthy, culturally appropriate diet
- Introduce guaranteed basic income adequate to cover basic needs, including a healthy, culturally appropriate diet
- Improve rural public transportations to increase the accessibility of grocery stores
- Improve active transportation infrastructure (e.g. sidewalks, bike paths) to increase the accessibility of grocery stores
- Prohibit advertising and promotion of unhealthy foods and beverages to youth (13 - 17 years old)
- Enact zoning to allow home gardens and animal husbandry (e.g., chicken coops)
- Implement hunting support services that allow supplies (e.g., ammo, gas) to be fundable expenses for programs investing in food access
- Implement a universal school food program that provides a free or low-cost healthy meal to every student every day

**End of Block: Healthy eating**

**Start of Block: Politics**

**Question 10d1**

In politics, people sometimes talk of ‘left/liberal’ and ‘right/conservative’.

Where would you place yourself on a scale from 1 to 11, where 1 means extreme left and 11 means extreme right?

Please mark the response that best reflects your perspective, based on your role and/or mandate in your organization.

- 1 - Extreme left
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11 - Extreme right
- Unsure/Don't know
- Prefer not to say

**End of Block: Politics**

**Start of Block: Demographics**

**Demographics Intro**

Finally, we just have a few questions that allow us to group responses and to sort the information we collect. Please be assured, all your responses will be kept completely confidential.

**Question 16**

How would you describe your current gender?

- Man
- Woman
- Gender diverse
- Or please specify \_\_\_\_\_
- Prefer not to say

**Question 24**

What is the highest level of education you have completed?

- Did not complete high school
- High school
- Trade school
- Some college, technical school, or university
- College or technical school
- University undergraduate certificate, diploma, or degree
- University graduate or professional degree
- Unsure/Don't know
- Prefer not to say

**Question 30d1**

What are the first three characters of your postal code?

Note that we cannot identify your address from this information since the first three digits of your postal code are not residence-specific.

\_\_\_\_\_

**Question 22d1**

In general, would you say your **physical health** is excellent, very good, good, fair or poor?

- Excellent
- Very good
- Good
- Fair
- Poor
- Unsure/Don't know
- Prefer not to say

**Question 22d2**

In general, would you say your **mental health** is excellent, very good, good, fair or poor?

- Excellent
- Very good
- Good
- Fair
- Poor
- Unsure/Don't know
- Prefer not to say

**Question 33**

Are you or a close family member living with a chronic condition (e.g., heart disease, diabetes, cancer, etc.)?

- Yes
- No
- Unsure/Don't know
- Prefer not to say

**Question 26d1**

Do you consider yourself to be a member of a racialized minority?

- Yes
- No
- Unsure/Don't know
- Prefer not to say

**Question 27d1**

Which of the following categories best describes the TOTAL income of ALL members of your household for the past year BEFORE taxes and deductions?

- Under \$20,000
- \$20,000 to just under \$40,000
- \$40,000 to just under \$70,000
- \$70,000 to just under \$100,000
- \$100,000 to just under \$125,000
- \$125,000 or more
- Unsure/Don't know
- Prefer not to say

**Q17d1**

**What type of organization do you work for?**

- Media
- School or School board
- Municipal authorities
- Provincial government
- Community Health Organization
- Other (specify)
- Unsure/Don't know
- Prefer not to say
- Community Non-health organization

**End of Block: Demographics**

## **Appendix II: Chronic Disease Prevention Survey – General Public**

### **Introduction**

You have been invited to take part in a survey on chronic disease prevention. Your participation is important to help us understand different perspectives on preventing cancer and other chronic diseases. This survey typically takes about 20 minutes to complete, and you may pause and resume the survey at any time – however, we encourage you to complete the survey in one sitting.

By completing and submitting the questionnaire, you will be providing informed consent to participate the study.

### **Why am I being asked to join this study?**

This study aims to understand different perspectives of chronic disease prevention in Newfoundland and Labrador (NL). You are invited to complete our survey as a community member to give your opinion on chronic disease prevention policies.

### **How many people will take part in this study?**

We are hoping to recruit about 1000 people living in NL for this survey.

### **What will happen if I take part in this study?**

You will be asked to complete a one time 25-30 minute survey that asks about your perspectives on chronic disease prevention in NL. The information you provide is for research purposes only.

### **Are there risks to taking part in this study?**

The risks to you participating in the survey are low. If you feel uncomfortable answering questions, you may choose to skip any question you wish.

### **Are there benefits to taking part in this study?**

This study gives you the chance to share your opinions about chronic disease prevention in NL. At the end of the survey, you have the option to enter in a draw to win 1 of 5 \$100 Mastercard e-gift cards. The contact information you provide cannot be linked to your responses.

### **If I decide to take part in this study, can I stop later?**

If you are unable to complete the survey in one sitting, you can choose to finish the survey at a later time. The survey must be started and completed on the same computer and internet browser. The survey will automatically track your progress and allow you to start where you left off the next time you click the survey link.

You may choose to stop completing the survey at any point by exiting the browser. If you stop filling out the survey and do not return to it at any point, the researchers may use your partially collected data.

You may choose to leave the study at any point and you can request that your data be removed. You can request to have your data be deleted up until the point when your data is combined with other responses, at which point the researchers are unable to determine which responses were yours.

### **What are my rights when participating in a research study?**

You have the right to receive all information that could help you make a decision about participating in this study, in a timely manner. You also have the right to ask questions about this study at any time and to have them answered to your satisfaction. Your rights to privacy are legally protected by federal and provincial laws that require safeguards to ensure that your privacy is respected. By completing the survey, you give us your consent to be in this study. It tells us that you understand the information about the research study.

### **What about my privacy and confidentiality?**

All individual responses are confidential and anonymous. If you decide to participate in this study, we will collect and use information regarding your gender, education, income, forward sorting code (first three characters of your postal code), Indigeneity, immigration status, and professional position. If you are uncomfortable answering any of the questions, you do not have to answer them. Please skip those and continue with the rest of the survey.

We do not collect your name or contact information within the survey. If you choose to enter the draw, the contact information you provide cannot be linked to your responses.

Your answers will NOT be associated with you in any way and will only be presented as grouped information, which will be retained at the Memorial University of Newfoundland. For these reasons, you will not be able to withdraw your responses once you have submitted the survey. The results will be presented in public reports and presentations.

Study information collected during the study stored in a secure server and locked cabinets that only the study staff will be able to access. After the study closes, study information will kept for five years. This information will be stored at Memorial University of Newfoundland. Rachel Prowse is the person responsible for keeping it secure.

You have the right to be informed of the results of this study once the entire study is complete. You may enter your email address after you have completed the survey if you are interested in learning about the results of the survey. Your email address will not be linked to your responses.

There are no conflicts of interest to declare related to this study.

If you have any questions about taking part in this study, you can meet with the principal investigator who is in charge of the study. That person is: Rachel Prowse at 709-864-6622 (rprowse@mun.ca). Or you can talk to someone who is not involved with the study at all, but can advise you on your rights as a participant in a research study. This person can be reached through: Ethics Office at 709-777-6974 (info@hrea.ca)



Thank you for your participation!

## Start of Block: Healthy eating

### Question 7

Many people think that government regulations, school policies, or workplace policies to **promote healthy eating** can be used to help prevent chronic diseases. Other people would disagree.

We would like to know what **you** think about healthy eating policies.

Please indicate your level of support for each of the following policy approaches related to **healthy eating**.

Please mark the response that best reflects your perspective.

*(Response options will be: Strongly support/Somewhat support/Somewhat oppose/Strongly oppose/Unsure or Don't know/Prefer not to say)*

- Mandate provision of healthy foods and beverages in all public buildings
- Tax sugary drinks including energy drinks on top of sales taxes
- Ensure income support rates are adequate to cover basic needs, including a healthy, culturally appropriate diet
- Improve urban public transportation to increase the accessibility of grocery stores
- Enact zoning that limits the number of fast food restaurants per region
- Restrict or ban new fast food restaurant drive-through facilities
- Ban sugary drinks in children's settings (schools childcare, recreation)
- Provide free fruit and vegetable subscription programs for schools and childcare settings
- Restrict sugary drink sales in all public buildings
- Mandate policies that support breastfeeding people and families ensuring that facilities are available in all public buildings
- Prohibit advertising and promotion of unhealthy foods and beverages to children and youth
- Mandate nutrition information on all restaurant menus
- Mandate comprehensive nutrition curriculum in schools
- Educate the public on the sugar content of beverages and impacts of consuming sugar
- Reduce the price of healthy foods for consumers by subsidizing staples, such as rice or bread
- Ensure minimum wage is adequate to cover basic needs, including a healthy, culturally appropriate diet
- Improve rural public transportations to increase the accessibility of grocery stores
- Enact zoning to allow home gardens and animal husbandry (e.g., chicken coops)
- Implement hunting support services that allow supplies (e.g., ammo, gas) to be fundable expenses for programs investing in food access

- Implement a universal school food program that provides a free or low-cost healthy meal to every student every day

**End of Block: Healthy eating**

**Start of Block: Politics**

**Question 10d1**

In politics, people sometimes talk of ‘left/liberal’ and ‘right/conservative’.

Where would you place yourself on a scale from 1 to 11, where 1 means extreme left and 11 means extreme right?

Please mark the response that best reflects your perspective, based on your role and/or mandate in your organization.

- 1 - Extreme left
- 2
- 3
- 4
- 5
- 6
- 7
- 8
- 9
- 10
- 11 - Extreme right
- Unsure/Don't know
- Prefer not to say

**End of Block: Politics**

**Start of Block: Demographics**

**Demographics Intro**

Finally, we just have a few questions that allow us to group responses and to sort the information we collect. Please be assured, all your responses will be kept completely confidential.

### Question 16

How would you describe your current gender

- Man
- Woman
- Gender fluid
- Or please specify
- Prefer not to say

### Question 24

What is the highest level of education you have completed?

- Did not complete high school
- High school
- Trade school
- Some college, technical school, or university
- College or technical school
- University undergraduate certificate, diploma, or degree
- University graduate or professional degree
- Unsure/Don't know
- Prefer not to say

### Question 30d1

What are the first three characters of your postal code?

Note that we cannot identify your address from this information since the first three digits of your postal code are not residence-specific.

---

### Question 22d1

In general, would you say your **physical health** is excellent, very good, good, fair or poor?

- Excellent
- Very good
- Good
- Fair
- Poor
- Unsure/Don't know
- Prefer not to say

**Question 22d2**

In general, would you say your **mental health** is excellent, very good, good, fair or poor?

- Excellent
- Very good
- Good
- Fair
- Poor
- Unsure/Don't know
- Prefer not to say

**Question 33**

Are you or a close family member living with a chronic condition (e.g., heart disease, diabetes, cancer, etc.)?

- Yes
- No
- Unsure/Don't know
- Prefer not to say

**Question 26d1**

Do you consider yourself to be a member of a racialized minority?

- Yes
- No
- Unsure/Don't know
- Prefer not to say

**Question 27d1**

Which of the following categories best describes the TOTAL income of ALL members of your household for the past year BEFORE taxes and deductions?

- Under \$20,000
- \$20,000 to just under \$40,000
- \$40,000 to just under \$70,000
- \$70,000 to just under \$100,000
- \$100,000 to just under \$125,000
- \$125,000 or more
- Unsure/Don't know
- Prefer not to say

**End of Block: Demographics**

## Appendix III: Public Participants Recruitment Advertisements

# YOUR HEALTH IS A PRIORITY

Take our 25-30 minute online survey & enter for a chance to win a \$100 Mastercard e-gift card!

We want to know your opinions on chronic disease prevention in Newfoundland & Labrador.

If you have questions regarding your rights as a research participant please contact the Health Research Ethics Authority at (709) 777-6974 or [info@hrea.ca](mailto:info@hrea.ca)



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## Appendix IV: Ethics Approval



Research Ethics Office  
Suite 200, Eastern Trust Building  
95 Bonaventure Avenue  
St. John's, NL  
A1B 2X5

October 25, 2021

Office 4M139  
300 Prince Philip Drive  
Division of Community Health and Humanities  
Faculty of Medicine  
Memorial University of Newfoundland  
St. John's, NL A1B 3V6

Dear Dr Prowse:

Researcher Portal File # 20221807  
Reference # 2021.169

RE: Policies to prevent chronic disease in Newfoundland and Labrador: Exploring attitudes of policy-influencers and the public

Your application was reviewed by the Health Research Ethics Board (HREB) at the meeting held on October 7, 2021 and your response was reviewed by the Chair and the following decision was rendered:

X	Approval
	Approval subject to changes
	Rejection

Ethics approval is granted for one year effective October 25, 2021. This ethics approval will be reported to the board at the next scheduled HREB meeting.

This is to confirm that the HREB reviewed and approved or acknowledged the following documents (as indicated):

- Application, approved
- Research proposal, approved
- Updated survey, approved
- Updated invitation email, approved
- Budget, approved

Please note the following:

- This ethics approval will lapse on October 25, 2022. It is your responsibility to ensure that the Ethics Renewal form is submitted prior to the renewal date.
- This is your ethics approval only. Organizational approval may also be required. It is your responsibility to seek the necessary organizational approvals.
- Modifications of the study are not permitted without prior approval from the HREB. Request for modification to the study must be outlined on the relevant Event Form available on the Researcher Portal website.
- Though this research has received HREB approval, you are responsible for the ethical conduct of this research.
- If you have any questions please contact [info@hrea.ca](mailto:info@hrea.ca) or 709 777 6974.

The HREB operates according to the Tri-Council Policy Statement: Ethical Conduct for Research Involving Humans (TCPS2), ICH Guidance E6: Good Clinical Practice Guidelines (GCP), the Health Research Ethics Authority Act (HREA Act) and applicable laws and regulations.

We wish you every success with your study.

Sincerely,

---

Dr Fern Brunger, Chair Non-Clinical Trials Committee  
Health Research Ethics Board