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**Direction de santé publique**

Agence de la santé et des services sociaux de Montréal

**Evaluation of the education campaign on  
health risks associated with heat waves  
and on related protection measures**

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**Evaluation of the education campaign on health risks associated with heat waves and on related protection measures**

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## A MESSAGE FROM THE DIRECTOR

It is now accepted that current climate change will enhance the frequency and intensity of heat waves. Due to increased morbidity and mortality associated with heat waves and in accordance with its health protection and prevention mandate, the Direction de santé publique de l'Agence de la santé et des services sociaux de Montréal implemented, in the early 2000s, a plan to reduce the health impacts associated with heat waves and episodes of extreme heat. One of the directions of the plan is to promote the implementation of behavioural strategies to reduce risks associated with heat waves. The *Evaluation of the education campaign on health risks associated with heat waves and on related protection measures* is consistent with this direction. More specifically the campaign is designed to inform the general public, especially the most vulnerable individuals, of measures to take to avoid health problems associated with heat waves.

This report presents the evaluation results of the education campaign conducted in summer 2007. The goal of the evaluation was to estimate the rate of penetration of prevention messages among Montrealers aged 65 and over, to assess the messages' impact on knowledge and behaviours adopted during heat waves, and to explore the factors influencing behavioural response.

Results of the evaluation identify improvements to make and suggest avenues to explore to better support older individuals so they can implement protection measures during heat waves and periods of extreme heat.

Director of public health,



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Richard Lessard, M.D.



## SUMMARY

The education campaign on health risks associated with heat waves and on related protection measures supports the *Plan montréalais de prévention et protection en cas de chaleur accablante ou de chaleur extrême* (preventive component). The objective of the campaign is to inform the general public, especially the most vulnerable individuals, of the measures to take to avoid health problems associated with heat waves. This report presents the evaluation results of the education campaign conducted in summer 2007. There are three components to the evaluation: The first assesses the dissemination of the messages among the general population. This component involves visits to promotional material distribution points, monitoring of the media, and a content analysis of newspapers. The second component estimates the rate of penetration of prevention messages among Montrealers aged 65 and over, and assesses the impact of messages on knowledge and protective behaviours adopted by this population during heat waves. This component consists of a telephone survey of a sample of individuals aged 65 and over (n=600) living in private households on the island of Montréal. The final component evaluates comprehension, acceptability and feasibility of protection measures among a sample of seniors at high risk. The focus group approach was the methodology chosen for this component.

Study results indicate certain weaknesses in the promotional material distribution network. Nevertheless, target population exposure to preventive messages disseminated through various information channels stands at 66%. Electronic media, especially television, has the highest penetration among the target population; exposure specific to the campaign promotional material is 17%

Moreover, analyses show a positive association between exposure to the messages and knowledge and adoption of protective behaviours. This relationship is linked to intensity of exposure (“dose”), measured in our study by the number of different channels through which individuals were exposed to prevention messages.

Furthermore, a qualitative analysis of data collected during focus groups indicates that access to resources (informational, social and financial) has a determining influence on seniors at high risk adopting protection measures. This outcome brings to the fore the issue of feasibility of the measures.

Finally, the findings drawn from the evaluation’s different components are summarised and directions for the future are suggested.



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- Jean Jolicoeur, Jean-François Dion and Pierre-Alexandre Lacoste from Centre National de Sondage (CNS) for planning, coordinating and carrying out the telephone surveys of Montreal seniors;
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- Marie-Claude Godin, secretary, Urban Environment and Health, for the document lay-out;
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However, the authors remain solely responsible for the contents of this report.



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## INTRODUCTION

An increase in the frequency and intensity of heat waves and periods of extreme heat has driven a number of cities, including Montréal, to adopt intervention plans to reduce the health impacts associated with these phenomena. The education campaign on health risks associated with heat waves and on related protection measures supports the *Plan montréalais de prévention et protection en cas de chaleur accablante ou de chaleur extrême* (ASSSM, 2006). The objective of the campaign is to inform the general public, especially the most vulnerable individuals, of measures to take to avoid health problems associated with heat waves.

This study aims to evaluate the impact of the education campaign on older individuals' knowledge and the behaviours adopted during heat waves, and to explore the factors influencing behavioural response.



# **1 BACKGROUND**

## **1.1 Health impacts of heat waves**

Heat waves and extreme heat episodes are known causes of excess mortality (Auger and Kosatsky, 2002; Kovats and Kristie, 2006; Smoyer et al., 2000). Excess mortality recorded during these episodes is mostly attributed to exacerbation of existing chronic conditions, especially cardiovascular, respiratory, neurological and kidney diseases (Bouchama et al., 2007; Kilbourne, 1999, cited in Auger and Kosatsky, 2002). Deaths directly attributable to heat (heatstrokes) are much lower, representing about 12% of excess deaths recorded during periods of very hot weather (Kilbourne, 1999, cited in Auger and Kosatsky, 2002).

## **1.2 Vulnerable populations**

Excess mortality recorded during these heat waves particularly affects older people due to combination of health and social risk factors among this population (Auger and Kosatsky, 2002; Delarozière and Sanmarco, 2004; Doyon et al., 2006; Harlan et al., 2006; Kovats and Kristie, 2006; Thomas and Soliman, 2003; Vandentorren et al., 2006; WHO, 2004, 2005). Some residential characteristics as well as urban heat islands can increase the risks for individuals living in these environments (Guay and Beaudoin, 2005; Smargiassi et al., 2008). These risk factors are rarely isolated. Individuals living in neighbourhoods exposed to extreme heat, due to the presence of urban heat islands, are often those whose health is poorer and who have limited resources to effectively contend with the effects of heat (Harlan et al., 2006; Smoyer, 1998). According to Smoyer (1998), targeting “populations at risk” living in “neighbourhoods at risk” increases the chances of reaching individuals whose needs are greatest.

## **1.3 Measures to adapt to heat waves**

In the terminology of climate change, adaptive measures refers to actions undertaken to avoid or minimize the detrimental impacts of climate change through better preparation and response to extreme weather events linked to such change (WHO, 2005:14). During heat waves, adaptation strategies involve both environmental (e.g. the greening of neighbourhoods) and behavioural changes (e.g. reducing intense physical activity, better hydration). From a public health point of view, environmental modifications result in more significant benefits over the medium and long term; however, in the short term, behavioural modifications are essential to reduce avoidable mortality during heat waves and periods of extreme heat (WHO, 2004; Smoyer-Tomic, 2001).

The education and awareness campaign on health risks associated with heat waves and on related protection measures falls within this latter context.



## 2 EDUCATION AND AWARENESS CAMPAIGN

**Objective:** The objective of the Montréal education and awareness campaign is to inform the general public, especially the most vulnerable individuals, of measures to take to avoid health problems associated with heat waves.

**Target groups:** People aged 65 and over, frail individuals, and those suffering from chronic diseases (cardiovascular, respiratory, renal or neurological) are the main targets of the campaign. The campaign also relies on the general public and an information relay network (Health and Social Services Centres, pharmacies, community groups, partners from municipal and community settings) to reach target groups.

**Prevention messages:** The messages focus on protection measures to adopt during heat waves. They highlight the importance of maintaining adequate hydration, avoiding activity that requires significant physical exertion, using an air conditioner or spending a few hours in an air conditioned environment, keeping an eye on indoor temperatures, cooling off (bath or shower) as often as necessary, wearing light clothing, and identifying someone to contact in case a problem arises.

**Strategy for communicating messages:** There are three components to the communications strategy adopted to reach targeted groups:

- Dissemination of promotional tools through a network of partner organizations;
- Activities to support health professionals;
- Press relations with electronic and print media early in the season and during heat waves.

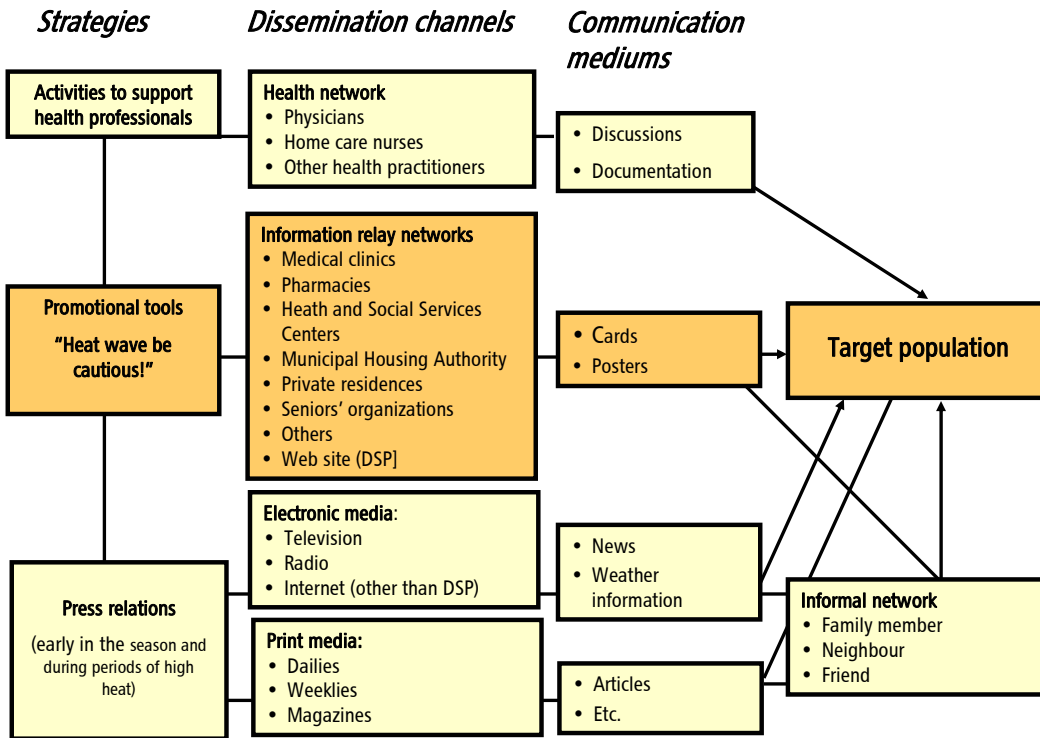
Promotional tools: The promotional material is disseminated in early May. Posters and cards are mailed to a broad and varied distribution network responsible for passing on the information to the target population. The information card can also be downloaded from the DSP Web site.

Activities to support health professionals : During the season, information is also sent electronically to health professionals, in particular to physicians and professionals in Health and Social Services Centres, to encourage them to pay particular attention to their patients at risk and give these individuals appropriate prevention advice on how to protect themselves from the heat.

Press relations: *Early in the season*, a press release is sent to Health and Social Services Centres for publication in local weeklies. It contains information on the risks related to heat waves, identifies vulnerable populations and proposes protective measures to guard against the effects of heat. *During periods of high heat and humidity warnings*, media releases are distributed and interviews in electronic and print media are conducted to remind the population of this information.

The latter strategies reinforce the educational messages issued via promotional tools throughout the season. Consequently, an evaluation of the impact of the education campaign on knowledge and protective behaviours adopted during heat waves should take into account the broader intervention context that prevails during summer (Figure 1).

**Figure 1: Education and awareness campaign: Communication strategies, channels and mediums**

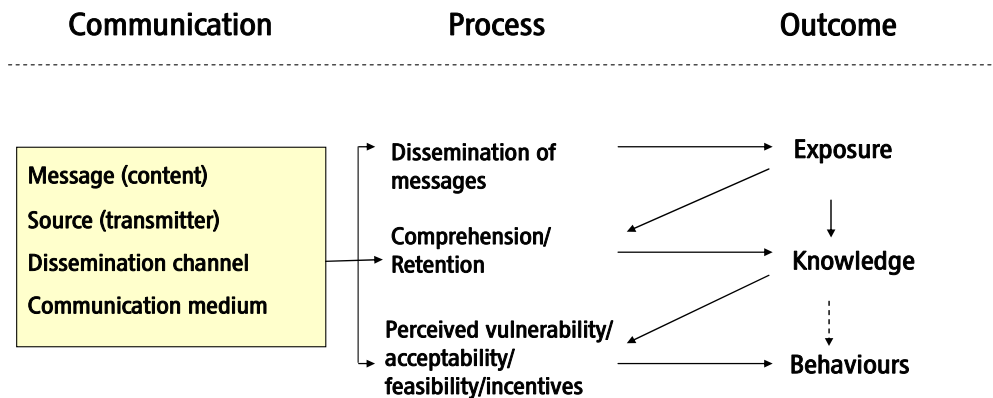


### 3 CONCEPTUAL FRAMEWORK AND OBJECTIVE

#### 3.1 Conceptual framework

The approach adopted to evaluate the education campaign is based on the conceptual framework of Flay et al (1980). According to this model, certain conditions must be met for education campaigns to influence health behaviours. First, messages must be disseminated to the population. The target group must then be exposed to the messages, which must be understood and memorized. Finally, the newly acquired knowledge should elicit the desired behavioural responses (Figure 2). The relative effectiveness of this sequence depends on factors that can be linked to the source, message communicated, channel of communication, characteristics of the target population, or to the more general context in which the campaign takes place (Flay et al., 1980; Randolph and Viswanath, 2004; Weiss and Tschirhart, 1994, cited in Coffman, 2002).

Figure 2: Information processing model (adapted from Flay et al., 1980)



A generally accepted principle in communications is that dissemination of messages in various formats and through different channels improves chances of reaching the intended audience and increasing exposure to the messages. Repetition is also important to catch the attention of the target audience and facilitate information retention (Flay et al., 1980). Nonetheless, to foster acquisition of new knowledge—to say nothing of changes in behaviours—messages should be developed based on a deep understanding of the target audience to tailor the campaign goals, determine the choice of the communication channel (by selecting the information sources most commonly used by the targeted population to increase exposure), and define the contents and style of the messages by suggesting a range of behaviours that are acceptable to the target audience and congruent with its conception of health (Randolph and Viswanath, 2004).

However, dissemination of educational material, even if very well developed, is not enough to produce the desired behaviours. In this regard, health promotion researchers have shown the importance that should be given to the conditions in which behavioural changes are expected to occur (Franklin et al., 2001), focusing in particular on facilitating and reinforcing factors to support preventive action (Godin, 1991; Green and Kreuter, 1991). Empirical studies based on the health belief model (Becker et al., 1977) have also revealed the role of psychosocial factors, particularly regarding perceived vulnerability, in seniors' adopting protective behaviours following a heat warning (Kosatsky et al., n.d.; Jacques et al., 2005). These results are consistent with the findings of Kalkstein and Sheridan (2007; Sheridan, 2006).

The conceptual model of Flay et al (1980) helps reframe the education campaign around the risks related to heat waves by taking into account the informational (messages), psychological (psychosocial factors) and social (facilitating factors and barriers) contexts that influence behavioural response. Using this model, three research components were developed, each one focusing on a specific aspect of the evaluation.

### **3.2 Study objectives**

The present study aims to evaluate the following:

- Dissemination of messages (Component 1)
- Exposure of the target population to prevention messages and its impact on knowledge and protective behaviours adopted during heat waves (Component 2)
- Comprehension, acceptability and feasibility of the recommended protection measures among a sample of seniors at high risk (Component 3)

## 4 METHODS

This section outlines the method pertaining to each study component.

### Component 1

**Objective:** To evaluate the dissemination of messages in the population and, more specifically, answer the following questions: (1) Does the dissemination of promotional material through information relay networks take place as planned? (2) Are prevention messages conveyed by the media in a timely fashion?

**Method:** To answer the first question, visits were made to points distributing the promotional material in order to locate information cards and posters on site. A communications intern visited the sites between 4 July and 10 August 2007. In total, visits were made to a sample of 103 pharmacies, 87 medical clinics and 10 CLSCs selected randomly from a list of all pharmacies (n=411), medical clinics (n=445) and CLSCs (n=29) on the promotional material mailing list.

To answer the second question, electronic (television and radio) and print (dailies and weeklies) media were monitored between 1 May and 30 September 2007 to identify reports and articles dealing with hot weather (various aspects). Media distributed or disseminated to the population on the island of Montréal were monitored by a company that specializes in this area. Copies of the articles published in the print media during the observation period were obtained and a content analysis performed to identify prevention messages in these articles.

**Analysis:** Descriptive statistics were used to document the presence of information cards and posters by type of institution (pharmacies, medical clinics and CLSCs). The number and date of publication of articles and reports dealing with heat waves in electronic and print media were compared with the dates on which Environment Canada issued heat warnings. A content analysis of the print media was performed to look for prevention messages in articles published during the summer and identify the nature of these messages. The presence of all prevention messages, and especially the three main ones—spending time in air-conditioned environments, maintaining adequate hydration and reducing physical activities that require a lot of effort—were systematically noted.

### Component 2

**Objective:** Assess the impact of the education campaign on knowledge and protective behaviours adopted by the target population during heat waves.

**Design:** The impact assessment is based on a post-test design with no comparison group. To compensate for the limits of this type of design (self-selection bias, confounding variables), we used propensity score matching (Rosenbaum and Rubin, 1983). With this method, it is possible to create groups of individuals exposed or not exposed to heat-related preventive messages who are statistically equivalent on a set of characteristics. As long as no significant variable is excluded from the propensity score calculation, unbiased estimates of the messages' impact can be obtained (Rosenbaum and Rubin, 1983).

**Sample:** The study population is composed of French- or English-speaking people aged 65 and over living in private dwellings on the island of Montréal. A stratified probability sample was constituted from a list of randomly generated telephone numbers using the technique developed by ASDE Survey Sampler, a company specializing in the production of national and regional samples. Telephone numbers were generated in proportion to the demographic weight of dissemination areas. One person per household was selected to complete the survey. In households where there was more than one person over the age of 65,

the person whose date of birth was closest was selected to participate in the survey. A final sample of 600 respondents was obtained, for a response rate of 56%.

**Data collection:** Data were collected by telephone survey using a computerised questionnaire (Appendix 3). The interview was conducted in French or English, depending on the respondent's preference. The survey took place at the end of summer to enhance exposure to educational messages and to one or several heat waves. Interviews lasted 9.5 minutes on average. The survey was conducted by a polling firm following a competitive bidding process.

**Variables and measures:** The primary independent variable is exposure to educational messages. Three exposure measures were used. The first includes two categories: group exposed versus group not exposed. Exposure is defined as having heard or read information on protection measures disseminated through one or several communication channels (electronic or print media, health care professionals, individuals from one's personal network, distribution of promotional tools); exposure to promotional material (information cards and posters) was evaluated by using aided recall questions (Nierdeppe, 2005; Southwell et al., 2002)<sup>1</sup>. The second exposure measure is a graded measure—level of exposure—based on the number of information channels through which respondents became aware of protection measures. It aims to verify the existence of a “dose-response” relationship. Finally, a third measure was used in secondary analyses to detect the “added value”, if any, of promotional materials on other available sources of information. This measure has four categories: no exposure to prevention messages; exposure to promotional material only; exposure to messages disseminated through one or several information channels, not including promotional material; and exposure to promotional material and other messages disseminated through one or several other communication channels.

Dependent variables of interest are knowledge of protection measures and behaviours adopted during heat waves. Knowledge of protection measures was based on the measures reported spontaneously by respondents. Protective behaviours adopted during heat waves were identified from a list of behaviours submitted to respondents. In both cases, three-item (air conditioning, hydration and reduction of activities) and eight-item (all measures included on promotional tools) indices were constructed.

The covariables used in the analyses include sociodemographic characteristics (age, sex, type of household, language spoken, education, perception of income adequacy), health (perceived health, hospitalization in the past year, mobility restrictions), residential (housing tenure, type of residence) and characteristics linked to the urban environment (presence of urban heat islands<sup>2</sup>). Psychosocial variables (perceived vulnerability), barriers (no air conditioning in the home) and incentives to adopt protective behaviours (having heard a heat warning and having obtained information about measures to take through face-to-face communication) were used as additional covariables for analyses on protective behaviours.

**Analysis:** Exposure to messages was documented from the different information channels through which respondents reported becoming aware of the prevention messages. To verify whether some population sub-groups had greater exposure to the messages than others (coverage bias) (Rossi and Freeman, 1993), the association between exposure to the messages and characteristics of the respondents was analysed (chi-square test). This analysis was performed for exposure to messages from all sources and, more specifically, for exposure to the promotional material.

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<sup>1</sup> The interviewer first described the promotional material; then the respondent was asked if, during the summer, he or she had seen a card or poster corresponding to this description.

<sup>2</sup> Information on urban heat islands was obtained based on respondents' postal codes using the following procedure: Surface temperature was determined using thermal images acquired by Landsat 5 on 29 July 2005 at 15:25 (Greenwich time). T° value by postal code was obtained by calculating the average surface temperature in the geographical locations of all homes that come under a same postal code. In this manner, greater weight is given to buildings with higher numbers of dwellings. Data for dwellings are from the city of Montréal's assessment roles (year 2001, updated in 2002); postal code data issue from Statistics Canada's Postal Code Conversion File, October 2005 update.

The evaluation of the impact of the education campaign is based on a regression analysis of knowledge and behaviours (three- and eight-item indices respectively) on the exposure variable (graded measure), adjusted by propensity scores. Propensity scores were calculated using Becker and Ichino's (2002) Stata program for average effect of treatment on the treated (ATT) estimation. To calculate propensity scores, sociodemographic (age, sex, type of household, language spoken, education, perception of income adequacy), health (perceived health, hospitalization in the past year, mobility restrictions) and residential (housing tenure, type of residence, presence of an urban heat island) variables were included. Based on the recommendations of Stuart and Rubin (2008), variables likely to be influenced by the campaign, particularly perceived vulnerability and having air conditioning in the home, were excluded from propensity score calculations and introduced as covariables in subsequent analyses. Three regression models were tested to assess the campaign's impact on behaviours adopted during heat waves: 1) a model that included the exposure variable only; 2) a model that contained the exposure variable and psychosocial variables, barriers and reinforcing factors; and 3) a model that included the exposure variable, psychosocial variables, barriers and reinforcing factors, and a measure of knowledge. The analyses were repeated with measure of exposure to the four categories in order to detect the added value associated with using the promotional materials, if any.

### **Component 3**

**Objective:** Evaluate seniors' comprehension, acceptability and feasibility of the protection measures related to heat waves.

**Method:** This component of the study is based on the focus group methodology. The technique is especially indicated to facilitate access to participants' "world views" and to understand the rationale and motivations that underlie the behaviours (Bedos et al., 2005; Gibbs, 1997; Morgan, 1988).

**Sample:** Four focus groups composed of seven or eight persons were formed (total N = 30). Focus group participants were chosen from among people at high risk, with risk being based on both individual (low income, precarious health) and environmental (social isolation, no air conditioning in the home) characteristics. Recruitment was carried out through community organizations working with older people who are isolated and living in poverty.

**Data collection:** The focus groups were held in August, on the premises of the recruiting community organizations. A professional moderator led the groups. Discussions were guided towards the research questions using a thematic grid. Groups met for 1½ hours. The discussions were recorded on audio tape, with the participants' consent, and later fully transcribed. All participants completed an identification sheet at the end of the interview.

**Analysis:** First, the transcripts were encoded using Atlas-ti software based on a preestablished coding grid that included elements from the health belief model (Becker et al., 1977), particularly risk perception, perceived effectiveness of protection measures and incentives to take protective action. This first level of analysis was performed by the research officer and validated by two other researchers from the team. Secondly, a close reading of the transcript was completed to identify the main recurring themes brought up by participants and to establish analytic categories. The analytical process led to the development of an interpretive understanding of the data and to the identification of a typology of adaptive responses during heat waves. This step, which links categories and themes, implies going back and forth from transcripts to summary analysis, a procedure which Paillé and Mucchielli (2005) have called constant data comparison process. This step enables researchers to test their theories and ensure they are well rooted in the data.



## 5 ETHICAL CONSIDERATIONS

The research project was approved by the research ethics committee of the Agence de la santé et des services sociaux de Montréal (project 120).

## 6 RESULTS

### 6.1 Component 1: Dissemination of messages

#### 6.1.1 Performance of the distribution network

Table 1 shows the number of institutions visited by the communications intern, listed by category of institution. A total of 158 visits were made out of the 200 initially planned (success rate of 79%). Twenty-five institutions (12.5% of the sample) were not visited due to wrong addresses, or because they had moved or closed; for the rest (n=17, 8.5%), opening hours and summer holidays were the main reasons explaining why these institutions were not reached..

**Table 1: Number of institutions visited, by category of institution**

Category of institution	Institutions visited (n=158)	Sample (n=200)
Pharmacy	95	103
Medical clinic	54	87
CLSC	9	10
<b>TOTAL</b>	<b>158</b>	<b>200</b>

Visits to the assorted distribution points showed that the availability of promotional materials varied significantly by category of institution and by type of material (information cards or posters) (Table 2). While the promotional material is almost always within view in CLSCs, this was less often the case for the other categories institutions, where information cards were spotted in 64% of pharmacies and 48% of medical clinics visited; figures for posters fell to 17% and 23% respectively.

**Table 2: Availability of the promotional materials, by category of institution**

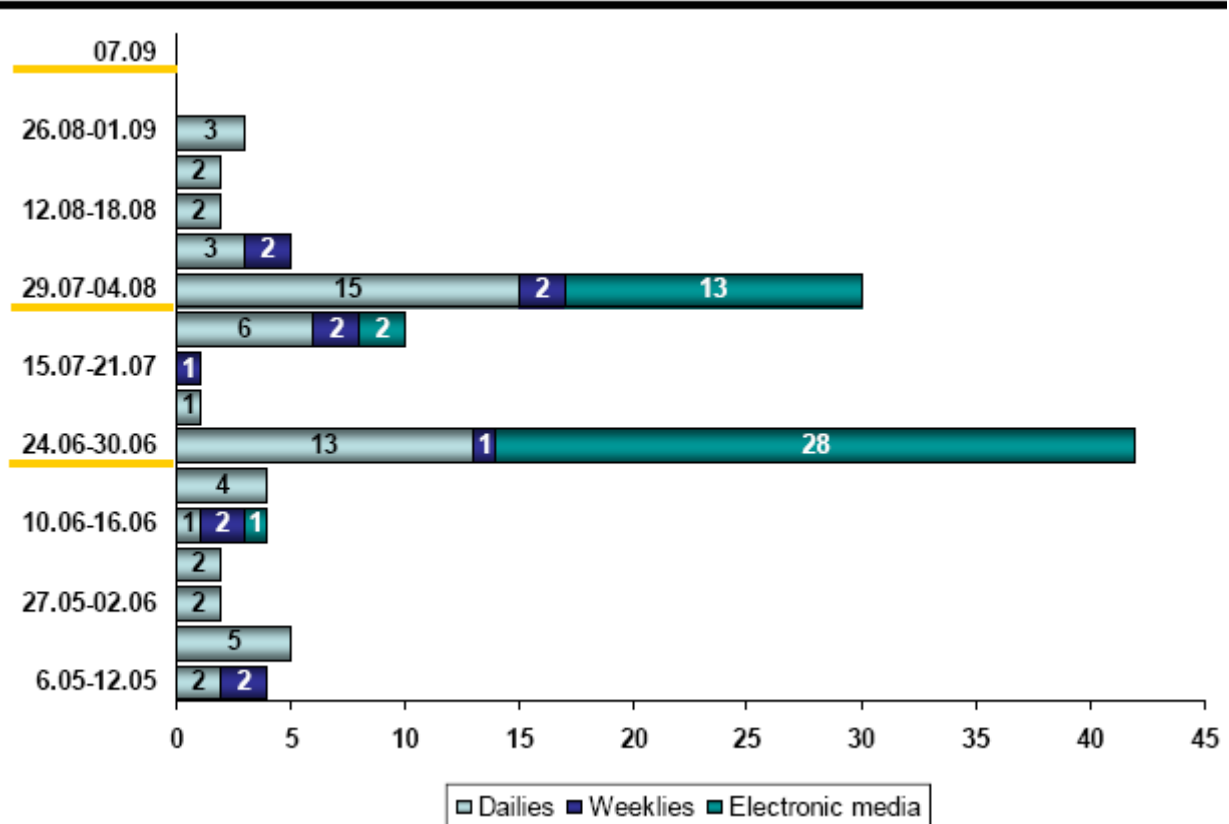
Category of institution	Card n (%)	Poster n (%)	Total
Pharmacy	61 (64 %)	16 (17 %)	95
Medical clinic	26 (48 %)	12 (23 %)	54
CLSC	8 (89 %)	8 (89 %)	9
<b>TOTAL</b>	<b>95 (60 %)<sup>a</sup></b>	<b>36 (23 %)</b>	<b>158</b>

<sup>a</sup> This figure increases to 68% if we include institutions where all information cards received had been distributed at the time of the intern's visit.

### 6.1.2 Media monitoring

Electronic (television and radio, excluding Web sites) and print (dailies and weeklies) media were monitored during summer of 2007; 117 reports or articles dealing with hot weather were compiled. As illustrated in Figure 3, the subject topic clearly came up more frequently during weeks when Environment Canada issued heat warnings (see highlighted dates in the figure), with one exception: there was no coverage related to the last heat warning of the season in September.

**Figure 3: Number of articles or reports dealing with hot weather between May 1 and September 30, 2007 (highlighted: weeks during which heat warnings were issued)**



### 6.1.3 Publication of prevention messages in print media

A content analysis of articles published in the print media (dailies and weeklies) reveals that of the 73 articles on the theme of hot weather during the summer of 2007, only 28 (38%) included information on protection measures to be taken during heat waves. Of the 28 articles, nearly half of them (13) presented at least one of the three principal protection measures (reduction of activities, hydration and air conditioning), and only 5 of the 13 discussed all three measures at once. Among these 13 articles, 2 were published early in the season and 7 others followed high heat warnings (Table 3). In the latter case, dailies were the first to disseminate the prevention messages. The day after the first high heat warning of the season was issued, on June 26, the four major dailies published articles that focussed on measures to take to protect oneself from heat. When the second warning was issued, in early August, three of the four dailies published such articles. On September 7, the third and last heat warning of the summer was issued; no articles about protection measures to take during periods of heat were found. Outside periods when heat warnings were issued, four articles on recommended protection measures were published, mostly in local weeklies.

**Table 3: Dissemination of prevention messages in the print media during the summer (n=13)<sup>1</sup>**

Media category	Early in the season (before June 15)	Period during which warning issued	During the season
Daily	1	7	1
Weekly	1	-	3
TOTAL	2	7	4

<sup>1</sup> Articles which mentioned at least one of the three main measures (spending time in an air conditioned environment, ensuring hydration, reducing activities requiring effort).

## 6.2 Component 2: Impact of the campaign on knowledge and behaviours

The impact analysis is based on data collected from a telephone survey conducted in the summer of 2007. The survey response rate is 56%. To adjust for biases associated with non-responses, the sample was weighted by age and sex, using data from the 2006 census. Table 4 describes the sample, by different variables considered in the study.

### 6.2.1 Target population exposure to prevention messages

Two-thirds of respondents (65.7%) report having read or heard information or receiving advice, through one or several information channels, on protection measures to take during summer heat waves (Figure 4). Electronic media (television, radio and the Internet) are the information channels most often reported (43.5%), followed by print media (dailies, weeklies and magazines, 24%), promotional material (17.4%), health professionals (10.3%) and individuals from one's personal network (5.7%). Table 5 provides more detailed data on the information channels. In particular, it indicates that, with regard to dissemination of prevention messages on what to do during heat waves, television has the highest penetration among the target population. Moreover, as Figure 5 shows, almost 30% of individuals report having obtained information on protection measures against high heat through at least two different information channels.

**Table 4: Respondent characteristics (n=600)<sup>a, b</sup>**

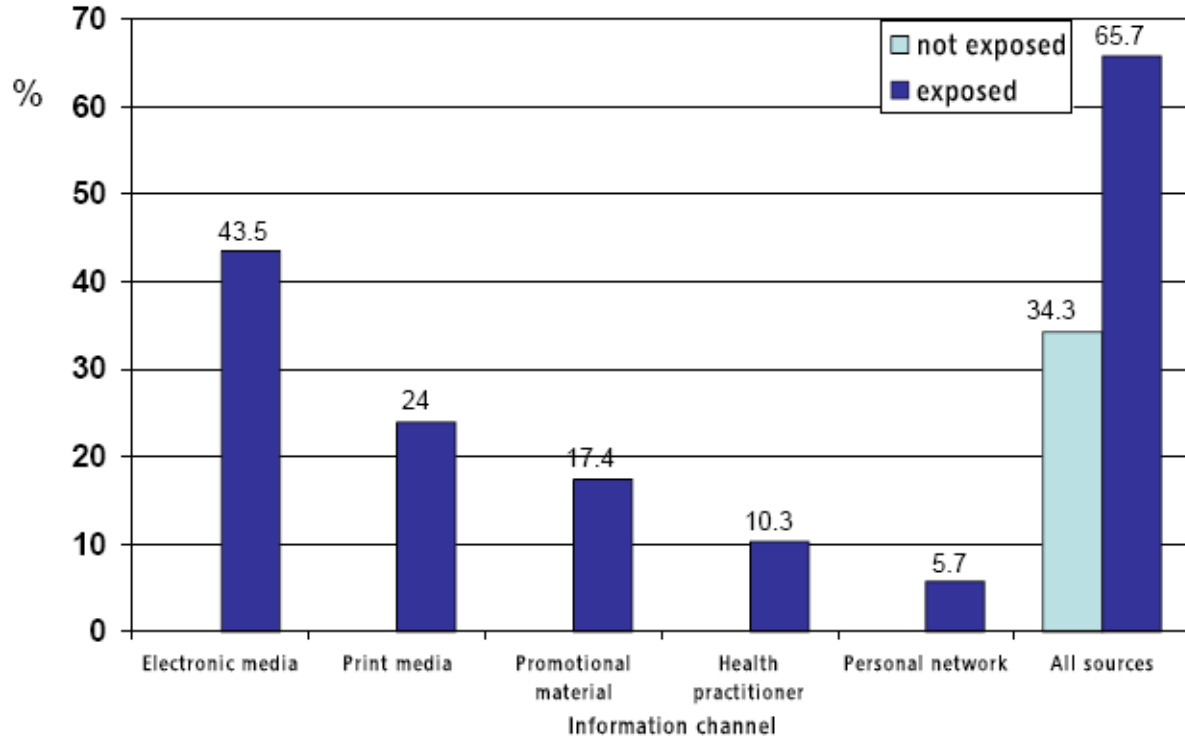
	%		%
<b>Sociodemographic characteristics</b>			
<b>Age</b>		<b>Perception of income adequacy</b>	
65-74	52.7	Totally adequate	41.7
75-84	37.3	Somewhat adequate	44.3
85 or over	10.0	Somewhat inadequate	12.7
<b>Sex</b>		Totally inadequate	1.4
Male	40.5	<b>Type of household (residential isolation)</b>	
Female	59.5	Lives alone	40.8
<b>Education</b>		Lives with other people	59.2
None/Elementary school	14.9	<b>Language spoken at home</b>	
High school/Trade school	48.4	French (F)	63.5
Post-secondary	36.6	English (E)	20.7
		F or E and another language	1.6
		Other	14.3
<b>Health characteristics</b>			
<b>Perceived health</b>		<b>Hospitalization (past year)</b>	
Excellent	16.2	Yes	15.8
Very good	25.8	No	84.2
Good	37.3	<b>Mobility (outside the home)</b>	
Fair	17.1	Alone without difficulty	89.7
Poor	3.6	Alone with difficulty	4.9
		With the help of another person	5.1
		Totally unable	0.2
<b>Housing characteristics</b>			
<b>Housing tenure</b>		<b>Seniors' home (low-cost housing or private)</b>	
Owner	53.9	Yes	9.3
Tenant	46.1	No	90.7
<b>Type of dwelling</b>		<b>Air-conditioned</b>	
Single-family home	26.6	All rooms	33.9
Plex	32.9	One or several rooms	32.4
Seniors' residence	6.3	None	33.7
Appartment building	34.2		
Low-cost housing for seniors	9.3		
Low-cost housing, all clienteles	6.8		
Private apartment building	83.9		
<b>Urban environment</b>			
<b>Urban heat islands<sup>c</sup> (top quintile)</b>			
Yes	18.0		
No	78.8		
n.d.	3.2		
<b>Heat-related variables</b>			
<b>Perception of risk for seniors</b>		<b>Perception of own vulnerability</b>	
Yes	82.8	Yes	47.0
No	8.3	No	53.0
For some of them	8.9	<b>High heat warning</b>	
		Yes	70.2
		No/Doesn't remember	29.8

<sup>a</sup> Partial non-response less than 5% for all variables described in the table except for assessment of income adequacy (partial non-response: 10%)

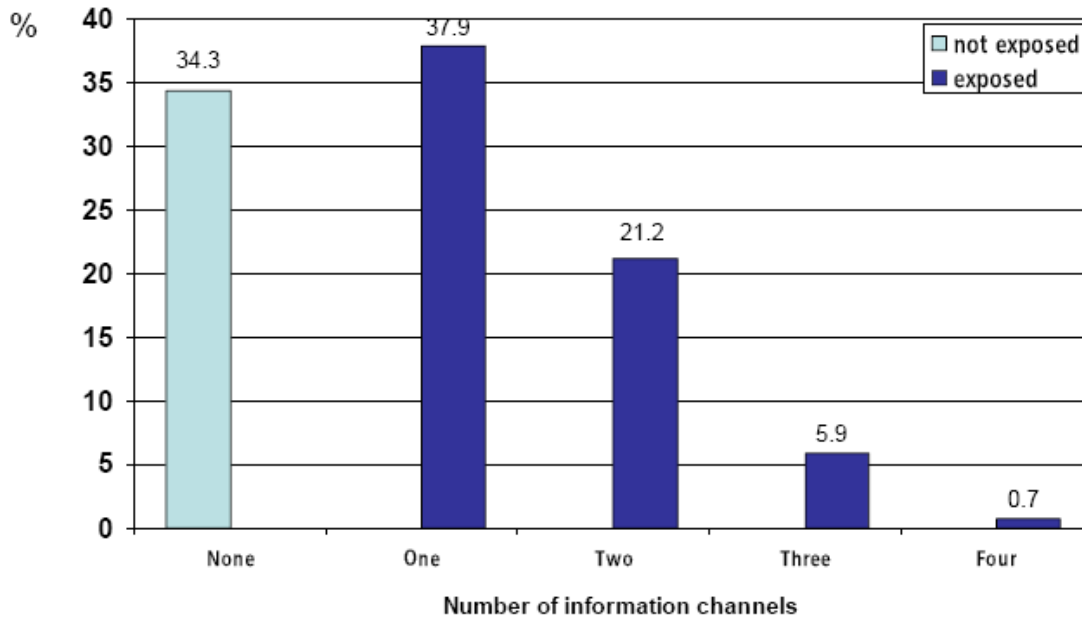
<sup>b</sup> Weighted data

<sup>c</sup> Information obtained according to the procedure described in Section 4 (Component 2) of the document

**Figure 4: Target population exposure, by information channel**



**Figure 5: Level of exposure of the target population**



**Table 5: Information channel on protection measures to take during heat waves**

Information channel		%	
Exposed 65.7 % <sup>a</sup>	Electronic media 43.5 % <sup>a</sup>	Television	33.8
		Radio	19.4
		Internet	0.5
	Print media 24 % <sup>a</sup>	Dailies	20.3
		Local weeklies	1.7
		Magazines	1.8
	Material 17.4 % <sup>a</sup>	Card	14.1
		Poster	9.0
	Health professional network 10.3 % <sup>a</sup>	Physician	6.7
		Pharmacist	0.3
		Nurse	2.5
		Other health practitioner	2.2
Personal network 5.7 %	Other (not specified)	1.3	
	Family, spouse, neighbour, friend	5.7	
Not exposed 34.3 %	No information channel	33.0	
	Does not remember	1.3 <sup>b</sup>	

<sup>a</sup> Percentages can differ from the total percentage for the category since several responses are possible.

<sup>b</sup> These respondents were grouped with those who report not having heard any information about prevention measures during summer.

An analysis of exposure to prevention messages by respondents' characteristics (Table 6) indicates that individuals who had been hospitalized during the past year had been exposed to prevention messages from all sources in a greater proportion than other individuals, that is, 75.8% versus 63.8%. With regards to the campaign promotional material specifically, results also show greater exposure among individuals who live in seniors' homes (private or public) (42.9% vs. 14.9%) as well as among people who can move around on their own without difficulty (18.6% vs. 6.6%).

**Table 6: Exposure to prevention messages by sociodemographic characteristics and risk factors (n=600)**

Characteristics	% exposed	
	All sources	Card or poster
<b>Age</b>		
65-74	69.4	19.7
75-84	62.3	13.1
85 or over	60.0	21.7
<b>Sex</b>		
Male	63.8	20.2
Female	66.9	15.4
<b>Education</b>		
None; Elementary	64.0	17.4
Secondary; Professional	65.2	16.1
Post-secondary	68.9	19.8
<b>Perception of income adequacy</b>		
Totally adequate	67.9	18.2
Somewhat adequate	66.0	18.9
Somewhat or totally inadequate	67.1	12.0
<b>Type of household</b>		
Lives alone	62.3	16.7
Lives with other people	67.9	17.7
<b>Language spoken at home</b>		
French (F)	63.6	17.7
English (E)	67.7	13.0
[F or E and another language] <sup>a</sup>	[80.0]	[40.0]
Other	72.9	21.2
<b>Perceived health</b>		
Excellent, very good, good	65.2	18.2
Fair, poor	67.5	13.8
<b>Hospitalization (past year)</b>		
Yes	75.8**	16.8
No	63.8**	17.4
<b>Mobility (outdoors)</b>		
Alone without difficulty	66.4	18.6**
Alone with difficulty, with help, unable	59.7	6.6**
<b>Residential environment</b>		
With A/C	65.9	17.9
Without A/C	65.0	16.3
<b>Seniors' home (low-cost housing or private)</b>		
Yes	75.0	42.9***
No	64.7	14.9***
<b>Urban environment (heat islands)</b>		
Yes	60.2	16.3
No	66.4	17.3
<b>Total</b>	65.7	17.3

\*\*\* p ≤ .001; \*\* p ≤ .01; \* p ≤ .05

<sup>a</sup> Data presented for information purposes only. Chi square invalid due to the insufficient number of respondents in this category.

## 6.2.2 Association between exposure and knowledge and protective behaviours

A comparison between exposed and non-exposed individuals reveals that the former had better knowledge of protection measures, specifically those regarding the importance of avoiding activities that require significant effort (17.2% vs. 11.2%), maintaining good hydration (55.2% vs. 21.8%), and wearing light clothing (23.3% vs. 11.7%) (Table 7). Overall, 17% of individuals in the non-exposed group did not mention any of the eight measures recommended; the corresponding figure for the exposed group is 5.6%

**Table 7: Target population’s knowledge of protection measures, by exposure (n=600)**

<b>KNOWLEDGE (spontaneous answers)</b>	<b>EXPOSED (%) (n=394)</b>	<b>NOT EXPOSED (%) (n=206)</b>	<b>TOTAL</b>
<b>Spend time in an air conditioned place</b>	<b>57.7</b>	<b>54.4</b>	<b>56.6</b>
<b>Avoid activities that require effort</b>	<b>17.2*</b>	<b>11.2*</b>	<b>15.2</b>
<b>Drink water</b>	<b>55.2***</b>	<b>21.8***</b>	<b>43.8</b>
Keep an eye on the temperature	0.5	-	0.33
Take a shower or bath	18.7	13.7	17.0
Avoid alcohol/caffeine/beverages that contain a lot of sugar	2.0	0.9	1.7
Light clothing	23.3***	11.7***	19.3
Identify someone	-	.5	0.2
Don’t remember any measure	5.6***	17.0***	9.5

\*\*\*  $p \leq 0.001$ ; \*\*  $p \leq .01$ ; \*  $p \leq 0.05$

The exposed group also adopted more protection measures than the non-exposed group, more particularly with regard to the following recommendations: avoid activities that require a lot of effort (87.3% vs. 76.3%); drink water even before you feel thirsty (81.1% vs. 73.6%); keep an eye on the temperature (62.9% vs. 48.8%); take a bath or shower to cool off (80.3% vs. 65.5%); and identify someone to call (79.5% vs. 66.8%) (Table 8)<sup>3</sup>.

The recommendation to spend a few hours in an air conditioned place was not associated with exposure to messages, but was associated with living in a completely or partly air-conditioned dwelling. Taking a bath or shower is associated both with exposure and having an air conditioner in the dwelling. Although not specifically recommended during the prevention campaign, using a fan and opening windows at night are measures adopted by a relatively high proportion of respondents, that is, 54.2% and 53.8% respectively. Results indicate that use of these two methods to protect against high heat is not associated with exposure to the messages but rather to the availability of air conditioning at home.

However, these analyses do not shed light on whether the differences observed between exposed and non-exposed individuals are due to exposure to prevention messages or to certain individual characteristics associated with exposure. Propensity-adjusted regression analyses were conducted in order to attempt to resolve this question.

<sup>3</sup> It may seem paradoxical that reported percentages for protective measures adopted are higher than reported percentages for knowledge of these methods. This is an effect of the measure; knowledge of protection methods was evaluated based on methods reported spontaneously by respondents, whereas protective behaviours adopted were identified from a list of behaviours suggested to respondents.

**Table 8: Adoption of protection measures during periods of high heat, by exposure and availability of an air conditioner in the dwelling (n=600)**

	Exposed			Not exposed			Total		
	+A/C	-A/C	Total	+A/C	-A/C	Total	+A/C	-A/C	Total
<b>Air conditioned place</b>	<b>96.2***</b>	<b>28.7***</b>	<b>73.9</b>	<b>94.0***</b>	<b>22.9***</b>	<b>69.3</b>	<b>93.4***</b>	<b>26.5***</b>	<b>72.3</b>
<b>Avoid activities that require effort</b>	<b>87.9</b>	<b>85.9</b>	<b>87.3***</b>	<b>75.4</b>	<b>77.9</b>	<b>76.3***</b>	<b>83.7</b>	<b>83.2</b>	<b>83.6</b>
<b>Drink water</b>	<b>80.6</b>	<b>81.7</b>	<b>81.1*</b>	<b>69.5</b>	<b>80.3</b>	<b>73.6*</b>	<b>77.1</b>	<b>81.3</b>	<b>78.5</b>
Keep an eye on the temperature	<b>66.0*</b>	<b>57.0*</b>	<b>62.9***</b>	<b>53.3*</b>	<b>40.0*</b>	<b>48.8***</b>	<b>61.7**</b>	<b>50.9**</b>	<b>58.0</b>
Take a shower or bath	<b>75.9***</b>	<b>89.1***</b>	<b>80.3***</b>	<b>60.6*</b>	<b>76.1*</b>	<b>65.5***</b>	<b>70.7***</b>	<b>84.4***</b>	<b>75.3</b>
Avoid alcohol <sup>a</sup>	<b>39.7*</b>	<b>32.6*</b>	<b>37.2</b>	<b>39.1</b>	<b>32.4</b>	<b>36.6</b>	<b>39.5</b>	<b>32.2</b>	<b>37.0</b>
Avoid colas/caffeine <sup>b</sup>	<b>36.2*</b>	<b>22.4*</b>	<b>31.7</b>	<b>30.5</b>	<b>23.2</b>	<b>28.1</b>	<b>34.4**</b>	<b>22.8**</b>	<b>30.5</b>
Light clothing	<b>93.9</b>	<b>94.5</b>	<b>94.1*</b>	<b>90.3</b>	<b>87.3</b>	<b>89.3*</b>	<b>92.5</b>	<b>92.1</b>	<b>92.4</b>
Identify someone to contact	<b>80.3</b>	<b>77.8</b>	<b>79.5***</b>	<b>65.9</b>	<b>68.6</b>	<b>66.8***</b>	<b>75.3</b>	<b>74.6</b>	<b>75.2</b>
<i>Fan</i>	<b>43.4***</b>	<b>79.5***</b>	<b>55.9</b>	<b>40.6***</b>	<b>71.8***</b>	<b>51.0</b>	<b>42.4***</b>	<b>76.9***</b>	<b>54.2</b>
<i>Open windows at night</i>	<b>37.8***</b>	<b>84.1***</b>	<b>53.6</b>	<b>40.0***</b>	<b>80.3***</b>	<b>54.2</b>	<b>38.5***</b>	<b>83.0***</b>	<b>53.8</b>

<sup>a</sup> 32.5% and 42% of respondents (not applicable)

<sup>b</sup> 8% of respondents (not applicable)

\*\*\* p ≤ .001; \*\* p ≤ .01; \* p ≤ .05

### 6.2.3 Impact of the campaign on knowledge and protective behaviours

Table 9 presents the results of a regression analysis of knowledge (3- and 8-item indices respectively) on level of exposure to preventive messages, adjusted by propensity scores. Results indicate that the number of protection measures correctly reported increases significantly with level of exposure. These results were found with regard to both knowledge of the three main measures (3-item index) and recommended measures as a whole (8-item index).

Results of regression analyses of behaviours (3- and 8-item indices) on exposure to preventive messages, adjusted by propensity scores, psychosocial variables (perceived vulnerability), facilitating factors (air conditioned dwelling) and reinforcing factors (high-heat warnings and reinforcement by health professionals or members of one's personal network) are presented in Tables 10 and 11. These results indicate a significant increase in protective behaviours only for moderate or high exposure and only on the 8-item behaviour measurement.

Table 10 presents the various regression models tested using the 3-item behaviour index. These results illustrate that the observed relationship between level of exposure and adoption of protective behaviours (model 1) declines and even disappears completely when covariables are introduced. In the final model (model 3), variables that are significantly associated with protective behaviours are, in order, availability of an air-conditioned dwelling, perception of one's vulnerability and knowledge of protection measures. However, given the association between exposure to messages and knowledge of them, we can hypothesize that the former could have had an indirect effect on protective behaviours by enhancing knowledge. On the other hand, given preventive messages that convey information on vulnerable populations and put forward air conditioning as a means to protect oneself against heat waves, an indirect effect of exposure to messages on behaviour adoption via perceived vulnerability and the creation of facilitating conditions (air conditioner) is also possible.

Table 11 presents the results of various regression models tested using the 8-item behaviour index. These results show a direct effect of exposure to messages on protection measures (model 1). This effect is observed only for moderate or high exposure and persists after introduction of covariables (Table 11; models 2 and 3).

**Tableau 9: Estimated regression coefficients of knowledge (3 and 8-indices) on level of exposure adjusted by propensity scores**

Variables	Model (3-item index)	Model (8-item index)
	b	b
Low exposure <sup>a</sup>	.30***	.37***
Moderate/High exposure <sup>a</sup>	.47 ***	.62 ***
Constant	.99	1.36
R <sup>2</sup>	.06***	.07***

a Reference category: no exposure; Low exposure: one information source; Moderate or high exposure: 2 or more sources of information

\*\*\* p ≤ .001; \*\* p ≤ .01; \* p ≤ .05

**Table 10: Estimated regression coefficients of protective behaviour (3-item index) on level of exposure adjusted by propensity scores and other covariates. Different models**

	Model 1	Model 2	Model 3
	b	b	b
Low exposure <sup>a</sup>	.03	.02	-.01
Moderate/High exposure <sup>a</sup>	.29 ***	.12	.08
Perceived vulnerability	–	.21***	.20**
Heat warning	–	.17	.15
Face-to-face communication	–	.11	.12
Air-conditioned dwelling	–	.60***	.57***
Knowledge of measures	–	–	.10 *
Constant	2.24	1.65	1.58
R <sup>2</sup>	.03***	.25***	.26***

a Reference category: no exposure; Low exposure: one information source; Moderate or high exposure: 2 or more sources of information

\*\*\* p ≤ .001; \*\* p ≤ .01; \* p ≤ .05

**Table 11: Estimated regression coefficients of protective behaviour (8-item index) on level of exposure adjusted by propensity scores and other covariates. Different models**

	Model 1	Model 2	Model 3
	B	b	b
Low exposure <sup>a</sup>	.13	.07	-.007
Moderate/High exposure <sup>a</sup>	.90***	.60***	.49**
Perceived vulnerability	–	.44 ***	.41**
Heat warning	–	.44*	.36
Face-to-face communication	–	.09	.12
Air-conditioned dwelling	–	.73***	.69***
Knowledge of measures	–	–	.20**
Constant	5.33	4.39	4.20
R <sup>2</sup>	.07***	.18***	.20***

a Reference category: no exposure; Low exposure: one information source; Moderate or high exposure: 2 or more sources of information

\*\*\* p ≤ .001; \*\* p ≤ .01; \* p ≤ .05

The regression analyses presented in previous tables (Tables 9 to 11) were repeated using a four-category exposure variable (data not shown). These analyses indicate that individuals exposed to the promotional material as sole information source do not differ from individuals who were not exposed, in terms of knowledge and behaviours. However, individuals exposed to the promotional material in addition to other sources of information adopt, on average, a significantly greater number of behaviours than individuals who were not exposed and those exposed to information sources other than the promotional material. This relationship is observed only on the 8-item behaviour index.

The preceding results indicate that adoption of protective behaviours increases with “dose of exposure” to prevention messages. They also suggest that exposure to the promotional material as an additional source of information to prevention messages conveyed through other sources can have a positive influence on adoption of protective behaviours.

### 6.3 Component 3: Comprehension, acceptability and feasibility of protection measures related to heat

Component 3 of the study relies on focus group methodology to evaluate comprehension, acceptability and feasibility of protection measures among a group of high risk individuals. The sociodemographic and health characteristics of focus group participants are shown in Table 12. Most are 75 years old or over, live alone and are in a precarious state of health. All respondents but one live in dwellings that are not air conditioned.

**Table 12: Characteristics of focus group participants (n=30)**

	N (%)		N (%)
<b>Sociodemographic characteristics</b>			
<b>Age</b>		<b>Perception of income adequacy</b>	
65-74	7 (23.3)	Totally adequate	9 (30)
75-84	15 (50.0)	Somewhat adequate	8(27)
85 or over	8 (27.0)	Somewhat inadequate	9 (30)
<b>Sex</b>		Totally inadequate	2 (7)
Male	7 (23)	NR	2 (7)
Female	23 (77)	<b>Type of household (residential isolation)</b>	
<b>Education</b>		Lives alone	29 (96)
None/Elementary school	8 (23.0)	Lives with other people	1 (4)
High school	14 (47.0)	<b>Language used:</b>	
Post-secondary	8 (13.3)	French	24 (83)
		English	6 (17)
<b>Health characteristics</b>			
<b>Perceived health</b>		<b>Mobility (outside the home)</b>	
Excellent	1 (3)	Alone without difficulty	14 (47)
Very good	1 (3)	Alone with difficulty	10 (33)
Good	12 (40)	With the help of another person	4 (13)
Fair	14 (47)	Totally unable	2 (7)
Poor	2 (7)		
<b>Hospitalization in the past year</b>			
Yes	12 (40)		
No	18 (60)		

### 6.3.1 Thematic analysis

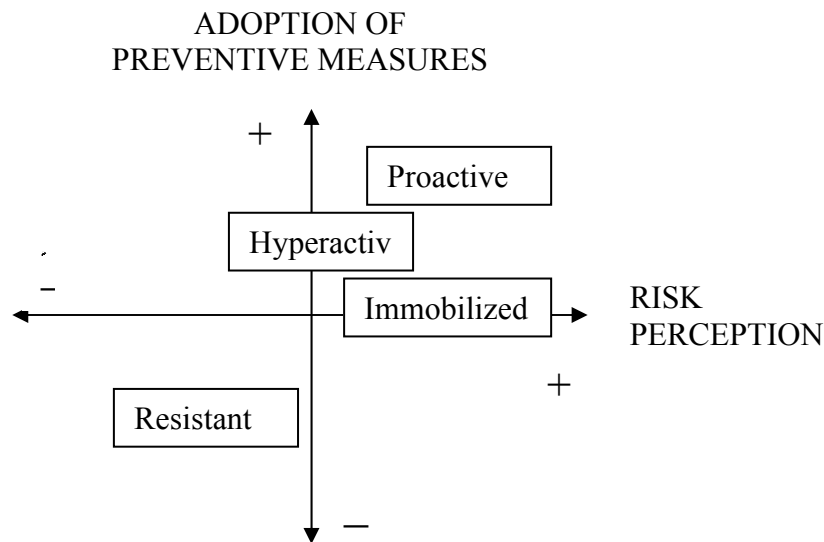
Analysis of the transcripts identified recurrent themes in the participants' discourse and uncovered certain controversies regarding protection measures to adopt during periods of high heat.

- *Physical discomfort as an indication of high heat:* For participants, humidity is what makes hot weather unpleasant and difficult to experience. Participants' responses indicated that discomfort associated with heat waves ranges over a continuum, from simple malaise to a "terrible" and "unbearable" experience. The furthestmost negative extreme is associated with quality of living environment (no air conditioning, windows too small, no air circulation). Some people feel physically weak, which they express as "collapsing", "feeling numb", "exhausted". A few participants reported more specific physical symptoms associated with high heat: sleep problems (sleeps too much or not enough, with lack of sleep dominating), arthritic pain, breathing problems (asthma, emphysema), heart problems ("my ticker's really pumping").
- *A reluctance to ask for preventive help:* Most participants live alone and are socially isolated. For the others, having friends is often not very helpful during heat waves since, as one participant stated, these friends are also older people in similar situations. However, most participants claim they would call emergency services or Info-santé if they felt particularly uncomfortable. The hospital appears to be the last recourse because confidence in the health system has been seriously shaken: "We can catch viruses and bacteria, and be too cold." "Hospitals are going to be the death of us." "I'd rather die than go to the hospital." "You have to stay in the hallway... you might as well stay home." There are even doubts about the health system's response: "What can a hospital do for people whose problem is that they're hot? The ambulance won't come get me just for that."
- *The scarcity of resources to deal with heat waves:* Most participants who have limited personal resources (health and financial) resort to individual management methods to deal with high heat. They also lack informational resources. On this subject, participants were very critical of health professionals, especially doctors: "They're not even telling you the things you're supposed to do," "They ask quick questions. They're in too much of a hurry," "Appointments are too close." Pharmacists are perceived as a reliable source of information who are closer to people, but they do not talk to them about heat. A few participants mentioned that nurses, family members and friends are the ones who take the time to talk with them and give them advice during heat waves.
- *Beliefs regarding the effectiveness of prevention measures:* Discussions among participants bring to light the controversies concerning the validity and effectiveness of certain prevention measures. While there is agreement with regard to keeping well-hydrated and cooling off, there is disagreement on ways to accomplish this. Indeed, there were debates about the temperature at which drinking water should be to have a cooling effect (warm or cold?) and about diet (Is drinking a lot of water always good? Meat or no meat? Salted or unsalted?). Opinions regarding these issues vary greatly depending on individuals' state of health; some people must eat salt-free or sugar-free diets, or be careful about the quantity of water they drink in a day. The liveliest discussions concerned consumption of alcohol, coffee and softdrinks. Generally, participants agreed that proscribing them completely would be difficult but that they should be consumed in moderation. For them, these beverages are small pleasures that are accessible and comforting, and that have "never killed anyone"; "It's important to enjoy life." The groups also did not agree about air conditioning as a means to protect against high heat. Several participants would like to have an air conditioner but do not have enough income to buy one or cannot install one in their homes (windows do not open). For other participants, air conditioning poses a health risk: it can cause respiratory or cardiovascular problems (because of the substantial differences between indoor and outdoor temperatures) and allergies that can lead to death. In some people's opinions, there has always been hot weather, but now, air conditioning makes people less tolerant to it.

### 6.3.2 Typology of adaptive responses during heat waves

Analyses identified four sub-groups of participants whose adaptive responses during heat waves differ. Sub-groups are distinguished by their position on two main axes: perception of risks associated with heat and preventive behaviours adopted during these episodes (Figure 6).

**Figure 6: Adaptive responses during heat waves**



“Proactive” individuals are characterized by the high degree of caution they exercise during heat waves and by their access to resources that enable them to deal better with these periods. While they adopt behaviours that result in better hydration and cooling off, “proactives” also have greater interaction with their physical and social environments. Individuals in this group more often turn to their network of family or friends to get out of the city or cool off in a swimming pool, or just to say they are going out. Others use resources near their homes: they go to an air-conditioned mall or restaurant, to an indoor pool or a shady park, for example. Because of these participants’ greater mobility, measures related to clothing and protection against the sun were mentioned more often: wear lightweight, light-coloured clothing made of natural fibres, walk in the shade, wear a hat or cap, put on sun cream, wear sunglasses.

Individuals in the “immobilized” group, the largest among focus-group participants, are aware and sometimes very concerned about the health risks associated with heat waves but have few means at their disposal to deal with the heat because of their health problems and/or limited access to social and material resources. As a result, they manage heat essentially on their own and focus on attenuating the effects of high heat. The measures participants in this group cited most often are doing fewer or no activities (“watch television,” “stay quiet,” “cook simply,” “refrain from doing housework,” “stay in bed,” “avoid moving around,” “talk quietly,”) and using simple means to cool off (fan, bath, shower, cool facecloth, icepack on the neck, soaking the feet, and others). Some people do not leave their homes because they feel too weak or have difficulty getting around. The importance of hydration—drinking a lot of water, coffee or soft drinks—and eating lighter meals was emphasized by a number of individuals. Another aspect that was discussed was indulging in small pleasures during this more difficult period: having an alcoholic beverage or a soft drink in the afternoon or adding a fragrance when taking a bath. In short, “they wait quietly as best they can for the cooler weather to arrive.”

“Hyperactives” are individuals who are fairly healthy, see themselves as being not all that vulnerable to heat, and prefer to remain active rather than staying inactive and brooding. Some of them want to avoid

focusing on heat too much and look for something to do: “I’d rather do volunteer work to forget that it’s hot.”

Finally, people in the “resistant” sub-group have a nonchalant approach to the risks associated with heat, even though some of them are aware of these risks. “We don’t think about it. We think about winter during these periods.” “I think about my other problems and I don’t think about the heat.” Individuals in this group are generally resistant to the public health message, which they see as too prescriptive: “You’re not going to tell me what to do at my age.” In some cases, this attitude can be somewhat fatalistic and point to a certain resignation regarding the problem: “What’s the difference if you die of that or of something else?” “You can’t change the weather. The guy up there’s in charge of that.”

By identifying these profiles, we can shed light on the limits of prevention messages in terms of acceptability (particularly in the “**resistant**” group) and feasibility (particularly among the immobilized group) (Table 13).

**Table 13: Profile of participants, by assorted variables**

	Perceived vulnerability	Acceptance of measures	Feasibility	Participant characteristics
Type 1 “Proactive”	+	+	+	Health: variable Resources: good
Type 2 “Immobilized”	+	+	—	Health: average/poor Resources: limited
Type 3 “Hyperactive”	+/-	+/-	+	Health: good Resources: good
Type 4 “Resister”	+/-	—	+/-	Health: variable Resources: limited to non-existent

### 6.3.3 Assessment of promotional material

A discussion focusing more specifically on assessing the promotional material revealed certain comprehension problems, especially regarding the usefulness of keeping an eye on the temperature (“It won’t be any less hot if we watch the thermometer”), and rekindled the debate on some more controversial measures (see above, section 6.3.1) Moreover, participants’ opinions were not unanimous concerning the drawings on the poster (cartoon-style) and the slogan “It’s summer. Be cool!”: while some people liked them and perceived them as humorous and as an attempt to avoid overly dramatizing the problem of high heat, others criticized them and saw them as too childish or thought the information given was not clear or straightforward enough (for example, some participants stated that it was not clear that the man on the balcony was drinking water and not something else). Others said also that the text in the speech bubbles was hard to read because the print was too small. However, everyone appreciated the format of the information card, especially the side on which the protection measures are listed.

## DISCUSSION

The education campaign on health risks associated with heat waves was evaluated using a comprehensive approach. Aspects considered for the evaluation include message dissemination, exposure of the target population, impact on knowledge and behaviours adopted during periods of high heat, and factors likely to influence behavioural response. Particular attention is paid to comprehension of messages, and to acceptability and feasibility of protection measures in a high risk group. The following section summarizes the main findings of the evaluation and suggests some directions for future research.

### Dissemination of messages

Visits to distribution sites uncovered flaws in the dissemination of promotional tools. A relatively high percentage of wrong addresses (12.5%) explains some of the shortcomings of the information relay network used for the dissemination of the promotional material. Site visits also showed that while distribution of the card is quite satisfactory (pharmacies, medical clinics) or even very satisfactory (CLSCs), distribution of the poster is much more restricted, especially in the pharmacy and medical clinic networks. A survey of the owners of these institutions (data not shown) reveals that the poster's large format is a major obstacle. However, we should not necessarily conclude that the solution is to print smaller posters since focus-group participants raised the issues of message legibility (print too small) and ambiguity about how to interpret the images. **Therefore, the pertinence of disseminating the poster through pharmacies and medical clinics should be reevaluated.**

Press relations with electronic and print media represent another communications strategy used to disseminate the campaign messages. A content analysis of articles published in the press shows that dailies fulfil their role well by relaying information on protective measures to the population when Environment Canada issues high-heat warnings. **However, it would be worth making greater use of the potential of weeklies, whose mission is less directly focused on “news”, to ensure the messages are disseminated outside periods of heat warnings, especially early in the season.**

### Target population exposure to prevention messages

Exposure of a target population to prevention messages is essential, although insufficient, to ensure the success of education campaigns (Flay et al., 1980; Rogers and Story, 1987, cited in Rimal et al., 1999). A well-targeted education campaign must guide the choice of communication channels by opting for the information sources most commonly used by the targeted population. Recent data collected by the Groupe de recherche Médias et santé (GRMS) inform us about the media consumption habits of Quebecers aged 60 and over (GRMS, unpublished data). These data reveal that individuals in this age group watch a lot of television (88.2%); fewer of them listen to radio (60.9%), read newspapers and magazines (48.9%) and use the Internet (25.6%).

It is interesting to compare these data with the results of a survey conducted during the evaluation of the education campaign. Those data reveal that 66% of the target population was exposed to the prevention messages—from all sources—and that television is the information source that had the highest penetration rate. Prevention messages disseminated on television reach 34% of the target population, compared with 29% for radio and 19% for dailies. For their part, the promotional tools—cards and posters—reached 17% of the targeted clientele.

**Given the type of media preferred by older people in Québec and considering the high penetration rate of prevention messages disseminated on television, there is good reason to proceed with a content analysis of the information conveyed on television and to evaluate the pertinence of developing closer collaborations with this media. This process is all the more indicated since monitoring of electronic and print media confirms the preponderant role that television and radio play in the dissemination of information on "heat", in particular after Environment Canada issues a warning.**

With regard to the promotional material (information card and poster) more specifically, the observed penetration rate (17%) is similar to the ones observed in other education campaigns (Palmieri, 2006). However, the measure of exposure to promotional material is subject to different biases. Since the promotional material was not shown to respondents but only described during telephone interviews, exposure might be underestimated (memory bias). Then again, overestimation of "true" exposure (social desirability bias) is also possible. **The current study confirms the usefulness of promotional tools when used in conjunction with other sources of information (this argument is developed later). Therefore it would be appropriate to have discussions with our partners in order to identify approaches that can be adopted to improve penetration of promotional materials among the target population. Survey data provide indications on avenues to pursue. In particular, they indicate that individuals who live in senior citizens' homes were more exposed to the promotional material whereas conversely, people with limited mobility were exposed less often to the campaign's promotional tools. These results indicate that dissemination of promotional materials should be pursued in settings where there is a high concentration of seniors, and demonstrate the importance of developing specific strategies to ensure the messages are disseminated among people with reduced mobility.**

Survey results also reveal that seniors cite face-to-face communication channels much less often as a source of information on protection measures related to heat. Barely 10.3% of respondents said they were given advice about this issue by a health professional and an even lower proportion (5.7%) by someone from their personal network. Yet, there could be advantages to exploiting face-to-face communication channels to increase and bolster the messages conveyed by the mass media. Several studies have suggested that while media campaigns can raise public awareness about certain health issues, interpersonal discussions following the dissemination of messages foster understanding and could have a determining effect on an individual's decision about whether or not to modify behaviours (Doyle et al., 1991; Johnson and Meischke, 1993, cited in Rimal et al., 1999). Although this connection was not established in our survey (component 2), focus-group participants clearly expressed what they expected in this regard: *"They should come talk to us rather than just sending us cards."* Health agencies have often been seen as ideal organizations to convey and bolster preventive messages; however, focus-group participants had certain reservations about the capacity of partners from the health network to fully assume this role since these professionals are in great demand and their availability is limited. In this context, Fernandez et al.'s (2002) suggestion, that community organizations working with seniors be encouraged to support education and pre-planning activities for their vulnerable older clients, should be considered. **It is clear that the close relationships more vulnerable seniors entertain with community organizations working with older people—a relationship often emphasized by focus-group participants—qualifies the latter to take on this role. Therefore, possibilities of developing a closer collaboration with these organizations should be explored in the future.**

### **Impact of the campaign on knowledge and behaviours**

A well-accepted communication principle is that message repetition is required to capture the target population's attention, facilitate information retention, and foster adoption of the healthy behaviours

desired (Flay et al, 1980; Randolph and Viswanath, 2004). In the current study, the number of different channels through which individuals learnt about the prevention messages was an indicator of "level of exposure" ("dose") and used as an independent variable to evaluate the impact of the campaign on knowledge and behaviours adopted during periods of high heat.

*Impact on knowledge:* In this regard, results indicate that the number of protection measures reported correctly increases significantly with level of exposure. These results are confirmed with the three-item (three main measures) and eight-item (measures listed on the information card) indices.

*Impact on behaviours:* These results indicate that individuals who were exposed to the prevention messages adopt a significantly higher number of protection measures during heat waves than people who were not exposed. However, the relationship between exposure and number of behaviours are only confirmed for average/high levels of exposure and only for the 8-item behaviour index. Awareness of protection measures, perception of one's vulnerability and living in an air-conditioned dwelling are also significantly associated with the behaviours.

*Specific effect of promotional tools:* Although it is extremely difficult and even impossible to separate effects of the promotional tools from those stemming from other sources or other channels, additional analyses conducted with a four-category exposure measure<sup>4</sup> suggest that there is "added value" associated with the promotional material *when it is used in conjunction with other sources of information*. Such "added value" could be due to the fact that, as Mayhorn (2005) and Fernandez et al. (2002) have suggested, educational material distributed outside warning periods could encourage a quicker response following a heat warning because it enables individuals to be better prepared for such an event. But it is also possible that the effect associated with use of promotional material in conjunction with other sources of information is simply a result of "dose". In any case, **the observed association between level of exposure and adoption of protective behaviours supports the generally held assumption in communication that disseminating messages in various formats and through a variety of sources increases the chances of reaching the targeted population and of ultimately influencing health behaviours. In this regard, it seems appropriate to maintain the communication strategy chosen for the campaign, which is based on diversifying dissemination channels and communication sources.**

### **Factors that influence behavioural response**

*Perception of one's vulnerability:* Findings that demonstrate the influence of perceived vulnerability on adoption of protective behaviours are consistent with those observed in other investigations conducted among the general population. Based on this observation, Sheridan (2006) recommended that prevention campaigns put greater emphasis on the vulnerability of older people to encourage them to adopt the recommended measures. Sheridan's recommendation should be tempered somewhat, given that data collected during focus groups clearly demonstrate the feasibility problems some more vulnerable seniors encounter when applying the measures recommended. We believe that **heightening the perception of risk without also increasing the capacity to take action may cause greater distress than the harm we are seeking to prevent. The following suggestions offer certain ways to increase access to resources.**

*Access to material resources:* While air conditioning is believed to be the most effective way to counter the effects of high heat (Semenza et al., 1996), results of the evaluation show that few individuals who do not have this appliance at home can follow this measure. Fostering greater access to air conditioners is a

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<sup>4</sup> The categories are 1) no exposure to prevention messages; 2) exposure to promotional material only; 3) exposure to messages disseminated through one or several information channels, not including promotional material; and 4) exposure to promotional material and other messages disseminated through one or several other communication channels.

measure to consider for the most vulnerable seniors. To reach individuals with the greatest needs, the recommendation put forward by Smoyer (1998) and Harlan et al. (2006) to target the “population at risk” living in “neighbourhoods at risk” should be considered. We now have the geomatic tools to apply this type of targeted intervention (Pitre, 2008; Smargiassi et al., 2008). Implementation of measures that foster access to air-conditioned socialisation sites for all seniors is also an option to explore.

**Access to social resources:** Activating neighbourhood networks (Argoud et al., 2004) is a strategy to consider. Several suggestions were put forward in this regard following the extreme heat that affected France in 2003. A list of interventions—ranging from urban development that encourages social interaction to more targeted interventions with people who are isolated—was proposed with a goal of reducing seniors’ isolation, a risk factor associated with excess mortality during periods of extreme heat (Argoud et al., 2004). Since isolation is a general, unspecific risk factor (see, for instance, Berkman, 1995; House, 2001; House et al., 1988), this type of intervention is likely to generate positive impacts for a host of health problems.

**Access to information resources:** Focus-group participants deplored the lack of access to professionals as a source of information on protection measures to take during heat waves. This finding is all the more regrettable since studies suggest interpersonal discussions that take place following message dissemination can promote better understanding of the information and even have a determining effect on a person’s decision to modify behaviours or not (Doyle et al., 1991; Johnson and Meischke, 1993, cited in Rimal et al., 1999). To counter this problem, we could consider training multiplying agents to which seniors would have privileged access. The suggestion **to explore the possibility of closer collaboration with community groups for seniors appears to be very promising in this regard.**

### Message contents

- Focus-group findings suggest that target population segmentation would be useful to increase message receptivity among sub-groups of seniors at high risk. Identification of different profiles among focus-group participants could be used to guide reflections. Nonetheless, we must admit that the use of mass media (promotional tools; messages disseminated through electronic and print media) are limited in this regard.
- Some recommendations, in particular those that suggest avoiding alcohol, caffeine and softdrinks, stem from a biomedical conception of health that is incompatible with seniors’ idea of health, which is defined in terms of well-being (and includes the notion of pleasure). Consequently, participants do not view this recommendation as acceptable. **Given that the controversy over this measure extends to the scientific field (Kostastky, 2008), there are grounds for reevaluating the relevance of this measure or of stating it differently: “Limit the consumption of beverages... because they can cause dehydration.”**
- The recommendation to “*check the weather and use a thermometer to keep an eye on the temperature in your home, especially when the temperature reaches or exceeds 30°C or 86°F and does not go down at night*” does not appear to be useful to focus-group participants, who even question its pertinence (“It won’t be any less hot if we watch the thermemoter”). In fact, **while the usefulness of temperature data to determine various levels of alert in case of high heat is not being questioned<sup>5</sup>, the pertinence of including such data in an information flyer for seniors about how to protect oneself against hot weather seems more questionable, in light of the focus-group discussions.**

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<sup>5</sup> 30°C is one of two criteria Environment Canada uses to issue high heat warnings; the other is a Humidex of 40.

- Survey data show that a majority of seniors (90%) follow **the recommendation to wear light clothing and a hat** for protection against the sun, regardless of exposure to the prevention messages. **Should the campaign tools be revised, the need to include this recommendation should be questioned.**
- An analysis of the print media revealed that of the articles dealing with protection measures related to heat, scarcely one of five articles presents all three main prevention measures at the same time (go to a cool or air-conditioned place, drink a lot of water, avoid activities that require effort), and about a third contains at least one or two (but not all three). **To ensure messages are disseminated more coherently, it would be useful to focus more on the three measures—in promotional tools and media releases— since these different sources are consulted by the media and by various spokespersons for the issue.**
- Survey results indicate that 54% of respondents use fans during periods of high heat. **Since inappropriate use of fans can aggravate the effects of heat waves, information about how to use them properly should be communicated. In this case, the best dissemination strategy have yet to be defined.**

### **Study limitations and strengths**

The main strength of the study resides in the fact that the evaluation of the education campaign is comprehensive and examines the aspects linked to dissemination of messages, exposure of the target population, comprehension, acceptability and feasibility of the measures proposed, and adoption of protective behaviours. Nonetheless, certain limits to the evaluation should be pointed out and these involve three main areas:

- *Limits concerning the study design:* While an adjustment by propensity score reduces biases related to post-test design with no comparison group, it is nonetheless possible that some variables not included in the study can introduce some biases;
- *Difficulty isolating the effect of the various campaign components:* The difficulty, indeed the impossibility, of isolating the different campaign components makes it risky to attempt to dissociate, *in a definite and absolute manner*, the effects that can be attributed to the promotional tools from those attributable to messages from other sources or conveyed through other channels;
- *Limits linked to the measures:* The different measures used to assess the impact of the campaign (exposure, knowledge and behaviours) are subject to various biases (memory, social desirability) whose extent is difficult to evaluate. Moreover, the measurement of behaviours also has limitations due to the fact that it does not take into account the relative effectiveness of the various protection measures since the same weight is given to all the recommended measures.

### **Avenues of research to pursue**

In conclusion, it is important to underline that the question of the campaign's capacity to bring about the desired protective behaviours does not address the question of the protection measures' effectiveness in reducing the excess mortality recorded during heat waves. To this effect, while the effectiveness of certain measures is well established (e.g. air conditioning), the persisting controversy in the scientific field about some of the measures proposed (Kosatsky, 2008) highlights the importance of pursuing further studies in the field so as to identify evidence-based prevention messages.



## CONCLUSION

The current study shows a positive association between exposure to the prevention messages conveyed through various communication channels and the target population's knowledge and the protective behaviours they adopted during periods of high heat. Even so, these findings suggest that some improvements are needed to ensure better dissemination of the promotional tools, increase the target population's exposure, encourage greater acceptability of the messages and develop interventions designed to support more actively the adoption of protective behaviours, particularly among groups at high risk.

In the light of the projected increase in climate extremes, manifestations of which include heat waves and extreme heat, education campaigns that focus on behavioural measures have obvious limitations. In this regard, the importance of environmental measures designed to adapt the built environment to ensure better protection during episodes of high heat cannot be downplayed (e.g. greening, use of materials that retain less heat), nor can the mitigation measures designed to reduce at source factors that contribute to climate change (e.g. measures to reduce greenhouse gases). The *Plan montréalais de prévention et protection en cas de chaleur accablante ou de chaleur extrême* (ASSSM, 2006) includes measures that address all these issues. We believe that setting forth these complementary measures will be the most beneficial, in terms of health gains.



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## APPENDIX 1 – PROMOTIONAL MATERIAL



### How to stay cool in a heat wave



- **Identify** someone to call in case there is a problem.
- **Keep** an eye on the weather and use a thermometer to check the temperature inside your home, especially when the temperature reaches **30°C or 86°F** or higher and does not cool off at night.
- **Use** an air conditioner to cool your home or spend a few hours in an air-conditioned place such as a shopping centre or movie theatre.
- **Drink** a lot of water even before you feel thirsty or in quantities indicated by the doctor.
- **Avoid** beverages that cause dehydration: drinks that contain alcohol, caffeine (coffee, tea, colas), or a lot of sugar.
- **Take** cool showers or baths as often as necessary.
- **Avoid** activities that require a lot of effort.
- **Protect** yourself against the sun: wear lightweight, light-coloured clothing and a hat.

In case of general discomfort, dizziness, fatigue, headaches, difficulty breathing, chest pain or swelling in the legs, call Info-Santé or your doctor.  
In case of emergency, call 911.

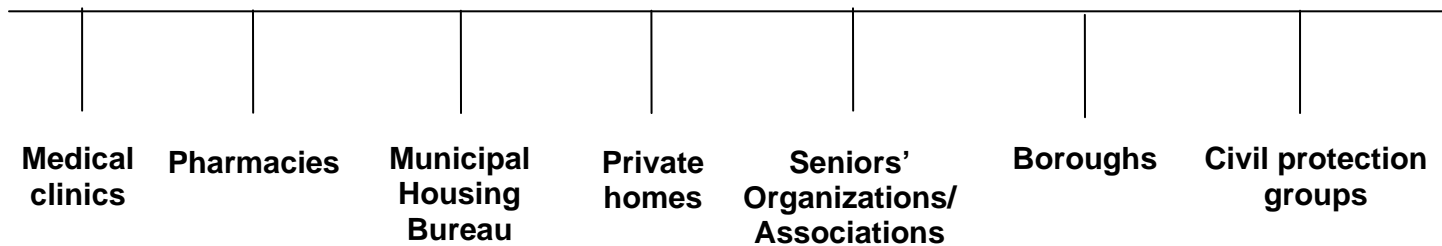
06-269-011A

Produced by the Direction de santé publique of the agence de la santé et des services sociaux de Montréal

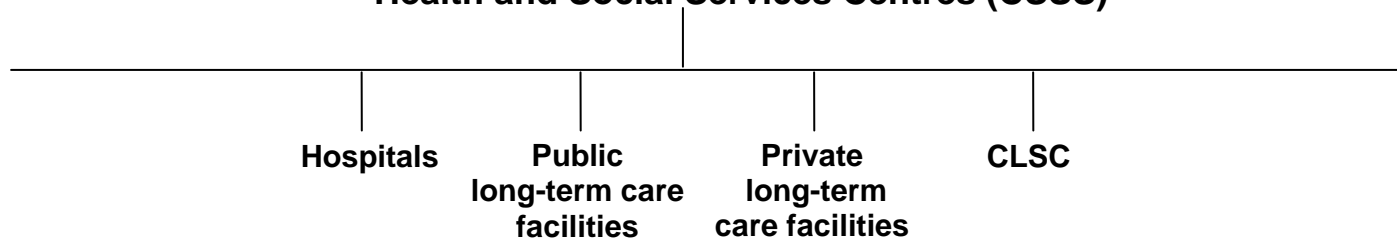


## APPENDIX 2 – DISTRIBUTION NETWORK

### Outside health institutions



### Health and Social Services Centres (CSSS)





## APPENDIX 3 – ENGLISH QUESTIONNAIRE

### NTRO:

Hello / Good afternoon, \$I from the NSC. Ask to speak with <NOM > ? The Montreal Public health department has asked us to conduct a study among the population on ways to protect yourself from heat waves. (Your answers will remain confidential.) (May I take a few minutes of your time?)

Press 1 to continue.....1 D

---

---

### LANG:

LANG. LANGUAGE OF THE INTERVIEW

French .....1

English.....2

---

---

### Q\_A:

QA. In order to scientifically choose somebody in your household, could you tell me how many people aged 18 years or older currently live in your household?

\$E 1 10

Register the number of people (1 - 10) .....

None - (CODE AS «04 - NOT-ÉLIGIBLE») .....00 ==> /INT

DNK - (CODE AS «07 - HOUSEHOLD REFUSAL») .....98 ==> /INT

REFUSE - (CODE AS «07 - HOUSEHOLD REFUSAL») .....99 ==> /INT

---

---

### Q\_B:

QB. And among these <Q\_A > persons, how many are aged 65 years or older?

\$E 1 10

Register the number of people (1 - 10) .....

None - (CODE AS «04 - NOT ELIGIBLE»).....00

DNK - (CODE AS «07 - HOUSEHOLD REFUSAL») .....98 ==> /INT

REFUSE - (CODE AS «07 - HOUSEHOLD REFUSAL») .....99 ==> /INT

---

---

### VER\_B:

I am sorry, but nobody in your household corresponds to the criteria for our study.

I don't have any other questions, thank you for your time.

=> +1

if NON Q\_B=00

REMERCIER ET CODER «CC - COMPLÉTÉ COURT - MÉNAGE PARTICIPATIF» 1

D=> /INT98

.....

**TSEL:**

QUESTION CALCULÉE (TEXTE REPORTÉ)

```
=> *
if SI ((Q_B==1),1,0)
```

May I speak with the person aged 65 years or older? May I have the person's first name?.....1  
Among the <Q\_B > persons aged 65 years or older, may I speak with the person who will be the next one to  
celebrate his or her birthday? May I have the person's first name?.....0

**SELEC:**

SELEC. <TSEL > NOTE : ASK FOR THE FIRST NAME ONLY IN CASE OF AN APPOINTMENT  
\$P

**TRNOM:**

Transport du prénom dans NOM

```
=> *
if MST(SELEC,NOM)
```

**NTR1:**

NTR1. Good morning / afternoon. The Montreal Public health department has asked us to conduct a study among people 65 years of age or over on ways to protect themselves from heat waves. I have a few questions I'd like to ask you. The duration of the interview is about 8 to 10 minutes and your answers will remain confidential. IF THE INDIVIDUAL REFUSES TO PARTICIPATE, TELL HIM: - Your participation is very important. It will enable public health officials to improve health messages and reach greater numbers of seniors. Continue next page .....1 D

**RECRD:**

*QUESTION INACTIVE - PRETEST SEULEMENT*  
In order of quality control, it is possible that this interview is recorded. DÉBUT DE L'ENREGISTREMENT.  
\$PRONTO RECORD  
FILENAME=C:220NQ><NB\_AP>.  
WAV FILEFORMAT=WAVE\_6  
Continue next page .....1 D

**Q1:**

The first questions deal with high heat warnings. Have you been made aware of high heat warning this summer, through the news media or by other means?  
Yes.....1  
No.....2 => Q3  
DNK/ NA .....9 => Q3

**Q1A:**

Q1A. How many high heat warnings were you aware of this summer?  
\$E 1 10  
WRITE-IN THE NUMBER .....  
DOESN'T REMEMBER .....98  
NO ANSWER .....99

**Q2:**

Q2. How did you come to be aware of the high heat warning or warnings? INTERVIEWER: Do not read the choices of responses. Check off the applicable responses. Once you have made note of the respondent's response(s), ask him "Have you obtained information from sources other than... [quote the respondent's responses]?" Check off the applicable responses. NOTE : Si réponse spontanée est «à la télé» ou «sur Internet», sondez : Quel canal? Quel site Internet?

MétéoMédia channel / The weather channel.....	01	
Other channel.....	02	
On the radio.....	03	
In newspapers (Daily newspaper, such as <i>La Presse</i> , <i>Le Devoir</i> , <i>The Gazette</i> , and so on) .....		04
MétéoMédia website .....	05	
Environment Canada's website.....	06	
Montreal Public health department's website.....	07	
Other website .....	08	
From a family member, spouse, neighbour or friend .....	09	
Other (précisez).....	98	O
DNK/ NA .....	99	X

---

---

**Q3:**

Q3. In your opinion, do high temperatures pose a health risk for seniors?

Yes.....	01	
No.....	02	
For certain seniors.....	98	
DNK/ NA .....	99	

---

---

**Q4:**

Q4. And for your health? If necessary: Do you believe that high temperatures pose a threat to your health?

Yes.....	1	
No.....	2	
DNK/ NA .....	9	

---

---

**Q5:**

Q5. During the summer, have you heard or read about ways of protecting yourself from the heat?

Yes.....	1	
No.....	2	=> Q7
DNK/ NA .....	9	=> Q7

---

---

**Q6:**

Q6. Where did you obtain this information? INTERVIEWER: Do not read the choices of responses. Check off the applicable responses. Once you have made note of the respondent's response(s), ask him: "Have you obtained information from sources other than ... [quote the respondent's responses]?" Check off the applicable responses. NOTE : Si réponse spontanée est «à la télé» ou «sur Internet», sondez : Quel canal? Quel site Internet?

MétéoMédia channel / The Weather Channel.....	01	
Other channel.....	02	
On the radio .....	03	
Local weekly newspaper .....	44	
Daily newspaper, such as La Presse, Le Devoir, The Gazette.....	04	
Montreal Public Health department's Website.....	05	
MétéoMédia Website.....	06	
Environment Canada's Website .....	07	
Other Website.....	08	
From a brochure or information sheet .....	09	
From a poster .....	10	
Other (please specify): .....	98	O
DNK/ NA .....	99	X

**Q6A:**

*Dépliant, brochure ou carton d'information*

Q6A. Can you describe the brochure or the information sheet? INTERVIEWER: Ne pas lire les choix. Cochez les éléments de réponses mentionnés.

=> +1  
if NON Q6=09

An information sheet printed on both sides.....	01	
A yellow information sheet .....	02	
Slogan "It's summer. Be cool!" .....	03	
A drawing of a three-storey building (occupied by seniors.) .....	04	
A green/blue/grey building .....	05	
Back of the sheet entitled "How to stay cool in a heat wave" .....	06	
Province of Quebec / Quebec flag .....	07	
A thermometer .....	08	
Advice on how to protect yourself from the heat .....		
Identify someone to call in case there is a problem.....	09	
Keep an eye on the temperature inside your home.....	10	
Use an air conditioner to cool your home or spend a few hours in an air conditioned place .....	11	
.....		
Drink a lot of water (even before you feel thirsty) .....	12	
Avoid drink that contain alcohol, coffee, tea, colas or a lot of sugar ...	13	
Take cool showers or baths .....	14	
Avoid activities that require a lot of effort.....	15	
Wear lightweight, light-colored clothing and/or a hat .....	16	
Advice (NOT SPECIFIED) .....	17	
Other (SPECIFY) .....	98	O
IT IS ANOTHER FLYER / SHEET .....	90	X
DOESN'T REMEMBER .....	97	X
NO ANSWER .....	99	X

**Q6B:**

*Affiche*

Q6B. Can you describe the poster? INTERVIEWER: Ne pas lire les choix. Cochez les éléments de réponses mentionnés.

=> +1

if NON Q6=10

- Slogan "It's summer. Be cool!" ..... 01
- A yellow poster ..... 02
- A drawing of a three-storey building (occupied by seniors) ..... 03
- A green/blue/grey building ..... 04
- Province of Quebec / Quebec flag ..... 05
- Advice on how to protect yourself from the heat ..... 06
- Wear lightweight, light-colored clothing and/or a hat ..... 06
- Drink a lot of water (even before you feel thirsty) ..... 07
- Use an air conditioner (to cool your home) ..... 08
- Advice (NOT SPECIFIED) ..... 09
- Other (SPECIFY) ..... 98 O
- It is another poster ..... 90 X
- DOESN'T REMEMBER ..... 97 X
- NO ANSWER ..... 99 X

**Q7:**

Q7. During the summer, has a health professional, someone from a community organization or a family member or a friend given you advice on how to protect yourself from the heat?

- Yes ..... 1
- No ..... 2 ==> CARTO
- DNK/ NA ..... 9 ==> CARTO

**Q7A:**

Q7A. Who are the people who advised you on this subject? INTERVIEWER: CHECK ALL THE ANSWERS THAT APPLY

- A physician ..... 01
- A pharmacist ..... 02
- A nurse ..... 03
- Another health service employee ..... 04
- An employee of a community organization ..... 05
- A family member, neighbour or friend ..... 06
- OTHER ..... 07
- DOESN'T REMEMBER ..... 98 X
- NO ANSWER ..... 99 X

**CARTO:**

CARTO. I am now going to describe an information sheet distributed by the Montreal public health department. I would like to know if you have seen the information sheet anywhere during the summer. The information sheet is printed on both sides. On the front, the slogan "It's summer. Be cool!" appears on a yellow background above a drawing of a three-storey building occupied by seniors. The back of the sheet is entitled "How to stay cool in a heat wave" and offers advice on how to do this.

Continue next page ..... 1 D

**Q8:**

Q8. Have you seen this information sheet anywhere during the summer?

- Yes ..... 1
- No ..... 2 ==> AFFIC
- DNK / NA ..... 9 ==> AFFIC

**Q8A:**

Q8A. Do you remember where?

In a medical clinic .....	01	
In a pharmacy .....	02	
In an Accès Montréal office.....	03	
In the building where you live.....	04	
At the CLSC.....	05	
Other.....	06	
DOESN'T REMEMBER .....	98	X
NO ANSWER .....	99	X

---

---

**Q9:**

Q9. Did you keep a copy of the information sheet?

Yes.....	1	
No.....	2	
DNK / NA .....	9	

---

---

**AFFIC:**

AFFIC. The public health department is also distributing a poster bearing the slogan It's summer. Be cool!. The yellow poster displays a drawing of a three-storey building occupied by seniors that presents tips for staying cool in hot weather.  
Continue next page .....1 D

---

---

**Q10:**

Q10. Have you seen this poster anywhere during the summer?

Yes.....	1	
No.....	2	=> Q11
DNK / NA .....	9	=> Q11

---

---

**Q10A:**

Q10A. Do you remember where?

In a medical clinic .....	01	
In a pharmacy .....	02	
In an Accès Montréal office.....	03	
In the building where you live.....	04	
At the CLSC.....	05	
Other.....	06	
DOESN'T REMEMBER .....	98	X
DNK / NA .....	99	X

---

---

**Q11:**

Q11. Different measures are recommended to protect yourself from the heat. Can you list some of them? DO NOT READ THE CHOICES. PROBE: Do you know any other means of protection?

- Spend a few hours in AIR-CONDITIONED facilities / at home .....01
- Refresh yourself with a damp FACECLOTH or take cool SHOWERS or BATHS 02
- .....
- Use a THERMOMETER to keep an eye on the TEMPERATURE INSIDE YOUR HOME 03
- .....
- Avoid activities that require a LOT OF EFFORT .....04
- Drink a lot of WATER even before you feel thirsty.....05
- Avoid beverages that contain ALCOHOL, CAFFEINE or a lot of SUGAR 06
- Use a FAN .....07
- Open the WINDOWS at night .....08
- Wear LIGHT CLOTHING, of PALE COLOR and/or a HAT .....09
- Identify SOMEONE TO CALL in case there is a problem .....10
- Stay in the SHADE WHILE OUTSIDE .....11
- Others (SPECIFY) .....98 O
- DOESN'T REMEMBER ANY RECOMMENDATION .....97 X => Q13A
- No answer .....99 X => Q13A

**Q13A:**

I am now going to read you a list of measures to protect yourself from the heat. Q13.  
Please tell me if, when it's very hot, you take such measures or not.

A) When it's very hot, do you use an air conditioner to cool your home or spend a few hours in air-conditioned facilities?

- Yes.....1
- No.....2
- DNK / NA .....9

**Q13B:**

Q13. (Please tell me if, when it's very hot, you take such measures or not.)

B) When it's very hot, do you refresh yourself with a damp facecloth or take cool showers or baths?

- Yes.....1
- No.....2
- DNK / NA .....9

**Q13C:**

Q13. (Please tell me if, when it's very hot, you take such measures or not.)

C) When it's very hot, do you use a thermometer to keep an eye on the temperature inside your home?

- Yes.....1
- No.....2
- DNK / NA .....9

**Q13D:**

Q13. (Please tell me if, when it's very hot, you take such measures or not.)

D) When it's very hot, do you avoid activities that require a lot of effort?

- Yes.....1
- No.....2
- DNK / NA .....9

**Q13E:**

Q13. (Please tell me if, when it's very hot, you take such measures or not.)

E) When it's very hot, do you drink a lot of water even before you feel thirsty?

- Yes.....1
- No.....2
- DNK / NA .....9

**Q13F:**

Q13. (Please tell me if, when it's very hot, you take such measures or not.)  
F) When it's very hot, do you avoid beverages that contain alcohol?

- Yes..... 1
- No..... 2
- NOT APPLICABLE..... 8
- DNK / NA ..... 9

**Q13G:**

Q13. (Please tell me if, when it's very hot, you take such measures or not.)  
F) When it's very hot, do you avoid tea, coffee, colas or beverages that contain a lot of sugar?

- Yes..... 1
- No..... 2
- NOT APPLICABLE..... 8
- DNK / NA ..... 9

**Q13H:**

Q13. (Please tell me if, when it's very hot, you take such measures or not.)  
H) When it's very hot, do you use a fan?

- Yes..... 1
- No..... 2
- DNK / NA ..... 9

**Q13I:**

Q13. (Please tell me if, when it's very hot, you take such measures or not.)  
I) When it's very hot, do you open the windows at night?

- Yes..... 1
- No..... 2
- DNK / NA ..... 9

**Q13J:**

Q13. (Please tell me if, when it's very hot, you take such measures or not.)  
J) When it's very hot, do you wear light clothing, of pale color and/or a hat?

- Yes..... 1
- No..... 2
- DNK / NA ..... 9

**Q13K:**

Q13I. Is there another mean of protection you use that I did not mention?

- Yes (SPECIFY) ..... 98 O
- No..... 97 => +2
- DNK / NA ..... 99 => +2

**Q14:**

Q14. When it is very hot, do you have someone you can contact in case there is a problem? If necessary: OTHER THAN 911

- Yes..... 1
- No..... 2
- DNK / NA ..... 9

**Q15:**

LAST QUESTIONS FOR STATISTICAL PURPOSES. Q15. Are you the owner of or a tenant of your home?

- Owner ..... 1
- Tenant..... 2
- DNK / NA ..... 9

**Q16A:**

Q16A. What are the first three characters of your postal code?

A9A

DNK / NA ..... 999 => Q17

---

**Q16B:**

Q16B. What are the last three characters of your postal code?

9A9

DNK / NA ..... 999

---

**Q17:**

Q17. In what type of dwelling do you live? Is it ... NOTE : UN CONDOMINIUM EST UN TYPE DE PROPRIÉTÉ ET NON UN TYPE D'HABITATION. ALORS, SI «CONDOMINIUM», DEMANDER QUEL TYPE... EX: Townhouse, duplex, apartment building...

... A single-family dwelling, townhouse or semi-detached house..... 01 => +2  
... A duplex, triplex or quadruplex ..... 02 => +2  
... An apartment building ..... 03  
... A rooming house ..... 04 => +2  
... A private residence for autonomous or semi-autonomous seniors.. 05 => +2  
Other (SPECIFY) ..... 98 0 => +2  
DNK / NA ..... 99 => +2

---

**Q17A:**

Q17A. Is it ... ?

... Subsidized housing - open to all..... 1  
... Subsidized housing reserved for seniors ..... 2  
... or another type of apartment buildings ..... 3  
DNK / NA ..... 9

---

**Q18:**

Q18. Do you have air conditioning in your home?

Yes..... 1  
No..... 2 => Q19  
DNK / NA ..... 9 => Q19

---

**Q18A:**

Q18A. Which rooms are air-conditioned? DO NOT READ CHOICES - PROBE

Room..... 01  
Kitchen / dining room / Living room..... 02  
OTHER (SPECIFY)..... 98 0  
USE A MOBILE UNIT ..... 96 X  
ALL OF THEM..... 97 X  
DNK / NA ..... 99 X

---

**Q19:**

To conclude, I would like to ask you some questions on your state of health and living conditions. Q19. Generally speaking, would you say that your state of health is:

Excellent ..... 1  
Very good ..... 2  
Good ..... 3  
Average ..... 4  
Poor ..... 5  
DNK / NA ..... 9

---

**Q20:**

Q20. During the last 12 months, have you spent one or more nights as a patient in a hospital, or at the emergency department?

- Yes.....1
- No.....2
- DNK / NA .....9

**Q21:**

Q21. During the summer, can you go out...

- ... alone without difficulty? .....1
- ... alone with difficulty?.....2
- ... only with the help of another person? .....3
- ...or are you totally incapable of leaving your home? .....4
- No answer.....9

**Q22:**

Q22. To which age group do you belong to? Would that be ...

- ... 65 to 74.....1
- ... 75 to 84.....2
- ... or 85 years or older? .....3
- No answer .....9

**Q23:**

Q23. Which language do you most often speak in the home?

- French .....01
- English.....02
- Other (SPECIFY) .....98 O
- No answer .....99

**Q24:**

Q24. In total, including yourself, how many persons currently live in your household?

- ATTENTION ! THE ANSWER MUST NOT BE BELOW <Q\_A >  
 \$E 1 20
- Number of people (1 - 6) .....98
  - Don't know.....98
  - REFUSE.....99

**Q25:**

Q25. What is the highest level of education that you have completed?

If need be, refer to the code booklet to establish equivalences.

- No education .....01
- Between grade 1 and grade 6 (elementary).....02
- Between grade 7 and grade 12 (high school) .....03
- Trade school (professional high school) .....04
- CEGEP or college.....05
- University.....06
- Other, specify .....98 O
- No answer .....99

**Q26:**

Q26. Concerning your financial situation, would you say that your income is ...

- ... Completely sufficient to satisfy your needs .....1
- ... Somewhat sufficient .....2
- ... Somewhat insufficient.....3
- ... Or completely insufficient to satisfy your needs? .....4
- No answer .....9

**SEXE:**

SEXE. NOTEZ LE SEXE DU REpondANT

MALE .....1  
FEMALE.....2

**MERCI:**

MERCI. We sincerely thank you for your time and cooperation.  
FOR ANY COMMENTS CONCERNING THIS INTERVIEW PLEASE CONTACT OUR OFFICE AT  
THE FOLLOWING NUMBER: 1-800-636-3106, # 104  
Press 1 to COMPLETE the questionnaire .....1 D

**INT98:**

I am sorry, but no one in your household matches the target criteria for our survey.  
Thank you very much for the time you have given us. I have no further questions to ask  
you.

ENTREVUE COMPLÉTÉE DURÉE DE L'ENTREVUE : \$T  
\$PRONTO STOP

=> +1  
if NON VER\_B=1

COMPLETED INTERVIEW (SHORT) .....CC D => /FIN

**INT99:**

We sincerely thank you for your time and cooperation. FOR ANY COMMENTS CONCERNING  
THIS INTERVIEW PLEASE CONTACT OUR OFFICE AT THE FOLLOWING NUMBER: 1-800-  
636-3106 ext. 104

COMPLETED INTERVIEW (LONG) DURATION : \$T  
\$PRONTO STOP

COMPLETED INTERVIEW (LONG)..... CO D => /FIN



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