

National Collaborating Centre
for **Healthy Public Policy**

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**PUBLIC POLICIES ON NUTRITION LABELLING:
EFFECTS AND IMPLEMENTATION ISSUES –
A KNOWLEDGE SYNTHESIS**

JANUARY 2011



Centre de collaboration nationale
sur les politiques publiques et la santé

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ABOUT THE NATIONAL COLLABORATING CENTRE FOR HEALTHY PUBLIC POLICY

The National Collaborating Centre for Healthy Public Policy (NCCHPP) seeks to increase the expertise of public health actors across Canada in healthy public policy through the development, sharing and use of knowledge. The NCCHPP is one of six Centres financed by the Public Health Agency of Canada. The six Centres form a network across Canada, each hosted by a different institution and each focusing on a specific topic linked to public health. In addition to the Centres' individual contributions, the network of Collaborating Centres provides focal points for the exchange and common production of knowledge relating to these topics.

FOREWORD

Intended readership

This document is likely to be of interest to two types of readers:

- **Public health actors who produce knowledge syntheses** to inform decision makers will be interested in how this document illustrates the knowledge synthesis method adapted to public policies that was developed by the National Collaborating Centre for Healthy Public Policy (NCCHPP) (Morestin, Gauvin, Hogue, & Benoit, 2010).
- **Decision makers as well as nutrition and healthy eating professionals** can read this document simply as a source of knowledge about the effects and implementation issues tied to public policies on nutrition labelling.

Overview

Following a brief discussion of the targeted problem, namely, obesity in Canada, this document defines the subject of the present knowledge synthesis: nutrition labelling, whose effectiveness we attempt to document, along with its unintended effects, equity, cost, feasibility and acceptability.

Next follows a description of the method used to study public policies on nutrition labelling: explication of their logic model; review of the scientific and grey literatures; and organization of deliberative processes that bring together Canadian actors involved in addressing obesity.

This document next describes the logic model for nutrition labelling. It then synthesizes the data gathered from the literature on the status of nutrition-labelling policies in industrialized countries, on the effectiveness of nutrition labelling, and on its unintended effects, equity, cost, feasibility and acceptability. Then, the data on these same topics gathered through deliberative processes are presented.

The document concludes with a summary of the key points to note regarding the effects and implementation of public policies on nutrition labelling.

Our suggestions for how this document is to be read

- Those interested mainly in the methodological aspect are invited to consult, in parallel, this document and the document describing the knowledge synthesis method developed by the NCCHPP (Morestin et al., 2010). The latter document justifies the need for a specific approach for the study of public policies and describes the proposed method in a *generic* manner. The present document shows how these generic guidelines have been applied to the study of a specific public policy. It also gives some indication of the results that this method can produce, showing, in other words, what the final knowledge synthesis document looks like.
- Those interested solely in knowledge about nutrition labelling can read this document without consulting the other one. Overall, it takes the form of a standard scientific report describing the problem and the intervention studied, the method followed, and the results obtained. A linear reading is possible. However, this document is rather dense, since it

assembles a large amount of data about several dimensions of nutrition-labelling policies. Readers may, therefore, prefer to approach it as a catalogue containing a collection of knowledge classified thematically, and to use the table of contents to navigate directly to the sections that interest them. Finally, readers with limited time may consult the end of the document, where the key points to note regarding the effects and implementation of public policies on nutrition labelling are summarized in a few pages.

An intermediate option would be to consult the summary document (Morestin, 2011), published in parallel, which summarizes the entire contents of this knowledge synthesis in about ten pages, and thus incorporates more detail than the “key points to note” while remaining relatively brief.

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LIST OF ACRONYMS

CCHS	Canadian Community Health Survey
CFIA	Canadian Food Inspection Agency
CSPI	Centre for Science in the Public Interest
EU	European Union
FDA	Food and Drug Administration
FDR	Food and Drug Regulations
FSA	Food Standards Agency
GAO	Government Accountability Office
NCCHPP	National Collaborating Centre for Healthy Public Policy
NLEA	<i>Nutrition Labeling and Education Act</i>
RDV	Recommended daily value
RWJF	Robert Wood Johnson Foundation
USDA	United States Department of Agriculture

1 INTRODUCTION: OBESITY IN CANADA

According to Statistics Canada's Canadian Community Health Survey (CCHS) (Tjepkema, 2006; Shields, 2006), in 2004, 23% of Canadian adults (5.5 million) were obese and 36% (8.6 million) were overweight; 8% of children and adolescents were obese and 18% were overweight.

The evolution of the situation is just as alarming. Between 1981 and 2007-2009, the percentage of obese adults at least doubled in all age groups; if this trend continues, in 25 years, half of Canadians over 40 will be obese (Shields et al., 2010). Among children and adolescents, the rate of obesity multiplied by 2.5 between 1978-1979 and 2004 (Shields, 2006).

Below are some noteworthy facts about the distribution of obesity within the Canadian population.

The relationship between obesity and income level appears complex. According to the 2004 CCHS, which directly measured the height and weight of respondents from across Canada, the highest rates of obesity are found among adult women, children and adolescents living in middle-income households (Shields, 2006; Tjepkema, 2006). Another study, based on data from the 2000-2001 CCHS, focused on a particular environment: large cities. This study indicates that, according to the self-reported height and weight data of respondents, low-income adult women have higher body mass indices (Ross et al., 2007). Among adult men, regardless of whether height and weight are measured directly or are self-reported, more weight problems are observed among those in the middle- and high-income groups (Ross et al., 2007; Tjepkema, 2006).

For another indicator of social status, the relationship is more consistent: lower education levels are associated with higher obesity rates (Shields, 2006; Tjepkema, 2006; Ross et al., 2007).

Also noteworthy is the much higher prevalence of obesity among aboriginal persons: 1.6 times the national average for adults, and 2.5 times for children and adolescents (Shields, 2006; Tjepkema, 2006).

Overweight and, even more so, obesity constitute risk factors for several chronic diseases (hypertension, type 2 diabetes, cardio-vascular diseases), for certain cancers, for musculo-skeletal problems, and for negative psychosocial consequences (notably, low self-esteem); in 2000, 9.3% of deaths among Canadians between 20 and 64 years old were linked to overweight or obesity (Raine, 2004; Tjepkema, 2006).

One study estimates that, in Canada in 2001, obesity was linked to 1.6 billion Canadian dollars in direct costs (health care expenditures for the main diseases associated with obesity) and 2.7 billion in indirect costs (economic output lost due to premature death, illness or disability) (Katzmarzyk and Janssen, 2004).

As Figure 1 illustrates, obesity does not result from a *single* cause, but from many factors that interrelate in a complex manner and intervene at different levels (international, national, regional, community, and individual).

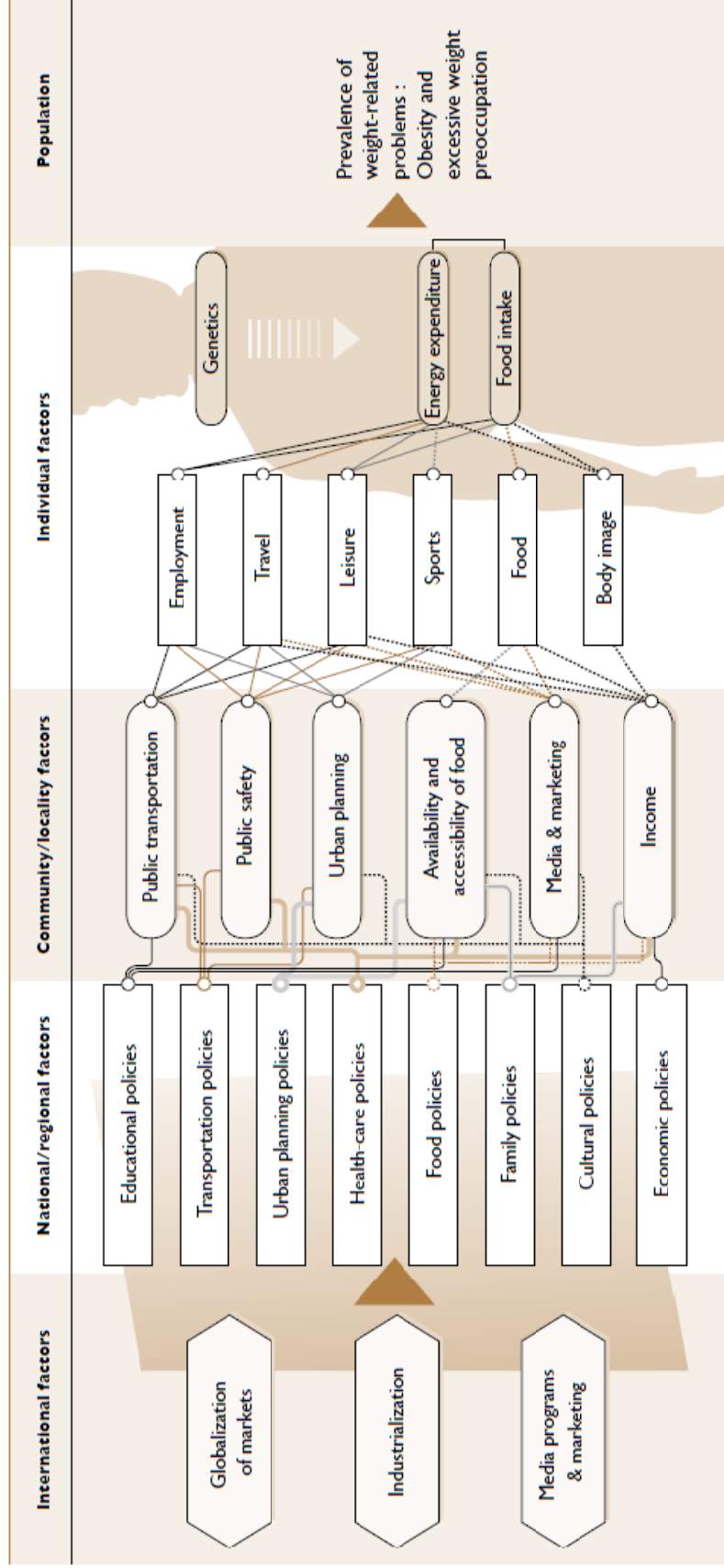


Figure 1 Causal web of factors influencing weight-related problems

Source: Groupe de travail provincial sur la problématique du poids (Adapted from work carried out by the International Obesity Task Force), 2004, p. 12.

All of these factors constitute potential points of intervention for addressing obesity.

2 SUBJECT OF THE KNOWLEDGE SYNTHESIS: PUBLIC POLICIES ON NUTRITION LABELLING

This knowledge synthesis is devoted to the subject of public policies on the various modes of nutrition labelling:

- labelling on pre-packaged foods and labelling on menus and menu boards in restaurants;¹
- detailed labelling (Nutrition Facts table) and simplified labelling² (summarizing information in visual format: logos, symbols);
- mandatory labelling versus labelling that is optional, but is regulated by guidelines.

Nutrition labelling is intended to act on one of the proximal determinants of obesity: food intake. Data from the 2004 CCHS indicate several problems related to the dietary habits of Canadians. “Other foods,” which do not belong to the basic food groups and should be consumed in moderation,³ are overconsumed; the caloric intake from snacks (largely composed of these “other foods”) is higher than that of breakfast and almost equal to that of lunch; a significant portion of the population overconsumes fats. Other indicators, such as daily calorie consumption remain within desirable proportions in general, but this can conceal significant disparities within the population (Garriguet, 2007).

It is understood that a problem as complex as obesity requires a multiform approach and that we are focusing here on *one* public policy which constitutes a *partial* response to obesity. The decision to study nutrition labelling, rather than other policies aimed at addressing obesity, was based on several criteria.

Firstly, we considered the potential effectiveness of nutrition labelling.

Labelling is one of the public policies experts propose as a way to improve dietary intake. Moreover, by providing consumers with information about the nutritional value of foods, labelling is likely to act not only on obesity, the problem that interests us here, but also on several diet-related diseases (cardio-vascular diseases, hypertension, etc.). However, it is known that interventions based on information provision generally have a limited impact on behaviour. Thus, it seemed likely, even before carrying out the knowledge synthesis, that nutrition labelling would be only marginally effective.

¹ Some believe that nutrition labelling on pre-packaged foods and menu labelling, because they are implemented in different contexts, constitute two subjects that are distinct enough to merit separate knowledge syntheses. We have, however, chosen to consider them together because they rely on the same principle, which assumes a certain response on the part of consumers to the nutritional information presented to them. Nevertheless, if the data collected for this knowledge synthesis point to differences between the effects and implementation issues related to labelling of packaged foods and menu labelling, we shall draw the reader's attention to these differences.

² Simplified labelling is also called “front-of-pack labelling” when it refers to pre-packaged foods, because it is in this most visible place that simplified nutrition labelling is usually presented, unlike the nutrition facts table, which is usually presented on the back or sides of packaging.

³ Fats and oils, foods and drinks composed essentially of sugar, snacks rich in salt and fat, etc.

The likelihood of its limited effectiveness did not, however, exclude nutrition labelling as a potential subject of study, because of other criteria related to the realities of decision making and to the opportunity to adopt a particular public policy at a given moment within a given society.

In theory, nutrition labelling is, by its nature, likely to draw the interest of decision makers. Apart from its probably marginal, yet non-negligible, effectiveness, there is the fact that it seems inexpensive to implement. Also of possible interest to decision makers is the fact that nutrition labelling is in no way coercive for consumers (on the contrary, information provision respects and promotes personal autonomy) and is variably coercive for the food industry, depending on the position taken with respect to mandatory or optional labelling. Such a policy should not, therefore, be met with strong opposition.

In concrete terms, many signs of interest in nutrition labelling can be observed in Canada. It is currently on the discussion agenda. Since detailed labelling of pre-packaged foods (using the Nutrition Facts table) is already required, the debate today is focused on new modes of labelling: simplified labelling and menu labelling. The food industry has been multiplying simplified labelling initiatives for several years, which has led federal authorities to organize a consultation process aimed at determining how to harmonize and better regulate this proliferation of labelling formats. For its part, the debate on nutrition labelling in restaurants has been revitalized by the fact that several public policies on this matter have recently been adopted in the United States. The relevance of this debate in Canada is reinforced by the 2004 CCHS, according to which a quarter of Canadians questioned had, during the previous day, consumed food prepared in a fast-food restaurant (Garriguet, 2007). The question of nutrition labelling is regularly debated in the media; thus, the public is sensitized to the issue.

For all these reasons, it seems relevant and worthwhile to devote a knowledge synthesis to the subject of nutrition labelling.

Taking into consideration decision makers' concern as much for the effects of public policies as for their implementation issues, this synthesis aims to contribute to answering the following six questions related to nutrition labelling:

Table 1 Dimensions for analyzing public policies (Morestin et al., 2010)

Effects	Effectiveness	What effects does this policy have on the targeted problem?
	Unintended effects	What are the unintended effects of this policy?
	Equity	What are the effects on different groups?
Implementation	Cost	What are the financial costs of this policy?
	Feasibility	Is this policy technically feasible?
	Acceptability	Do the relevant stakeholders view this policy as acceptable?

The scope of each analytical dimension is not always as evident as it may seem. Below are the definitions that we have assigned to these terms within the context of this knowledge synthesis:

Effectiveness refers here to the degree to which a public policy fulfills its objective. In assessing this, we take into account not only the positive effects of the policy studied, but also its potentially neutral or negative effects.

Unintended effects are defined here as any other effects (positive or negative) that are produced by the policy, but that are unrelated to the objective pursued.

Equity, as discussed here, refers to the equitability of effects, that is, the *differential* effects of the public policy studied on various population groups (Swinburn, Gill, & Kumanyika, 2005).

Cost refers to the financial costs associated with implementing the public policy under study.

Feasibility refers to the technical feasibility of the public policy.

Acceptability refers to how the public policy under study is judged by stakeholders: how they judge not only its intrinsic characteristics, but also the conditions surrounding its adoption and implementation.

For a more detailed description of each of these analytical dimensions, please consult the document describing the method for synthesizing knowledge about public policies proposed by the NCCHPP (Morestin et al., 2010).

3 METHOD

We have followed the method for synthesizing knowledge about public policies proposed by the NCCHPP (Morestin et al., 2010).

The first step suggested in this method is to compile an inventory of public policies that could potentially address the targeted health problem, before choosing one to be the subject of the knowledge synthesis. The purpose of such an inventory is to help guide the choice of the policy to be studied: it leads to deeper reflection and, thus, prevents relevant policies from being disregarded. However, the present document is above all an illustrative document intended to clarify for the reader how the knowledge synthesis method developed by the NCCHPP may be applied; the inventory step, which is very specific to whatever subject is being studied, is only marginally useful for clarifying how other subjects can be explored. Thus, in the present case, we have not compiled an inventory of public policies aimed at addressing obesity and have directly chosen to study nutrition labelling.

We have followed the three other steps proposed in the NCCHPP's method: the explication of the intervention logic of the public policy under study, the production of a literature review, and the organization of deliberative processes.

3.1 EXPLICATION OF THE INTERVENTION LOGIC OF NUTRITION LABELLING

When studying the effectiveness of a public policy, it is useful to make its intervention logic explicit: through which intermediate effects, which in turn produce others, do we expect this policy to act on the targeted health problem? The first documents consulted at the beginning of the literature review process described below, along with causal reasoning, allowed us to establish the chain of expected effects linking nutrition labelling to the prevention of obesity. We have graphically represented this chain of effects in the form of a logic model (presented in Chapter 4).

The goal of a logic model is clearly circumscribed. Its purpose is not to prove the existence of a causal relationship between the policy studied and the effects listed, but only to represent how, *in theory*, the policy is supposed to produce these effects. Moreover, it does not represent “competing” factors, which influence the targeted problem, but which the policy under study does not act upon (for a graphic representation of these factors for obesity, refer to the causal web shown in the introduction).

However, the logic model is useful in several respects. It served as a guide at several points in the production of this knowledge synthesis. Given the fact that there exists almost no literature on the link between nutrition labelling and obesity prevention, the only possible approach to documenting the policy's effectiveness was to collect data on the various intermediate effects. Prior reflection on the intervention logic made it possible to orient the documentary search toward the relevant intermediate effects. In addition, nutrition labelling is approached from numerous perspectives in the literature and, when one is immersed in the documentation, it is sometimes difficult to discern whether something is off-subject, given our angle of approach; consulting the logic model helped us decide whether or not certain documents identified during the documentary search should be included and whether or not

to extract some of the data found in documents. The logic model also provided the framework for classifying the effectiveness data in the extraction tables and for structuring the text describing these data into relevant sub-sections. This breakdown of the effectiveness data by intermediate effect carries an advantage that can guide decision making and action: it more precisely details which aspects of the policy under study work and which do not work, and thus, indicates where to intervene to remedy problems.

3.2 LITERATURE REVIEW

The purpose of the literature review was to gather the available knowledge on the effectiveness of nutrition labelling, its unintended effects, its equity, its cost, its feasibility and its acceptability. Given the diversity of these aspects and the tendency of the scientific literature to favour effectiveness data to the detriment of the other dimensions, the grey literature was also reviewed.

3.2.1 Documentary search

The documentary search was carried out during the month of August 2009. A few documents identified through scanning were added to the documentary corpus during the autumn of 2009.

Inclusion criteria

Content of document

To be selected, documents had to be focused on nutrition labelling — detailed or simplified — on pre-packaged foods or restaurant menus.

They had to include information on at least one of the following dimensions: the status of nutrition-labelling policies (already in effect, under discussion...), their effectiveness (including their intermediate effects, as identified in the logic model), their unintended effects, their equity, their cost, their feasibility, or their acceptability.

We were mainly interested in documents assessing or describing *public policies* on nutrition labelling, that is, nutrition-labelling initiatives carried out by public authorities. However, we also retained documents on specific labelling experiments organized by researchers (for example: labelling for a month in a cafeteria). These more controlled experiments make possible more refined assessments, and their results can partially be extrapolated to public policies, even though these are implemented under different conditions. We also included documents on labelling initiatives arising from the private sector. Certain lessons drawn from such initiatives can also be extrapolated to public policies. Moreover, since these private initiatives already “occupy the territory”, their effects and implementation issues cannot be ignored by those preparing to implement a public policy on nutrition labelling.

Documents dealing with the general population were selected, but not those focused on groups who must follow a particular diet (for example, diabetic persons).

Countries of implementation

Searching for data on Canada was a priority, but we expected such data to be scarce. We therefore included data on the United States, European countries, Australia and New Zealand, judging these countries to be sufficiently similar to Canada economically, politically and socioculturally to offer relevant lessons.

Period considered

This extended from January 2006 to August 2009. Recent literature was given priority, since we were attempting to document the current situation so as to inform decision making. Moreover, recent literature was sufficiently abundant, making it unnecessary to go far back in time to collect a significant amount of data.

Languages

Given the linguistic abilities of our team, we selected documents written in English and in French.

Documentary sources

The documentary search was carried out on websites and using databases, such that both scientific and grey literatures were considered.

We first explored about sixty websites of organizations, Canadian and non-Canadian, working in the area of health or of healthy public policy (governmental institutions, associations and networks, research groups and think tanks, institutions that produce or inventory literature reviews), including some specialized in nutrition, in obesity or in chronic diseases. The complete list of sites consulted is included in Appendix 1. The time devoted to this step was relatively short: six days, full-time equivalent. In fact, because our subject is very specific and because the sites examined also reflect interest in numerous other subjects, we went through them quite quickly.

The exploration of websites included a review of presentations made during various conferences in Canada (*Journées annuelles de santé publique du Québec*, annual conferences of the Ontario Public Health Association, national conferences of the Chronic Disease Prevention Alliance of Canada).

The other documentary sources explored were databases:

- PubMed, chosen because it is the main database for life sciences. The search terms selected from the thesaurus after various trials were the following: (((("Health Behavior"[Mesh] OR "Health Promotion"[Mesh])) OR "Obesity"[Mesh]) AND "Food Labeling"[Majr]).
- PsycINFO (explored using the EBSCOhost platform), a database specialized in psychology, an important aspect to consider in examining consumer reaction to the information provided by nutrition labelling. After various trials, the method selected consisted of searching the titles of documents using free keywords (chosen because of their recurrence in previously located documents): TI (nutrition* or food or kalori*) and TI (label* or fact? or content).

- Using the CSA research platform:
 - CSA Worldwide political science abstracts: political science database;
 - CSA Social services abstracts: social sciences and sociology database;
 - CSA Sociological abstracts: idem; this database indexes not only scientific literature, but also grey literature;
 - PAIS international: a database that includes scientific and grey literature and covers a variety of subjects, several of which potentially relate to various aspects of nutrition-labelling policies (government, health, law and ethics, industry, communication...).

These databases were searched by document title, using free keywords: TI=(nutrition* or food or calori*) and TI=(label* or fact? or content).

3.2.2 Appraisal of the quality of data

For reasons explained in the document presenting our knowledge synthesis method (Morestin et al., 2010), our “appraisal of quality” is not based on the methodological criteria ordinarily used for systematic reviews in the health field, as these criteria prove overly rigid for the study of public policies. The documents located were not sorted according to their methodological characteristics, but rather according to their relevance, that is, the extent to which they contributed to the knowledge synthesis. In the present case, none of the documents that met the inclusion criteria defined above were rejected, except those which were too brief to contribute useful information (editorials, letters to the editor, authors’ replies, etc.). However, the main characteristics of each selected document were described, so that readers would be able to assess their methodological quality.

3.2.3 Data perusal and extraction

Forty documents were finally selected from the scientific literature (peer-reviewed articles published in scientific journals) and thirty-one from the grey literature (reports, press releases, fact sheets, action plans, declarations, university theses...).

We separated the scientific literature and the grey literature, in view of the fact that the latter could be more biased, since it is not subject to peer review. For both corpora, we read the documents in reverse chronological order and in alphabetical order, by author. We systematically recorded, for each document, the information about the status of nutrition-labelling policies in the contexts studied (for example, the history of its adoption if a policy was already in effect or the description of the debate underway if its adoption was under discussion) and about the six analytical dimensions summarized below:⁴

⁴ For a description of these analytical dimensions and criteria, consult the document describing the method for synthesizing knowledge about public policies proposed by the NCCHPP (Morestin et al., 2010).

Dimensions and criteria for analysis

Effectiveness

- Plausibility of the intervention logic
- Effectiveness of the policy under study as a means of addressing the targeted problem
- Intermediate effects of the policy
- Impact of context on the policy's effectiveness

Unintended effects

Unintended effects of the public policy (be these positive or negative, anticipated or unanticipated)

Equity

- Differential effects of the policy under study on various groups
- Effects on social inequalities in health

Cost

- Implementation cost for the government
- Cost for other actors
- Cost compared to that of other potential policies
- Cost-effectiveness
- Distribution over time
- Visibility⁵

Feasibility

- Conformity with all relevant legislation
- Existence of pilot programs
- Automaticity⁶
- Directness⁷ and hierarchical integration⁸
- Number of actors involved in implementation
- Quality of the cooperation between actors
- Ability of opponents to interfere
- Availability of human resources required
- Availability of material resources required
- Availability of "technological" resources required

Acceptability

For each actor concerned:

- Acceptability of acting on the problem
- Acceptability of the policy:
 - Assessment of its effectiveness, unintended effects, equity, cost, and feasibility
 - Assessment of the degree of coercion involved
- Acceptability of the decision-making process
- Acceptability of the actors involved in implementation
- Acceptability of accountability measures

⁵ Visibility: Degree to which the costs associated with a public policy are apparent (Peters, 2002; Salamon, 2002).

⁶ Automaticity: Degree to which the implementation of a public policy is managed by pre-existing administrative mechanisms (Salamon, 2002).

⁷ Directness: Degree to which the organization that authorizes, finances or launches the policy is also involved in its implementation (Salamon, 2002).

⁸ Hierarchical integration: Degree to which those spearheading a public policy guide, using an appropriate system of incentives and sanctions, the activities of the other actors involved in its implementation (Sabatier & Mazmanian, 1995).

All documents must be read carefully, since useful information may be found even in a short sentence in the introduction or conclusion, particularly concerning the cost, feasibility and acceptability dimensions.

After reading each document, we recorded, in an extraction table, the information it contained about the various dimensions, as well as its main methodological characteristics: the type of document (scientific journal article, grey literature, etc.), its origin (name of website, database or other source through which it was found), its design, and its authors' affiliations (university, government, industry, etc.). One extraction table is devoted to the scientific literature and another to the grey literature; these are accessible online.⁹

We extracted *all* of the relevant information contained in the documents, whether this took the form of primary data presented by the authors or of secondary data drawn from other documents cited by the authors. This is why the data extracted from a single document can sometimes be contradictory (for example, the evaluation described in one article notes a positive effect associated with nutrition labelling; yet, the article also cites other studies indicating a negative effect). One could challenge our decision to proceed as such. However, it was guided by the desire to take an exhaustive approach (to present all the relevant information available) and by time constraints (reading all the documents cited, in other words, using snowballing, would have taken too long). Moreover, our view is that when authors cite another document, they appropriate its content by presenting it in their own manner: thus, it seemed reasonable to us to extract these reported data and place them alongside primary data.

Reading and extracting data took a little more than three weeks, full-time equivalent, for 71 documents. Because of the time devoted to this step, we almost never had to return to the documents subsequently.

3.2.4 Synthesis of data drawn from the literature

Our synthesis of the data drawn from the literature (Chapter 5) is a narrative review structured according to seven broad themes: status, effectiveness, unintended effects, equity, cost, feasibility, and acceptability of nutrition-labelling policies. The groundwork for this thematic analysis was laid during the previous step, since the data drawn from the literature were classified in the extraction tables according to these different dimensions.

However, the two extraction tables contained large amounts of information, which were difficult to manage as recorded. Therefore, we subdivided the main extraction tables into several sub-tables, each devoted to one of the analytical dimensions. Since the extracted data was still quite abundant for some dimensions, we further subdivided some sub-tables (as shown in the organizational charts presented in Appendix 2) to arrive at manageably-

⁹ The extraction tables can be accessed at the following addresses:
Scientific literature: <http://www.ncchpp.ca/224/tables-sci.ccnpps>,
Grey literature: <http://www.ncchpp.ca/227/tables-grey.ccnpps>.

sized groupings of data. The data contained in each column of the main extraction tables were isolated and reclassified into sub-tables corresponding to these subdivisions.¹⁰

At this stage, each column of the sub-tables contained a coherent grouping of data on the same sub-theme; it was thus easier to consider the content of the columns one-by-one and to summarize it in a text.

We began by synthesizing the data drawn from the scientific literature, pointing out where the data from the various documents converge and diverge. The synthesis was produced in a systematic manner: *all* the statements extracted from the documents are reflected in the text, accompanied by references to *all* the documents from which they were extracted, with the exception of the data on the status of nutrition-labelling policies, which are often very basic data elements, such as the date a law was adopted. In such cases, we did not judge it necessary to cite all the documents presenting the same piece of information.

Once the synthesis of the scientific literature was completed, it became apparent that the grey literature (which we had already read and whose data we had extracted) reiterated the content of the scientific literature concerning a number of aspects. To avoid wasting time, we decided to use only the data on aspects that were not extensively covered in the scientific literature: all the information about Canada, as well as the information about cost and feasibility in all the countries studied. This was a choice of expedience, but to avoid introducing further bias, we systematically included all the data available on these aspects. In the final text, the data drawn from the grey literature are presented side by side with those drawn from the scientific literature, for each theme. They are, however, distinguished by being written in grey text and by the systematic identification of their authors (through formulations such as: “According to the X Foundation...”).

3.3 DELIBERATIVE PROCESSES

The type of deliberative process proposed in our knowledge synthesis method involves bringing together relevant stakeholders, and presenting them with a synthesis of the data drawn from the literature, so that they can discuss it collectively. The deliberative processes must therefore document the same dimensions as the literature review: the effectiveness of the policy under study, its unintended effects, its equity, its cost, its feasibility, and its acceptability.

The participants’ experiential knowledge related to these dimensions is useful in several respects. If the data collected was drawn from studies of other countries (because of a lack of Canadian data in the literature), Canadian actors may indicate that these data cannot be fully extrapolated to Canada, because of some parameter specific to the Canadian context. Inversely, if these actors believe the data can be extrapolated to Canada, this information is not redundant, but is useful in itself. Furthermore, the literature often contains a scarcity of data on certain dimensions (in particular those related to the implementation of public policies); deliberative processes can help fill these gaps. Finally, participants in deliberative

¹⁰ Cf. the previously cited addresses:
Scientific literature: <http://www.ncchpp.ca/224/tables-sci.ccnpps>,
Grey literature: <http://www.ncchpp.ca/227/tables-grey.ccnpps>.

processes may be prompted to work for or against the eventual adoption and implementation of the public policy under study in their particular context. Thus, decision makers have an interest in knowing how these actors view the policy.

Deliberation is preferable to individual consultations with actors, because allowing actors to compare their respective knowledge deepens the level of reflection achieved.

We tested a preliminary version of our knowledge synthesis method in 2006-2008. Within this context, deliberative processes were organized in March 2008 to generate discussion of three public policies, including nutrition labelling. We resumed this work in 2009, to refine the synthesis method and to update the literature review, but without organizing new deliberative processes. It is the characteristics of the 2008 deliberative processes that are described here.

We organized deliberative processes in two provinces. British Columbia was chosen because the Select Standing Committee on Health in this province had recommended, subsequent to consultations, the creation of a provincial committee to work with the federal government on a simplified nutrition-labelling system for pre-packaged foods (Select Standing Committee on Health, 2006). Ontario, which at the time had not undertaken such an initiative, was chosen for purposes of comparison.

The participants invited to the deliberative process in British Columbia were identified through the intermediary of the BC Healthy Living Alliance, an umbrella group for several organizations whose mission is to promote healthy living.¹¹ Twelve people were invited to this meeting, which took place on March 5, 2008 in Vancouver. The participants were recruited from the health sector (public and not-for-profit institutions), the agri-food sector (not-for-profit institutions) and the education sector (a public institution). In Ontario, we received assistance from two resource persons from Health Nexus, an organization working in the area of health promotion,¹² who contacted various actors. Given the number of relevant actors identified, two deliberative processes were organized in Toronto: the first was held on March 13, 2008, and brought together 12 persons from the public health sector (public and not-for-profit institutions), the education sector (a public institution), the physical activity sector (not-for-profit institutions); and the other, which took place on March 14, brought together 9 persons from the public health sector (public and not-for-profit institutions, and an academic institution) and the children's services sector (a public institution).

The actors identified received an invitation in January 2008. Approximately two weeks before the meetings, they received short documents describing our knowledge synthesis project and summarizing the literature on the public policies to be discussed.

The meetings began with a brief introduction to the NCCHPP, the project underway, its objective and the day's agenda. Then followed almost two hours of discussion devoted to nutrition labelling, for each deliberative process. This length of time, which might be considered somewhat short, is explained by the fact that the participants had been

¹¹ <http://www.bchealthyliving.ca>.

¹² <http://www.healthnexus.ca/>.

assembled to discuss three public policies in a single day. Discussion was guided by a series of questions reflecting the dimensions of our analytical framework. Exchanges were governed by the Chatham House Rule¹³: all participants are free to use and to cite the content of exchanges that take place during the meeting, but neither the identity nor the institutional affiliation of any of the participants may be revealed.

We made audio recordings of the discussions. These were transcribed, and the statements gathered were summarized and classified according to the same dimensions used for the literature review (status of nutrition labelling, effectiveness, unintended effects, equity, cost, feasibility, and acceptability). The points of convergence and divergence between the participants' statements and among the three deliberative processes were highlighted.

In the present document, data gathered from the deliberative processes (Chapter 6) are identified by means of underlining in order to clearly distinguish them from data gathered from the literature.

Table 2 Summary table of the time required to complete each step of the method

Step		Time required (full-time equivalent)
Logic model		1 week -
Literature review	Documentary search – Websites	1 week +
	Documentary search – Databases	1 week
	Data perusal and extraction	3 weeks +
	Synthesis/writing	6 weeks
Deliberative processes	Organization, analysis and synthesis/writing	8 weeks

Let us now consider the knowledge about nutrition labelling that the application of this method allowed us to gather and synthesize.

¹³ <http://www.chathamhouse.org.uk/about/chathamhouserule>.

4 INTERVENTION LOGIC OF NUTRITION LABELLING

The intervention logic, whether for pre-packaged foods or restaurant menus, holds that nutrition labelling will result in consumers being better informed about the nutritional value of food products; this improved knowledge will lead them to purchase and consume healthier food (the relationship between information and food intake can also be direct, as, for example, for those members of a family who choose from among foods that are present in the home, but which they did not buy themselves); and this consumption of healthier foods will help prevent obesity.

The logic model below summarizes these hypotheses in graphic form:

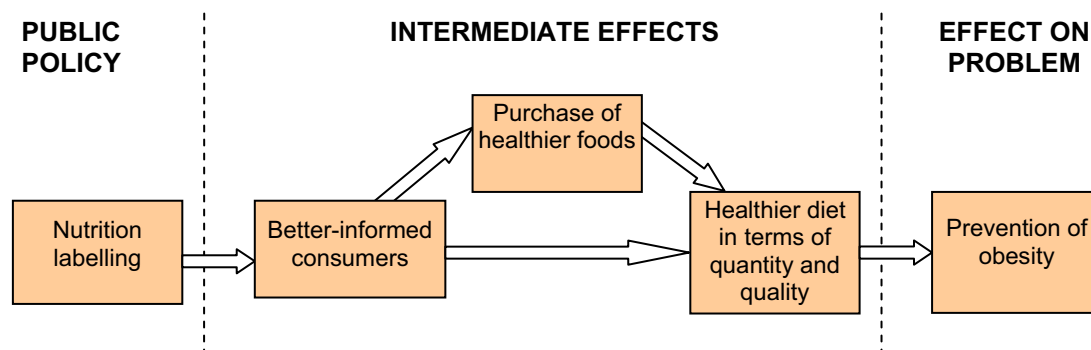


Figure 2 Logic model (nutrition labelling)

Of course, one may presume from the outset that this intervention logic is not fully realized in reality. It can be expected that, at each step in the process, the policy's effectiveness will be affected by factors that are uninfluenced by nutrition labelling, which limits the extent to which the intervention hypotheses hold true. For example, to what extent does nutrition labelling increase consumers' knowledge, given that this depends on whether (or not) they read and whether (or not) they understand the nutrition information? To what extent does the information consumers possess influence their purchasing choices, given the presence of other factors, such as food prices and taste preferences?

The data gathered from the literature and the deliberative processes will show us the extent to which the intervention logic is fulfilled in reality, will indicate what other effects nutrition-labelling policies produce, and will point to the issues raised by their implementation.

5 SYNTHESIS OF DATA DRAWN FROM THE LITERATURE

Below are presented, in succession, the data on the status of nutrition-labelling policies in Canada and in other industrialized countries, and on their effectiveness, unintended effects, equity, cost, feasibility, and acceptability.

The data drawn from the scientific literature are presented in regular text, while those drawn from the grey literature are written in grey.

Refer to Appendix 3 for visual examples of nutrition-labelling formats denoted in the text by an asterisk (*).

5.1 STATUS OF NUTRITION-LABELLING POLICIES IN INDUSTRIALIZED COUNTRIES

5.1.1 Canada

Health Canada is responsible for developing policies, regulations and standards for nutrition labelling on foods, whereas the Canadian Food Inspection Agency (CFIA) ensures that industry complies with these (CFIA, 2009; Health Canada, 2007). The Food and Drug Regulations (FDR) made uniform labelling on pre-packaged foods mandatory: since December 2005, these foods have been required to display a Nutrition Facts table* (modelled on the one used in the United States) indicating the caloric value of the food and its nutrient content for 13 nutrients: fat, saturated fat, trans fat, cholesterol, sodium, carbohydrate, fibre, sugars, protein, vitamin A, vitamin C, calcium and iron (Health Canada, 2009a). Bill C-283, debated in Canada's Parliament in 2006, proposed that the Nutrition Facts table also be displayed on fresh meat, poultry, and seafood, but it was not approved (Centre for Science in the Public Interest - Canada [CSPI-Canada], 2006a).

The presentation of simplified nutrition information on the front of packages falls largely into a regulatory void. The FDR establish the criteria that must be respected for a food to display an *explicit* nutrient content claim (for example: "Low fat" or "Sodium-free"). However, *implied* claims, not expressed in words, but through illustrations, logos or symbols, are not targeted by existing regulations (Health Canada, 2007). In reality, numerous companies have created their own "health" logos*: for example, PepsiCo's Smart Spot™, Kraft's Sensible Solution, and the Blue Menu™ logo from President's Choice® (CSPI-Canada, 2007 and 2008b). For its part, the Heart and Stroke Foundation of Canada has developed the Health Check™* logo. Industry members can voluntarily submit their products to receive this logo if they fulfill the required nutritional criteria and, to date, over 1500 foods carry it (Heart and Stroke Foundation, 2009a). All of these logos are based on different criteria and, apart from the Health Check™ logo, are attributed to foods by the companies themselves (CSPI-Canada, 2007 and 2008b; Coalition québécoise sur la problématique du poids, 2009a and 2009b; Health Canada, 2007). This lack of uniformity and impartiality is problematic. Thus, at the end of 2007, Health Canada began consultations with researchers, consumer groups, health professionals, industry representatives, and with federal, provincial and municipal governments. Based on these, Health Canada developed a five-year plan, detailing, among other things, plans to study the way consumers interpret the Nutrition Facts table and simplified front-of-pack labelling; to analyze, at the national and international levels,

nutritional criteria being used, definitions of “healthy” foods, and the obstacles to taking action in this area, as well as the potential health benefits of doing so; and to examine the possibility of standardizing nutritional criteria regulating front-of-pack logos and claims (Health Canada, 2009b).

Restaurants are exempt from the FDR, even though Health Canada encourages consumers to request nutrition information when dining out (Health Canada, 2009a). Bill C-283, debated in the Canada’s Parliament in 2006, proposed making it mandatory for restaurant chains to display the caloric value of foods on their menu boards and, on menus, their sodium, saturated fat and trans fat content (CSPI-Canada, 2006a). This bill was rejected, partly in exchange for a promise from the Canadian Restaurant and Foodservice Association that restaurant chains would voluntarily make nutrition information available (CSPI-Canada, 2006b, 2008a and 2009b). A similar debate is underway in Ontario: Bill 156, tabled in 2009, provides for the mandatory labelling of calories on the menus and menu boards of restaurant chains in this province; it is currently being examined by the Legislative Assembly (CSPI-Canada, 2009a and 2009b).

5.1.2 United States

Nutrition labelling on pre-packaged foods began in 1975 under the stewardship of the Food and Drug Administration (FDA). It was not, at that time, standardized and remained optional, except if a nutrition claim was made (Taylor & Wilkening, 2008; Variyam, 2008). In the 1980s, the industry saw a commercial opportunity in the growing interest of consumers in healthy foods and multiplied the claims being made on food labels, which raised concerns about their credibility among consumers and even among certain actors in the industry (Taylor & Wilkening, 2008). Therefore, in 1990, Congress adopted the *Nutrition Labeling and Education Act* (NLEA), which makes it mandatory to include the Nutrition Facts table on pre-packaged foods (Mello, 2009). The NLEA took effect in 1994 (Variyam, 2008). For several years, the FDA has been considering revising it to require products that are usually fully consumed in one sitting (for example, an entire muffin) to display their full nutritional value and not the value of a smaller portion of the product (half a muffin)* (Antonuk and Block, 2006). The FDA also announced, at the end of 2009, its intention to better regulate industry initiatives that present simplified nutrition information on the front of packages (Neuman, 2009). These initiatives have been multiplying in the United States, as in other industrialized countries (Golan, Kuchler, & Krissof, 2007; van Kleef, van Trijp, Paeps, & Fernandez-Celemin, 2008; Lobstein & Davies, 2009; Switt, 2007).

The NLEA does not apply to restaurant menus, except in cases where a nutrition claim is made about the food offered (Rutkow, Vernick, Hodge, & Teret, 2008). Private sector initiatives remain limited: half of the large American restaurant chains do not offer any nutrition information (Rutkow et al., 2008); the others generally only offer any at the client’s request, or on their websites, or in their restaurants, but where it is not very visible (Kuo, Jarosz, Simon, & Fielding, 2009). Thus, in recent years, bills have been considered that require restaurant chains to display caloric values, with some even requiring certain nutrient values, on menu boards and menus – locations that are highly visible when orders are being placed (Pomeranz & Brownell, 2008). It was first in cities (like New York where this labelling regulation has been in effect since 2008), then in counties and in states (the first state being

California) that such provisions were adopted (Kuo et al., 2009; Mello, 2009; Pomeranz, Teret, Sugarman, Rutkow, & Brownell, 2009). At the federal level, several bills have been considered, but none have been passed. Finally, the health care reform bill adopted in March 2010 includes a provision requiring restaurant chains to display calorie counts; the FDA has one year to establish the rules for implementing the new law, which will supersede lower-level laws and regulations (Jalonick, 2010).

5.1.3 Europe

Across the European Union (EU), a directive adopted in 1990 makes nutrition labelling optional, except where claims are made (Hyde, 2008; MacMaolain, 2008). But within European institutions, voices are calling for labelling to be made mandatory. In 2008, the European Commission proposed making it mandatory to label pre-packaged foods with their caloric value and their total fat, saturated fat, sugar and salt values, as well as the percentage of recommended daily values (RDVs) these represent (Hyde, 2008; Lobstein & Davies, 2009), while allowing the industry flexibility as to how it presents this information (MacMaolain, 2008). Also in 2008, the European Parliamentary Committee on the Environment, Public Health and Food Safety came out in favour of mandatory front-of-pack labelling, but suggested the use of colour coding (Hyde, 2008). However, neither the European Commission, nor this committee, has the power to adopt such measures: they would have to be approved by other EU institutions.

Among European countries, the United Kingdom is distinguished by its use of a colour-coded system, frequently cited elsewhere as a noteworthy example: simplified nutrition labelling in the form of “traffic lights”^{*} has been promoted by the Food Standards Agency (FSA)¹⁴ since 2006, but remains optional (Lobstein & Davies, 2009). Companies that decide to adopt it must respect four principles: they must present information on four nutrients (total fat, saturated fat, salt and sugar); indicate the amount of these nutrients contained in a portion of the product; qualify the quantity of each nutrient as low, medium or high, based on criteria established by the FSA; and use colour coding (green, yellow or red) to represent this quantity (Hignett, 2007; Switt, 2007). Beyond these guidelines, companies have a margin of flexibility. For example, the products initially targeted were those whose nutritional value is difficult for consumers to assess, such as cereals and prepared meals, but some companies have decided to apply the traffic lights to other food categories. Some have also chosen to add information about RDVs to the logo (Hignett, 2007; Switt, 2007). Shortly after the FSA began promoting them, traffic lights had already been adopted by a third of supermarkets and by many manufacturers (Hignett, 2007; Switt, 2007). However, many others adopted a competing initiative promoted by industry: the labelling of RDV percentages^{*}, recommended by the Confederation of the Food and Drink Industries in the EU (Lobstein & Davies, 2009; Switt, 2007). Confronted with the coexistence of these two systems in the United Kingdom, the FSA decided in 2008 to evaluate them and committed itself to adopting the one that worked best for consumers (Lobstein & Davies, 2009).

¹⁴ This information was valid when this document was being written. In October 2010, the responsibility for public policies on nutrition was transferred to the Department of Health in England and to the Assembly Government in Wales.

5.1.4 Australia and New Zealand

In 2002, Food Standards Australia New Zealand made mandatory, for both countries, the presentation of a Nutrition Facts table on pre-packaged foods (Kelly et al., 2009; Louie, Flood, Rangan, Hector, & Gill, 2008; Signal et al., 2008). In parallel, the private sector introduced simplified front-of-pack labelling initiatives: the *Pick the Tick* logo promoted by the National Heart Foundation (Signal et al., 2008; van Kleef et al., 2008); and a logo based on RDV percentages, recommended by the Australian Food and Grocery Council (Kelly et al., 2009; Louie et al., 2008).

5.2 EFFECTIVENESS

We first present the theoretical data indicating the extent to which the intervention logic of nutrition labelling is plausible, followed by the empirical data on the effectiveness of this policy (its intermediate effects, its effectiveness at addressing obesity, and the influence of context on its effectiveness).

5.2.1 Plausibility of the intervention logic

The authors of a systematic review of European studies on nutrition labelling note that most of these studies do not specify any theoretical framework for their work (Grunert & Wills, 2007). We found three documents that explain the intervention logic of this policy and that overall confirm the logic model that we have developed (Grunert & Wills, 2007; van Kleef et al., 2008; Krukowski, Harvey-Berino, Kolodinsky, Narsana, & Desisto, 2006). Several other studies advance hypotheses concerning the potential and the limits of nutrition labelling.

Firstly, there is the question of the type of labelling – mandatory or optional. According to economic theory, an optional system does not guarantee the provision of valid information (Golan et al., 2007). It is certainly possible that when some products display nutrition information, consumers will infer that others are of lesser quality, which may prompt companies to display this information so as not to be suspected of hiding something. But, for products of low nutritional value, it is possible that no manufacturer will decide to be the first to label products or that producers will choose to present relative information (like a comparison with another unhealthy product aimed at enhancing the attractiveness of the product being promoted; for example: “30% less salt than regular chips”), instead of absolute information, which would be unflattering for the product (Golan et al., 2007). Moreover, some consumers may – falsely – interpret the healthier product as being healthy in the absolute sense (Lobstein & Davies, 2009).

Other authors advance hypotheses about factors that can influence the effects of nutrition labelling on food choice:

- consumers’ interest in nutrition (Grunert & Wills, 2007; Levi, Chan, & Pence, 2006);
- their level of confidence in the information presented on food labels (Golan et al., 2007; van Kleef et al., 2008);

- their motivation (Levi et al., 2006; Taylor & Wilkening, 2008) — some authors believe, for example, that the fact that numerous Americans wish to lose weight is a favourable factor (Ludwig & Brownell, 2009);
- their state of health (Grunert & Wills, 2007);
- their ability to understand the nutrition information (Taylor & Wilkening, 2008); this factor may be influenced by their knowledge of nutrition (Grunert & Wills, 2007), but also by the format of labelling (Grunert & Wills, 2007): this is why, for example, the FDA sought to make the Nutrition Facts table as easy as possible to read and understand (Taylor & Wilkening, 2008);
- the price of food products (Grunert & Wills, 2007), which is implicitly linked to the purchasing power of consumers.

In addition, some authors point to the limits of nutrition labelling. Thus, the traffic light logos used in the United Kingdom can help consumers make choices that are better-informed with respect to nutrients, but these logos do not prevent the consumption of excessive portions, since they do not indicate the caloric value of foods (Switt, 2007). Moreover, since these logos do not present information about beneficial nutrients, they risk discouraging the consumption of foods like cheese, labelled red because of its fat content, but beneficial for other reasons (calcium) (Louie et al., 2008). As concerns labelling of calories in fast-food restaurants, clients may compensate for reducing calorie consumption in these places by increasing consumption elsewhere. However, the authors who point out this limitation also note that if a portion of what is consumed consequently comes from sources other than fast-food restaurants (where the food offered is of mediocre value) then that in itself is beneficial (Ludwig & Brownell, 2009).

In terms of overall judgement, some authors find that nutrition labelling has strong face validity as a mechanism for encouraging healthier food choices (Mello, 2009) and, moreover, believe its effectiveness may increase over time, since changes in human behaviour occur gradually (Ludwig & Brownell, 2009). Others, in contrast, basing their views on economic theory, argue that other public policies could have a greater impact on supply and demand: for example, bans, quotas, production regulations, taxes that bring externalities to bear on food producers (Golan et al., 2007).

Let us now consider whether the above-mentioned hypotheses are corroborated by empirical data.

5.2.2 Intermediate effects

Following the order of the intermediate steps in the logic model, we first present the data on the effectiveness of nutrition labelling for modifying the information possessed by consumers, followed by the data on its effectiveness for influencing food purchasing and consumption.

5.2.2.1 *Effectiveness for modifying consumers' level of information: Visibility, reading and comprehension of nutrition information*

This section is sub-divided into three parts which reflect the logical progression from the presence of nutrition labelling to its effect on consumers' level of information: exposure to nutrition information, reading of the information, and comprehension of it.

Availability and visibility of nutrition labelling

Before regulations concerning this matter were adopted by a few local jurisdictions, only half of the large American restaurant chains voluntarily displayed the nutritional content of their products (Roberto, Agnew, & Brownell, 2009; Rutkow et al., 2008; Wootan & Osborn, 2006; Wootan, Osborn, & Malloy, 2006). In addition, the information was usually presented in a form that was not visible when orders are placed: on websites, on tray liners, in brochures, or on posters located far from the cash (Roberto et al., 2009; Rutkow et al., 2008; Wootan & Osborn, 2006; Wootan et al., 2006; Bassett et al., 2008). Under these conditions, only 4% of clients notice the nutrition information versus 32% in restaurants that present it where food is displayed (Bassett et al., 2008). The size of nutrition labels and their very visible presence in front of the foods they describe prove essential to the labels being noticed (Kolodinsky, Green, Michahelles, & Harvey-Berino, 2008).

As regards pre-packaged foods, in the United States, 96% carried nutrition labels two years after the law making this labelling mandatory took effect, as opposed to 60% before the law existed (Variyam, 2008), which illustrates the difference between a mandatory and an optional system, in terms of the availability of information. As regards visibility, a majority of consumers in Europe (where nutrition labelling is not standardized) find that nutrition information on packaging is hard to find (Grunert & Wills, 2007). For its part, the Heart and Stroke Foundation of Canada has published data indicating that its Health Check™ logo is highly visible, since 90% of consumers report having noticed it on foods (Heart and Stroke Foundation, 2009b).

Reading of nutrition information

The majority of consumers claim to be interested in nutrition information (Driskell, Schake, & Detter, 2008; Grunert & Wills, 2007; Kolodinsky et al., 2008; Lando & Labiner-Wolfe, 2007; Wills, Schmidt, Pillo-Blocka, & Cairns, 2009). However, it is not their primary concern, when compared with food safety, taste, price, etc. (Grunert & Wills, 2007). What, then, is the proportion of consumers who read the nutrition information displayed? As Grunert and colleagues point out (Grunert & Wills, 2007), the majority of studies refer to the “use” of information without clarifying whether this refers to its being read or to its being used to modify decisions about what to consume. In this section, we present information about data that did not specify whether the “use” had consequences for consumption and, further on, under the heading “Modification of purchasing/consumption,” we present data that refers to such consequences.

We found two studies focused on restaurants. One indicates that, in restaurant chains where the information is presented somewhere other than at the order counter, barely 0.1% of clients had consulted it before making their purchase (Roberto et al., 2009). Conversely, in

university cafeterias, where the information was highly visible, 58% of clients read it (Driskell et al., 2008).

As regards pre-packaged foods, labels are the primary source of nutrition information for Canadians and are among the top three sources for Americans who are trying to change their eating habits (Wills et al., 2009). Approximately 50-60% of consumers claim to read nutrition information (Blitstein and Evans, 2006; Driskell et al., 2008; Grunert & Wills, 2007; Krukowski et al., 2006; Variyam, 2008; Wills et al., 2009; Rothman et al., 2006). Some studies even indicate 75 to 85% (Borra, 2006; O'Dougherty et al., 2006; Wootan & Osborn, 2006; Signal et al., 2008). One possible explanation for this variation among studies is the authors' decision to count, or not to count, consumers who "sometimes" read the information. Another explanation: in one study (Borra, 2006), the question asked referred to *all* the information on labels (nutrition information, list of ingredients, etc.). With respect to what is read, some authors advance the hypothesis that the percentage of consumers reading nutrition information on pre-packaged foods is overestimated, since some consumers confuse the different types of information presented on the labels (Grunert & Wills, 2007). Observation-based studies also demonstrate that actual reading rates are lower than reported rates (Kelly et al., 2009); for example, the rate in the United Kingdom is only 25% (Borgmeier & Westenhoefer, 2009). The majority of consumers do not deliberately seek nutrition information on pre-packaged foods and only read it when they happen to notice it (Grunert & Wills, 2007; Borgmeier & Westenhoefer, 2009). Moreover, many limit their search to simplified information (logos) and do not consult the detailed information (van Kleef et al., 2008).

Finally, whether it involves restaurant food or pre-packaged foods, nutrition information is often read selectively, guided by a diet consumers are following, their eating strategy, or their health problems (Lando & Labiner-Wolfe, 2007; Feunekes, Gortemaker, Willems, Lion, & van den Kommer, 2008). Overall, the elements that draw readers' attention most are calories and fat content (Borra, 2006; Grunert & Wills, 2007; Kelly et al., 2009; Kolodinsky et al., 2008; van Kleef et al., 2008).

Several factors determine whether nutrition information is read.¹⁵ It is more frequently read when a food is being purchased for the first time, and less frequently read once a purchasing habit is ingrained (Borra, 2006; Grunert & Wills, 2007; van Kleef et al., 2008; Wills et al., 2009). It is less frequently read when consumers have little time (Borgmeier & Westenhoefer, 2009; Grunert & Wills, 2007; van Kleef et al., 2008) or are concerned about the price of foods (Grunert & Wills, 2007). Reading also depends on the type of food: consumers more commonly search for nutrition information on highly processed foods, and search less for information on products that are fresh or are perceived as healthy (for example, yogurt), or on pleasure foods, including chocolate, in particular (Grunert & Wills, 2007). Problems tied to the visibility and the comprehension of nutrition information reduced reading rates, as did doubts about the information's accuracy (Roberto et al., 2009; van Kleef et al., 2008). It is easy to understand why, inversely, consumers in the United States reported reading nutrition information more often once regulations were introduced, standardizing and imposing tighter

¹⁵ These data come almost exclusively from studies on pre-packaged foods, but one may suppose that they are partially applicable to the situation in restaurants.

controls on nutrition labelling of pre-packaged foods (Rothman et al., 2006). Studies present contradictory findings regarding the positive (Wills et al., 2009) or negative (Kelly et al., 2009) impact of simplified information (logos, claims) on the reading of detailed information. Consumers are more likely to consult detailed information when they are comparing two products that are similar in price or make similar claims (Wills et al., 2009).

Once information has been read, it must also be understood.

Comprehension of the information

Nutrition labelling in restaurants is less likely to produce comprehension difficulties, since it is often limited to one element: the number of calories in the portion served. This is perhaps why the data that follow focus mainly on the comprehension of labelling on pre-packaged foods.

We found no data on the extent to which consumers in Canada understand nutrition information. Health Canada has, in fact, indicated its intention to research the way that consumers interpret front-of-pack labelling (including logos) and the Nutrition Facts table (Health Canada, 2007 and 2009b).

Grunert and colleagues point out that a distinction must be made between subjective understanding (the way consumers believe to have understood nutrition information) and objective understanding (evaluated by tests¹⁶); indeed, consumers may believe they have understood information, when in fact they have misinterpreted it (Grunert & Wills, 2007).

Comprehension of detailed nutrition labelling

For many of the studies reviewed, we do not know how comprehension was measured. These studies agree on the fact that nutrition information is often misinterpreted (Blitstein & Evans, 2006; Borgmeier & Westenhoefer, 2009; Kelly et al., 2009), even though one study reports improved comprehension in the United States after the Nutrition Facts table was introduced (Variyam, 2008). The results are similar for studies of subjective understanding: the majority of consumers find detailed nutrition information difficult to understand (Feunekes et al., 2008; Grunert & Wills, 2007; Louie et al., 2008; MacMaolain, 2008; van Kleef et al., 2008; Wills et al., 2009); only one study identified an inverse trend (Rothman et al., 2006). On the level of objective understanding, the proportion of correct answers depends on the questions asked. Within the context of one study, 78% of respondents satisfactorily compared the nutritional content of two products using the Nutrition Facts table; another study found that 69% of questions were answered correctly, for the entire set of questions, but that certain questions were answered correctly by only 20 to 30% of respondents (Rothman et al., 2006).

¹⁶ Refer to Appendix 3 for examples of the comprehension questions used by Rothman and colleagues (Rothman et al., 2006).

Comprehension of simplified nutrition labelling

The results are better. Studies whose measurement methods are unknown to us report good understanding (Borgmeier & Westenhoefer, 2009; van Kleef et al., 2008). These results are confirmed on the level of subjective understanding, since consumers claim to understand the logos quickly and well (“at a glance”), especially traffic lights and logos based on recommended daily values (RDVs) (Borgmeier & Westenhoefer, 2009; Feunekes et al., 2008; Grunert & Wills, 2007; Kelly et al., 2009). On the level of objective understanding, it appears that consumers are able to correctly differentiate healthy and less-healthy foods using logos (Feunekes et al., 2008). However, one study points out that products are correctly differentiated only slightly more often when they display a logo than when they display no nutrition information (Borgmeier & Westenhoefer, 2009).

Some data refers to specific logo formats. Objective measurements indicate that traffic lights are understood quickly and well (Kelly et al., 2009; Lobstein & Davies, 2009; Louie et al., 2008), and even slightly better than other logos, such as those based on RDVs (Borgmeier & Westenhoefer, 2009; Kelly et al., 2009). Even simpler logos (providing a single judgement about the nutritional value of the total product) allow consumers to correctly identify healthy products (Louie et al., 2008), and even do so slightly better and more quickly than more sophisticated logos that require more thought, like traffic lights or logos based on RDVs (Feunekes et al., 2008). However, very simplified labelling discourages consumers from seeking further nutrition information, which leads to quicker, more favourable, and sometimes mistaken judgements about foods (Kelly et al., 2009). For example, claims such as “low fat” or “healthy” lead consumers to underestimate the caloric value of a food or a restaurant meal and to overestimate the size of the portion that it is appropriate to consume (Wansink & Chandon, 2006; Berman & Lavizzo-Mourey, 2008).

Recurring comprehension problems

Consumers often have trouble interpreting the nutritional value of a food in relation to RDVs (Rothman et al., 2006; van Kleef et al., 2008; Wills et al., 2009). Some claim to have “rules of thumb” for determining the amount of calories and nutrients they judge appropriate for themselves (Lando & Labiner-Wolfe, 2007). However, a third of Americans do not know the recommended daily caloric intake (O’Dougherty et al., 2006; Wills et al., 2009) or fat intake (O’Dougherty et al., 2006). These limitations can lead to misunderstanding of even the quite simple element of information represented by the display of caloric values in restaurants. Europeans appear to have a good overall understanding of calories, but demonstrate some confusion about nutrients (Grunert & Wills, 2007).

When nutrition labels present percentages of RDV, it is precisely so that consumers will not have to calculate what consuming a specific quantity of a product represents, in terms of the RDV. Indeed, these percentages were included in the Nutrition Facts table because, during research conducted by the FDA, they were better understood than the other approaches tested (Taylor & Wilkening, 2008). And yet, all the other studies of subjective (Borra, 2006; Lando & Labiner-Wolfe, 2007) and objective (Hignett, 2007; Louie et al., 2008; Rothman et al., 2006; Wills et al., 2009) comprehension that we found indicated poor understanding of the RDV percentages.

Finally, the subjective (van Kleef et al., 2008) and objective (Lando & Labiner-Wolfe, 2007; Rothman et al., 2006) data both indicate comprehension difficulties and frequent errors in calculations of the quantity of nutrients absorbed, when the portion of food consumed does not correspond to the portion for which nutrition information is displayed.

Factors affecting comprehension

These are tied to the characteristics of the nutrition information presented and to consumers' abilities.

One basic obstacle is that the information displayed, by its nature, is sometimes misleading. Thus, some health logos used by manufacturers are based on nutritional criteria that are not very transparent (Louie et al., 2008; Lobstein & Davies, 2009). Moreover, the proliferation of such logos, each based on different criteria is confusing for consumers (Louie et al., 2008; Lobstein & Davies, 2009; Kelly et al., 2009), as Health Canada, in particular, has noted (Health Canada, 2007). A similar problem existed in the United States before enactment of the law standardizing nutrition labelling on pre-packaged foods; subsequently, the number of misleading claims declined (Variyam, 2008). Also troublesome for consumers is the fact that, in the absence of any regulatory constraints, companies present nutritional values for portion sizes that vary from one product to another. This is sometimes deliberately manipulative: for example, when information based on small portions is displayed on foods with high caloric content (Lobstein & Davies, 2009; Taylor & Wilkening, 2008).

As was observed above, the more the information presented requires interpretation, the less likely it is to be correctly understood (Grunert & Wills, 2007). Establishing food categories (for example, low, medium or high calorie) promotes understanding (Borgmeier & Westenhoefer, 2009; Krukowski et al., 2006). Ease of interpretation is also an issue because consumers want to decide quickly: in the supermarket, they choose products in a matter of seconds and do not analyze the information presented (Feunekes et al., 2008). Inversely, overly simplified information can lead to more favourable and sometimes mistaken judgements about products (Kelly et al., 2009). Some authors recommend a compromise: simplified information on the front of packaging and more detailed information on the back (Feunekes et al., 2008; Wills et al., 2009).

There are significant limits to consumers' abilities to understand nutrition information. While 77% of respondents in an American study on comprehension were sufficiently literate, 63%, despite having achieved a relatively high level of education, had a level of numeracy lower than the average level of high school graduates (Rothman et al., 2006). This makes interpreting numeric nutrition information problematic. Several authors recommend complementary nutrition-labelling measures that take into account these limited abilities: simultaneously presenting information about RDVs to make nutrition information easier to interpret (O'Dougherty et al., 2006); educating consumers about how to read nutrition information and about RDVs (Krukowski et al., 2006); and removing confusing information that few consumers seem to understand (for example, RDV percentages) (Rothman et al., 2006). Some authors go so far as to recommend that less emphasis be put on nutrition labelling, which places too much individual responsibility on consumers, and that measures

be taken instead to address the price of foods and the size of portions offered (Krukowski et al., 2006).

5.2.2.2 *Effectiveness at influencing purchasing and consumption*

Let us now examine another intermediate effect of nutrition labelling: its ability to influence food purchasing and consumption habits (it should be noted that the majority of studies on this subject do not verify whether consumers have first read and understood the information presented – even though doing so is essential to making informed choices). We will first consider the situation for pre-packaged foods, and then for restaurants. We will also examine which factors compete with nutrition information to influence consumers' choices.

Pre-packaged foods

Van Kleef and colleagues find the data indicating that nutrition labelling improves food choices to be somewhat unconvincing, because they are usually self-reported (which means that respondents may have given what they believe are socially acceptable answers) or collected under experimental conditions (van Kleef et al., 2008) from which other significant factors, such as food prices, have been removed.

Indeed, we found an abundance of self-reported data. The majority of this indicates a positive effect: intention to consume healthier products more often after being exposed to nutrition labelling (Borgmeier & Westenhoefer, 2009; Feunekes et al., 2008; Grunert & Wills, 2007; Kelly et al., 2009), correlation between reading nutrition information and healthy eating¹⁷ (Driskell et al., 2008; Mello, 2009; Variyam, 2008; Wills et al., 2009; Wootan & Osborn, 2006). According to the Heart and Stroke Foundation, 74% of Canadian respondents claim they are more inclined to buy a food product if it carries the Health Check™ logo (Heart and Stroke Foundation, 2009b). Health Canada also reports that, in several Canadian surveys, consumers state they often use the nutrition information displayed on products to choose healthier foods; but Health Canada recognizes that there may be a discrepancy between these statements and actual behaviour (Health Canada, 2007). Other limitations must also be considered: according to some documents, the impact of nutrition information on diet is minimal (Feunekes et al., 2008; Variyam, 2008). One study states that only half of those who read the information claim to frequently look for healthy food (Wills et al., 2009); another study indicates that consumers exposed to the traffic light system claim they do not boycott “red” products, preferring to balance their consumption of “green,” “yellow,” and “red” products (Hignett, 2007). Finally, a few studies based on self-reported data report that reading nutrition information has no impact on food consumption (Borgmeier & Westenhoefer, 2009; Kolodinsky et al., 2008; Variyam, 2008).

¹⁷ It is difficult to know in which direction this relationship operates: on the one hand, nutritional information is supposed to lead to healthier eating; on the other hand, it is possible that people who are careful about what they eat are more interested in this information. Since all the studies on this subject are cross-sectional, they are not able to establish which phenomenon precedes the other. In this knowledge synthesis, we have reflected the understanding of studies' authors of the causal relationship and, accordingly, classified the data on the relationship between reading nutritional information and diet either under the “effectiveness” dimension (effectiveness of the information for modifying consumption) or under the “equity” dimension (behaviour of a population sub-group – namely, those concerned about what they eat – with respect to nutrition labelling).

Studies based on objective data can also be separated according to whether they report positive, neutral or negative data. In one experiment, participants who received a package of candy displaying nutrition information that was easy to interpret (and that they had to read to answer some questions) later consumed less candy than other participants (Antonuk & Block, 2006). In a real-life situation, shortly after the introduction of traffic light logos in the United Kingdom, supermarket sales figures revealed an increase in sales of healthier products (Borgmeier & Westenhoefer, 2009; Grunert & Wills, 2007; Hignett, 2007; Louie et al., 2008; Switt, 2007). Other authors point out that it would be necessary to verify whether this proved to be a long-term trend (Lobstein & Davies, 2009). As for neutral effects, an experiment involving the labelling of high-fat products in supermarkets in the Netherlands produced no significant effect on clients' fat consumption (Grunert & Wills, 2007). Finally, a negative effect was observed in an experimental situation: the fact that snacks were labelled "low fat" increased the amount of these snacks that was consumed by up to 50%, because feelings of guilt were lessened (Wansink & Chandon, 2006).

Choices in restaurants

Here again, the data gathered are contradictory (Ludwig & Brownell, 2009; Mello, 2009; Gerend, 2009).

In several studies, respondents stated that nutrition labelling modified their purchasing intentions (Bassett et al., 2008; Berman & Lavizzo-Mourey, 2008; Driskell et al., 2008; Kolodinsky et al., 2008; Mello, 2009). This phenomenon seems particularly likely to occur when consumers realize, after reading nutrition information, that the nutritional value of the food being sold is worse than they had imagined (Mello, 2009; Berman & Lavizzo-Mourey, 2008). However, the percentage of respondents who claim to be influenced by nutrition labelling varies greatly from one study to another: from 23% (Driskell et al., 2008) to 73% (Mello, 2009), including an intermediate range of about 30-40% (Bassett et al., 2008; Driskell et al., 2008). Other studies reported no effect associated with nutrition labelling in restaurants (Mello, 2009).

As regards data on purchases collected using objective measures (sales figures, observation of clients' choices, etc.), the majority of studies reviewed reported a positive effect (Bassett et al., 2008; Driskell et al., 2008; Ludwig & Brownell, 2009; Mello, 2009); for example, a reduction of 16% in the amount of fat from food products sold (Driskell et al., 2008); food orders containing 52 less calories when clients had seen nutrition information (Bassett et al., 2008). However, other studies observed no effect (Mello, 2009; Ludwig & Brownell, 2009).

Competing factors

Nutrition information competes with other factors that intervene when purchasing and consumption choices are made.

Taste preferences are a major factor influencing food choice (Berman & Lavizzo-Mourey, 2008; Borgmeier & Westenhoefer, 2009; Driskell et al., 2008; Grunert & Wills, 2007; Lando & Labiner-Wolfe, 2007; O'Dougherty et al., 2006; Wills et al., 2009). They are at least as important for consumers (Wills et al., 2009), if not more (Borgmeier & Westenhoefer, 2009; Grunert & Wills, 2007; O'Dougherty et al., 2006), as nutrition information. Moreover, many

consumers perceive healthier foods as being less tasty (Berman & Lavizzo-Mourey, 2008; Lando & Labiner-Wolfe, 2007).

Price is another crucial factor (Berman & Lavizzo-Mourey, 2008; Driskell et al., 2008; Grunert & Wills, 2007; Kolodinsky et al., 2008; Lando & Labiner-Wolfe, 2007; O'Dougherty et al., 2006). Here again, healthy foods are perceived as being more expensive, and, in fact, they often are (Kolodinsky et al., 2008; Lando & Labiner-Wolfe, 2007). The results of one survey go against the general trend: for Canadian consumers, nutrition appears to be much more important than price when it comes to choosing food (Wills et al., 2009). It should be noted, however, that the data collected by this survey were self-reported and may exaggerate the reality.

The convenience of foods (ease of preparation and consumption) is the third aspect recurrently cited in the documents reviewed (Driskell et al., 2008; Grunert & Wills, 2007; Kolodinsky et al., 2008; Lando & Labiner-Wolfe, 2007; O'Dougherty et al., 2006). Here again, the Canadian survey indicates that nutrition is more important than convenience (Wills et al., 2009), as does an American study on supermarket purchasing (O'Dougherty et al., 2006). On the other hand, according to this American study, in fast-food restaurants, convenience takes priority over nutrition. A British study also indicates that, for ready meals, convenience is a major determinant of purchasing choice, whereas nutrition information plays almost no role (Grunert & Wills, 2007).

Other factors, mentioned earlier because they influence whether or not nutrition information is read, also affect consumers' consumption choices: time constraints (Driskell et al., 2008), purchasing habits (Grunert & Wills, 2007), and the desire to control one's diet (Berman & Lavizzo-Mourey, 2008). Finally, some authors point out that nutrition labelling is just one source of information among others influencing food choice: list of ingredients (Kolodinsky et al., 2008), media, and advertising (Borgmeier & Westenhoefer, 2009).

5.2.3 Effectiveness as a means of affecting the targeted problem: obesity

How effective, ultimately, is nutrition labelling at preventing obesity? We found a single study which estimates the degree to which displaying calories on menus in large restaurant chains could reduce weight gain within the population of Los Angeles County. The study hypothesizes, on the basis of empirical studies, that 10% of clients would reduce their consumption by 100 calories per meal ordered. This would result in a decrease in consumption of 9 billion calories each year, which would prevent 40% of the annual weight gain among this population (Berman & Lavizzo-Mourey, 2008; Kuo et al., 2009).

5.2.4 Impact of context on the policy's effectiveness

The context in which a public policy is implemented influences its effectiveness.

Several studies on nutrition labelling in restaurants underscore the fact that Americans spend half of their food budget in restaurants (Kolodinsky et al., 2008; Pomeranz & Brownell, 2008; Wootan & Osborn, 2006) and consume a third of their caloric intake there (Berman & Lavizzo-Mourey, 2008; Ludwig & Brownell, 2009; Mello, 2009; Wootan et al., 2006). In other

words, restaurants are a much-frequented eating environment, and any nutrition labelling policy implemented there would potentially reach a large portion of the population. As was pointed out in the introduction, many Canadians also frequent fast-food restaurants.

One study on nutrition labelling in university cafeterias indicates the particular characteristics of these environments. On the one hand, students are familiar with the menus, since they frequent the cafeterias daily and often decide what they are going to eat before getting to the cafeteria; thus, they may be less inclined to read nutrition labels. On the other hand, they do not view eating in the cafeteria as a special occasion for treating oneself (as going out to a restaurant can be) and may, therefore, be more inclined to make healthy choices (Kolodinsky et al., 2008).

5.3 UNINTENDED EFFECTS

The goal of nutrition labelling is to modify the behaviour of consumers, such that they adopt healthier eating habits, and in the “Effectiveness” section, we presented data on the positive, neutral or negative results of this effort. But this policy can also produce incidental effects.

The most commonly mentioned effect is the reformulation of food products by manufacturers: by making nutritional value apparent, nutrition labelling can raise awareness and increase consumer demand for healthier foods; food producers and restaurants are then motivated to make their products healthier. Numerous documents mention reformulation either as a hypothesized effect (Borgmeier & Westenhoefer, 2009; Kelly et al., 2009; Ludwig & Brownell, 2009; Berman & Lavizzo-Mourey, 2008; Taylor & Wilkening, 2008; Golan et al., 2007; Switt, 2007; Lobstein & Davies, 2009), or as an observed fact (Lobstein & Davies, 2009; Berman & Lavizzo-Mourey, 2008; Feunekes et al., 2008; Louie et al., 2008; Government Accountability Office [GAO], 2008; Signal et al., 2008; Golan et al., 2007; Switt, 2007). Reformulation occurred even in the case of “threshold” systems such as health logos or traffic lights, although some people feared that such systems would discourage reformulation because it would be too difficult to move a product from a “less healthy” category into a “healthy” one (Signal et al., 2008; Switt, 2007; Louie et al., 2008). Some authors point out that reformulation automatically improves food products and therefore benefits all consumers, even those who do not use nutrition information to change their consumption habits (Borgmeier & Westenhoefer, 2009; Golan et al., 2007). Without explicitly mentioning reformulation, Health Canada has, nevertheless, demonstrated its interest in examining the effect its policies that regulate claims (including health logos) might have on food supply in Canada and on Canadian companies’ investments in research and development of food products (Health Canada, 2007).

Still on the level of the food industry’s response to nutrition-labelling policies, a possible secondary effect of local regulations requiring such labelling in restaurants might be the extension of such provisions to other zones where they are not mandatory, because restaurant chains would standardize nutrition labelling in all their outlets (Berman & Lavizzo-Mourey, 2008).

One anticipated effect that is not intended is a loss of revenue for restaurants that would be subject to nutrition labelling, especially those offering mainly high-calorie meals, if consumers turn away from these. However, no empirical data are currently available that either support or undermine this hypothesis (Ludwig & Brownell, 2009; Berman & Lavizzo-Mourey, 2008).

5.4 EQUITY: DIFFERENTIAL EFFECTS ON VARIOUS POPULATION GROUPS

The documentary corpus studied provides some indication of the differential effects of nutrition labelling on groups that differ on the socio-demographic level (gender, age, familial status), the socio-economic level (education, socio-economic status, ethnic minorities) and with respect to their knowledge about nutrition, their eating habits and their body types. We found little information specifically about Canada; Health Canada has indicated its interest in future research into the way different social groups understand and use the claims made on food products (including logos) (Health Canada, 2007).

5.4.1 Gender

Women appear to be more involved than men in making decisions about food (Levi et al., 2006), and many studies indicate that they attach more importance to nutrition information (Grunert & Wills, 2007; Levi et al., 2006), read it more often (Borgmeier & Westenhoefer, 2009; Driskell et al., 2008; Grunert & Wills, 2007; Kolodinsky et al., 2008; Krukowski et al., 2006), and understand and interpret it better (Borgmeier & Westenhoefer, 2009; Krukowski et al., 2006). More women also claim that this information influences their purchasing decisions (Blitstein & Evans, 2006; Grunert & Wills, 2007; Kolodinsky et al., 2008; Krukowski et al., 2006; Gerend, 2009). Moreover, the hypothesis that consumers have a desire to improve their diet proves truer for women. Far fewer men claim to look for low-calorie food (Gerend, 2009; Krukowski et al., 2006). Studies of undergraduates suggest that many young men do not take into account nutrition information and that some even use it to increase their caloric intake, with the intention of *gaining* weight; whereas young women respond to nutrition information by reducing their caloric intake (Gerend, 2009; Kolodinsky et al., 2008).

Only a small number of studies conclude, inversely, that women do not benefit more from nutrition labelling: no gender-based difference with respect to understanding, eating intentions and actual consumption (Antonuk & Block, 2006; Feunekes et al., 2008; Wansink & Chandon, 2006); or even, observation of more errors in comprehension among women (Rothman et al., 2006).

5.4.2 Age

The elderly are the group mentioned most often. They are more interested in nutrition information (often because they have health problems that require them to follow a specific diet) and they are among those who read and use it the most to guide their purchasing decisions (Grunert & Wills, 2007). However, the elderly demonstrate some comprehension problems. They *claim* to find logos easy to understand (Grunert & Wills, 2007). In contrast, many studies show that they commit more errors in interpreting detailed nutrition information (Feunekes et al., 2008; Grunert & Wills, 2007; Rothman et al., 2006).

With regard to other age groups, some authors note that logos, such as traffic lights, are easy to understand, even for children (Lobstein & Davies, 2009). Young adults (students) make less use of nutrition information on foods and appear less inclined to use it in restaurants than the general population (Krukowski et al., 2006). In a similar vein, another study indicates that the use of nutrition information to guide purchasing decisions increases with age (Blitstein & Evans, 2006). But another study found no difference among age groups, for persons between 18 and 55, with respect to the impact of logos on eating intentions or to the comprehension of logos (perceived or objective) (Feunekes et al., 2008).

5.4.3 Familial status

One study notes that married persons use nutrition information more often to guide their purchasing decisions; the suggested explanation is that over time, the eating habits of couples tend to converge, or in other words, the behaviour of married men is influenced by the importance their wives attribute to nutrition information (Blitstein & Evans, 2006). Additionally, parents of young children are more interested in this information and read it more (Grunert & Wills, 2007). However, another study found that marital status or household composition made no difference either in terms of understanding various logos, or in terms of their impact on dietary intentions (Feunekes et al., 2008).

5.4.4 Education level

We located studies examining the impact of education level on the understanding of detailed labelling and simplified labelling, and on purchasing decisions.

According to several studies, when faced with *detailed* nutrition information, less educated persons had more difficulty understanding it (Feunekes et al., 2008; Grunert & Wills, 2007; Rothman et al., 2006), but even those with higher levels of education experienced some difficulty (Rothman et al., 2006).

As regards *simplified* information, several studies found that education had no impact on either objective or perceived comprehension (Borgmeier & Westenhoefer, 2009; Feunekes et al., 2008; Grunert & Wills, 2007; Lobstein & Davies, 2009).

When making purchasing decisions, more educated persons appear to make greater use of nutrition information (Blitstein & Evans, 2006; Grunert & Wills, 2007). Given that education level and income level often coincide, and that healthier products are often more expensive, it is possible that the price factor intervenes here.

5.4.5 Socio-economic status

As with education, the data found indicate the impact of socio-economic status on the comprehension of detailed labelling and simplified labelling, and on purchasing decisions.

As concerns *detailed* information, almost all the studies found report that disadvantaged persons have more difficulty understanding it (Feunekes et al., 2008; Grunert & Wills, 2007; Rothman et al., 2006; Signal et al., 2008). A Canadian survey (conducted when the law on pre-packaged food labelling had been adopted, but not yet uniformly implemented) found

only slight differences among income groups, when comparing the ease with which they used nutrition information to compare two foods (Lindhorst, Corby, Roberts, & Zeiler, 2007). However, the respondents' ease of use was *self-reported*, not measured objectively.

Regarding *simplified* information in the form of logos, a number of studies observed no comprehension gap between socio-economic groups, whether considering perceived comprehension (Feunekes et al., 2008; Grunert & Wills, 2007) or comprehension measured through testing (Feunekes et al., 2008; Kelly et al., 2009). In contrast, two studies found that, while simple logos posed no problems, respondents from lower socio-economic backgrounds had more trouble understanding more complex logos requiring some interpretation: logos based on RDVs, with (Switt, 2007) or without (Kelly et al., 2009) colour coding.

The data concerning the use of nutrition information to guide purchasing are divided. Two studies, including the Canadian survey cited above, indicate no significant difference between socio-economic groups (Feunekes et al., 2008; Lindhorst et al., 2007). Others, in contrast, indicate that those with lower incomes make less use of the information (Grunert & Wills, 2007; Signal et al., 2008). Questioned about the reasons for this, these persons cited their comprehension difficulties, lack of time to read the information and to search in stores for foods labelled as “healthy,” the fact that purchasing is influenced by habits, and above all, the cost of healthy food. Respondents stressed the fact that even if nutrition labelling appeared in a format that was easier to understand, the problem of cost would remain (Signal et al., 2008).

Another study, cited by Signal and colleagues, reflects a situation in which the cost barrier is partially removed, since the respondents were low-income persons who benefited from the *National Food Stamp Program* in the United States (a food-purchasing allowance); this study noted that the respondents who used the Nutrition Facts table consumed healthier food (Signal et al., 2008).

5.4.6 Ethnic minorities

In the United Kingdom, ethnic minorities *reported* finding logos easy to understand (Grunert & Wills, 2007); but, objective measurements showed these groups to be less able to understand logos based on RDVs, which are a little more complex (Switt, 2007). Similarly, a study on the comprehension of the Nutrition Facts table observed fewer correct answers among African-American respondents (Rothman et al., 2006).

According to two studies cited by Signal and colleagues (Signal et al., 2008), a minority of African-Americans use nutrition information; however, another American study found no significant relationship between use and ethnicity (Blitstein & Evans, 2006). In New Zealand, Maori people and natives of Samoa and Tonga make little use of nutrition information when purchasing foods because of comprehension problems, lack of time, the weight of purchasing habits, and above all, the cost of healthy foods (Signal et al., 2008).

Although none of the studies found delved further into this subject, there is no reason why ethnicity should give rise to specific behaviour relative to nutrition labelling; it is more likely that the determinant factors are other characteristics of ethnic minorities, such as, in particular, their socio-economic circumstances.

5.4.7 Knowledge about nutrition

Driskell and colleagues (Driskell et al., 2008) note that the data diverge with respect to the relationship between knowledge about nutrition and use of nutrition information. Some studies have shown a relationship between the two (Blitstein & Evans, 2006; Borgmeier & Westenhoefer, 2009), as well as between knowledge about nutrition, habitual use of nutrition information and the ability to understand detailed logos (Feunekes et al., 2008). On the other hand, experiments measuring the amount of snack food people consume when various types of simplified nutrition information is displayed on the snacks observed no significant difference among people with varying levels of nutrition knowledge (Wansink & Chandon, 2006).

5.4.8 Eating habits¹⁸

People controlling their diet read nutrition information more often (Krukowski et al., 2006; Antonuk & Block, 2006), find it easier to understand (Antonuk & Block, 2006) and use it more often to guide their purchasing decisions (Borgmeier & Westenhoefer, 2009; Driskell et al., 2008; Krukowski et al., 2006).

5.4.9 Body type

Studies relying on self-reported information from respondents found no clear relationship between body type and use of nutrition information (Blitstein & Evans, 2006; Krukowski et al., 2006). Other studies observed more errors of comprehension among overweight or obese persons, whether considering detailed (Rothman et al., 2006) or simplified labelling (Borgmeier & Westenhoefer, 2009). Naturally, we can infer that it is not body type in itself that has an impact, but other associated factors; however, the authors do not address this question.

With regard to factors other than comprehension that intervene in the relationship between information provision and food consumption, some experiments have shed light on the role played by guilt. When snacks were labelled “low fat,” all categories of respondents increased their consumption, because associated feelings of guilt were diminished; but overweight persons were found to increase their consumption more (Wansink & Chandon, 2006).

This section highlights the degree to which population sub-groups may respond differently to nutrition labelling, as well as the fact that labelling is not equally effective for everyone. Thus, some authors view the reformulation of foods as more promising, since it is less likely to increase health inequalities (Lobstein & Davies, 2009).

¹⁸ We present here studies in which the authors presume that it is eating behaviour which influences the use of nutritional information. But the studies are cross-sectional: thus, it is possible that the causal relationship is inverted. See also, in reference to this, footnote 17 in the section entitled “Effectiveness at influencing purchasing and consumption.”

5.5 COST

Presented below are the data on the financial costs associated with implementing nutrition labelling.

5.5.1 Cost categories

According to a food and resource economics thesis presented to the University of Florida, the direct financial costs associated with implementing nutrition-labelling policies fall into four categories: the cost of producing information (the nutritional content of each food must be analyzed), of controlling its veracity, of printing nutrition labels or labelled menus, and of enforcing labelling rules. Nutrition labelling also produces indirect costs by limiting production flexibility: even if short-term variations in the availability or cost of ingredients make it preferable to replace these ingredients with others, it is impossible to do so because the standard recipe on which the nutritional analysis and display are based must be respected (Jauregui, 2007).

5.5.2 Cost for the government

Usually, public authorities assume the cost of inspections that ensure the food industry is respecting labelling rules, and they periodically carry out nutritional analyses to check the veracity of the information displayed. The only empirical data we found on this subject came from the Rudd Center for Food Policy and Obesity.¹⁹ This centre reports that, according to the Legislative Assembly of California, a law on nutrition labelling in restaurants would cost the state US\$100,000; the Senate, for its part, foresaw no cost to the government (Rudd Center, 2008). One may ask whether inspections were planned and how their cost was to be absorbed, but the document does not provide this information.

5.5.3 Cost for industry

Industry assumes most of the cost of implementation (nutritional analyses and printing of information). The Canadian division of the Centre for Science in the Public Interest (CSPI-Canada)²⁰ has reported estimates, produced by Health Canada and Agriculture and Agri-food Canada and published in the Canada Gazette, of costs related to the 2003 regulation making the Nutrition Facts table mandatory on pre-packaged foods. The cost of introducing new nutrition labels was at the time estimated at C\$263 million distributed over three years – a minimal amount, according to the CSPI, compared to food sales revenues: C\$120 billion during the same period (CSPI-Canada 2006a, 2007 and 2008b). The cost of analyzing the nutritional content of pre-packaged foods, which is non-recurrent since this analysis is only performed once, represents less than 0.1% of these sales revenues (CSPI-Canada, 2006a). Moreover, the Canadian CSPI points out that displaying the Nutrition Facts table on packaged meat, poultry and seafood (as required by Bill C-283, which was ultimately rejected in 2006) would entail minimal costs: for one thing, the meat industry has already carried out nutritional analyses of some of its products and posts their nutritional value on its

¹⁹ A not-for-profit organization devoted to research and awareness-raising, based at Yale University.

²⁰ An independent, not-for-profit organization devoted to awareness raising and advocacy related to nutrition and health.

websites; for another thing, an implementation delay of several years would allow industry to take advantage of the periodic renewal of food labels, to incorporate the Nutrition Facts table (CSPI-Canada, 2006a).

In the opinion of several authors, the cost to the restaurant industry would also be minimal (Ludwig & Brownell, 2009; Berman & Lavizzo-Mourey, 2008; Pomeranz & Brownell, 2008; Wootan & Osborn, 2006; Gerend, 2009). Nutritional analysis costs about US\$220 per menu item, which amounts to US\$18,000 for an 80-item menu (Wootan & Osborn, 2006). According to the American CSPI, the cost of nutritional analysis software is about US\$500; and the services of a dietician or an analysis laboratory are equivalent to the price of a restaurant oven or dishwasher (CSPI, 2008a). The Rudd Center reiterates the fact that these are one-time costs (Friedman, 2008). Furthermore, many large restaurant chains have already analyzed the nutritional value of their products (Berman & Lavizzo-Mourey, 2008), as both the American and Canadian divisions of the CSPI point out (CSPI, 2008a; CSPI-Canada, 2006a). The cost of creating and printing new menus is often already included in budgets, since restaurant chains renew menus several times a year for promotional purposes (Berman & Lavizzo-Mourey, 2008; Pomeranz & Brownell, 2008; Wootan & Osborn, 2006). The Canadian and American divisions of the CSPI point out that industry can take advantage of these renewals to insert nutrition information: it is possible to wait for the next renewal, since menu-labelling regulations allow for transition periods before labelling becomes mandatory (CSPI, 2008a; CSPI-Canada, 2006a).

The food and resource economics thesis from the University of Florida mentioned above notes that the cost of implementing nutrition labelling is proportionately heavier for small companies (Jauregui, 2007). At least, as the American CSPI and the Rudd Center point out, all the regulations that have been discussed in recent years apply to restaurant chains and not independent restaurants (CSPI, 2008a; Friedman, 2008). In addition, the cost of nutritional analyses and of printing menus are not borne by restaurant chain subsidiaries, but are centralized at the head office level (CSPI, 2008a).

5.5.4 Cost for consumers

Consumers must not be forgotten. Naturally, on the one hand, nutrition labelling reduces the cost, for consumers, of having to research information, by making it directly accessible (Grunert & Wills, 2007). However, on the other hand, as the University of Florida thesis cited above points out, everyone must ultimately pay for nutrition labelling (i.e. industry recuperates its costs by raising food prices), even those who don't use it – and who are often among the lowest-income and least educated (Jauregui, 2007).

5.5.5 Cost-benefit relationship

The following data were found in the literature; however, we suggest they be considered cautiously, since they seem to be based on highly optimistic estimates, if compared with empirical data on the effectiveness of nutrition labelling. According to estimates, published by Health Canada and Agriculture and Agri-Food Canada and reported by the Canadian division of the CSPI, by reducing the risks of premature death and disability due to cardiovascular disease, cancer and diabetes, mandatory nutrition labelling on pre-packaged foods would

produce savings of C\$5 billion over twenty years due to reduced health costs and higher productivity. These savings compensate twenty times over for the cost of implementing this public policy (CSPI-Canada, 2006a, 2007 and 2008b). One author indicates that the FDA also carried out a cost-benefit analysis before nutrition labelling on pre-packaged food became mandatory in the United States, but he provides no information about the results of this analysis (Variyam, 2008). However, other figures were available. The American CSPI reports estimates from the U.S. Department of Agriculture (USDA), according to which reductions in body weight and in the risk of obesity resulting from nutrition labelling of pre-packaged foods will produce economic benefits of US\$63 to US\$166 billion over twenty years. The CSPI also reports FDA estimates according to which simply listing trans fat content on pre-packaged foods will save between US\$3 and US\$8 billion per year (CSPI, 2008b). Within industry, food producers conduct their own cost-benefit analyses within the context of their food-labelling initiatives (i.e. the health logos they have developed): they use these as a form of publicity for their products, provided the expected benefits exceed the costs (Golan et al., 2007).

5.6 FEASIBILITY

Summary table of criteria associated with this dimension (Morestin et al., 2010)	
<ul style="list-style-type: none"> • Conformity with all relevant legislation • Existence of pilot programs • Automaticity • Directness and hierarchical integration • Number of actors involved in implementation 	<ul style="list-style-type: none"> • Quality of the cooperation between actors • Ability of opponents to interfere • Availability of human resources required • Availability of material resources required • Availability of “technological” resources required

Presented below are the data we found on the various aspects of the feasibility of public policies on nutrition labelling.

5.6.1 Conformity with all relevant legislation

No Canadian data on this subject was found. In contrast, several articles in scientific journals discuss the conformity of local regulations on nutrition labelling in restaurants with other United States laws – a subject of current interest that is generating intense debate.

Some authors note that care must be taken when formulating regulations, so as not to open the door to contestation by industry (Pomeranz & Brownell, 2008). The Rudd Center gives the example of a Californian bill, inspired by a model supplied by the CSPI and revised by lawyers before being submitted, with the aim of minimizing the risk of appeals (Rudd Center, 2008).

Nevertheless, several local administrations that have adopted such regulations (including, notably, the cities of New York, San Francisco and Santa Clara) have been sued by the restaurant industry, alleging that these regulations violate restaurant owners’ right to free

speech and the preemption principle²¹ (Bassett et al., 2008; Mello, 2009; Pomeranz et al., 2009). An initial regulation adopted by New York was even overturned on the basis of the preemption argument (Bassett et al., 2008). Subsequent jurisprudence, in contrast, established the conformity of such regulations (Mello, 2009; Pomeranz & Brownell, 2008). On the one hand, the obligation to present factual information does not run contrary to the first amendment of the constitution, which protects freedom of speech (Mello, 2009; Pomeranz et al., 2009). Secondly, the federal law currently in effect applies only to nutrition labelling on pre-packaged foods, and therefore does not preempt local regulations concerning restaurants (Mello, 2009; Rutkow et al., 2008). The FDA itself intervened to support this position, later ratified by a federal court (Pomeranz et al., 2009). But the restaurant industry has lobbied several states to extend the scope of their preemptive powers, either by adopting laws that forbid local authorities situated in their territory from regulating nutrition labelling in restaurants (Ohio, Georgia, Washington state), or by adopting less restrictive labelling laws, which would annul and replace existing local regulations (California) (Pomeranz et al., 2009; Rutkow et al., 2008). In any case, with the federal law adopted in March 2010, which ultimately supersedes pre-existing local provisions, the United States has now evolved toward the regulation of labelling at the national level.

5.6.2 Existence of pilot programs

The existence of pilot programs is an indication of the feasibility of a public policy on the same issue. In the “Status” section, we indicated the high number of existing nutrition-labelling programs in industrialized countries, including both public and private initiatives, concerning pre-packaged or restaurant food and detailed or simplified information. One scientific study explicitly points out (Wootan & Osborn, 2006), as does the Rudd Center (Friedman, 2008), that if half of American restaurant chains are currently making the nutritional value of their products available, this proves it is feasible to do so.

5.6.3 Automaticity

The concept of automaticity refers to the degree to which the implementation of a public policy is managed by pre-existing administrative mechanisms. The countries studied do not appear to have created new organizations specifically devoted to nutrition labelling. Such policies come under the authority of the public agencies responsible for regulating food products. For example, in Canada, Health Canada is responsible for developing policies and regulations related to the health and safety of food (which includes nutrition labelling); and the CFIA is responsible for ensuring these regulations are respected (Health Canada, 2007 and 2009a).

5.6.4 Directness, number of actors involved in implementation and hierarchical integration

Directness refers to the degree to which the organization that authorizes, finances or launches a policy is also involved in its implementation. Although the documents gathered do not discuss this, it is clear that the implementation of nutrition labelling ultimately depends on

²¹ Preemption: Prohibition of a jurisdiction from adopting laws or regulations on matters that are already regulated by a higher-level jurisdiction.

the food industry – and, thus, on a multitude of actors. This implies that a nutrition-labelling policy is only feasible if these actors are willing to play along. To ensure that this happens, most countries establish some form of hierarchical integration: those spearheading the public policy guide the activities of the actors involved in its implementation, using an appropriate system of incentives and sanctions. Thus, in the United States, the Government Accountability Office (GAO)²² indicates that the FDA carries out inspections to verify whether industry is complying with requirements for nutrition labelling on food products, or the FDA contracts state authorities to carry out such inspections (GAO, 2008).

5.6.5 Cooperation among actors

A critical aspect of the feasibility of nutrition-labelling policies is the degree to which the various actors involved cooperate in their implementation. Their attitude obviously follows from their judgement of nutrition-labelling, an element that will be discussed below, in the section on "Acceptability."

5.6.5.1 Consultation process

The promoters of nutrition-labelling policies often make an effort to win the cooperation of other stakeholders (industry, consumers, public health actors, etc.) by organizing consultation processes. Health Canada did so before developing its regulation requiring the Nutrition Facts table on pre-packaged foods (Health Canada, 2009a); the FDA published preliminary versions of their regulations concerning the same issue and received thousands of comments (Taylor & Wilkening, 2008). As regards simplified nutrition labelling, in 2006, the European Commission published a document based on consultations with stakeholders (MacMaolain, 2008). The FSA in the United Kingdom launched the traffic lights system after several years of consultation with the agri-food industry (Lobstein & Davies, 2009; Hignett, 2007) and remains open to the idea of promoting the RDV-based logos used by a portion of the industry instead, if the consumer evaluation study they are conducting indicates that this competing system is preferred (Lobstein & Davies, 2009). For its part, at the end of 2007, Health Canada initiated consultations on the subject of food claims (including logos) with researchers, consumer groups, health professionals, industry representatives, and federal, provincial and municipal governments. Based on these consultations, Health Canada developed a five-year plan to revise the framework for managing health claims; it also plans to continue with targeted consultations (CSPI-Canada, 2008b; Health Canada, 2007 and 2009b; GAO, 2008). As regards nutrition labelling in restaurants, certain promoters of such regulations have negotiated their content with industry, as was done in California and in King County, which includes the city of Seattle (Pomeranz et al., 2009; Rutkow et al., 2008). The New York City Board of Health did not specifically consult the New York State Restaurant Association before proposing its regulation, but it did submit it to public commentary and study over 2000 responses (Mello, 2009).

²² An independent agency that works for Congress and audits the activities of the federal government.

5.6.5.2 *Cases of industry opposition*

The food industry often opposes policies and sometimes seeks the support of political actors to block them: an example of cooperation, but for the purpose of *opposing* nutrition labelling. We described above how American restaurant associations went so far as to contest nutrition-labelling regulations in court (Ludwig & Brownell, 2009; Mello, 2009). They also lobbied to have certain state legislative assemblies adopt laws limiting the regulatory power of local authorities or negotiated less restrictive labelling requirements with public authorities (Pomeranz et al., 2009; Rutkow et al., 2008). In Canada also, the CSPI reports that the restaurant industry conducted a lobbying campaign against Bill C-283, a bill examined by the federal Parliament in 2006 that would have required nutrition labelling in restaurants (CSPI-Canada, 2006b and 2007). The conservative party (in the position of a minority government) unanimously voted against the project, and opposition deputies were not numerous enough to support its adoption (CSPI-Canada, 2006b and 2008a). Another example of blockage by a political actor: Governor Schwarzenegger vetoed the first law on nutrition labelling in restaurants approved by the California Legislative Assembly in 2007 (Rudd Center, 2008). As regards pre-packaged foods, certain actors in the European agri-food industry are opposed to the introduction of the traffic light system (Hyde, 2008), particularly in the United Kingdom (Lobstein & Davies, 2009); in the United States, the GAO reports that the Grocery Manufacturers/Food Products Association is opposed to any form of mandatory simplified labelling on food (they want such labelling to remain voluntary), and opposes labelling the nutritional value of whole products (versus the value of smaller portions) (GAO, 2008).

5.6.5.3 *Industry collaboration and its limits*

Cases where industry has demonstrated its willingness to cooperate with nutrition-labelling policies seem rarer, but the literature does report a few. For example, soon after the FSA began promoting them, traffic lights had already been adopted by a third of supermarkets and many food producers in Britain (Hignett, 2007; Switt, 2007). A report produced by The Urban Institute²³ (Engelhard, Garson, & Dorn, 2009) indicates that the law on nutrition labelling in restaurants finally adopted by the American Congress was supported by the National Restaurant Association; indeed, as one scientific article also points out (Mello, 2009), if there must be mandatory nutrition labelling, industry prefers a single national standard, making compliance easier than is currently the case with many local provisions with variable content.

In addition, industry often presents its own nutrition-labelling initiatives as gestures of cooperation and good faith. And, in fact, some of these initiatives go in the direction desired by public authorities. For example, in response to current FDA concerns, some large American companies have begun to display the complete nutritional value of products that are generally fully consumed in one sitting (presenting, for example, the nutritional value for a whole muffin instead of for half) (Antonuk & Block, 2006; Lando & Labiner-Wolfe, 2007). Often, however, and we shall return to this in the section on "Acceptability," industry points to its own initiatives when arguing that public intervention is unnecessary. However, most of these initiatives do not really help inform consumers. American restaurant chains that

²³ An independent, not-for-profit American research and educational organization.

voluntarily offer nutrition information usually offer it in a form that is not visible when orders are being placed (Kuo et al., 2009; Wootan et al., 2006). The Canadian CSPI also denounces the doubtful value of the nutrition information program created by the Canadian Restaurant and Foodservice Association in 2006 to convince the Parliament of Canada to reject the bill requiring nutrition labelling in restaurants (CSPI-Canada, 2008a and 2009b). Not only does this program promote the presentation of nutrition information in places where it is not very visible (websites, brochures, tray liners) (CSPI-Canada, 2006a); but also, in evaluating 27 participating restaurant chains, the CSPI discovered that two thirds do not even respect the program's lax standards (CSPI-Canada, 2008a and 2009b). With respect to pre-packaged foods, the Coalition québécoise sur la problématique du poids²⁴ and the Canadian CSPI draw attention to the fact that numerous health logos created by companies are based on lax criteria, which allows these labels to be displayed on foods with mediocre nutritional value (CSPI-Canada, 2007 and 2008b; Coalition québécoise sur la problématique du poids, 2009a and 2009b). On the other hand, it is certainly encouraging that food manufacturers have voluntarily submitted more than 1500 products to the Heart and Stroke Foundation of Canada's Health Check™ program (Heart and Stroke Foundation, 2009a), but the Canadian CSPI points out that this number represents only 3% of food products available on the market (CSPI-Canada, 2008b). And while the Health Check™ criteria are stricter than those of industry, the CSPI still considers some of the Health Check™ criteria to be lax (CSPI-Canada, 2007 and 2008b). Thus, public intervention remains necessary.

5.6.6 Practical aspects

The data collected on this aspect are rather disparate. They are presented point by point, and do not necessarily represent a coherent whole.

One technically difficult task related to the creation of simplified nutrition labelling is the establishment of criteria for categorizing foods according to their degree of healthiness. However, within the context of health claim regulation, several international institutions and countries (including Canada) have already defined nutrient levels considered to be "high" or "low." The promotion of the traffic lights system in the United Kingdom, which involved the definition of quantitative criteria used to associate each nutrient with the colour green, yellow or red, also demonstrates that this is feasible (Lobstein & Davies, 2009).

As for the public agencies responsible for enforcing nutrition-labelling rules, a GAO report states that, over the last few years, the number of inspections and corrective actions undertaken by the FDA has decreased or remained stable, whereas the number of food producers has increased (GAO, 2008). The FDA deplores its lack of financial and human resources and its limited powers, which it hopes to see extended (for example, to allow third parties to be accredited to conduct certain inspections, or to allow it to oblige non-compliant companies to assume the cost of re-inspection) (GAO, 2008).

²⁴ Initiative sponsored by the Association pour la santé publique du Québec, and devoted to advocating for public policies that contribute to a healthy environment.

Concerns are recurrently expressed regarding the possible incompatibility of the standardization necessitated by nutrition labelling and certain restaurant realities. The Robert Wood Johnson Foundation²⁵ (RWJF), the CSPI, and the Rudd Center mention factors such as special offers (not on the regular menu), for which it would be costly to carry out a nutritional analysis in every case; the many possible combinations that can be ordered from menus; and the frequent personalization of orders by clients (for example, ordering a dish without sauce, or, on the other hand, with the addition of a certain ingredient), which render inapplicable the nutrition information displayed (CSPI, 2008a; Friedman, 2008; Robert Wood Johnson Foundation [RWJF], 2009). The RWJF also points out that nutrition labelling limits flexibility related to menu changes and stresses that chefs are not accustomed to following standardized recipes (RWJF, 2009). This said, this last remark applies more to independent restaurants, which are not targeted by nutrition-labelling regulations, than to chains; moreover, almost all proposed or enacted legislation requires the labelling of nutrition information solely for standard meals that are permanently included on menus (CSPI, 2008a; Friedman, 2008).

Another concern on the practical level is that the time spent by clients reading nutrition information will slow down service in fast-food restaurants; but the Rudd Center and the CSPI stress that the presentation of information on menu boards (as long as it is big enough) does not slow down ordering, because clients can read the information while waiting in line (CSPI, n.d.; Friedman, 2008).

The RWJF notes that training employees to answer questions about nutrition labelling could be difficult (RWJF, 2009), but most nutrition-labelling regulations do not require that personnel provide this kind of clarification to clients.

Another concern of a very practical nature is the limited amount of space available for presenting nutrition information, both on pre-packaged food labels (Taylor & Wilkening, 2008) (particularly in the Canadian context, with the added challenge of bilingual labels) and on menus (RWJF, 2009; Health Canada, 2007). However, Health Canada and the Canadian division of the CSPI note that the use of symbols summarizing this information in a compact graphic form resolves this problem (Health Canada, 2007; CSPI-Canada, 2007 and 2008b).

According to The Urban Institute, it is generally necessary to allow industry a certain amount of time to comply with new nutrition-labelling regulations and to allow small companies even more time (Engelhard et al., 2009).

²⁵ Foundation established by the American company Johnson and Johnson. It carries out and finances research and advocacy activities aimed at changing the environments and public policies surrounding various health issues, including childhood obesity.

5.7 ACCEPTABILITY

Summary table of criteria associated with this analytical dimension (Morestin et al., 2010):

For each actor concerned:

<ul style="list-style-type: none"> • Acceptability of acting on the problem • Acceptability of the policy: <ul style="list-style-type: none"> - Assessment of its effectiveness, unintended effects, equity, cost, and feasibility - Assessment of the degree of coercion involved 	<ul style="list-style-type: none"> • Acceptability of the decision-making process • Acceptability of the actors involved in implementation • Acceptability of accountability measures
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We found data on the judgements of three types of actors regarding nutrition labelling: consumers, industry, and associations and public actors.

5.7.1 Position of consumers

5.7.1.1 *General acceptability of nutrition labelling*

Much of the data on this subject concerns American opinion on menu labelling. According to various national and local polls, between 62% and 83% are in favour (Lando & Labiner-Wolfe, 2007; Mello, 2009; O'Dougherty et al., 2006; Pomeranz & Brownell, 2008; Wootan & Osborn, 2006). Indeed, when the City of New York released its labelling regulation for consultation, 99% of the comments received were favourable (Mello, 2009). Focus groups organized in several large American cities revealed that consumers find it useful to see the caloric value of restaurant items displayed and would appreciate a logo identifying healthy choices on menus (Lando & Labiner-Wolfe, 2007).

With regard to pre-packaged foods, in Australia, the vast majority of respondents support nutrition labelling, especially the labelling of fat, sugar and sodium content (Kelly et al., 2009). The data collected on Europe indicate that consumers would like simplified information in the form of logos (Borgmeier & Westenhoefer, 2009; Feunekes et al., 2008; Grunert & Wills, 2007; Wills et al., 2009). At least a portion of European and American consumers want information not only about calories (deemed insufficient by itself to inform choices), but also about nutrients (Lando & Labiner-Wolfe, 2007; van Kleef et al., 2008). However, some European consumers view nutrition labelling as an attempt to push them to make certain choices and to impose a scientific approach toward eating, which they think should be a pleasurable activity (Grunert & Wills, 2007).

5.7.1.2 *Preferences related to labelling formats*

The preferences expressed by consumers oscillate between two conflicting expectations. On the one hand, they like simplification, and appreciate logos, for example (more than detailed information of the type found in the Nutrition Facts table) because they are visible, save time, and make it easy to compare products (van Kleef et al., 2008; Lando & Labiner-Wolfe, 2007). On the other hand, they want enough detail to not feel they are being patronized or at least to

allow them to understand the basis for the summarized information being presented (Grunert & Wills, 2007; Lando & Labiner-Wolfe, 2007). For example, one study showed that to build consumer trust, front-of-pack nutrition claims must be combined with detailed information on the back (van Kleef et al., 2008). In many studies, consumers simultaneously express these two opposing expectations (Feunekes et al., 2008; Grunert & Wills, 2007; Wills et al., 2009). In other studies, the preference for simplified information dominates (van Kleef et al., 2008; Rothman et al., 2006), particularly among low-income consumers and those from ethnic minorities (Signal et al., 2008). Inversely, in many experiments, very simple logos offering a global assessment of food products (single traffic light,* health logo, etc.) were less appreciated than more elaborate logos (Feunekes et al., 2008; Grunert & Wills, 2007; Signal et al., 2008; Lobstein & Davies, 2009). According to a survey carried out in several European countries, British people appreciate more complex logos more than others, perhaps because they are already used to seeing such logos (van Kleef et al., 2008).

Consumers prefer the implementation of a uniform labelling system for all foods, rather than the coexistence of various formats, which creates confusion (Feunekes et al., 2008; Kelly et al., 2009; Lobstein & Davies, 2009; Lando & Labiner-Wolfe, 2007). On the level of graphics, they prefer labelling based on images rather than on words (Signal et al., 2008), labelling that is big enough to be readable (van Kleef et al., 2008; Wills et al., 2009) and labelling that uses colour not only to attract the eye (van Kleef et al., 2008), but also as a code to aid interpretation (Grunert and Wills, 2007; Kelly et al., 2009; Switt, 2007). The two types of logos that are generally most preferred are multiple traffic lights and colour-coded logos based on RDVs* (Feunekes et al., 2008; Grunert & Wills, 2007; Signal et al., 2008; Switt, 2007). These logos have in common the fact that they are colour coded and that they present information broken down by nutrient, thus achieving the compromise between simplified and more detailed information desired by consumers. When the two systems were compared, traffic lights were preferred in the United Kingdom, but by a narrow margin (Hignett, 2007; Switt, 2007); a review of the literature across Europe turned up no clear indication of which system was preferred (Grunert & Wills, 2007). RDVs are preferred by Australians, probably because they are used to a similar system that industry has been using voluntarily since 2006 (Kelly et al., 2009).

One note on the subject of RDVs, which are often discussed by consumers: we saw in the section on "Effectiveness" that Americans have difficulty understanding RDVs presented in the form of percentages (for example, indicating that a portion of a product contains 15% of the RDV of sodium); it is therefore not surprising that they would like them to be either better explained (Borra, 2006; Wills et al., 2009) or removed (Lando & Labiner-Wolfe, 2007). European studies, on the other hand, indicate that the presentation of RDVs is appreciated there, whether presented in the form of percentages or as absolute values (Grunert & Wills, 2007; van Kleef et al., 2008). However, in Europe, as in the United States, some respondents think that RDVs, which are calculated for an "average" person, do not apply to their own individual case (Lando & Labiner-Wolfe, 2007; van Kleef et al., 2008).

Another recurring issue is that of the size of the portions for which nutrition information is given. American consumers recommend that, for a given category of food, the nutritional values presented apply to the same size portion for all products (for example, for two tablespoons of sauce) (Wills et al., 2009). They also think that products that are usually

consumed in one sitting should display their full nutritional value, and not the value of a smaller portion – which obliges consumers to perform calculations they do not like to do (Lando & Labiner-Wolfe, 2007). Studies carried out in Europe, for their part, examine the popularity of presenting nutritional values per 100 g or per portion. Neither of the two systems is a clear winner, since consumers see advantages to both: the first makes it easier to compare products, whereas the second is considered useful for assessing a given food product, providing what constitutes a portion is clearly defined (Grunert & Wills, 2007; van Kleef et al., 2008).

Focusing on a completely different issue, a study of ethnic minorities in New Zealand found that some minorities would like nutrition information to be culturally adapted: presentation in their native language, and use of symbols and personalities from their community on labels identifying healthy products, for example (Signal et al., 2008).

No data was found on the subject of Canadian preferences. Health Canada would look favourably on research into the expectations of consumers regarding health claims (including logos) on food products (Health Canada, 2007).

Overall, the data on format preferences correspond to those, presented in the “Effectiveness” section, on the reading and understanding of nutrition information: the preferred formats are also the most frequently read and the best understood. There are only slight discrepancies: extremely simple logos, disliked by some consumers, produced good results in terms of comprehension; and RDVs, which were favoured in Europe, were nevertheless not always interpreted correctly.

5.7.1.3 Preferences related to the placement of information

Some American respondents suggest placing nutrition information in restaurants on wrapping and bags for take-out food, on tray liners, in brochures, on posters near the cash, and on menu boards; they would also like to see logos in menus beside healthy foods or to see all healthy choices presented in a separate section in menus (Lando & Labiner-Wolfe, 2007). With regard to pre-packaged foods, consumers recommend moving key information to the front of the package (Wills et al., 2009). Some respondents suggest adding nutrition information to discount coupons, and even grouping all healthy foods together in one section of the supermarket (Signal et al., 2008).

5.7.1.4 Assessment of the effectiveness of nutrition labelling

In some European studies, respondents expressed the view that “unfavourable” nutrition information would not prevent them from consuming foods whose taste they liked, but might lead them to consume these in moderation. Others think that the use of colour coding makes information difficult to ignore and would therefore have a greater impact on their purchasing habits. Some consumers believe they would use nutrition information more when unsure about the health value of a food (Grunert & Wills, 2007). With regard to menu labelling, a survey conducted in Minnesota indicates that respondents who oppose a law on this matter (a minority), do not think it would be effective in modifying consumers' decisions (O'Dougherty et al., 2006).

5.7.1.5 *Assessment of unintended effects*

European consumers point out that care must be taken to ensure that simplified nutrition labelling does not attach guilt to the pleasure of eating (van Kleef et al., 2008). Responding to a completely different context, an ethnic minority in New Zealand is wary of additional stigmatization: Maori people think that healthy food is, in general, too expensive for them and that attaching a logo to these products could open the door to still more judgement regarding their behaviour, making it seem as if they chose deliberately not to buy these products (Signal et al., 2008).

5.7.1.6 *Assessment of equity*

Some consumers think nutrition labelling could potentially produce a differential effect, believing it would be used mainly by women (van Kleef et al., 2008).

5.7.1.7 *Assessment of the degree of coerciveness of nutrition labelling*

Consumers express views on coercion related both to industry and to themselves. Two studies indicate that they support legislation because they find nutrition labelling backed by a law or by government standards to be more credible (Louie et al., 2008) or because they do not think that industry would accept a voluntary labelling system (Signal et al., 2008). In the United States, consumers who support a law on nutrition labelling in restaurants justify their position mainly by pointing to the fact that a law would ensure businesses carry out their responsibilities; as for opponents, they think such a law represents an excessive burden for businesses (O'Dougherty et al., 2006).

As regards views on consumer coercion, some Europeans express reservations about overly simplified labelling, viewing it as a paternalistic attempt to influence their behaviour (Grunert & Wills, 2007; Wills et al., 2009); however, the majority, in contrast, like the fact that labelling is an informative measure rather than a coercive one (van Kleef et al., 2008). In a survey of American fast-food restaurant clients, a recurring argument was that eating is a question of choice and of individual responsibility; paradoxically, this argument was used as often by those supporting menu labelling (according to whom it would make informed choices possible and increase individual responsibility) as by those opposed to it (who thought that the law should not intervene in matters of choice and individual responsibility) (O'Dougherty et al., 2006).

5.7.1.8 *Acceptability of the actors involved*

Implicitly, consumers' judgements about the legitimacy and credibility of actors involved in implementing nutrition labelling would be reflected in the level of credibility and trust they ascribe to this labelling.

Currently, only 40% of Canadian consumers believe the labelling on foods is credible. It should be noted that the entire label is being judged and not just the Nutrition Facts table (Wills et al., 2009). According to a survey conducted by the Heart and Stroke Foundation of Canada, 80% of consumers trust the Health Check™ logo, specifically because it is an initiative of the Foundation, and also because they believe that the program is based on

scientific knowledge or the expertise of dieticians (Heart and Stroke Foundation, 2009b). Americans doubted the credibility of unregulated nutrition claims that proliferated before the NLEA (Taylor & Wilkening, 2008). They continue to believe that a health logo only has meaning if it is certain that it is only used on products that respect established criteria (Lando & Labiner-Wolfe, 2007). Supervision by a third party makes even private labelling initiatives more credible. The preferred identity of this third party can vary depending on context: while Americans place more trust in government agencies for such matters (like the FDA or the USDA), Europeans ascribe more credibility to international organizations or consumer associations (Golan et al., 2007). According to one survey, European consumers trust the credibility of logos approved by the World Health Organization or by national nutritionists' associations; in contrast, approval by the European Union or by the agri-food industry confers less credibility (Feunekes et al., 2008). Other studies simply indicate that trust in logos increases when they are endorsed by "the authorities" (van Kleef et al., 2008) or regulated by a law or by governmental standards (Louie et al., 2008).

Health Canada has demonstrated its interest in research into the possible sources of consumer scepticism regarding claims attached to food products (including logos) and into expectations regarding the roles, responsibilities and degree of accountability that should be assumed by the various actors involved in this matter, including, notably, the government and industry (Health Canada, 2007).

5.7.2 Position of the food industry

We found little data that directly reflect the position of industry.

The food industry is critical of the effectiveness of nutrition labelling in restaurants: the American industry contests the methodological rigour of the studies supporting this policy (Mello, 2009), considers that the policy's benefits for consumers have not been proven (Ludwig & Brownell, 2009) and that consumers are not knowledgeable enough about nutrition to benefit from the information displayed (Berman & Lavizzo-Mourey, 2008).

Another, contradictory, argument recurrently put forth by industry is that nutrition labelling on menus is useless, since restaurants already make nutrition information available elsewhere (websites, pamphlets, posters) (Berman & Lavizzo-Mourey, 2008; Roberto et al., 2009; Wootan et al., 2006) or identify healthy choices on their menus (Berman & Lavizzo-Mourey, 2008).

In addition, the restaurant industry is concerned about the cost of implementing nutrition labelling (Berman & Lavizzo-Mourey, 2008; Roberto et al., 2009) and, beyond this, about the loss in revenues that could result from clients turning away from less healthy dishes (Ludwig & Brownell, 2009). Large Australian companies express a similar fear: that traffic lights on pre-packaged foods will cause sales of products labelled with a red light to drop (especially given their view that reformulating these products would be expensive, time-consuming, and commercially risky) (Louie et al., 2008).

With respect to feasibility, the restaurant industry is worried about overburdening menus by adding nutrition information (Roberto et al., 2009). According to the Canadian CSPI, a lack of space on menus was the basis of one argument put forth by Canadian restaurant owners opposing Bill C-283 (CSPI-Canada, 2006a, 2007 and 2008b).

Inversely, harmonization seems to make nutrition labelling more acceptable to industry. Thus, The Urban Institute reports that the American National Restaurant Association accepts the new federal law on menu labelling, which, because it is national in scope, is easier to comply with than multiple local regulations with varying content (Engelhard et al., 2009). For pre-packaged foods, Australian firms prefer logos based on RDVs, because many other countries use this system and such harmonization facilitates the circulation of products (Louie et al., 2008).

In fact, the numerous nutrition-labelling initiatives undertaken by industry (mentioned above in the sections on “Status” and “Feasibility”) can lead to the assumption that industry does not oppose such measures; its position seems rather to be determined by its assessment of the degree of coercion at play. Thus, traffic lights, which are encouraged but not mandatory in the United Kingdom, were adopted without difficulty by a portion (but only a portion) of the food industry. In the United States, the restaurant industry has, on occasion, negotiated the content of labelling regulations, rather than reject them outright (Pomeranz et al., 2009; Rutkow et al., 2008). On the other hand, it has gone so far as to attack other regulations through the judicial system. It seems, in fact, that industry accepts nutrition-labelling regulations more easily when it has a certain degree of control over their content.

5.7.3 Position of associations and public actors

The data collected on this subject and presented in this section concern:

- associations: associations working in the health field and consumer protection groups;²⁶
- public institutions working in the health field: the World Health Organization; Health Canada; in the United States: the FDA, the Institute of Medicine, the Surgeon General,²⁷ the New York City Board of Health; in the United Kingdom: the FSA; the health ministries of European countries;
- other types of public institutions: in Canada: the federal Parliament, the legislative assemblies of Ontario and British Columbia; in the United States: Congress, the legislative assemblies of various states, municipalities; in Europe: the European Commission, the European Parliament.

5.7.3.1 General acceptability of nutrition labelling

In Canada, the CSPI has come out in favour of nutrition labelling in restaurant chains (CSPI-Canada, 2008b) and cites several associations and public actors also calling for such a policy, among these are Health Canada’s Advisor on Healthy Children and Youth, the former Chief Medical Officer of Health of Ontario, the Ontario Medical Association, and the Heart and Stroke Foundation of Canada (CSPI-Canada, 2006a, 2008b, 2009a and 2009b). A

²⁶ Considered here rather than in the section above, which was devoted to consumers as separate individuals.

²⁷ The American equivalent of the Chief Public Health Officer in Canada.

document produced by the Foundation itself confirms this recommendation (Heart and Stroke Foundation, 2007). With respect to political actors, the federal Parliament rejected a bill on menu labelling in 2006 (the Canadian CSPI points out that among the parliamentarians opposed were four who had personal or familial interests in fast-food restaurant chains and seven who were cattle ranchers – and this bill also included a provision requiring that meat be labelled with the Nutrition Facts table (CSPI-Canada, 2006b and 2008a)), but the Ontario legislative assembly is currently examining a bill on this issue. In the United States, actors like the FDA, the Institute of Medicine and the Surgeon General have recommended wider availability of nutrition information in restaurants (Krukowski et al., 2006; Mello, 2009; Rutkow et al., 2008; Taylor & Wilkening, 2008; Wootan & Osborn, 2006; Lando & Labiner-Wolfe, 2007), and consumer protection groups are calling for calorie labelling on menus (Krukowski et al., 2006). As explained in the “Status” section, in recent years an increasing number of American jurisdictions have adopted regulations or laws on nutrition labelling in restaurants, indicating that more and more political actors accept this public policy; and this situation culminated recently with the adoption of a federal law.

With regard to pre-packaged foods, in Canada the debate is currently focused on simplified nutrition labelling. Health Canada, the Canadian CSPI and the United States GAO all refer to various Canadian actors who have come out in favour of a regulation promoting a simple, clear and standardized logo system: Health Canada’s Advisor on Healthy Children and Youth, the Standing Committees on Health of both the House of Commons and the Legislative Assembly of British Columbia, and the Chronic Disease Prevention Alliance of Canada (CSPI-Canada, 2007 and 2008b; Health Canada, 2007; GAO, 2008). The Canadian CSPI is itself in favour of such a policy (CSPI-Canada, 2008b), as is the Coalition québécoise sur la problématique du poids and the Québec association Option Consommateurs (Coalition québécoise sur la problématique du poids, 2009a and 2009b). In addition, according to the Canadian CSPI, many consumer protection and health promotion groups are calling for nutrition-labelling requirements to be extended to fresh foods (CSPI-Canada, 2006a). Elsewhere, the FDA recommends exploring changes to the nutrition information displayed on pre-packaged foods (Lando & Labiner-Wolfe, 2007). In Europe, many actors favour better regulation of nutrition labelling. The European Commission has proposed making it mandatory (MacMaolain, 2008). European health ministers are committed to supporting the second World Health Organization European Action Plan for Food and Nutrition Policy, which includes actions such as the adequate labelling of foods, by means of a nutrition profile accompanied by elements that facilitate its interpretation, such as, for example, traffic lights (Lobstein & Davies, 2009). Traffic lights appear to be well-accepted in Europe, since they are also supported by several consumer protection groups and associations working in the health field (Hignett, 2007; Lobstein & Davies, 2009). Following in the same trend, the European Parliamentary Committee on the Environment, Public Health and Food Safety has called for simplified nutrition labelling based on colour coding (Hyde, 2008).

Some data specifically indicate that, for certain public actors, the acceptability of nutrition labelling depends on the positions taken by other actors. Thus, the European Commission acknowledges that consumers are not satisfied with current nutrition-labelling provisions in Europe (MacMaolain, 2008). In the United States, in the early 1990s, it was in response to

the concerns of consumers and industry about the credibility of proliferating food claims that Congress adopted the law requiring standardized nutrition labelling on pre-packaged foods (Taylor & Wilkening, 2008). Similarly, it is in response to the concerns of consumer protection groups that the FDA plans to require labelling of the *full* nutritional value of foods that are normally consumed in one sitting, rather than the nutritional value of a smaller portion (Antonuk & Block, 2006). As regards menu labelling, in the United States some legislators seem to want to avoid running afoul of industry, and hence the adoption of labelling laws whose content is negotiated with the restaurant industry, and also laws restricting the ability of local authorities within a larger territory to regulate nutrition labelling in restaurants (Pomeranz et al., 2009; Rutkow et al., 2008).

5.7.3.2 *Assessment of the effectiveness of nutrition labelling*

According to the Canadian CSPI, scientists and economists working for the federal government recognize that nutrition information, if visible prior to purchase, can efficiently reduce the burden of diet-related diseases (CSPI-Canada, 2006b). Moreover, the CSPI recommends that Health Canada carry out research and consult scientists, health and communication experts, industry representatives, and consumers, to identify the best possible system to use for simplified nutrition labelling (CSPI-Canada, 2007 and 2008b). The New York City Board of Health has affirmed its confidence in the intervention logic of nutrition labelling in restaurants, pointing to the scientific data supporting each step in the chain of effects that links this policy to a reduction in obesity prevalence (Mello, 2009). In addition, the Board has deemed it unrealistic to wait for data from controlled randomized studies before acting (Mello, 2009).

Others have expressed judgements regarding an intermediate effect: the comprehension of nutrition information. The Institute of Medicine is concerned about the increasingly high level of literacy consumers must have in order to understand nutrition labels (Blitstein & Evans, 2006). European consumer protection groups, for their part, believe that several different nutrition-labelling formats should not be allowed to co-exist (Lobstein & Davies, 2009): as was discussed above, such co-existence confuses consumers. In the United States as well, consumer protection groups are complaining about current labelling practices which are misleading: particularly the fact that industry can display the nutritional value of only a portion of foods that are usually fully consumed in one sitting (Antonuk & Block, 2006).

5.7.3.3 *Assessment of the degree of coerciveness of nutrition labelling*

Even when associations and public actors support nutrition labelling, they are not always in favour of making it mandatory.

With regard to simplified front-of-pack food labelling, Health Canada has left the door open: during consultations with stakeholders, the department proposed intervention options ranging from educating consumers, to providing industry with guidelines on the wording of claims and the conditions for their use, to improving nutrition-labelling regulations, as needed (Health Canada, 2007). According to the CSPI, Health Canada's Advisor on Healthy Children and Youth has come out in favour of a mandatory system of simplified labelling on pre-packaged foods and in restaurants (CSPI-Canada, 2008b). Among legislators, the House of Commons

Standing Committee on Health recommended in 2007 that the federal government intervene rapidly to make simplified labelling on pre-packaged foods mandatory (CSPI-Canada, 2008b; Health Canada, 2007; GAO, 2008). However, it is bills on menu labelling that have been examined, as mentioned above: in Ontario, the Legislative Assembly is still examining such a law; another was rejected in 2006 by a majority of members of Canada's Parliament, who opted to let industry present nutrition information on a voluntary basis. As for Canadian associations, almost all of those whose views we found documented were in favour of mandatory labelling. Only the Heart and Stroke Foundation seems not to propose coercion, since it simply recommends that fast-food restaurants make nutrition information more available (Heart and Stroke Foundation, 2007). In contrast, the Canadian CSPI recommends that nutrition labelling in restaurant chains be made mandatory (CSPI-Canada, 2008b). The CSPI considers this the responsibility of the federal government; however, it calls on provincial and municipal governments to regulate menu labelling, until such time as the federal government does so (CSPI-Canada, 2008a and 2008b). As regards simplified information on pre-packaged foods, the Coalition québécoise sur la problématique du poids and Option Consommateurs would like to see Health Canada introduce regulations (Coalition québécoise sur la problématique du poids, 2009a and 2009b). The Canadian CSPI recommends that a logo and the nutritional criteria regulating its use be established by Health Canada; the CSPI indicates that Health Canada should also establish the voluntary or mandatory nature of the system, but for its part, the CSPI favours coercion, without which industry will not apply the simplified labelling system to foods with little nutritional value (CSPI-Canada, 2007). The CSPI specifies, in addition, that Health Canada should decide if the logos currently used by industry should be eliminated once an official simplified labelling system is adopted (CSPI-Canada, 2008b).

In the United States, the FDA has demonstrated its ambivalence: its internal Obesity Working Group asked restaurants to voluntarily display nutrition information (Lando & Labiner-Wolfe, 2007), but the FDA also stated explicitly that all levels of government have the authority to make menu labelling mandatory (Pomeranz & Brownell, 2008) and supported the New York City Board of Health in its adoption of such a regulation (Mello, 2009). American state legislatures also seem divided on the issue: as previously indicated, many have adopted laws requiring nutrition labelling in restaurants, while others have rejected a coercive approach or limited its scope, in response to pressure from the restaurant industry. As for consumer protection groups, many have called for a law requiring calorie labelling in restaurants (Krukowski et al., 2006).

In Europe, the British FSA has opted for a voluntary approach (issue guidelines, but leave industry free to choose whether or not to apply them to their products) to avoid the bureaucracy that would attach to such regulations (Switt, 2007). Within EU institutions, positions diverge. The Agriculture and Fisheries Council²⁸ has expressed fears about the counter-productive effects of mandatory nutrition labelling, which could ignite conflict between stakeholders; it also justifies its position by invoking respect for the sovereignty of the member states (Hyde, 2008). However, in 2008, the European Commission proposed that the labelling of calories and the main nutrients on pre-packaged foods be made

²⁸ It brings together the corresponding ministers of the European Union's member states and European Commission representatives for agriculture, fisheries, health and consumer protection.

mandatory, while still allowing industry flexibility with regard to the format in which the information is presented (MacMaolain, 2008). For its part, in 2008, the European Parliamentary Committee on the Environment, Public Health and Food Safety also called for mandatory simplified nutrition labelling based on colour coding (Hyde, 2008).

6 SYNTHESIS OF DATA GATHERED DURING DELIBERATIVE PROCESSES

The specific deliberative process during which statements were made is indicated in parentheses: British Columbia (BC), Ontario, March 13, 2008 (ON1), Ontario, March 14 (ON2).

6.1 STATUS OF POLICIES IN CANADA, IN BRITISH COLUMBIA AND IN ONTARIO

Participants in the deliberative processes recalled the fact that nutrition labelling on pre-packaged foods has been regulated by Health Canada for several years and that nutrition claims are more strictly controlled than in other countries, such as the United States (ON1). They mentioned that there exist simultaneously in Canada up to 35 labelling initiatives introduced by agri-food firms who display nutrition information on their products. In addition the Heart and Stroke Foundation's Health Check™ program was brought up in all three deliberative processes. One participant mentioned the national consultation hearings on private nutrition-labelling initiatives held by Health Canada (in 2008) (ON1). Others indicated that many fast-food restaurant chains provide consumers with nutrition information on their products, either in their restaurants (in pamphlets or on tray liners), or on their websites (BC).

Participants also referred to provincial initiatives. In British Columbia, new guidelines that apply to vending machines in some public buildings indicate the nutritional value of the foods sold by means of an icon representing a happy face, a neutral face, or a frowning face (BC). In Ontario, a similar program (Fuel to Xcell/L'excellence, *ça se nourrit* developed by Ottawa Public Health and Ventrex Vending Services) classifies foods sold in school vending machines using a colour coding system similar to the traffic lights system. This program was tested from October 2003 to January 2004 in four high schools, and then extended to the whole province (ON2).

6.2 EFFECTIVENESS

6.2.1 Lack of evidence

Participants in all three deliberative processes judged there to be a lack of data demonstrating the effectiveness of nutrition labelling, and thought there should be more assessment of existing policies (including those in other jurisdictions), even if such assessments are complex to carry out. One participant also raised questions about what effects should be measured: apart from the effect of nutrition labelling on obesity, there are intermediate effects involving the ability to understand and use the information presented; but should policy decisions be made solely on the basis of intermediate effects? (ON2). Not everyone ascribes the same level of importance to effectiveness data. Some participants went so far as to advise turning instead to other policies that are supported by more evidence than nutrition-labelling policies (BC). However, other participants admitted that effects on behaviour can take a long time to become apparent and that it is not always best to wait for this to happen before going ahead with a policy (BC). One participant suggested taking action based on existing initiatives in Canada and elsewhere, while at the same time

establishing an ongoing assessment procedure for the policy implemented that can lead to its revision, if necessary (ON2).

6.2.2 Effectiveness for modifying consumers' level of information

Discussion concerning this subject centred on pre-packaged foods. The point was made during all the deliberative processes that the nutritional message currently conveyed by labels is too complex and is poorly understood by the population. This said, one participant stressed that, even poorly understood, this information has symbolic value: it alerts consumers to the questionable nutritional value of certain foods, which can lead them to reflect on their food choices (ON2).

During all three processes, participants suggested simplifying the information presented in order to maximize understanding. Various formats were considered promising, including with children:

- Colour coding modelled on traffic lights; this system, used in the United Kingdom and taught to Ontarian students met with some success in the context of the Ontarian Fuel to Xcell program (BC, ON1, ON2).
- Icons representing a happy face, a neutral face, or a frowning face, such as are used in vending machines in some public buildings in British Columbia (BC).
- Logos inspired by the peanut-free logo, which would make it possible to very easily identify products that contain, or do not contain, a particular component (ON1).
- “Pie chart” graphics like those used in some supermarket chains in the United Kingdom (ON2).

It is nevertheless necessary to be aware of certain comprehension problems tied to the format of nutrition labelling. Thus, some participants noted that health logos (like Health Check™) represent a judgement about the nutritional value of a food, but do not associate it with a specific portion (ON1). Therefore, some participants proposed adding information concerning the size of portions, for example (ON2). More generally, in all three deliberative processes, participants pointed out that the numerous labelling initiatives introduced by industry each have a different format and are each based on different criteria, which confuses consumers. Moreover, some participants stressed that the nutritional criteria used by industry often serve their own “interests” (flexibility regarding what qualifies as “healthy” food) and mainly support their sales strategy (ON1). Some consumers are thus misled, because they think that industry initiatives use publicly recognized criteria and are subject to independent evaluations (ON1); others lose trust in nutrition labelling (ON2).

In addition, some participants mentioned a possible perverse effect: if nutrition information is only presented on pre-packaged foods, some consumers might think that these foods constitute the basis of a healthy diet. To prevent such misunderstanding, one participant suggested extending labelling to fresh food (ON1).

During all three deliberative processes, participants suggested implementing educational policies to heighten the impact of nutrition labelling in terms of informing consumers. One approach judged promising was to provide nutrition education in schools, which would also

allow children to carry information home to their families (BC, ON1). In 2008, when the Ontarian curriculum was revised, stakeholders had asked the Ministry of Education to incorporate the development of skills in interpreting nutrition information into the curriculum (ON1).

6.2.3 Effectiveness at influencing purchasing and consumption

For one participant, nutrition labelling can provide consumers with a starting point for improving their eating habits, one based on objective nutritional data (ON1). However, many others stressed, during each of the processes, that information does not directly translate into modified behaviour, because food choices are also influenced by other factors. One participant drew attention to the relationship between cultural norms and diet: the way nutrition information is presented must take into account the cultural diversity of the population (ON1). For others, the fact that choice also depends on cost and the accessibility of foods, means it is not enough to provide nutrition information: complementary measures are also necessary, to make healthy foods more accessible, both physically and financially (BC, ON1).

With respect to restaurants, participants in all three deliberative processes noted that eating in restaurants is rare and choices there are very much guided by pleasure (“treating oneself”), which greatly limits how effectively nutrition information can modify food choices. Some, however, stated that this reasoning does not apply to the many persons who frequent restaurants on a *daily basis* (ON1). Others thought that nutrition labelling in restaurants has symbolic value regardless, as an awareness-raising tool, which should not be underestimated (ON1).

6.3 UNINTENDED EFFECTS

Participants mentioned one positive effect, which is not the primary intended goal of nutrition labelling: increased emphasis on nutrition labelling can lead industry to improve the nutritional value of its products (a phenomenon referred to in the literature as “reformulation”). They cited the example of Campbell’s® which reduced the amount of salt in its soups in order to be able to use the Health Check™ logo (BC, ON1).

Others cautioned against negative unintended effects. According to some, care must be taken to make sure that nutrition labelling does not stigmatize food, and to make sure that it instead allows people to develop a healthy relationship with food (BC). Another participant noted that labelling can generate feelings of guilt in persons who would like to buy healthy food, but do not because they cannot afford it (ON1).

6.4 EQUITY

The main point related to equity, which was brought up during all three deliberative processes, is that the information presented must be adapted to the different levels of literacy within the population; hence the recommendation that labelling be simple and clear. One participant mentioned that information should be presented in the places where food is

purchased, rather than on manufacturers' websites, since certain population groups do not have access to the internet (BC).

Another participant advanced the hypothesis that industry would recuperate the costs associated with nutrition labelling by raising food prices (ON1); thus, in decisions about what to consume, the "cost" factor could take on greater weight relative to the "information" factor, especially among the poorest consumers. In addition, even though it falls outside the scope of nutrition-labelling policies, some participants noted that, out of concern for equity, it is necessary to ensure that the healthy foods being promoted are physically and financially accessible to all consumers (BC, ON1).

6.5 COST

Concerning financial costs for the government, one participant noted that if nutrition labelling in restaurants were regulated, its implementation could be verified by visits from public health inspectors. Such verification would require an investment of public funds (ON2).

As regards costs for the food industry, one participant remarked that regulations which do not apply uniformly to all provinces would be very costly, because it would be necessary to modify product labels to conform to the various provincial standards (BC). The case of the produce industry was discussed, and some participants pointed out that this industry was not able to assume the cost of analyzing the nutritional content of its products (BC). As for restaurants, some participants thought (in contradiction to the data found in the literature) that significant costs could be associated with nutritional analyses, and with the production of information sheets and new menus that include nutrition information. According to one participant, restaurant chains can afford these expenses, but small restaurants cannot (BC).

Finally, one participant hypothesized that the cost of nutrition labelling would be reflected in the cost of foods and would therefore be borne by consumers (ON1).

6.6 FEASIBILITY

6.6.1 Existence of pilot programs

Pilot programs attest to both the feasibility of a policy and to the possibility of implementing it on a larger scale. Participants in the three deliberative processes cited numerous nutrition-labelling programs already existing in Canada and in their provinces (refer to the "Status" section). Some suggested that the development of nutrition-labelling regulations for restaurants be guided by existing voluntary initiatives, such as the Health Check™ and Fuel to Xcell programs (ON2). Proposing that nutrition labelling be extended to fresh food, one participant cited, as an example, the *Hannaford Guiding Stars Program* which, in the United States, attaches a health logo to fruits and vegetables (ON1).

6.6.2 Directness / Actors involved / Quality of cooperation

It was noted that nutrition labelling requires the collaboration of a multitude of actors from various sectors, both public and private (BC). In order to be assured of the support of stakeholders, it is of primary importance to involve them in the development of labelling

regulations, and in their implementation (BC, ON2). Some participants advocated, in particular, for collaboration between the public health sector and the food industry: rather than for government to adopt a coercive regulation, they considered it more productive for public health actors to encourage industry to develop its own nutrition-labelling initiatives, while supplying it with the tools needed to do so in a coherent manner (BC). They noted that this way of doing things has the advantage of pooling more resources (BC). According to some, the experience of British Columbia demonstrates the feasibility of collaborative approaches: intersectoral partnerships have become more common there in recent years, particularly in the context of the *Act Now* program, an intergovernmental health promotion program involving collaboration with local actors (BC).

However, participants felt there should be limits to collaboration. To inspire consumer trust, a third party (and not industry) should establish nutritional criteria and analyze the nutritional value of foods (ON2). Another participant pointed to the possibility of developing an administrative structure, within the context of the public health system, which would be responsible for inspecting restaurants to ensure they comply with nutrition-labelling rules (ON2).

The division of roles between the federal and provincial levels was discussed. If nutritional criteria for identifying healthy foods are to be established, they should be national in scope: within the context of nationwide commercial trading, standardized criteria would be easier and less costly for industry to manage than standards that vary from one province to another (BC, ON1). Many participants also thought that if a new nutrition-labelling regulation were to be adopted, then it should be managed by a national administrative structure; however, this structure should also have offices in the different provinces, and the provinces themselves could play a role in promoting the regulation (BC, ON1). One participant thought that nutrition labelling in restaurants could leave more room for adaptation at the provincial level – although a certain level of national homogeneity is necessary (ON1).

6.6.3 Practical aspects

During all three deliberative processes, participants expressed the view that nutritional criteria for categorizing food products should be developed before regulations on simplified labelling or even voluntary initiatives are adopted. However, it was noted that these criteria remain difficult to establish: the goal is to simplify a complex reality by classifying foods into a few easily recognized categories (healthy/unhealthy, green/yellow/red...), but how do you delimit these? Moreover, the desire for simplification is complicated by the fact that consumer sub-groups (the elderly, children, diabetics...) have different nutritional needs and thus need different information (ON2, BC). Nevertheless, some participants stressed that this complexity should not prevent the establishment of criteria; especially since the agri-food industry has not been slow to establish its own criteria for distinguishing “healthy” and “unhealthy” foods (BC, ON1). As a compromise, one participant recommended moving forward, but regularly evaluating the criteria adopted (ON1).

Nutrition labelling in restaurants raises particular technical issues, including consistency among the different chefs preparing dishes (for example, in the quantity of fat used), and the frequency with which dishes should be analyzed when menus change regularly (BC, ON2).

Given these difficulties, some envision menu labelling as the identification of healthier choices on menus, but do not call for detailed nutritional analyses of dishes (ON2). Others note that in small restaurants, where menus frequently change, it is practically impossible to inform clients about the nutritional value of the food served, and that any regulation introduced should apply only to fast-food restaurant chains (which constitute the heart of the problem) (BC).

6.7 ACCEPTABILITY

6.7.1 Position of consumers

Many participants mentioned that the population is increasingly seeking simplified nutrition information on food products, including, more recently, on restaurant food (BC, ON1). Moreover, one participant stressed that if demand is significant, it will influence the strategic choices of industry and policy makers (BC).

6.7.2 Position of industry

Indeed, many pointed out that the food industry seems to recognize the growing consumer demand and the fact that investing in nutrition labelling can benefit a company's corporate image (BC, ON1). These participants cited as examples the voluntary labelling initiatives of some restaurants and the growing number of products applying for the Health Check™ logo (BC, ON1).

However, opinions were divided as to how industry would react to the establishment of nutritional criteria for identifying healthy food. One participant reported that during a consultation hearing in Toronto organized by Health Canada, companies such as PepsiCo and Kraft requested that specific criteria be established, as this would create a level playing field for all firms; this would also allow them to position their products more easily (BC). Despite this, several participants noted that establishing criteria could be controversial and might generate the opposition of certain lobbies because these new criteria could prevent the use of some health claims that industry is currently using as a sales strategy (BC, ON1).

6.7.3 Position of decision makers

According to some participants, the political will to move forward could be limited because public policies on nutrition labelling are complex to develop, require the collaboration of a multitude of both public and private actors, can require the establishment of new administrative structures (particularly for inspections), and carry political costs (BC, ON2). Inversely, one participant noted that the government wants to support the empowerment of consumers, and easy-to-understand nutrition information would contribute to this goal (ON1).

6.7.4 Assessment of effectiveness

Many participants thought that, since the data on the effectiveness of nutrition labelling are limited, such a policy would probably gain more support if it were part of a global, integrated and progressive strategy for addressing obesity, which proposed a portfolio of various kinds of policies (BC).

6.7.5 Assessment of the degree of coerciveness of nutrition labelling

Some doubted the acceptability for the general population and for politicians of mandatory nutrition labelling in restaurants: these actors would be interested, but only in voluntary approaches (ON1).

As for participants in the deliberative processes, they were divided in British Columbia and at the first Ontario meeting between proponents of mandatory nutrition labelling and proponents of voluntary initiatives; those at the second Ontario meeting appeared to favour mandatory labelling. Some pointed out that a labelling policy could consist of incentives designed to guide industry's initiatives, without necessarily regulating them (BC). Proponents of regulation justified their position by pointing out that industry does not take enough action when voluntary initiatives are preferred (BC, ON2), and that these only apply to products industry chooses to have evaluated (ON1); in addition, those favouring regulation pointed to potential abuses by industry, which could choose to present only favourable information about products and thus mislead consumers about the real nutritional value of foods (ON2).

7 CONCLUSION

7.1 KEY POINTS TO NOTE

We gathered data from the scientific and grey literature and from Canadian actors involved in addressing obesity to document the effectiveness of nutrition-labelling policies, as well as their unintended effects, equity, cost, feasibility, and acceptability. Presented here is a broad outline of the results.

The nutrition-labelling policies studied target pre-packaged foods or restaurant menus, and require them to display nutrition information either in a detailed format (Nutrition Facts table) or a simplified format (logos). These policies may make labelling mandatory or leave it optional but subject to guidelines with which companies must comply if they choose to display nutrition information on their products.

The intervention logic of labelling policies assumes that nutrition information will be read, that it will be understood, and that it will lead to healthier diets, both in terms of quantity and quality, which will help prevent obesity.

In practice, this logic holds true, but only for a portion of consumers. Thus, approximately half of them claim to read nutrition information, and often they only read some of it. Detailed information (found in the Nutrition Facts table) is poorly understood, because it is too complex for the literacy and numeracy levels of many consumers. Simplified information in the form of a logo is better understood, which probably explains why this option is increasingly being considered. Nutrition information has a positive effect on food choice, but only for some consumers, and the effect is sometimes modest. Other factors compete with this information to influence food choice, including, notably, taste preferences and food prices. In the case of restaurants, another factor to consider is that dining out sometimes represents an occasion to “treat oneself.” However, in many other cases, restaurants are frequently visited, ordinary eating environments.

Finally, the impact of nutrition labelling varies according to population group: it is most effective with women, persons controlling their diet, the more educated, and those with higher incomes. Despite their interest in nutrition information, the elderly have difficulty understanding it.

As a way to avoid deepening social inequalities in health, an incidental effect of nutrition labelling seems to interest some authors more than labelling itself. This would be the reformulation of food products. Industry does this in response to pressure from consumers who, influenced by nutrition information, are demanding healthier products. Because reformulated foods benefit even those who do not read nutrition information, certain authors recommend favouring policies that lead directly to reformulation. However, neither nutrition labelling nor reformulation has an impact on the financial accessibility of healthy foods, an issue that particularly affects disadvantaged groups.

There are some data on the implementation issues related to nutrition labelling.

The costs of implementing labelling policies fall to government (i.e. supervision) and, above all, to industry (i.e. nutritional analyses of food products and printing of information) which may pass them on to consumers in the form of higher food prices. These costs are rather modest, at least for large companies. They are far inferior to the estimated economic benefits of labelling policies, which take the form of lower healthcare costs and increased productivity (estimates which must, however, be considered cautiously, since they appear optimistic when compared with the empirical data on the effectiveness of nutrition labelling).

The feasibility of nutrition labelling depends on the cooperation of numerous actors from the food industry. Thus, the authorities spearheading labelling policies attempt not only to regulate the industry, but also to consult it. However, this has not always prevented industry from contesting regulations through the judicial system or from lobbying to block the adoption of labelling policies. With regards to concrete feasibility, we brought to light the problems often raised by these policies and the manner in which actors respond to them.

The majority of consumers appear to be in favour of labelling on foods and in restaurants, and to prefer it in a standardized, simple, yet informative format. Coercion of industry (mandatory labelling) seems acceptable to consumers, and only a few find nutrition labelling intrusive on a personal level.

Industry is often reticent to accept public policies on labelling, even though it introduces many labelling initiatives of its own. Coercion displeases those in industry, but they acknowledge at least one advantage of public policies: the harmonization of labelling, which makes it easier to implement and creates a level playing field for everyone in the industry.

The majority of actors working in the fields of health and consumer protection are in favour of mandatory labelling, as long as it is easy to understand.

Regardless of the relevance of a given policy, one must keep in mind that obesity is a multifactorial problem perceived differently from one context to another. Any policy proposed must be part of a coherent strategy that incorporates an array of policies chosen from among those best suited to the targeted context.

7.2 HOW CAN YOU MAKE USE OF THIS KNOWLEDGE SYNTHESIS IN YOUR OWN DECISION-MAKING CONTEXT?

The knowledge presented here can be enriched and contextualized through deliberative processes that bring together the relevant actors in your context. Within the context of this study, we took note of the knowledge brought forth by means of the three deliberative processes we organized in British Columbia and in Ontario to generate discussion about data drawn from the literature on the effects and implementation of nutrition-labelling policies.

The participants, Canadian actors involved in addressing obesity, for the most part echoed the findings reported in the literature. The exercise may therefore seem redundant; but, on the contrary, it was necessary, because the literature contained little Canadian data, and the experiential knowledge of these Canadian actors might have diverged from the data gathered from other countries.

Moreover, the deliberative processes brought to light knowledge that was not found in the literature and is useful to decision makers. Participants called attention to the existence of simplified nutrition-labelling initiatives in Canada. They suggested avenues for implementing new labelling policies in Canada. The deliberative processes also provided an overview of how Canadian actors involved in addressing obesity view nutrition-labelling policies and of the views they attribute to other stakeholders in Canada (consumers, industry, and decision makers).

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APPENDIX 1
WEBSITES EXPLORED

WEBSITES EXPLORED

Note: The date of consultation is indicated in parentheses. Unless otherwise indicated (for example: searched by keyword), websites were explored section by section (either the whole site, or the section or sections related to the topic of nutrition labelling).

CANADIAN ORGANIZATIONS

Governmental institutions:

Public Health Agency of Canada <http://www.phac-aspc.gc.ca/index-eng.php>
(August 4, 2009)

Canadian Best Practices Portal <http://www.cbpp-pcpe.phac-aspc.gc.ca/index-eng.html> (August 6, 2009)

Health Canada <http://www.hc-sc.gc.ca/index-eng.php> (August 3, 2009)

Canadian Food Inspection Agency <http://www.inspection.gc.ca/english/fssa/labeti/labetie.shtml> (August 3, 2009)

Government of Canada Policy Research Initiative <http://www.policyresearch.gc.ca/>
(August 24, 2009)

Institut national de santé publique du Québec <http://www.inspq.gc.ca/english/default.asp?A=7> (August 3, 2009)

Public Policy and Health Portal <http://politiquespubliques.inspq.gc.ca/en/index.html>
(August 3, 2009)

Répertoire des plans d'action gouvernementaux en matière d'alimentation, d'activité physique et d'obésité <http://www.inspq.gc.ca/pag/> (August 26, 2009)

Newfoundland and Labrador Department of Health and Community Services <http://www.health.gov.nl.ca/health/> (August 3, 2009)

Prince Edward Island Department of Health and Wellness <http://www.gov.pe.ca/health/>
(August 3, 2009)

Nova Scotia Department of Health <http://www.gov.ns.ca/health/> (August 3, 2009)

Nova Scotia Department of Health Promotion and Protection <http://www.gov.ns.ca/ohp/>
(August 3, 2009)²⁹

New Brunswick Health <http://www.gnb.ca/0051/index-e.asp> (August 3, 2009)

New Brunswick Wellness, Culture and Sport <http://www.gnb.ca/0131/index-e.asp>
(August 3, 2009)

²⁹ “Created in January 2011, the Department of Health and Wellness brings together the former departments of Health and Health Promotion and Protection” (<http://www.gov.ns.ca/ohp/>).

Ministère de la Santé et des Services sociaux du Québec <http://www.msss.gouv.qc.ca/en/index.php> (August 4, 2009)

Ontario Ministry of Health and Long-Term Care <http://www.health.gov.on.ca/en/default.aspx> (August 4, 2009)

Ontario Ministry of Health Promotion and Sport <http://www.mhp.gov.on.ca/en/default.asp> (August 4, 2009)

Ontario Ministry of Children and Youth Services <http://www.children.gov.on.ca/htdocs/English/index.aspx> (August 4, 2009)

Manitoba Health <http://www.gov.mb.ca/health/> (August 4, 2009)

Manitoba Healthy Living, Youth and Seniors <http://www.gov.mb.ca/healthyliving/> (August 4, 2009)

Saskatchewan Health <http://www.health.gov.sk.ca/> (August 4, 2009)

Alberta Health and Wellness <http://www.health.alberta.ca/> (August 4, 2009)

British Columbia Ministry of Health Services <http://www.gov.bc.ca/health/> (August 4, 2009)

British Columbia Ministry of Healthy Living and Sport <http://www.gov.bc.ca/hls/> (August 4, 2009)

Yukon Health and Social Services <http://www.hss.gov.yk.ca/> (August 4, 2009)

Northwest Territories Department of Health and Social Services <http://www.hlthss.gov.nt.ca/> (August 4, 2009)

Nunavut Health and Social Services <http://www.gov.nu.ca/health/> (August 4, 2009)

Associations, networks and foundations:

Chronic Disease Prevention Alliance of Canada <http://www.cdpac.ca/> (August 4, 2009)

Canadian Obesity Network <http://www.obesitynetwork.ca/> (August 4, 2009)

Heart and Stroke Foundation <http://www.heartandstroke.com/> (August 4, 2009)
Health Check™ <http://www.healthcheck.org/> (August 4, 2009)

Centre for Science in the Public Interest - Canada, Food Labelling tab <http://www.cspinet.org/canada/foodlabelling.html> (August 6, 2009)

Canadian Public Health Association <http://www.cpha.ca/en/default.aspx> (August 3, 2009)

Association pour la santé publique du Québec <http://www.aspq.org/> (August 3, 2009)

Coalition québécoise sur la problématique du poids <http://www.cqpp.qc.ca/> (August 3, 2009)

Ontario Public Health Association <http://www.opha.on.ca/index.shtml> (August 3, 2009)

Nutrition Resource Centre <http://www.nutritionrc.ca/> (August 3, 2009)

Eat Smart !® / À votre santé !^{MD} <http://www.eatsmartontario.ca/welcome>
(August 3, 2009)

Public Health Association of British Columbia <http://www.phabc.org/> (August 3, 2009)

Alberta Public Health Association <http://www.apha.ab.ca/index.php> (August 3, 2009)

Public Health Association of Nova Scotia <http://www.phans.ca/> (August 3, 2009)

Manitoba Public Health Association <http://www.manitobapha.ca/> (August 3, 2009)

[Other provinces: no websites or no public health associations]

Research groups and think tanks:

Canadian Population Health Initiative <http://www.cihi.ca/CIHI-ext-portal/internet/en/document/factors+influencing+health/environmental/cphi> (August 24, 2009)

Caledon Institute of Social Policy <http://www.caledoninst.org/> (August 24, 2009)

Chaire Approches communautaires et inégalités de santé FCRSS / IRSC, Université de Montréal <http://www.cacis.umontreal.ca/actualite.asp> (August 24, 2009)

Centre for Health Economics and Policy Analysis (CHEPA), McMaster University <http://www.chepa.org/Home.aspx> (August 24, 2009)

Groupe d'étude sur les politiques publiques et la santé (GÉPPS), École nationale d'administration publique <http://www.gepps.enap.ca/fr/accueil.aspx?sortcode=1>
(August 24, 2009)

Wellesley Institute <http://wellesleyinstitute.com/> (August 24, 2009)

PolitiquesSociales.net <http://politiquessociales.net/> (November 5, 2009)

FOREIGN AND INTERNATIONAL ORGANIZATIONS

National Institute for Health and Clinical Excellence <http://www.nice.org.uk/> (August 4, 2009)

Centers for Disease Control and Prevention <http://www.cdc.gov/> (August 6, 2009)

Center for Science in the Public Interest <http://www.cspinet.org/> (August 6, 2009)

Yale University Rudd Center for Food Policy and Obesity <http://www.yaleruddcenter.org/>
(August 6, 2009)

National Association of County and City Health Officials (NACCHO) <http://www.naccho.org/> (August 24, 2009)

World Health Organization <http://www.who.int/en/index.html> (August 5, 2009)

INSTITUTIONS THAT PRODUCE OR INVENTORY SYSTEMATIC REVIEWS

Health-evidence.ca <http://www.health-evidence.ca/?language=en> (August 5, 2009)

Cochrane Public Health Group <http://www.ph.cochrane.org/> (August 6, 2009)

Campbell Collaboration <http://www.campbellcollaboration.org/> (August 6, 2009)
Searched using the keywords “obesity” in “all text”; “diet”; “nutrition”

TRIP database <http://www.tripdatabase.com/index.html> (August 7, 2009)
Searched using the keywords “(nutrition or food) and label”

Centre for Reviews and Dissemination <http://www.crd.york.ac.uk/crdweb/> (August 7, 2009)
Searched using the keywords “nutrition label(l)(ing)”, “nutrition label*” (all these words)

Effective Public Health Practice Project <http://www.ehpp.ca/index.htm> (August 24, 2009)

The Community Guide <http://www.thecommunityguide.org/index.html> (August 24, 2009)

CONFERENCE PRESENTATIONS

Annual conferences of the Ontario Public Health Association <http://www.ophaconference.ca/> (August 3, 2009)

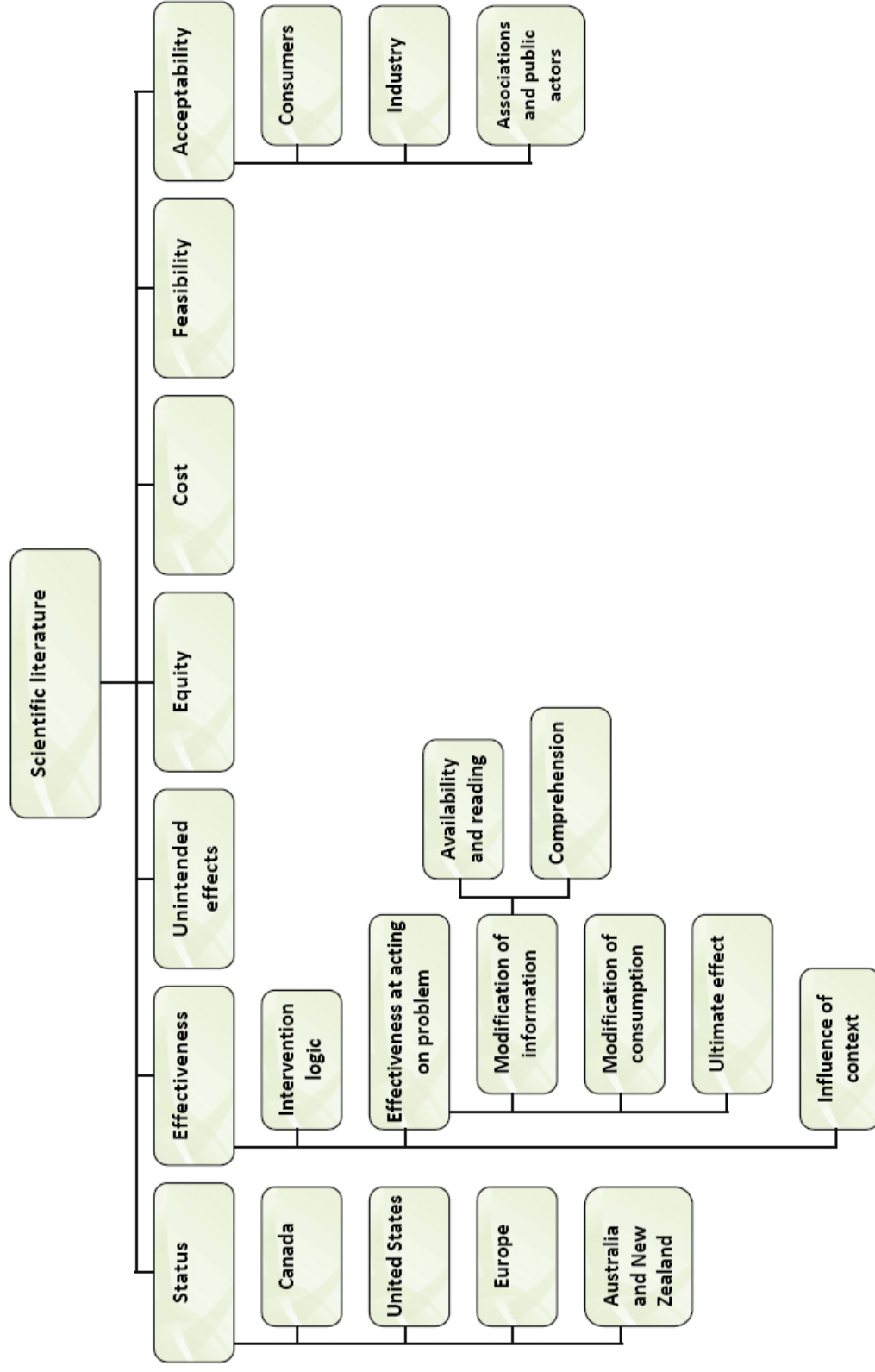
National conferences of the Chronic Disease Prevention Alliance of Canada <http://www.cdpac.ca/content.php?doc=19> (August 4, 2009)

Journées annuelles de santé publique du Québec http://www.inspq.gc.ca/aspx/fr/jasp_presentations.aspx?sortcode=1.55.58.62.69 (August 24, 2009)

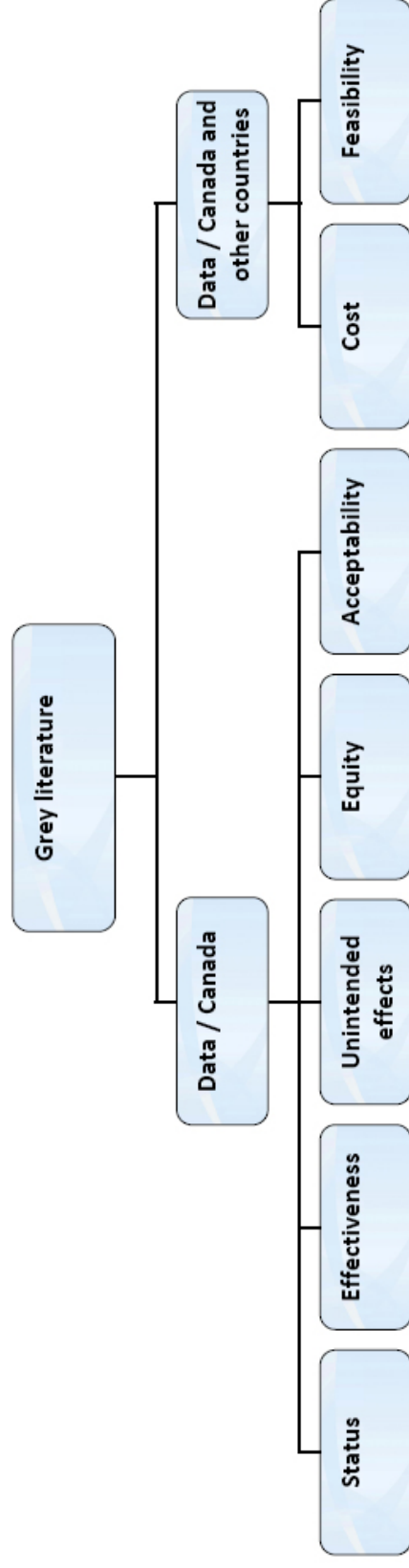
Review of titles of thematic activities and search in the list of presentation titles using the keywords “nutrition”, “obésité”, “poids”.

APPENDIX 2
SUBDIVISIONS OF EXTRACTION TABLES

SUBDIVISIONS OF EXTRACTION TABLES



The extraction tables for the scientific literature can be accessed at the following address: <http://www.ncchpp.ca/224/tables-sci.ccnpps>.



The extraction tables for the grey literature can be accessed at the following address: <http://www.ncchpp.ca/227/tables-grey.ccnpps>.

APPENDIX 3

EXAMPLES OF NUTRITION-LABELLING FORMATS

EXAMPLES OF NUTRITION LABELLING FORMATS

(These appear below in the order in which they are mentioned in the knowledge synthesis)

Nutrition Facts table (Source: Health Canada)

Nutrition Facts	
Per 125 mL (87 g)	
Amount	% Daily Value
Calories 80	
Fat 0.5 g	1 %
Saturated 0 g + Trans 0 g	0 %
Cholesterol 0 mg	
Sodium 0 mg	0 %
Carbohydrate 18 g	6 %
Fibre 2 g	8 %
Sugars 2 g	
Protein 3 g	
Vitamin A 2 %	Vitamin C 10 %
Calcium 0 %	Iron 2 %

Examples of “health logos” of private companies

Sensible Solution
(Kraft)



Smart Selections™
(PepsiCo)



(Photo credit: NCCHPP)

Blue Menu™
(President's Choice®)



(Photo credit: NCCHPP)

Example of the Health Check™ “health logo” (Heart and Stroke Foundation of Canada)

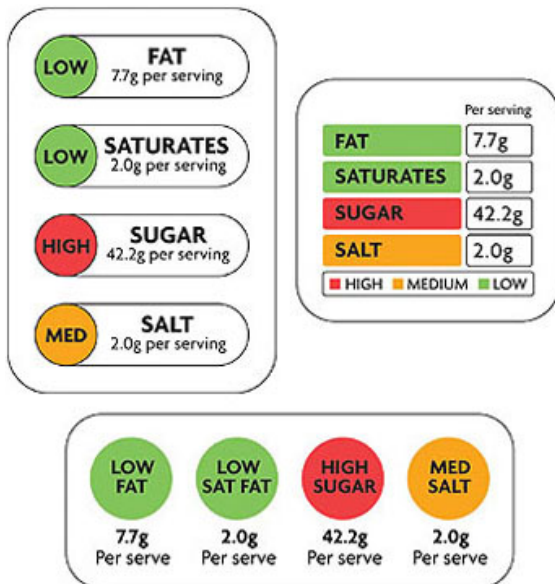


Nutritional value for a portion/for the entire product (Source: Lando & Labiner-Wolfe, 2007)

Nutrition Facts		
Amount per 1/2 muffin (57g)		
Servings Per Container 2		
Amount	1/2 Muffin	1 Muffin
Calories	210	420
% Daily Value*		
Calories	11%	22%
Total Fat 11g, 22g	17%	34%
Saturated Fat 3g, 6g	15%	30%
Trans Fat 4g, 8g		
Cholesterol 40mg, 80mg	13%	27%
Sodium 200mg, 400mg	8%	16%
Total Carbohydrate 24g, 48g	8%	16%
Dietary Fiber 1g, 2g	4%	8%
Sugars 17g, 34g		
Protein 3g, 6g		
Vitamin A	0%	0%
Vitamin C	4%	8%
Calcium	2%	4%
Iron	4%	8%

*Percent Daily Values are based on a 2,000 calorie

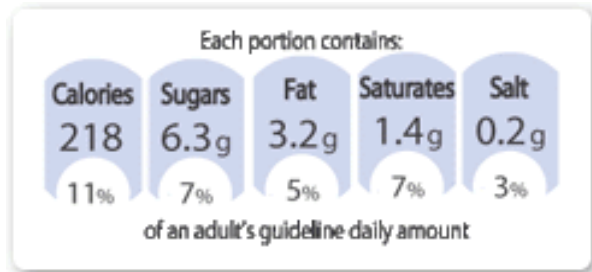
Multiple traffic lights (Source: Food Standards Agency, United Kingdom)



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Logos based on recommended daily values:

- **Monochrome, percentages** (Source: Food and Drink Federation, United Kingdom)



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- **Colour-coded, absolute values** (Source: Food Standards Agency, United Kingdom)

	Per serving	GDA
FAT	7.7g	70g
SATURATES	2.0g	20g
SUGARS	42.4g	40g
SALT	2.0g	6g

■ HIGH ■ MEDIUM ■ LOW

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GDA: *Guideline daily amount* (Recommended daily value)

- **Single traffic light** (Source: Food Standards Agency, United Kingdom)



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Questions measuring objective comprehension (Rothman et al., 2006)

Nutrition Facts	
Serving Size 1 bagel (104g)	
Servings Per Container 6	
Amount Per Serving	
Calories 290	Calories from Fat 20
% Daily Value*	
Total Fat 2g	3%
Saturated Fat 0.5g	3%
Cholesterol 0mg	0%
Sodium 540mg	23%
Total Carbohydrate 56g	19%
Dietary Fiber 3g	12%
Sugars 7g	
Protein 11g	
Vitamin A 0%	Vitamin C 0%
Calcium 10%	Iron 20%
* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
	Calories: 2,000 2,500
Total Fat	Less than 65g 80g
Sat Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g

Question: How many grams of total carbohydrates are in 1/2 of a bagel?

Correct response: 28 grams

Common errors: Did not apply serving size; incorrect calculation read % Daily Value column for Total Carbohydrate (19%); used % Daily Value column in calculation.

Percent correct: 60%

Nutrition Facts	
Serving Size 5 pieces (39 g)	
Servings Per Container about 9	
Amount Per Serving	
Calories 210	Calories from Fat 110
% Daily Value*	
Total Fat 12g	18%
Saturated Fat 4.5g	23%
Trans Fat 0g	
Cholesterol < 5mg	1%
Sodium 115mg	5%
Total Carbohydrate 22g	7%
Dietary Fiber 1g	4%
Sugars 19g	
Protein 4g	
Vitamin A 0%	Vitamin C 0%
Calcium 2%	Iron 2%
* Percent Daily Values are based on a 2,000 calorie diet. Your daily values may be higher or lower depending on your calorie needs:	
	Calories: 2,000 2,500
Total Fat	Less than 65g 80g
Sat Fat	Less than 20g 25g
Cholesterol	Less than 300mg 300mg
Sodium	Less than 2,400mg 2,400mg
Total Carbohydrate	300g 375g
Dietary Fiber	25g 30g

Question: How many grams of dietary fiber are in 5 candies?

Correct response: 1 gram

Common errors: Multiplied dietary fiber by 5 (misinterpretation of serving size); multiplied total dietary fiber for a 2000 calorie diet (25g) by 5; multiplied % Daily Value column for Dietary Fiber (4%) by 5.

Percent correct: 66%

Nutrition Facts	
Serving Size 8 fl oz (240 mL)	
Servings Per Container 2.5	
Amount Per Serving	
Calories 100	
% Daily Value*	
Total Fat 0g	0%
Sodium 25mg	1%
Total Carbohydrate 27g	9%
Sugars 27g	
Protein 0g	
* Percent Daily Values are based on a 2,000 calorie diet.	

Question: You drink the whole bottle of soda. How many grams of total carbohydrates does this contain?

Correct response: 67.5 grams

Common errors: Did not apply serving size; incorrect calculation read % Daily Value column for Total Carb. (9%) or used it in calculation.

Percent correct: 32%

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