



The Canadian Food System: The Role of the Food Guide

Effects on Stakeholder Behaviour

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1. Introduction

More than 100 countries worldwide have food-based dietary guidelines that serve as a key resource in informing national food, nutrition, and health policies and programs (Food and Agriculture Organization of the United Nations, 2019b). These guidelines are a shot at translating a large—yet incomplete—body of evolving evidence regarding relations between food, diet patterns, and health into specific, culturally appropriate, and actionable recommendations (Herforth et al., 2019). In addition, countries publish food guides, often in the form of food pyramids and food plates, intended for consumer education and to support healthy eating decisions (Food and Agriculture Organization of the United Nations, 2019b). Canada's Food Guide includes a detailed set of Dietary Guidelines for health professionals and policy makers, a Food Guide Snapshot (Exhibit 1) for the general public, Healthy Eating Recommendations, and additional online tips to help translate recommendations into everyday use. In past years, Canada's Food Guide has been lauded as the second most downloaded government document after tax forms (Scott-Reid, 2019).

Canada's Food Guide is a key document in shaping Canada's complex food environment. When it comes to decisions about what food to buy and eat, consumers are heavily influenced by the context—for example, what options are available in the cafeteria or grocery store, how health and nutrition information is communicated, and which food option is the “easier choice” (Ly, Mazar, Zhao, & Soman, 2013). To the extent that Canada's Food Guide influences regulations on food marketing and labelling, shifts food procurement policies in public institutions like hospitals and schools, and provides a basis for the way consumers think about nutrition and health, we suspect it directly and indirectly influences the diets of Canadians.

Yet, we have a limited understanding of the far-reaching implications of Canada's Food Guide on the behaviour of various stakeholders (e.g., policymakers, industry players, consumers). Given the complexity of the food environment, it is difficult to tease out the sole effect of Canada's Food Guide on Canada's food environment. However, attempting to measure and understand its effects on behaviour will provide a crucial foundation for improving the guide and informing relevant policies. For instance, will the grouping of dairy, meat, and legumes in the protein category make consumers more likely to treat them as substitutes for each other? Will the suggestion to reduce sugar intake push industries to lower the sugar level in their products?

Canada's most recent iteration of the Food Guide, revealed in 2019, was a major revamp from its 2007 predecessor in terms of its creation process, final form, and content. Health Canada, which led the revision process, adhered to a new set of standards for quality of evidence, and engaged in significant consultation with various stakeholders and the public. Perhaps most remarkably, for the first time, steps were taken to limit the potential for industry influence during the food guide drafting process (Crowe, 2019). This approach is a radical shift from how previous food guides were developed, where the agricultural and food manufacturing industries lobbied for certain foods (e.g., meat and dairy) to be prioritized (Duignan, 2019). Health Canada also abandoned its four-food-group rainbow in favour of a plate visual (see Exhibit 1), and made its recommendations less prescriptive with what to eat presented as proportions instead of portions. They also included recommendations related to healthy eating behaviours, like cooking more often and eating with others.

Exhibit 1. Canada's Food Guide: 2007 vs. 2019



Sources: Retrieved from *Health Canada, 2007* and *Health Canada, 2018b*.

The 2019 Canada's Food Guide includes the Canadian Dietary Guidelines for Health Professionals and Policy Makers, the Food Guide Snapshot (a consumer-facing image of a plate), the Healthy Eating Recommendations, and additional online resources. The colourful plate of 2019 features half fruits and veggies, one-quarter protein foods, one-quarter whole grains, and a glass of water as the "drink of choice." Unlike the 2007 rainbow of four food groups, the plate also represents meat and dairy as two of many choices in the protein foods category.

The 2019 Canada's Food Guide has prompted both praise and criticism. Leaders of food security and food justice organizations have applauded many aspects of the new guide, but point out that cost of food, low incomes, and lack of access to clean drinking water remain enormous barriers to its implementation for more than four million people in Canada (Taylor, 2019; Saul, 2019). While most health professionals applaud the guide's basis on health and nutritional science, some agricultural groups worry that the new guide will have negative consequences on their industry (Duignan, 2019). For instance, it received criticism for shifting dairy out of its own category and into protein, and for encouraging greater consumption of plant-based proteins, with some accusing Health Canada of pushing an environmentalist agenda (Kirkey, 2019). More recently, Canada's Food Guide has become the subject of politicized public debate, with some politicians questioning its scientific basis (Zimonjic, 2019).

In this report, we examine the role of Canada's Food Guide in the food system, with the goal of understanding its effects on the behaviour of various stakeholders.

The remainder of the report is organized as follows. We begin by looking at the context for food guides as a policy imperative for public health, food, and agriculture in Canada and around the world. We then examine the process of developing the 2019 Canada's Food Guide, including the evidence considered and the stakeholders engaged. We look at the various ways in which the guide is implemented to inform policy, consumers, and industry players, along with the current state of monitoring of the guide's effects.

Finally, building on our findings from previous sections, we outline possible effects of the guide on the behaviour of policymakers, consumers, and industry agents. By outlining methods to measure and test

our hypotheses, we hope to lay the groundwork for future research and exploration into the food guide's effect and potential.

2. National Dietary Guidelines as Policy Imperatives

Around the world, national dietary guidelines are primarily developed as policy imperatives to guide national policies and programs related to food and health, and secondarily as information-based support for individual decision-making. The Food and Agriculture Organization (FAO) of the United Nations emphasizes the importance of dietary guidelines as a policy tool to establish consistent national standards for healthy eating (Fischer & Garnett, 2016).

Most of the early efforts to create food-based dietary guidelines (FBDGs) were focused on preventing and ameliorating malnutrition. In 1995, the FAO and the World Health Organization (WHO) collaborated to develop an instructional guide for countries on how and why to prepare FBDGs (Fischer & Garnett, 2016). Nearly two decades later, they held the Second International Conference on Nutrition, and produced the Rome Declaration on Nutrition and the Framework for Action. This declaration consisted of 60 recommendations for governments to incorporate into their policies in order to achieve better nutrition for all (Food and Agriculture Organization of the United Nations and World Health Organization, 2014). Today, the FAO continues to facilitate workshops for countries to create and improve their own dietary guidelines, and provide a scan of current recommendations around the world (Fischer & Garnett, 2016).

The FAO and the WHO stipulate that the main goal of national dietary guidelines is “to establish a basis for public food and nutrition, health and agricultural policies and nutrition education programmes to foster healthy eating habits and lifestyles” (Food and Agriculture Organization of the United Nations, 2019a). To maximize impact, guidelines need to be “tailored to the specific nutritional, geographical, economic and cultural conditions within which they operate” (Fischer & Garnett, 2016, p. 13). Furthermore, for the guidelines to be effectively utilized, they should be based on up to date and unbiased scientific evidence and communicated in a manner that is easily understood by both health professionals and the public (Fischer & Garnett, 2016).

To date, more than 100 countries have developed their own food-based dietary guidelines. Of those, about 81 have created consumer-facing food guides that frequently come in the shape of a pyramid, plate, or culturally important item. Most dietary guidelines and food guides consist of portion and food category recommendations to prevent malnutrition and diet-related disease, and to promote overall health. Exhibit 2 shows a summary of consumer-facing food guides around the world.

Exhibit 2. Food Guides around the World

81 countries have a Consumer-Facing Food Guide

I Measurement



71% used Proportion
25% used Serving Size
4% used Both

I Format

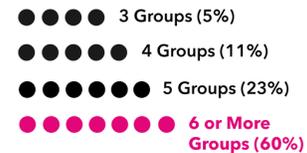


Top 3 popular presentations of the guidelines: 21% use a **Plate**, 31% use a **Pyramid**, and 48% use **Other Shapes**

Dairy as its own sub-group?



Number of Food Groups



Source: Food and Agriculture Organization of the United Nations, 2019a.

Currently, only four countries have followed the FAO’s suggestion of including formal recommendations on environmental sustainability in their FBDGs: Brazil, Sweden, Qatar, and Germany (Fischer & Garnett, 2016). The Swedish guidelines, for instance, advocate for more plant-based food and less red meat consumption for both health and environmental sustainability reasons. Sweden includes a risk and benefit management report that shows the scientific basis of the guidelines. This level of transparency around evidence makes it more challenging for lobbying groups to refute the guidelines (Fischer & Garnett, 2016).

2.1 The Canadian Context

The earliest iteration of Canada’s Food Guide, Canada’s Official Food Rules, was unveiled in 1942, with the goal of helping Canadians avoid malnutrition in the face of WWII food rationing (Health Canada, 2019b). It was originally positioned as part of the war effort on the home front, and in later years was intended as a means to bolster the Canadian agriculture and agri-food industry (Mosby, 2012). Over time, the caliber of scientific evidence used to form recommendations has evolved, and the guide has become focused solely on the promotion of human health. The philosophy of the food guide has also shifted towards a total diet approach, which advocates a nutrient-rich diet, and considers other important social and cultural factors that affect Canadians’ relationships with food (Health Canada, 2019a).

Canada’s most recent Food Guide was published in January 2019 with the goal of promoting “healthy eating and overall nutritional well-being, and support[ing] improvements to the Canadian food

environment” as well as the intention of guiding nutrition policies and programs (Health Canada, 2019a). The new Food Guide is a web application that provides Canadians with easier access to information about healthy eating. It includes resources for the general public as well as the more detailed Dietary Guidelines for health professionals and policy makers.

Today, Canada’s Food Guide lies within the mandate of Health Canada, where it is part of the larger Healthy Eating Strategy (HES). Launched in October 2016, the HES is the umbrella strategy created by Health Canada to make healthy eating easier for Canadians through multiple regulatory and policy approaches. Unlike the previous piecemeal approach of tackling one issue at a time, the HES focuses on communicating and implementing a comprehensive strategy for healthy eating.

Canada’s Food Guide is seen as the cornerstone of the HES, with regulatory measures like the proposed front of pack labelling and measure to restrict Marketing to Kids taking a more direct approach to facilitating healthy eating habits. Currently, the HES focuses on four main efforts: “improving healthy eating information, improving nutrition quality of foods, protecting vulnerable populations, and supporting increased access to and availability of nutritious foods” (Health Canada, 2016c).

Within Health Canada, the two organizations involved in the HES are the Office of Nutrition Policy and Promotion (ONPP) and the Food Directorate. ONPP is the focal point for public health nutrition within the federal government and leads federal efforts to support healthy eating, including the development and promotion of Canada’s Food Guide. The Food Directorate develops regulations and standards pertaining to the nutritional quality, composition, labelling and advertising of food. These are often used to further the impact of food guide recommendations, such as clearer front of pack nutrition labelling, targets for sodium levels in foods, and restrictions on marketing certain foods to kids.

While the food guide is intended to help achieve coherent policies around food and health, it is understandably limited by the differing mandates, budgets, and priorities of federal agencies. Exhibit 3 illustrates the relationships between the three primary agencies connected to Canada’s Food Guide: Health Canada; Public Health Agency of Canada (PHAC), whose mandate includes healthy living and chronic disease prevention through grants and contributions funding that address the common risk factors (i.e., healthy eating, physical activity and tobacco use) for diabetes, cardiovascular disease and cancer; and Agriculture Agri-Food Canada (AAFC), whose mandate has historically been to promote economic growth in the agriculture and agri-food industry.

Exhibit 3. Select federal government agencies involved with Canada's Food Guide

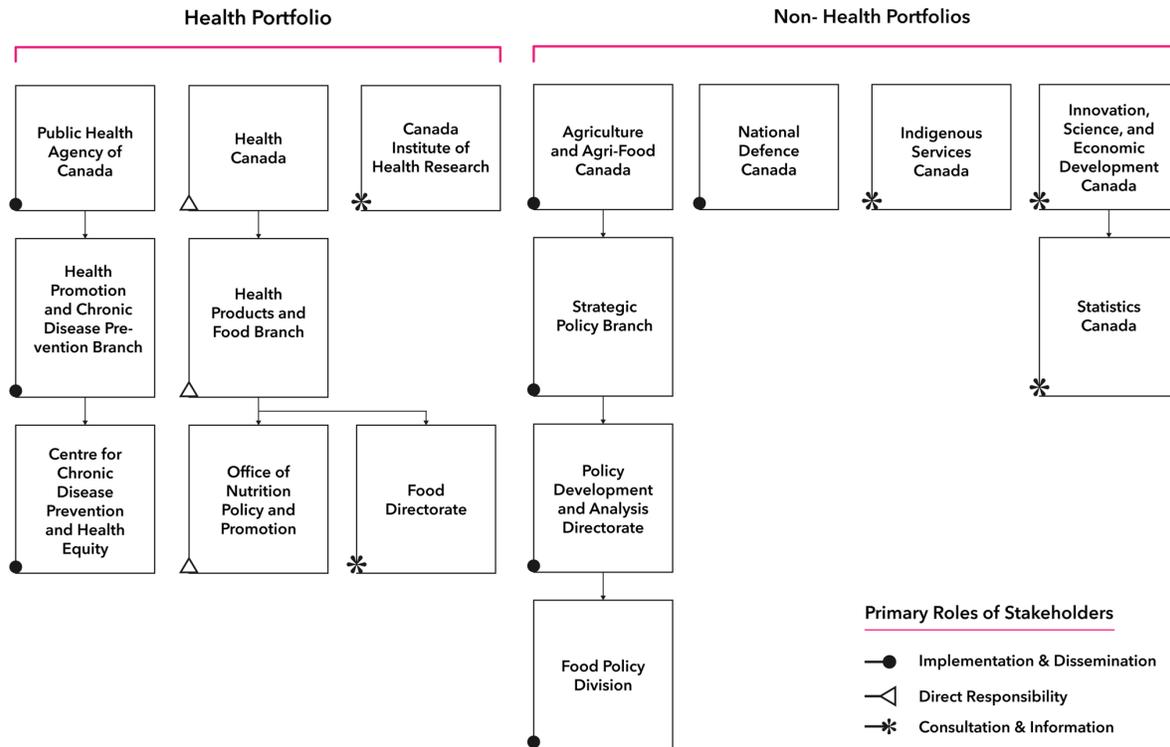
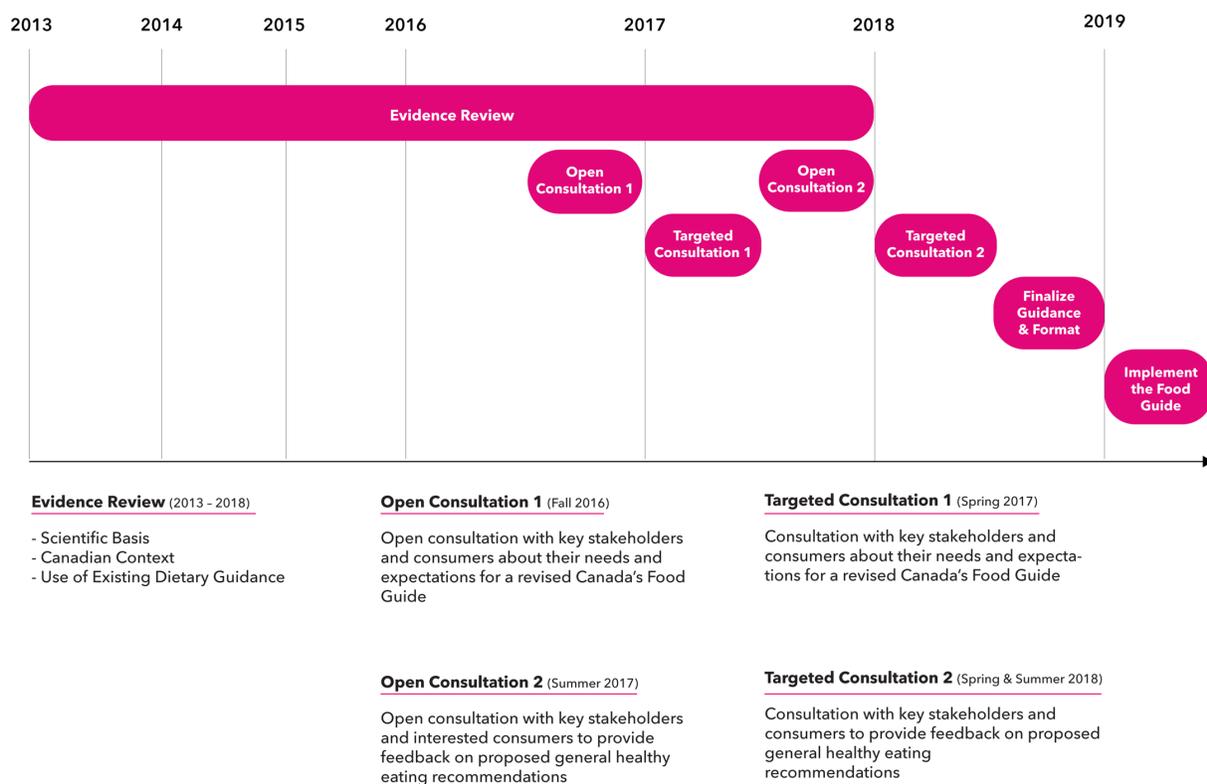


Exhibit 3 maps out select federal agencies that are involved with or impacted by Canada's Food Guide, but is by no means comprehensive. In addition, many of the policies and programs that use Canada's Food Guide, including school and long-term care food guidelines are within provincial, territorial, or regional jurisdictions. Figure 1 from Health Canada's *Evidence Review for Dietary Guidance* illustrates these relationships further (Health Canada, 2016a).

3. Process of Developing Canada’s 2019 Food Guide

The 2019 Food Guide stands out from previous guides in Canada both for its content and the process involved in creating it. In this section, we examine the process of developing the latest iteration of Canada’s Food Guide, from evidence selection and review, and consultation with stakeholders to refine communication of the guidance. See Exhibit 4 for a snapshot of the whole process.

Exhibit 4. Timeline of developing Canada’s Food Guide (2019 version)



The process of updating the guide includes evidence review and a series of consultations with key stakeholders and the general public. Scientific evidence for the dietary guidelines was reviewed continuously over the course of seven years and was communicated twice—once in 2015 and again in 2018. Once the scientific evidence is synthesized, communication of the guidance is refined through focus groups, expert reviews, and open consultations with health professionals and the public.

We gathered information about the process of creating the food guide through a review of external and Health Canada reports, as well as through conversations with key stakeholders within and outside the government who were involved in the process.

While the Dietary Guidelines for Americans are revised and republished every five years in the United States, Canada’s Food Guide is not revised on a regular schedule. The revision timeline for Canada’s Food Guide is dependent on several factors including the discovery of new, credible scientific evidence;

evaluations of the previous guide; and socio-political factors. For instance, revisions of the 2007 version of Canada's Food Guide began after the development of a new evidence review process and once the political will and budget for a new guide were in place.

In 2013, a new evidence review process was developed to ensure a systematic approach to reviewing scientific evidence to inform dietary guidance and to answer questions about how to assess the need for a new food guide and what would be needed for those updates (Colapinto et al., 2016). By 2015, this evidence review had revealed that there was an adequate change in nutritional science to warrant a new guide. Talks about revising the food guide occurred for many years before a concrete decision to revise the food guide was made. The revision was only officially set in motion after the Liberal Trudeau administration, sworn into office in November 2015, made healthy eating a priority.

3.1 Key Revisions & Updates to the Process

In Canada, the main changes to the process of creating the 2019 guide centered on increasing credibility through greater transparency and higher-caliber nutrition science evidence. Health Canada was aware of concerns (from health professionals and the public) that influence from agents in the food and agriculture industries, particularly dairy and grain, made the previous guideless credible (Corporate Research Associates, 2017). To ensure that the 2019 guide was both evidence-based and perceived as such, Health Canada took steps to limit food and agriculture industry influence over the process. In particular, it deliberately excluded industry-commissioned reports as part of the evidence review; and eliminated the role of an external advisory committee, which had previously included members of the food industry (Schwartz, 2012; Solyom, 2019).

For the 2019 guide, only high-quality scientific reports from authoritative health organizations, informed by systematic reviews, and with conclusions graded by an independent group of experts were considered (Health Canada, 2019a).

Input from players in the food and agriculture industries was considered only through the public consultation process, where it was put on equal footing with other public comments on the food guide. This included the two open consultations run by Ipsos Public Affairs in 2016 and 2017 (see Exhibit 4), in which individuals were asked to identify their interest in the food guide and comment on the usefulness of particular statements or formats (Ipsos Public Affairs, 2017; Ipsos Public Affairs, 2018). Members of Health Canada directly responsible for drafting the food guide did not meet with industry, and to retain transparency in interactions related to food guide and other aspects of the HES, any industry meetings with others at Health Canada were recorded and reported online (Health Canada, 2019c). Hence, the evidence base for the food guide remained untainted under the responsibility of Health Canada employees in the ONPP. Exhibit 5 provides a brief overview of the process of updating the United States food guide as a point of comparison.

Exhibit 5. United States food guide process

In contrast to Canada, the U.S. food guide is updated every five years by an external advisory committee that is responsible for assessing and reviewing evidence (which forms the scientific basis for the guide), and updating the food guide. The U.S. Department of Agriculture (USDA) and the U.S. Department of Health and Human Services (HHS) share responsibility for the guide, and alternate taking primary responsibility for drafting the new guide. Together, the USDA and HHS appoint an external Dietary Guidelines Advisory Committee comprised of researchers from nutrition, health, and medicine, all of whom are vetted to eliminate conflict of interest (United States Department of Health and Human Services and United States Department of Agriculture, 2015).

The types of evidence considered mainly consist of systematic reviews as well as analysis of data related to chronic disease, food consumption patterns, and nutrient content of foods. To place emphasis on relatively recent scientific evidence, the advisory committee focused on evidence published after 2010 for its most recent guide, published in 2016. Additionally, the process incorporates some level of public transparency through meetings or online forums to discuss findings and recommendations (United States Department of Health and Human Services and United States Department of Agriculture, 2015). Public comments are also sought in oral and written form throughout the development of the guidelines (United States Department of Health and Human Services and United States Department of Agriculture, 2015). Oral public comments favor invited speakers, who are given more time to speak than uninvited speakers.

3.2 Evidence Review

Health Canada relies on three types of evidence inputs in the process of revising the food guide: (a) scientific evidence linking food and health, (b) information about the Canadian context, and (c) information about the use of existing dietary guidance.

Scientific Basis

The scientific basis of the guide includes nutrient standards for adequacy and excess, and relationships between food and health (Colapinto et al., 2016). For the 2019 food guide, findings from approximately 45 reports on nutrition science from reputable institutions like the Scientific Advisory Committee on Nutrition, the World Cancer Research Fund International, and the American College of Cardiology/American Heart Association were used as the scientific basis of the dietary guidelines (Health Canada, 2019d).

The review process excluded any systematic reviews or reports commissioned by industry to avoid conflict of interest. Therefore, the reports that met Health Canada's inclusion criteria were ones published by an authoritative health organization and included a systematic review of the evidence. From these reports, over 400 convincing findings were found, which guided the development and recommendations outlined in Canada's Dietary Guidelines for Health Professionals and Policy Makers.

Health Canada's choice to rely on evidence in reports from other organizations rather than conduct their own systematic reviews was met with mixed reactions. Some argued that Health Canada should be commissioning its own systematic reviews, similar to what is done in the United States and several other countries, to retain control over the systematic review process. On the other hand, Health Canada was

able to avoid duplicating the systematic review process of scientific reports, which had already been completed by authoritative health organizations.

As mentioned previously, instead of relying on an external advisory committee, the ONPP used reports on the links between food, nutrients and health that were authored by credible scientific bodies and informed by systematic reviews to inform food guide recommendations. Beyond their own employees, Health Canada consulted a select group of experts (healthcare professionals, academics, and researchers) for additional input, research, and analysis (Health Canada, 2016b).

Furthermore, seeing similar findings in reports from multiple credible organizations boosted confidence in the new food guide's evidence base. The new evidence review process took a totality of evidence approach by looking at systematic reviews published over several years. For instance, evidence reviewed from 2006–2015 and communicated in the 2015 Technical Report (Health Canada, 2016b) included convincing evidence from the World Cancer Research Fund International linking red meat consumption to colon cancer. However, subsequent evidence review at Health Canada (2015–2018) revealed new findings from the same organization that downgraded confidence in the previous evidence. As a result, the 2019 food guide does not explicitly recommend limiting red meat consumption. Instead, it recommends limiting highly processed foods, which includes processed meat.

According to Alfred Aziz, director general of the ONPP, Health Canada also paid particular attention to similar countries in terms of populations and public health policies such as the United States, United Kingdom, Nordic countries, Australia, and New Zealand. They found that like-minded countries have similar scientific basis but the way the food guide is communicated differs based on the context of each country. For example, Brazil communicates their recommendations in terms of unprocessed, minimally processed, processed, ultra-processed. However, the transition to increased use of processed foods is currently unfolding in Brazil whereas processed foods are already widespread in Canada.

One distinctive feature of the 2019 food guide is the incorporation of social factors such as food skills and eating habits. The inclusion of social aspects such as eating together and changes in layout such as elimination of serving sizes were prompted by consultation and some social science. For example, Statistics Canada found that 30% of Canadian household spending on food is from restaurants and vending machines (Statistics Canada, 2017b). Health Canada cites a study that shows that meals eaten in fast-food and full-service restaurants can increase the amount of sodium, sugar, and saturated fat in a person's diet (Nguyen & Powell, 2014). These findings, as well as analysis of food skills interventions, contributed to Health Canada's recommendation that Canadians eat and cook more at home (Ipsos Public Affairs, 2018).

The Canadian Context

To inform their understanding of the context in which individuals obtain and consume food, Health Canada pulls on data from national- and provincial-level surveys and consults with federal agencies and stakeholders. This data provides Health Canada with greater detail about the Canadian population, their eating habits, and the food environment (Health Canada, 2016b).

The Canadian Community Health Survey's (CCHS) Nutrition focus is the primary source of data on Canadian food and nutrient consumption trends for Health Canada. The CCHS is a two-part survey with an annual component focused on general health and another smaller, less frequent survey that focuses on a different, specific health topic each cycle (Halladay, 2014). One main purpose of the CCHS Nutrition focus is to collect detailed, nationally representative data on consumption of foods and dietary supplements at the national and provincial levels. The CCHS Nutrition focus has been run twice, once in

2004 and again in 2015. (For more details on the CCHS, please see section 5.1, Consumption and Expenditure Surveys, p. 25).

Other health surveys, such as the Canadian Health Measure Surveys (CHMS), are used to understand Canadians' nutritional status. Unlike the CCHS 24-hour recall survey, which is self-reported, the CHMS is measured through physical evidence, including levels of vitamin D in blood samples.

Various stakeholders within the Canadian government are engaged to ensure that the food guide is relevant to all Canadians and inclusive of Indigenous Peoples. The integration of Indigenous considerations was informed through engagement during the food guide revision process. This included engagement with Indigenous academics, Indigenous health professionals and health professionals with experience and expertise working with Indigenous populations. These considerations were then integrated in Canada's Food Guide. For example, Canada's Dietary Guidelines considers the cultural, social and historical context of Indigenous Peoples as well as challenges related to the access and availability of nutritious foods and higher rates of chronic diseases in many communities. Furthermore, foods available and accessible in Indigenous communities have been integrated into Canada's Food Guide tools to support the application of the guidance.

Use of the Food Guide

In 2012, a rapid-response module focused on individuals' awareness and usage of the 2007 Canada's Food Guide was included in CCHS. For instance, the questionnaire asked whether respondents had ever looked at the 2007 Canada's Food Guide, whether they used it to make food decisions, and why or why not (Statistics Canada, 2012). Health Canada also consults with the general public and health professionals to inform their understanding of Canadians' use of the food guide (Health Canada, 2016b).

3.3 Consultation with Stakeholders

Beyond the CCHS survey data and scientific evidence reviews, Health Canada consults with members of the public, health professionals, and people working in health or food organizations to make a coherent and relevant guide. Consultations center on the format and language used to communicate guidelines, not the content or evidence base of the guidelines themselves (Ipsos Public Affairs, 2017).

Through consultation, Health Canada ensures relevant tools are being developed, especially with Canadians increasingly accessing information through digital channels. For example, the 2007 food guide was one six-page document. The 2019 guide, however, includes a series of tools and resources: the Canadian Dietary Guidelines for Health Professionals and Policy Makers, the Food Guide Snapshot (a consumer-facing plate), the Healthy Eating Recommendations, and associated online resources (recipes, tips, etc.).

Leading up to the 2019 food guide, consultations took the form of public online consultation and focus groups conducted by third-party research firms.

Open Consultation

Two phases of consultations were conducted online and available to any member of the public, including health professionals and those involved in the industry (see Exhibit 4). Open consultations are open to all interested stakeholders and the public, and are promoted through a ministerial or departmental public announcement. Participation in the consultation is voluntary, thus, the sample of people collected is not a nationally representative sample. Phase one of the consultation consisted of 14,297 members of the general public, 5,096 health professionals, and 461 organization representatives (Ipsos Public Affairs, 2017). Phase two of the consultation process consisted of 5,193 general members of the public, 989 health professionals, 170 organization representatives, and 105 people who prefer not to disclose (Ipsos Public Affairs, 2018).

The first phase of open consultation (Fall 2016) focused on how stakeholders use healthy eating information. The consultation involved 19,873 submissions in the form of an eWorkbook. The questions asked centered on how information on healthy eating is gathered, communicated, and understood by the public, health professionals, and industry. For example, some of the questions focused on “usefulness of approaches to encourage a reduction in the consumption of sugars” (Ipsos Public Affairs, 2017). Some feedback heard during this phase helped inform the final draft. For example, many people felt that serving sizes were confusing and hard to follow, which eventually led to Health Canada replacing serving sizes with proportions.

Phase two of the open consultation was held in summer 2017. The main focus of the second phase was to ask members of the general public and any interested people and organizations for feedback on the proposed recommendations for the new food guide. Nearly 7,000 contributions were collected on the delivery of messaging of the three guiding principles of the new food guide: (1) “Variety of nutritious foods and beverages are a foundation for healthy eating”; (2) “Processed or prepared foods and beverages high in sodium, sugar, or saturated fat undermine healthy eating”; and (3) “Knowledge and skills are needed to navigate the complex food environment and support healthy eating” (Ipsos Public Affairs, 2018).

Focus Groups

In addition to the open consultations and throughout the development of the food guide, Health Canada organized focus groups through third-party research firms to consult targeted groups on specific topics related to the food guide. Stakeholders consulted include health professionals within Indigenous communities, health professionals, and members of the general public. In these focus groups, Health Canada worked with research firms to develop questions around messaging and layout of the guide. After the concepts were tested with consumers, Health Canada took the feedback to relevant parties, including a creative design company, to make changes based on the feedback.

Outside of these focus groups, stakeholders within the Canadian government agencies such as the PHAC and AAFC were provided with a draft and asked for input before the guide was published. PHAC was specifically consulted on certain online components related to mental health, mindful eating, and chronic disease prevention.

One of the major concerns with consultation was public perception of industry influence. Health Canada’s decisions to include industry input only in public consultation, exclude industry from holding private meetings with those working on the guidelines, and maintain a level of transparency regarding meetings were mostly met with positive reactions from the media, public, health professionals, and policymakers.

However, negative responses from industry may have resulted in a larger volume of “noise” at offices peripheral to ONPP from lobbying groups (Hui, 2018).

Overall, alterations to the process of creating Canada’s Food Guide increased transparency, engaged stakeholders in a new way, and solidified ONPP’s commitment to creating a thoroughly evidence-based guide. As a result, the 2019 version of Canada’s Food Guide is an updated, evidence-based guide and has greater credibility, legitimacy in the eyes of the public and of health professionals, and potential for use.

4. Implementation of Canada's Food Guide

The Canadian food environment is a complex and interconnected network of multiple factors and players, and public policy needs to influence various parts of the network to affect real change. In contrast to the development of the food guide, which is owned and overseen by Health Canada, its implementation is the prerogative of numerous federal and provincial agencies, individual health practitioners, civil society actors, and participants in the agriculture and agri-food industries.

Areas of implementation can be broken down into (1) informing policy at various levels of government; (2) influencing programming for healthy eating, such as through PHAC funding programs; and (3) sharing information about the food guide directly to consumers, health professionals, and industry players.

4.1 Informing Policy

As discussed in section 2.1, Canada's Food Guide is intended to act as a cornerstone of food and health policy at a national level, a set of guidelines that can inform consumers and health professionals, and also as a source of guidance to create a cohesive set of food-related policies that work with each other to advance human health. The food guide falls under the mandate of Health Canada, and is also a part of Health Canada's larger HES, a series of policy initiatives designed "to make the healthier choice the easier choice for Canadians" (Health Canada, 2016c). Moreover, it will be consulted to some degree in the implementation of the new Food Policy for Canada, operating out of AAFC.

Healthy Eating Strategy (HES)

Canada's Food Guide represents an effort to improve healthy eating information as part of the HES. It is also used as a guiding document to inform other components of the HES, including front of package labelling, sodium reduction efforts, increased access to nutritious foods for northern communities, and limitations on marketing to children. While the food guide is simply a guideline, other elements of the HES can take the form of regulations. These proposed regulations are not always accepted. In the summer of 2019, the HES's attempt at protecting vulnerable populations through a regulation restricting the marketing of foods high in sugar, sodium, and saturated fat to children did not pass through the Senate before its 2019 summer recess. The failure to pass this regulation in 2019 is commonly attributed to the power of heavy lobbying efforts (Crowe, 2019). However, the Minister of Health's December 2019 mandate letter shows that the government remains committed to putting these restrictions in place (Trudeau, 2019).

Food Policy for Canada

In June 2019, Canada announced its first-ever national food policy, the Food Policy for Canada, a roadmap for a healthier and more sustainable food system for Canada. The Food Policy for Canada aims to improve access to "safe, nutritious and culturally diverse" (Agriculture and Agri-Food Canada, 2017) food across the nation, including in remote and Indigenous communities; and to ensure that the Canadian food system is "resilient and innovative, sustains our environment; and supports our economy"

(Agriculture and Agri-Food Canada, 2017). The government has committed to spending \$134.4 million over the next five years on key short-term initiatives to make progress toward this vision.

Importantly, the policy explicitly recognizes the interdependence of social, health, environmental, and economic components of the food system, and builds potential for greater cross-agency and public engagement in policymaking. While the initiative will be led by AAFC, the Food Policy for Canada aligns with objectives across the federal government, including the Poverty Reduction Strategy and Health Canada's HES. It will involve collaboration between more than 12 departments and agencies, as well as with a range of stakeholders in a policy advisory committee (Food Secure Canada, 2019). Hence, it could result in an opportunity for the food guide to be used in collaboration across agencies for policies that have positive economic, health, and environmental impact.

The Food Policy for Canada, in conjunction with the food guide, creates an opening for convergent, rather than simply coherent, food policy. Policy coherence is achieved when policies from several actors do not impede one agency's goal, but policy convergence occurs when all actors advance each others' goals in unison across sectors (Dubé et al., 2014a; Dubé et al., 2009). A Food Policy for Canada that aims to engage public and private actors across sectors to advance health, economic, and environmental interests in concert is a chance at policy convergence for the food system.

As Canada's Food Guide discusses the importance of creating food environments that support healthy choices, there are opportunities for the guide to impact the implementation of the Food Policy for Canada. One such example is school food. While Canada currently lacks a National School Food Program, the Food Policy for Canada will include an exploration of what this could look like in the future. While community organizations and other levels of government currently use the food guide to varying degrees to guide their school meal programs, AAFC has indicated that the National School Food Program offers an opportunity to create healthier school food environments that reflect the recommendations of Canada's Food Guide. However, given uncertainty about funding and direction for a potential National School Food Program, this impact remains unclear. Additionally, in the view of those outside the government, the creation of a National School Food Program that follows recommendations from Canada's Food Guide will be contingent upon a federal government that prioritizes food policy and healthy food for all schoolchildren.

While not explicitly intended as such, Canada's Food Guide could also serve as a general or informal guide to help shape other aspects of the Food Policy for Canada, such as the Local Food Infrastructure Fund. Other aspects of the Food Policy for Canada, including the Buy Canadian Promotion Campaign, have a less direct connection to the food guide and may require collaborative effort to avoid being at odds with food guide recommendations. Exhibit 6 shows an outline of the new Food Policy for Canada as it currently stands.

Exhibit 6. The new Food Policy for Canada, announced in June 2019

Help Canadian communities access healthy food

Local Food Infrastructure Fund (\$50M)

Strengthening the food system by improving local infrastructure for food access

Tackling Food Fraud (\$24.4M)

Preventing mislabelling of food products to protect consumers and companies from deception and unfair competition

National School Food Program

Consulting with key stakeholders to work towards a National School Food Program in Canada. No funding has yet been assigned.

Make Canadian food the top choice at home and abroad

Buy Canadian Promotion Campaign (\$25M)

Promoting Canadian agricultural products

Support food security in Northern and Indigenous communities

Northern Isolated Community Initiatives Fund (\$15M)

Supporting community-led projects to strengthen Indigenous food systems and address food insecurity in remote communities

Reduce food waste

Reducing Food Waste (\$26.3M)

Funding innovative food waste reduction proposals in food processing, grocery retail, and food service

Source: *Agriculture and Agri-Food Canada, 2017.*

In tackling these issues, AAFC will be taking on a more interdisciplinary approach than in past years, but may face limits depending on the political priorities of the Liberal minority government elected in October 2019 and future governments. AAFC, and the future of policy convergence, may also be limited by points of divergence between AAFC's economic mandate and the health mandate of Health Canada.

Institutional Procurement Policies

Currently, institutional procurement—the purchase of food done by governmental institutions—represents the clearest example of how the food guide is used to inform policy. At a national level, institutions such

as prisons and military consult the food guide for their food procurement practices. Dietitians within these institutions use the food guide as one tool to support the development of procurement policies and menus.

Implementation of the food guide in institutions under provincial jurisdiction such as schools, hospitals, day cares, and nursing homes follow a slightly less formal implementation process. In Ontario, school nutrition guidelines are determined at the provincial level and are roughly based on Canada's Food Guide. However, there's a lag time in updating school nutrition guidelines. Beyond procurement, the food guide is incorporated into the Health and Physical Education curriculum in Ontario public schools (Ontario Ministry of Education, 2019).

While different public institutions, including long-term care facilities, schools, and prisons may consult Canada's Food Guide to inform procurement policies, the extent to which Canada's Food Guide is applied remains unclear. Currently, procurement standards are heavily dependent on governmental and organizational budget priorities. In addition, the focus of Canada's Food Guide on decreasing the risk of developing chronic disease may not be the most appropriate goal for nutrition in settings such as long term care. This is also clearly stated in Canada's Dietary Guidelines.

4.2 PHAC's Healthy Living and Chronic Disease - Multi-Sectoral Partnerships Program

Aside from informing policy, Canada's Food Guide is often used by funding recipients to inform projects being funded under the Public Health Agency of Canada's (PHAC) Healthy Living and Chronic Disease Prevention - Multi-Sectoral Partnership (MSP) Program. The MSP Program funds projects that work on healthy living and chronic disease prevention by addressing the common risk factors (i.e., physical activity, healthy eating and tobacco use) associated with major chronic diseases (diabetes, cardiovascular disease and cancer). The program allocates approximately \$20 million annually to support projects that advance Canadians' health each year, primarily funding not-for-profit organizations and some private-sector organizations. Currently, there are approximately 40 funded projects, three of which focus on increasing healthy eating among Canadians. This includes a farm to school initiative, food skills and healthy living programming for low-income adults, and after-school food literacy and skill programs for children (Public Health Agency of Canada, 2019a). Additionally, another 14 projects focus on addressing multiple risk factors for chronic disease, including healthy eating, along with physical activity and tobacco prevention and cessation. For these projects, the food guide is used to raise knowledge and awareness about healthy eating, such as the value of increasing the consumption of fruits and vegetables (Public Health Agency of Canada, 2019b). Since the release of the Canada's most recent food guide in early 2019, PHAC has ensured that existing projects get an updated copy of the food guide. There may be future opportunities to work with project recipients to even further maximize the uptake of Canada's Food Guide into funded projects.

4.3 Direct to Consumers

In addition to informing policy and institutional procurement, Canada's Food Guide is shared with the general public as a source of healthy eating information. Since the release of the guide in January 2019,

Health Canada has broadly promoted the guidelines through social media and traditional media campaigns.

In order to reach diverse populations in Canada, the Food Guide Snapshot was translated into 29 languages, in addition to French and English. This snapshot document—the basic plate and recommendations in Exhibit 1—serves as an entry point for consumers to more detailed guidance. To further encourage consumers to explore the available resources, including actionable advice and recipes, Health Canada has created social media messages directing visitors to Canada’s Food Guide’s website. Individuals can also subscribe to Health Canada’s monthly newsletter, which offers tips and encouragement to visit the related official website. Both the social media campaign and the newsletter follow a monthly theme, such as affordability.

4.4 Civil Society & Health Professionals

The new Canada’s Food Guide may have limited implementation in civil society organizations due to pre-existing guidelines that make similar recommendations. For example, Community Food Center Canada’s (CFCC) programming is currently informed by the Harvard Healthy Plate. While this may mean there’s limited implementation of the food guide in civil society organizations, in some cases the same messages are being delivered, just from a different set of guidelines.

Health-related professional organizations do frequently implement Canada’s Food Guide through their practice, though often informally. Health practitioners frequently use the food guide as a reference tool, while professional organizations like Dietitians of Canada use it to support messaging around healthy eating. For example, Dietitians of Canada provided input on the revisions of the food guide, and informed members and the public about the release of the food guide. Dietitians use the food guide as one tool to support dietary advice for clients, but there is not currently a method of measuring the food guide’s use by health professionals.

4.5 Food Industry

The food guide is used to inform accurate marketing in the food industry. In addition to incorporating the food guide into marketing, food manufacturers occasionally update the formulation of a product in order to comply with new institutional procurement rules that shift in response to a new food guide. For example, in the United States, PepsiCo Inc. developed baked Cheetos for sale in schools, as the product meets the sodium, fat, and total calories targets set by school food guidelines. Exhibit 7 provides further information about the United States’ process of implementing the Dietary Guidelines for Americans.

Exhibit 7. Overview of United States food guide implementation

In the United States, collaboration between industry and government through private-public partnerships has proved to be an effective method of getting industry to implement new dietary guidelines in their food products. In 2011, then-First Lady Michelle Obama and her senior policy advisor for nutrition policy, Sam Kass, partnered with Walmart to reduce sodium, fat, and sugar across thousands of products over five years, and to offer price parity for healthy foods within a category (Mulligan, 2011). The Let's Move campaign also partnered with Goya Foods to include MyPlate and MiPlato (the U.S. version of the food plate) on their product packaging (The White House Office of the First Lady, 2012). This particular approach to public-private partnerships was so effective primarily because of the immense public and political power of Michelle Obama.

Looking ahead, Health Canada plans to continue to improve the application of the dietary guidelines with the release of additional guidance for policymakers and health professionals, including recommended types of foods to eat during various life stages like infancy and pregnancy (Health Canada, 2018a). This document will support the current dietary guidelines as a cornerstone for health practices as well as food, nutrition, and health policies. There are also plans afoot to develop new tools and resources for the food guide web application to help consumers better apply the new guidelines in their daily lives.

5. Monitoring of Canada’s Food Guide

The food guide’s intended outcomes are clear: to foster food and health policy coherence at the government level and to inform healthy food choices at the individual level (Food and Agriculture Organization of the United Nations, 2019a). However, its actual outcomes are largely unknown. Some stakeholders suggest that the food guide’s clearest concrete effect is on institutional procurement, but the guide’s effects on a wider range of policies, industry players, and consumers remain unclear. Measuring and monitoring any and all outcomes is difficult, but accurately tracking the food guide’s effects could be invaluable for the federal government and stakeholders in the food system. Monitoring of the Canadian food system and individual or aggregate diets is lacking, but current approaches fall under three general categories: (1) consumption and expenditure surveys, (2) industry food supply, and (3) usage of Canada’s Food Guide.

5.1 Consumption & Expenditure Surveys

Monitoring food consumption has been sporadic, with multiple surveys running in different years and regions. Surveys used in the creation and assessment of Canada’s Food Guide include the CCHS and Food Expenditure Survey as well as the Canadian Health Measures Survey (CHMS), the First Nations Food, Nutrition and Environment Study, and the Inuit Health Survey.

Canadian Community Health Survey (CCHS)

The aim of the CCHS is to get a representative view of Canadian health patterns. Run by Statistics Canada, it consists of two sections: (1) an annual component conducted at the provincial level (Halladay, 2014); and (2) a non-annual component conducted every couple of years with a rotating focus on a specific health topic, such as nutrition. Exhibit 8 shows the general structure of the CCHS.

Exhibit 8. Topic Structure of the Canadian Community Health Survey

Annual Component	Non-Annual Component (specific topics, e.g., nutrition)
<ul style="list-style-type: none"> • General health questions 	<ul style="list-style-type: none"> • 24hr recall + forgotten foods • 24hr recall round 2 (at later date) • Additional related questions

In order to get a representative view of Canadian health patterns, Statistics Canada uses the Household Survey Frame Service (HSFS), which uses census information and other records to get a representative sample. A representative number of households are selected, from which one person is randomly selected to take the survey. From there, Statistics Canada extrapolates to develop estimates about the amount of fruit and vegetables consumed by Canadians, etc. However, people “living outside the 10 provinces, on Indian reserves, and other aboriginal settlements, full-time members of the Canadian

forces, institutional residents and residents of selected remote areas,” amounting to about 3% of the overall population, are excluded from the survey (Halladay, 2014). Moreover, since the focus changes every cycle, the CCHS Nutrition focus has only been conducted twice—first in 2004 and then again in 2015. The irregularity and infrequency of data collection through CCHS makes it more difficult for Health Canada, other agencies, and academics to assess and understand Canadians’ eating habits. This gap in data makes it additionally challenging to assess or predict the impact of changes in the food guide to eating habits.

CCHS data, along with other tools, are used by Health Canada to understand Canadians’ eating habits with respect to the recommendations outlined in the food guide. However, because the 2019 guide does not include serving size recommendations, Health Canada will need to develop tools, such as a healthy eating index score, to evaluate the extent to which Canadian diets are in accordance with the food guide. It remains unclear when the next CCHS Nutrition Survey will be conducted, how compliance with the guide will be measured and compared longitudinally, and what the anticipated shifts in dietary habits might be. For greater detail on CCHS and NHANES, the comparable survey in the United States, see Exhibit 9.

Prior to CCHS, Canada ran Provincial Nutrition Surveys. If all the provinces ran the surveys consistently and simultaneously, the Provincial Nutrition Surveys were supposed to provide a longitudinal overview of the Canadian diet. However, it took approximately 10 years for all provinces to complete: starting with Nova Scotia and Quebec in 1990 and ending with BC in 1999 (Health Canada, 2005). Shifting from provincial surveys to the nationally run CCHS took significant concerted effort and political alignment around food as an issue of national concern.

Exhibit 9. More on the Canadian Community Health Survey (CCHS) and NHANES

The Annual Component of the CCHS asks general questions that probe the respondent's health status. This "core content" is consistent from year to year.

The CCHS Nutrition is one non-annual component of the CCHS, and delves more deeply into food and nutrition-specific questions. This includes a 24-hour recall, in which the respondent is asked to recall all of the foods they have consumed in the 24 hours prior to the survey (Health Canada, 2017). The surveyor walks the respondent through a series of probing questions to help recall forgotten memories of meals and snacks and to obtain a detailed picture of portion sizes and the preparation methods of the foods (Statistics Canada, 2017a). A subset of respondents are then asked follow-up questions to determine how much the diet of a person changes from day to day.

The CCHS Nutrition focus is a complex survey to administer and interpret. The lag time involved in processing the data means that results of the 2004 CCHS Nutrition survey was only available in 2007. Therefore, Canada's 2007 food guide was not informed by 2004 CCHS survey data. The second CCHS Nutrition was conducted in 2015 and its data was made available in 2017. As a result, 2004 CCHS data was used to inform the Canadian Context section of the 2015 Technical Report on Evidence Review for Dietary Guidance, while 2015 CCHS data was considered to inform Canada's Dietary Guidelines. The latest evidence is critical in informing recommendations for dietary guidance. For instance, Health Canada learned from the 2015 CCHS that a great proportion of sugar consumed by both adults and children in Canada came from sugary drinks. In order to keep messaging clear, simple, and focused on the positive (i.e., what to eat instead of what to avoid), Health Canada made a significant change to the guide, suggesting in Canada's 2019 Food Guide to "make water your drink of choice."

The large gap between CCHS Nutrition focus surveys pose a challenge for Health Canada, PHAC, and other agencies. However, the survey is costly for Statistics Canada to run, and it must compete with other topics of focus. By contrast, the United States conducts a version of the CCHS called the National Health and Nutrition Examination Survey (NHANES) every two years, which is less nationally representative and uses a lower-powered sample (National Center for Health Statistics, 2014).

NHANES: A U.S. Counterpart

The United States also has a nationally representative nutrition survey called the National Health and Nutrition Examination Survey (NHANES). In contrast to the CCHS-Nutrition, the NHANES is conducted every two years. The data collected includes 24-hour recalls from 5,000 individuals (United States Department of Agriculture, 2018), which is significantly smaller, particularly in relationship to the U.S. population, than the CCHS sample size of 24,000 (Statistics Canada, 2017a). The NHANES is conducted through a partnership between the United States Department of Agriculture and United States Department of Health and Human Services.

Food Expenditure Survey & Survey of Household Spending

Prior to the CCHS Nutrition focus in 2004, Canada lacked a scalable nationwide picture of Canadian dietary patterns. At the time, the Food Expenditure Survey (FoodEx), which ran in 1996 and 2001, provided a lens into Canadian food purchase habits and food pricing. FoodEx asked participants to keep a daily diary of food expenditures for two sets of two consecutive weeks. In the diary, respondents filled out information on daily food purchased, including type of packaging (frozen, canned, dried, other), number of units purchased, weight or volume per unit (in either metric or imperial measure), the total cost of the purchase, and the type of store they purchased from. Participants were surveyed monthly throughout the year by Statistics Canada. In the 2001 FoodEx, 9,488 dwellings were sampled. The FoodEx survey was designed to complement the Survey of Household Spending, and both were used to

calculate the Consumer Price Index (Statistics Canada, 2007). The Survey of Household Spending, which is conducted annually using an expenditure diary, includes data on average household food-related spending.

5.2 Industry Food Supply

Monitoring of supply and demand for food, as well as other industry factors, generally falls to AAFC or private research companies. Statistics Canada measures some aspects of food supply and pricing through the Retail Commodity Survey and Consumer Price Index.

Data analytics companies such as Nielsen compile extensive data, including on advertising, store-level sales, and individual item or item category sales. This data on grocery sales, food prices, and marketing activities has the potential to provide an additional snapshot of Canadian consumption patterns, but is expensive and tends to be used by industry players or economics-focused agencies like AAFC, not health-focused agencies, like Health Canada. Dubé et al. (2014b) suggest that collaborative sharing of access to this data could help to break down silos between economic-focused and health-focused actors, allowing “them to singly and collectively work to build supply and demand for nutritious food” (Dubé et al., 2014b, p. 290).

Researchers at the McGill Center for the Convergence of Health and Economics (MCCHE) and other surveillance labs are also monitoring food supply and demand, and doing analysis (Dubé et al., 2014b). The Food Monitoring Group, established in 2012, was created to track nutritional composition of processed foods in 24 countries around the world. Dr. Mary L’Abbé’s lab at the University of Toronto is part of the group and keeps track of the nutritional content of branded food as one indicator of the nutritional quality of the Canadian food supply. The data collected for Canada includes calories and sodium content of 11,000 processed food products and 3,647 products from 68 chain outlets.

5.3 Usage & Perception of the Food Guide

Usage of Canada’s Food Guide has been measured in self-reported surveys as well as via case studies, interviews, online consultation, and more (Health Canada, 2016b). The surveys used to measure usage of Canada’s Food Guide include the 2012 CCHS rapid-response module, which included questions focused on the usage and perception of the 2007 food guide, and research by the Angus Reid Institute, a not-for-profit public opinion research foundation. The Angus Reid Institute surveyed 1,600 Canadians in March 2019 about the cost, perception, and appraisal of the new food guide (Korzinski & Holliday, 2019). Researchers at the University of Guelph and Dalhousie University also conducted a survey in March to look at Canadians’ usage and perceptions of the food guide, as well as the affordability of a diet in compliance with the guide (Charlebois et al, 2019). In addition to surveys, Health Canada measures frequency of downloads of the guide as a metric for its usage and perception by the public.

Monitoring the effects of the food guide faces a number of challenges. Funding and political priorities are big obstacles to conducting surveys like the CCHS Nutrition focus with greater regularity. The lag time of two to three years to process and present CCHS data to stakeholders presents additional challenges to the timing of the survey and relevancy of the data to a particular policy or event. As mentioned, some monitoring has been done on the usage of the food guide. However, it is difficult to directly attribute effects to the food guide as it is only one factor that influences healthy eating in Canada. Initiatives like

front of pack labelling, marketing to children, sodium reduction targets, and bans on industrial trans fats act as complementary pieces to Canada's Food Guide. Therefore, extracting the specific effects of the guide, as opposed to those of the larger HES, Food Policy for Canada, or changes in the food supply, becomes exceptionally challenging. Finally, with the elimination of serving sizes from the food guide, there is a need to develop new tools, like a healthy eating index score, to measure consumption relative to the food guide recommendations. Health Canada is currently working on an evaluation of Canada's new Food Guide, including considerations of how to measure adherence to the new dietary guidance.

6. Toward Measurement of Behavioural Effects

A deeper understanding of the purpose of food guides, the policy process involved in creating the most recent Canada's Food Guide, and an examination of its implementation and monitoring reveal a number of possible effects. While it is challenging to monitor and to tease out specific effects of Canada's Food Guide, we can better understand and enhance the food guide's importance to the food system by hypothesizing, measuring, and testing the food guide's effects on stakeholder behaviour.

By understanding the food guide's effects on stakeholder behaviour, we can begin to identify areas in which behavioural science can assist in making "the healthier choice the easier choice." Furthermore, tracking shifts in individual or aggregate consumption, industry behaviour, or policy coherence with the guide will not only help Health Canada and others understand and harness the behavioural effects of Canada's Food Guide, but also allow for real-world triangulation/confirmation of nutritional science results, which generally stem from highly controlled environments.

We conceptualize the potential effects of Canada's Food Guide on stakeholder behaviour into three categories: consumer behaviour, policy-related behaviour, and food and agriculture industry behaviour. Within each category are a number of potential effects. For instance, the guide's effects on consumers are broken down into effects on individual and aggregate consumption, diet-related disease, purchasing habits, and understanding and use of the guide. Its effects on policy-related behaviour could include effects on policy coherence, a variety of institutional policies, and use in school curricula. Finally, the food guide's effects on behaviour in the food and agriculture industries include effects on innovation, lobbying, marketing and retailing, and production and product formulation.

We expect each of these potential effects to start a chain reaction from its original stakeholder cluster (policy, consumers, or industry), eventually affecting each of the other clusters. For instance, shifts in institutional procurement rules and practices are a direct change in the food policy environment, but result in changes for individuals in public schools, prisons, hospitals, the military, public assisted living facilities, and other public institutions. These shifts also affect industry behaviour, perhaps resulting in tweaked formulas for processed foods or increased demand (and therefore increased prices or supply) for a certain agricultural product.

With each potential direct effect of the food guide, we must consider also downstream effects on other stakeholders. Given the complexity and interconnected nature of the food system, what affects individual consumers may also have downstream effects on aggregate consumption, food and agriculture industries, the healthcare system, and policy.

However, these hypothetical effects span a wide range in terms of likelihood, with some consensus that shifts in institutional procurement are the most likely direct effect of the new guide. Conversely, there was the greatest skepticism that the dietary guidelines had any significant effect on the agri-food industry in Canada, as it is so often export-focused. Part of the particular challenge of measuring the effects of Canada's Food Guide stems from their often-indirect nature. While the downstream effects of the Canada Food Guide are of interest to the food and agriculture industries, they also have impact on the health system, education system, and others. For instance, an increase in healthy eating habits could lead to a reduced average number of emergency room visits or hospital admissions. Or, changes in aggregate consumption might alter the domestic market for particular foods.

Each of these speculations should and can be tested through enhanced monitoring of the effects of Canada's Food Guide. Results of this further exploration will help reveal priorities in order to leverage the food guide and other food policy tools for greater policy coherence and impact.

6.1 Consumer Behaviour

Individual and Aggregate Consumption

It is challenging to link the food guide directly to shifts in Canadian consumption, but it is likely to have an indirect impact. The 2019 guide's effect is likely to be greater than any previous iteration of the guidelines, due to greater confidence in the guide resulting from the more participatory and transparently evidence-based process involved in its creation. The way in which the 2019 guide is communicated also makes it easier to understand and apply than previous guides, increasing the likelihood it will affect individual and aggregate consumption. Establishing a clear causal relationship between changes in Canada's Food Guide and shifting dietary habits would be exceptionally difficult to tease out, but knowing what Canadians are eating will be an essential measure. This data will be helpful to understand the current state of Canadian eating habits, to estimate the guide's influence, and to make improvements and revisions to future guides.

Measurement: Collecting accurate data on what Canadians eat by expanding the frequency of the CCHS Nutrition component is expensive and resource-intensive. However, smaller-scale initiatives like NutriQC, run by INAF in Quebec City, show promise. This new research initiative involves collecting regular 24-hour nutrition recall data online from a cohort in Quebec. Participants not only provide information about their eating habits, but can be polled about their views on a new policy or program.

Better measurement and tracking of individual and aggregate consumption patterns is essential to understanding what Canadians eat. Though the CCHS data is a good start, monitoring food consumption with greater regularity will provide necessary information for federal agencies like Health Canada, PHAC, and AAFC, but also important information for industry contenders and civil society members. Currently, being able to say whether Canadians drink fewer sugary beverages after the guide recommends "make water your drink of choice" may also quell some of the industry-related political debate over changes to the guide. Improved data around Canadian consumption habits may also help illustrate ways in which the food guide affects the frame of decision-making that Canadians use to make food decisions.

However, there are good reasons that few countries have authoritative or thorough data on this. As previously discussed, collecting information about individual consumption is time-consuming, expensive, and relies on individuals to report accurately and to be demographically representative.

Prevalence of Diet-Related Disease

Prevalence and incidence of diet-related disease (DRD) are, with a long lag time, somewhat affected by shifts in consumption, but cannot be fully explained by food intake or explained by changes to Canada's Food Guide. Shifts in consumption behaviour and prevalence/incidence of DRDs could help confirm or disconfirm nutrition science claims, but it would be challenging to establish a relationship between Canada's Food Guide and changes to the overall health of Canadians.

Measurement: More extensive and more regular 24-hour nutrition recall data combined with pre-existing health statistics about diet-related diseases.

Regular and reliable measurement of what consumers in Canada are eating, combined with data on shifting prevalence and incidence of diet-related diseases such as diabetes and cardiovascular disease in

Canada will also provide some real-world context on the complex relationship between food and health. As previously discussed, nutrition science is not alone in that published and peer-reviewed findings stem from highly controlled environments. In reality, we know that we exist in highly complex, ever-changing environments. Two cucumbers do not necessarily have the same nutritive properties, just as two humans may react to the same foods differently. The environment or conditions under which food is consumed may have an effect as well, so while it's still helpful to know what happens under nearly complete control, nutritional science doesn't always tell us what will happen on an individual basis or in aggregate. Having better data to connect and compare changes in consumption with changes in health may be able to provide a form of triangulation to confirm or question nutritional science results.

Finally, tying aggregate food consumption patterns to a reduction in preventable illnesses, and as follows, a reduced cost of healthcare, could help make a compelling cost-benefit case to all levels of government to facilitate access to healthy diets for its citizens. Given the interrelatedness of food and social determinants of health, improving food security in Canada would be crucial to reducing prevalence/incidence of DRDs and associated healthcare costs (Artiga & Hinton, 2018). However, the business case for healthy food is merely a supporting argument, and should not be confused for a primary concern.

Purchasing Habits

It is difficult to discern whether Canada's Food Guide currently has an impact on Canadian purchasing behaviours. However, as a frequently downloaded guide, it is possible that the food guide functions as a framework for individual decision-making. For instance, will the shift from separate categories for meat and dairy products to one "protein foods" category cause consumers to treat meat and dairy as substitutes in their grocery decisions?

Measurement: Use of pre-existing checkout data from Nielsen combined with loyalty card information from major retailers around the country.

Making data on purchasing habits available to Health Canada, AAFC, PHAC, and researchers would shed light on general shifts in consumption and on potential effects of Canada's Food Guide on purchasing behaviour (demand). It would also open up opportunities for government or civil society groups to collaborate with retailers to promote healthier options according to the 2019 guide, and would combat some of the opposing marketing and layout in retail environments that make healthier choices more difficult. Research from McGill University and INSEAD shows promise in this area (Cadario & Chandon, 2019; Dubé et al, 2014b).

However, Nielsen's data are extremely expensive in Canada, and major retailers' loyalty card information is complicated to work with because it's coded and labelled in ways that are important to retailers but not particularly helpful for researchers. Privacy and data ownership concerns may also pose barriers to accessing loyalty card information. Aggregating some of this data would add a layer of depth to a CCHS-style nutrition recall survey. Gaps between CCHS-style data and purchasing data could either reveal issues in self-reporting on food behaviours or could help to measure amounts of food waste in the home, which we know to be an environmental and economic issue.

Last, checkout data pre and post the 2019 food guide could help to illuminate whether perceptions of certain foods as complements or substitutes for each other have shifted in response to the new guidelines.

Understanding and Use of the Food Guide

Canadians seem to be aware of and better understand the newest iteration of Canada's Food Guide because of its simplified recommendations, but may be perplexed by the many changing and even conflicting nutritional recommendations presented by government, media, scientists, marketing, and peers. Consumers, health professionals, and members of civil society organizations appear to have increased confidence in Canada's 2019 Food Guide because industry was excluded from holding private meetings with Health Canada employees who were involved in drafting the guide.

Measurement: CCHS rapid-response module combined with download counts and media analysis.

The 2012 CCHS rapid-response survey, which relies on self-reporting, suggests that the food guide is the fourth most frequently consulted resource on healthy eating after general "research on the internet," family and friends, and TV programs, but also revealed that Canadians do not follow the healthy eating guidelines set out by the food guide (Health Canada, 2016a). This survey suggests that people generally appreciate having credible guidelines (Health Canada, 2016a). The results also showed that the guide has strong brand recognition, with most Canadians having heard of or seen the food guide, but low adherence. Researchers hypothesized that this disparity between awareness and adherence may be due to competition for consumers' attention from other sources, including the internet (Slater & Mudryj, 2018).

In the Angus Reid Institute's survey, many people expressed confusion with what to eat because of ever-changing nutrition science and food trends. Many Canadians, especially those from low-income households, expressed frustration that eating according to the new food guide diet is unaffordable (Korzinski & Holliday, 2019). Despite mixed sentiments on the usefulness and daily use of the food guide, it continues to be frequently downloaded and present in the media.

Obtaining a representative sample of how Canadians view and use the food guide will be helpful in making improvements to the guide's development and implementation. It may also reveal that Canada's Food Guide has greater potential for impact because of the recent changes to the policy process. Conversations with individuals involved in a range of sectors lead us to believe that more organizations and consumers now view Canada's Food Guide as a credible source of information about healthy eating behaviours, in part because of Health Canada's commitment to consultation with civil society and consumers, and their transparency about conversations with industry members. Involving more voices and reducing industry influence over the process gave the public and professionals greater faith in Canada's Food Guide and may amplify its impact.

6.2 Policy-Related Behaviour

Shifts in Institutional Procurement

Canada's Food Guide serves as the formal and informal guideline for food procurement in various public institutions, such as hospitals, schools, long-term care facilities, and others. Currently, this may be the food guide's strongest impact on policy-related behaviour, but it is still unevenly applied across institutions and regions of Canada.

Measurement: National policy scans, menu and meal scans at public institutions.

From a policy perspective, shifts in institutional procurement policies could be tracked through a policy scan along the lines of Food Secure Canada's Nourishing the Future of Food in Healthcare: A Pan-Canadian Policy Scan 2018. Food Secure Canada (FSC) found that the food guide was the formal basis of nursing home meals in Alberta, long-term-care meals in Saskatchewan, and generally guided hospital meals across the country (Reynolds, 2019).

Expanding upon this research to measure the role of the food guide in the development and regulation of institutional food procurement will help to quantify and improve the role of Canada's Food Guide as a key form of policy coherence that directly affects industry and consumers. This could be accomplished through an environmental scan of policies, guidelines, governing bodies, and menus in schools and universities, healthcare institutions, prisons, military, and other public institutions across Canada.

Policy Coherence

Canada's Food Guide forms a cornerstone of the HES, helping to direct regulations coming from within Health Canada. The food guide has the potential to be used as a guiding document for a National School Food Program and other Food Policy for Canada initiatives, including those focused on Indigenous communities and local food. Beyond the aforementioned policies and programs, Canada's Food Guide has a limited effect on other food and health-related policies, particularly on agricultural policies and social assistance.

Measurement: Develop and utilize a policy rubric to assess alignment of federal policies with Canada's Food Guide.

Developing a policy rubric to measure whether a given food policy aligns with the food guide will assist in measuring the food guide's effect or influence on policies beyond institutional food procurement. This will be of particular significance and assistance as the new Food Policy for Canada progresses and develops. If the goal of national dietary guidelines is to guide coherent policies on health and nutrition, measuring the extent to which this is achieved is essential to continuing to improve on Canada's dietary guidelines and properly allocating resources towards their revision and implementation.

Incorporation into School Curricula

Canada's Food Guide appears to be frequently used in public school teaching, but is unevenly incorporated into the curriculum, depending on provincial and territorial requirements as well as individual schools and teachers.

Measurement: Policy scan of public school curricula in each province and territory.

Further exploration is needed to understand the frequency and effects of incorporating Canada's Food Guide recommendations into classroom learning in public schools across Canada.

6.3 Industry Behaviour (Food & Agriculture)

“Industry” in this context encompasses many different types of industries and agents, including agriculture of all kinds, food manufacturing, and food retailing. Further work is required to explore the nuances and differences of each type of food and agriculture industry.

Innovations

While AAFC works with players in the food and agriculture industries to develop innovations, the room for Canada’s Food Guide to have an impact on innovations in the industry is unknown. For instance, does the recommendation that individuals eat more plant-based protein increase innovations by lentil growers in the prairies or food manufacturing companies specializing in protein foods?

Measurement: Scan of new food innovations, R&D expenses related to food guide recommendations.

At this point, it seems unlikely that many companies or farmers are looking to the food guide, rather than market trends, for inspiration for their research and development projects. However, the guide may serve to solidify or even speed up particular trends, like that of consuming more plant-based proteins. Measuring whether Canada’s Food Guide is actively used to guide innovation by industry could help the government assess the potential of providing innovation support and guidance to relevant industries.

Lobbying

Food and agriculture industry members were not allowed to hold private meetings with those involved in crafting the 2019 food guide, but did engage in official and unofficial lobbying through other channels—likely including an increase in media discussion.

Measurement: Use of sentiment software and key word searches to assess meeting transcripts, press releases, social and news media, and more.

Greater information about the level of lobbying activities related to the food guide might illuminate points of influence, particular pain points for industry groups, and opportunities to better manage relationships and power dynamics between government and industry.

Marketing and Retailing

Marketing language and retailing techniques are sometimes affected by changes to Canada’s Food Guide, but it is unclear to what the extent these changes stem precisely from the food guide.

Measurement: A scan for food guide-related language in product marketing materials and retailing techniques.

Understanding the extent to which food guide-related language is incorporated into marketing materials by manufacturers and retailers would provide richer detail about the importance of the food guide to industry players and within an economic context.

Product Formulation and Production Levels

Product formulation is occasionally directly affected by recommendations in Canada's Food Guide, but changes in production levels are rarely linked to the guide itself (i.e., companies do not look to the food guide as a harbinger of changes in demand for certain foods).

Measurement: Expansion of the branded food database currently run by Mary L'Abbé's lab by enlisting industry collaboration.

The effect of the new food guide on industry production, sales, and pricing is predicted to be minimal. Since the agriculture and agri-food industry in Canada is largely export-driven, much of the industry operates under the assumption that farmers will be able to sell whatever they produce. Even if domestic pricing of say, Canadian beef, is affected, effects on cattle farmers are expected to be minimal because of international demand. Indeed, changes to consumption patterns in countries that import Canadian agricultural products is considered to be of greater concern than shifts in domestic consumption patterns.

Greater supply-side information about the formulation and production of food products in Canada would be helpful for assessing one effect of Canada's Food Guide on industry behaviour. This information, which could take form through the collaborative partnerships suggested by Dubé et al (2014b), would also be illuminating for other reasons. It would assist policymakers and other industry agents in assessing the need for and impact of potential incentives, regulations, or guidelines. It would also be helpful in better understanding the environment in which consumers make decisions, and would enhance the information currently available through surveys like the CCHS Nutrition focus. Finally, data showing that Canada's Food Guide does not have a strong effect on production levels might serve to reduce industry (and political) concern over revisions to the guide and its process.

7. Conclusion

Increased monitoring and evaluation of the food guide's effect on stakeholder behaviour is important for two main reasons. First, it will help Health Canada and others understand the effects of Canada's Food Guide, paving the way for future iterations of the guide that can foster coherent national food policies and that can inform the behaviour of policymakers, consumers, and industry to positively affect human health, the environment, and the economy. Second, information on changes in stakeholder behaviour, and primarily changes in individual consumption and population health and healthcare costs, will help to provide a real-world context to enrich or question evidence from highly controlled nutrition studies.

But Canada's Food Guide is an information-based tool, and as such has limited power to change behaviour or the larger food system. The newest iteration takes into account far more contextual and behavioural factors than any of the guides that preceded it, but a behavioural lens on its policy process, its implementation, and the monitoring of its ultimate effects on behaviour can help make Canada's Food Guide a cornerstone of food/health policy and practice, and a guiding light for a better-designed food system.

Going forward, being able to hypothesize, measure, and test the effects of the food guide on stakeholder behaviour will be crucial to making Canada's Food Guide an effective tool for policy coherence and individual health. With greater policy coherence, starting with the food guide and advanced through the new Food Policy for Canada, we can rework our food system to function well and contribute to healthy people, a healthy planet, and a healthy economy. While the 2019 food guide represents a key step towards coherent food and health policies, the Food Policy for Canada may be able to initiate a shift towards convergence of food, health, economic, and environmental goals and collaboration across sectors to achieve them.

References

- Agriculture and Agri-Food Canada. (2017, June 2). Food policy for Canada. Retrieved October 9, 2019, from Government of Canada website: <https://www.canada.ca/en/campaign/food-policy.html>
- Artiga, S., & Hinton, E. (2018, May 10). *Beyond Health Care: The Role of Social Determinants in Promoting Health and Health Equity*. Kaiser Family Foundation. Retrieved from <https://www.kff.org/disparities-policy/issue-brief/beyond-health-care-the-role-of-social-determinants-in-promoting-health-and-health-equity/>
- Cadario, R., & Chandon, P. (2018). *Which healthy eating nudges work best? A meta-analysis of field experiments* (SSRN Scholarly Paper No. ID 3090829). Retrieved from Social Science Research Network website: <https://papers.ssrn.com/abstract=3090829>
- Charlebois, S., Smook, M., Wambui, B., Somogyi, S., Racey, M., Music, J., & Fiander, D. (2019). *Canada's food guide: Awareness, understanding, affordability, and barriers to adoption* [preliminary results]. Retrieved from <https://cdn.dal.ca/content/dam/dalhousie/pdf/management/News/Canada%20Food%20Guide%20March%2014%20EN.pdf>
- Colapinto, C. K., Ellis, A., Faloon-Drew, K., & Lowell, H. (2016). Developing an Evidence Review Cycle Model for Canadian Dietary Guidance. *Journal of Nutrition Education and Behavior*, 48(1), 77-83.e1. <https://doi.org/10.1016/j.jneb.2015.08.018>
- Corporate Research Associates Inc. (2017). Focus groups on use of healthy eating information. Retrieved from <http://epe.lac-bac.gc.ca/100/200/301/pwgsc-tpsqc/por-ef/health/2017/116-16-e/report.pdf>
- Crowe, K. (2019, May 4). 11th-hour lobbying by industry could kill law banning food marketing to kids. *CBC News*. Retrieved from <https://www.cbc.ca/news/health/food-marketing-kids-health-canada-senate-industry-lobby-1.5123021>
- Dubé, L., Addy, N. A., Blouin, C., & Drager, N. (2014a). From policy coherence to 21st century convergence: A whole-of-society paradigm of human and economic development. *Annals of the New York Academy of Sciences*, 1331(1).
- Dubé, L., Labban, A., Moubarac, J.-C., Heslop, G., Ma, Y., & Paquet, C. (2014b). A nutrition/health mindset on commercial big data and drivers of food demand in modern and traditional systems. *Annals of the New York Academy of Sciences*, 1331(1), 278–295.
- Dubé, L., Thomassin, P. J., Beauvais, J., & Canadian Agri-Food Policy Institute. (2009). *Building convergence: Toward an integrated health & agri-food strategy for Canada: A discussion paper*. Ottawa, ON: Canadian Agri-Food Policy Institute. Retrieved from <http://www.deslibris.ca/ID/227042>
- Duignan, S. (2019, January 26). Commentary: Canada's food guide failure. Retrieved October 10, 2019, from Global News website: <https://globalnews.ca/news/4885166/canada-food-guide/>
- Fischer, C. G., & Garnett, T. (2016). *Plates, pyramids, and planets: Developments in national healthy and sustainable dietary guidelines: A state of play assessment*. Food and Agriculture Organization of the United Nations and Food Climate Research Network at the University of Oxford.
- Food and Agriculture Organization of the United Nations. (2019a). Food-based dietary guidelines. Retrieved from <http://www.fao.org/nutrition/education/food-dietary-guidelines/home/en/>
- Food and Agriculture Organization of the United Nations. (2019b). Food-based dietary guidelines: Background. Retrieved from <http://www.fao.org/nutrition/education/food-dietary-guidelines/background/en/>
- Food and Agriculture Organization of the United Nations and World Health Organization. (2014). Second international conference on nutrition: Conference outcome document: Framework for action. Retrieved from <http://www.fao.org/3/a-mm215e.pdf>
- Food Secure Canada. (2019, June 12). *The Launch of the First 'Food Policy For Canada—Everyone at the Table'*. Food Secure Canada. <https://foodsecurecanada.org/first-national-food-policy-for-canada>
- Halladay, A. (2014). Canadian community health survey—nutrition: Methodological challenges with nutrition data, 6.
- Health Canada. (2005, July 12). Food and nutrition surveillance in Canada: An environmental scan. Retrieved June 28, 2019, from Government of Canada website: <https://www.canada.ca/en/health-canada/services/food-nutrition/food-nutrition-surveillance/food-nutrition-surveillance-canada-environmental-scan-health-canada-2000.html>

- Health Canada. (2007, February 5). 2007 Eating well with Canada's food guide. Retrieved September 24, 2019, from Government of Canada website: <https://www.canada.ca/en/health-canada/services/canada-food-guide/about/history-food-guide/eating-well-with-canada-food-guide-2007.html>
- Health Canada. (2016a). Evidence review for dietary guidance: Summary of results and implications for Canada's food guide, 2015. Retrieved from http://epe.lac-bac.gc.ca/100/201/301/weekly_acquisitions_list-ef/2016/16-45/publications.gc.ca/collections/collection_2016/sc-hc/H164-193-2016-eng.pdf
- Health Canada. (2016b, June). Evidence review for dietary guidance: Technical Report, 2015. Retrieved from http://publications.gc.ca/collections/collection_2018/sc-hc/H164-192-2016-eng.pdf
- Health Canada. (2016c, October 24). Health Canada's healthy eating strategy. Retrieved August 7, 2019, from Government of Canada website: <https://www.canada.ca/en/services/health/campaigns/vision-healthy-canada/healthy-eating.html>
- Health Canada. (2017, June). Reference Guide to Understanding and Using the Data: 2015 Canadian Community Health Survey—Nutrition. Retrieved from https://www.canada.ca/content/dam/hc-sc/documents/services/food-nutrition/food-nutrition-surveillance/ReferenceGuide2015CCHS-Nutr_Eng_Final_06192017.pdf
- Health Canada. (2018a, March 21). Revision process for Canada's food guide. Retrieved October 8, 2019, from Government of Canada website: <https://www.canada.ca/en/health-canada/services/canada-food-guide/about/revision-process.html>
- Health Canada. (2018b, October 2). Food guide snapshot. Retrieved September 24, 2019, from Government of Canada website: <https://food-guide.canada.ca/en/food-guide-snapshot/>, <https://food-guide.canada.ca/food-guide-snapshot>
- Health Canada. (2019a). Canada's Dietary Guidelines for Health Professionals and Policy Makers. Retrieved from <https://food-guide.canada.ca/en/guidelines>
- Health Canada. (2019b). History of Canada's food guides from 1942 to 2007. Retrieved from http://epe.lac-bac.gc.ca/100/201/301/weekly_acquisitions_list-ef/2019/19-04/publications.gc.ca/collections/collection_2019/sc-hc/H164-244-2019-eng.pdf
- Health Canada. (2019c, June 7). Meetings and correspondence on healthy eating. Retrieved October 1, 2019, from Government of Canada website: <https://www.canada.ca/en/services/health/campaigns/vision-healthy-canada/healthy-eating/meetings-correspondence.html>
- Health Canada. (2019d). Food, nutrients and health: Interim evidence update 2018 for health professionals and policy makers. Retrieved from http://epe.lac-bac.gc.ca/100/201/301/weekly_acquisitions_list-ef/2019/19-04/publications.gc.ca/collections/collection_2019/sc-hc/H164-248-2019-eng.pdf
- Herforth, A., Arimond, M., Alvarez-Sanchez, C., Coates, J., Christianson, K., & Muehlhoff, E. (2019). Global review of food-based dietary guidelines | *Advances in nutrition* | Oxford Academic. *Advances in Nutrition*, 10(4), 590–605. <https://doi.org/10.1093/advances/nmy130>
- Hui, A. (2018, November 22). The big squeeze: Inside the fight over juice in Canada's food guide. *The Globe and Mail*. Retrieved from <https://www.theglobeandmail.com/canada/article-the-big-pqueeze-inside-the-fight-over-juice-in-canadas-food-guide/>
- Ipsos Public Affairs. (2017, June 10). Canada's food guide consultation—phase 1: What we heard report. Retrieved August 6, 2019, from: <https://www.canada.ca/en/health-canada/services/publications/food-nutrition/canada-food-guide-phase1-what-we-heard.html>
- Ipsos Public Affairs. (2018, March). Canada's food guide consultation—phase 2: What we heard report. Retrieved August 6, 2019, from <https://www.canada.ca/en/services/health/publications/food-nutrition/canada-food-guide-phase2-what-we-heard.html>
- Kirkey, S. (2019, January 22). Got milk? Not so much. Health Canada's new food guide drops 'milk and alternatives' and favours plant-based protein. *National Post*. Retrieved from <https://nationalpost.com/health/health-canada-new-food-guide-2019>
- Korzinski, D., & Holliday, I. (2019, April 10). Amid rising food costs, half of low-income households say the new Canada food guide diet is unaffordable. *Angus Reid Institute*. Retrieved from <http://angusreid.org/wp-content/uploads/2019/04/2019.04.07-FoodGuide-Release.pdf>
- Ly, K., Mazar, N., Zhao, M., & Soman, D. (2013). *A practitioner's guide to nudging* (SSRN Electronic Journal).
- Mosby, I. (2012). Making and breaking Canada's food rules: Science, the state, and the government of nutrition, 1942–1949. In F. Iacovetta, Marlene Epp, & Valerie Joyce Korinek (Eds.), *Edible histories, cultural politics: Towards a Canadian food*

- history*. Retrieved from <https://books-scholarsportal-info.myaccess.library.utoronto.ca/en/read?id=/ebooks/ebooks2/utpress/2013-08-26/1/9781442661509#page=441>
- Mulligan, J. (2011, January 26). First lady Michelle Obama announces collaboration with Walmart in support of let's move! campaign. Retrieved October 9, 2019, from Let's Move! Blog website: <https://letsmove.obamawhitehouse.archives.gov/blog/2011/01/25/first-lady-michelle-obama-announces-collaboration-walmart-support-lets-move-campaign>
- National Center for Health Statistics. (2014). *National health and nutrition examination survey, 2013–2014: Overview*. Retrieved from https://www.cdc.gov/nchs/data/nhanes/nhanes_13_14/2013-14_overview_brochure.pdf
- Nguyen, B. T., & Powell, L. M. (2014). The impact of restaurant consumption among US adults: Effects on energy and nutrient intakes. *Public Health Nutrition*, 17(11), 2445–2452. <https://doi.org/10.1017/S1368980014001153>
- Ontario Ministry of Education. (2019). *The Ontario curriculum, grades 1-8: Health and physical education, 2019*. <http://edu.gov.on.ca/eng/curriculum/elementary/2019-health-physical-education-grades-1to8.pdf>
- Public Health Agency of Canada. (2019a, March 13). *Healthy Living and Chronic Disease Prevention—Multi-Sectoral Partnerships Program*. <https://www.canada.ca/en/public-health/services/funding-opportunities/multi-sectoral-partnerships-promote-healthy-living-prevent-chronic-disease.html>
- Public Health Agency of Canada. (2019b, October 17). *Multi-Sectoral Partnerships to Promote Healthy Living and Prevent Chronic Disease*. Government of Canada. <https://health-infobase.canada.ca/mssp/>
- Reynolds, J. (2019). *Nourishing the future of food in health care: A pan-Canadian policy scan 2018*. Retrieved from Food Secure Canada, McConnell Foundation, Nourish website https://foodsecurecanada.org/sites/foodsecurecanada.org/files/policy_scan_report_full_may12_spreads.pdf
- Saul, N. (2019, January 29). The new Canada Food Guide highlights the biggest obstacle to healthy eating—Poverty. *Maclean's*. <https://www.macleans.ca/society/health/the-new-canada-food-guide-highlights-the-biggest-obstacle-to-healthy-eating-poverty/>
- Schwartz, D. (2012, July 30). The politics of food guides. *CBC News*. Retrieved from <https://www.cbc.ca/news/health/the-politics-of-food-guides-1.1268575>
- Scott-Reid, J. (2019, January 23). Canada's food guide: Ignoring it? Now's the time to follow the rules. *Maclean's*. Retrieved from <https://www.macleans.ca/society/canadas-food-guide-ignoring-it-nows-the-time-to-follow-the-rules/>
- Slater, J. J., & Mudryj, A. N. (2018). Are we really “eating well with Canada's food guide?” *BMC Public Health*, 18(1), 652. <https://doi.org/10.1186/s12889-018-5540-4>
- Solyom, C. (2019, January 23). New Canada's food guide is a giant step forward, dietitians say. *Montreal Gazette*. Retrieved from <https://montrealgazette.com/health/new-canadas-food-guide-is-a-giant-step-forward-dietitians-say>
- Statistics Canada. (2007, October 24). Food expenditure survey (FES). Retrieved June 26, 2019, from <http://www23.statcan.gc.ca/imdb/p2SV.pl?Function=getSurvey&SDDS=3503>
- Statistics Canada. (2012, November 13). *Canadian community health survey RR (CCHS_RR): 2012 / rapid response—Canadian Food Guide / content*.
- Statistics Canada. (2017a, June 20). Canadian community health survey (CCHS): Nutrition—2015 (first interview). Retrieved August 7, 2019, from http://www23.statcan.gc.ca/imdb/p3Instr.pl?Function=assembleInstr&lang=en&Item_Id=202664
- Statistics Canada. (2017b, December 27). Detailed food spending, Canada, regions and provinces. Retrieved August 8, 2019, from <https://www150.statcan.gc.ca/t1/tbl1/en/tv.action?pid=1110012501>
- Taylor, P. (2019, January 30). How can we talk about Canada's new Food Guide without talking about access and inequality? *Toronto Star*. Retrieved from <https://www.thestar.com/opinion/contributors/2019/01/30/how-can-we-talk-about-canadas-new-food-guide-without-talking-about-access-and-inequality.html>
- The White House: Office of the First Lady. (2012, January 26). First lady Michelle Obama joins Goya Foods in announcing “Mi Plato” resources for families. Retrieved October 9, 2019, from The White House: President Barack Obama website: <https://obamawhitehouse.archives.gov/the-press-office/2012/01/26/first-lady-michelle-obama-joins-goya-foods-announcing-mi-plato-resources>

Trudeau, J. (2019, December 13). *Minister of Health Mandate Letter*. <https://pm.gc.ca/en/mandate-letters/2019/12/13/minister-health-mandate-letter>

United States Department of Agriculture. (2018, July 31). WVEIA/NHANES overview: USDA ARS. Retrieved June 20, 2019, from <https://www.ars.usda.gov/northeast-area/beltsville-md-bhnrc/beltsville-human-nutrition-research-center/food-surveys-research-group/docs/wveianhanes-overview/>

United States Department of Health and Human Services and United States Department of Agriculture. (2015, December). Dietary guidelines for Americans. 8th edition. Retrieved June 20, 2019, from <https://health.gov/dietaryguidelines/2015/guidelines/>

Zimonjic, P. (2019, July 19). Conservatives “declaring war on Canada food guide” like they did on long-form census, Trudeau says. *CBC News*. Retrieved from <https://www.cbc.ca/news/politics/scheer-trudeau-canada-food-guide-1.5216957>