CANADA FOODSTUDY

TECHNICAL REPORT – WAVE 2 (2017)

FEBRUARY 25, 2019 (DRAFT – FINAL VERSION FORTHCOMING)

UNIVERSITY OF WATERLOO
FACULTY OF APPLIED HEALTH SCIENCES
School of Public Health and Health Systems

SUGGESTED CITATION

HAMMOND D, WHITE CM, REID JL. CANADA FOOD STUDY:
TECHNICAL REPORT – WAVE 2 (2017). UNIVERSITY OF
WATERLOO. FEBRUARY 2019. AVAILABLE AT
http://canadafoodstudy.ca/studydocs

CONTACT
DAVID HAMMOND PHD
PROFESSOR
SCHOOL OF PUBLIC HEALTH & HEALTH SYSTEMS
UNIVERSITY OF WATERLOO
WATERLOO, ON CANADA
N2L 3G1
DHAMMOND@UWATERLOO.CA
WWW.DAVIDHAMMOND.CA

RESEARCH TEAM

PRINCIPAL INVESTIGATOR

David Hammond, PhD, School of Public Health and Health Systems, University of Waterloo

CO-INVESTIGATORS

Joel Dubin, PhD, Department of Statistics & Actuarial Science, and School of Public Health and Health Systems, University of Waterloo

Guy Faulkner, PhD, School of Kinesiology, University of British Columbia

Erin Hobin, PhD, Public Health Ontario

Sara Kirk, PhD, School of Health & Human Performance, Dalhousie University

Sharon Kirkpatrick, PhD, RD, School of Public Health and Health Systems, University of Waterloo

Leia Minaker, PhD, School of Planning, University of Waterloo

Dana Olstad, PhD, Department of Community Health Sciences, University of Calgary

Zachary Patterson, PhD, Department of Geography, Planning and Environment, Concordia University

Marie-Claude Paquette, DtP, PhD, Institut National de Santé Publique du Québec, and Department of Nutrition, University of Montreal

Kim Raine, PhD, RD, FCAHS, School of Public Health, University of Alberta

Lana Vanderlee, PhD, Department of Nutritional Sciences, University of Toronto

Michael Widener, PhD, Department of Geography and Planning, University of Toronto – St. George

PROJECT MANAGERS

Jessica Reid, MSc, School of Public Health and Health Systems, University of Waterloo

Christine White, MSc, School of Public Health and Health Systems, University of Waterloo

TABLE OF CONTENTS

INTRODUCTION

The primary objective of the current study is to examine eating patterns and trends among youth and young adults in Canada. This technical report describes the methods for the second wave of data collection for a national cohort survey conducted with 1,022 participants aged 16-32 in October-December 2017. The survey is repeated annually to monitor trends in dietary patterns over time.

STUDY PROTOCOL

OVERVIEW

Data were collected via two self-completed web-based surveys between October 23, 2017 and December 11, 2017. Respondents completed a 'main survey' on dietary patterns, and two Automated Self-Administered 24-hour (ASA24) dietary assessments.

WAVE 2 SAMPLE AND RECRUITMENT

Sample Eligibility & Consent

As described in the 'Canada Food Study: Technical Report – Wave 1 (2016)',[1] the analytic sample from Wave 1 included 3,000 respondents. All respondents in the Wave 1 analytic sample were sent an email invitation for Wave 2 of the Canada Food Study, with the exception of eight respondents (n=2,992). Five of the Wave 1 respondents were excluded because they emailed after completing the main survey and indicated they did not wish to participate in further surveys; three respondents were excluded due to concerns based on bizarre and/or threatening email communication received from the respondent during Wave 1.

The email invitations were sent using SurveyGizmo software, and included a personalized link to the survey. Initial survey invitations were sent over a seven-day period, with respondents evenly distributed across the seven days using a random number sequence. In addition to the initial survey invitation, respondents were sent up to four email reminders (sent 2, 4, 7, and 10 days after the initial invitation). Upon clicking the link in the invitation, respondents were directed to the main survey, and were reminded that they should access the survey from a laptop, desktop computer or tablet. Respondents were discouraged from attempting to complete the survey via a smartphone, but some newer phone models were not restricted from doing so. Respondents were asked to enter their age; those aged 16-32 were considered eligible, and were provided with information about the study, and asked to give consent for participation.

Response Rates: Main Survey

In total, 2,992 respondents were sent an email invitation to the Wave 2 main survey. As shown in Table 1, 1,115 accessed the survey link, for a re-contact rate of 37.3%. Of those who were successfully re-contacted, 51 were

---

[1] Hammond D, White CM, Reid JL. Canada Food Study: Technical Report – Wave 1 (2016). University of Waterloo. February 2019. Available at http://canadafoodstudy.ca/studydocs

disqualified for ineligibility and 42 were excluded due to data quality concerns, for a final Wave 2 sample size of 1,022 and a follow-up rate of 34.2%.

Table 1: Main Survey Completion Outcomes (Wave 2)

	%	n
Completed	34.2%	1,022
Disqualified for ineligibility	1.7%	51
Excluded for data quality	1.4%	42
Not started	62.7%	1,877
Total		2,992

The 1,877 respondents (62.7%) who were not successfully re-contacted may not have started the main survey for a number of possible reasons, including disinterest, or failure to receive the email due to a spam filter, bounced email, or unsubscription from SurveyGizmo. SurveyGizmo identified that 18 respondents (1.0% of those who did not start the survey) did not receive the invitation email because it was "bounced" by the respondent's email server; others may have been redirected to a junkmail folder. Additionally, 21 of the respondents had previously unsubscribed to SurveyGizmo emails (after completing the main survey in Wave 1), so their Wave 2 invitations were not delivered by the SurveyGizmo system.

Respondents were discouraged from attempting to complete the main survey via a smartphone, but some models of phones, particularly newer models from the past year, were not restricted from doing so. A total of 34 respondents were disqualified for accessing the survey using a mobile browser; however, SurveyGizmo data estimates that an additional 119 individuals were able to complete the survey using a mobile brower (n=116 in the analytic sample). See page 7 for further discussion of smartphone use.

Initially, 62 respondents were disqualified for smartphone use (n= 55) or entering an ineligible age (n=7). Respondents disqualified for smartphone use (n=55) or who notified study personnel about a missed digit in their age (n=2) were contacted by email and asked to provide an alternative email address to which a new invitation could be sent and used to re-access the survey from an eligible device (laptop, desktop or tablet). Overall, 32 respondents (30 disqualified for smartphone use; 2 disqualified for age entry error) provided an alternative email address to which the new invitation was sent; 24 of these respondents utilized the new invitation to eventually complete or partially complete the survey. Respondents whose invitations were recognized as 'bounced' by the SurveyGizmo system and who had provided an alternative email address during Wave 1 were sent a new invitation to the alternative address (n=4; one of which also bounced; two completed the survey; and one did not start the survey). Respondents whose invitations were recognized as bounced by the SurveyGizmo system and who provided a back-up mobile phone number during Wave 1 were sent a text message and asked to provide an alternative email address (n=6), but half of the text messages failed to send and no responses were received from participants contacted in this manner. Ultimately, 39 respondents remained with a final disposition of 'disqualified' (34 for smartphone use, 5 for ineligible age). An additional 12 respondents did not enter a response for consent or for their age and thus were also considered disqualified.

Among the 1,115 respondents who accessed the main survey link, 91.6% completed the survey; 3.5% were disqualified, for accessing the survey on a smartphone (n=34), ineligible age (n=5), failure to consent (n=10) or failure to provide age (n=2).

Excluded Respondents

Respondents were excluded from the analytic sample if they terminated the survey prior to the 7-day food source frequency questions (n=27).

As a data integrity check, midway through the main survey respondents were asked to select the current month from a list. The month selected by the respondent was compared to the month when the survey was submitted. Respondents with month discrepancies were excluded from the analytic sample, unless the selected month was within two days of the date the survey was submitted (e.g., selected November but submitted on October 30th or 31st), or the selected month was the month preceding the submitted date (e.g., selected October but submitted in November) as the respondent may have paused the survey for days and then returned to submit it. Overall, 5 respondents were excluded from the analytic sample due to discrepancies with the month selected. An additional 10 respondents were excluded from the analytic sample due to other data quality concerns (i.e., incongruent responses for province and city).

The final analytic sample included 1,022 respondents.

LANGUAGE

During Wave 1 recruitment, respondents in Montreal were asked whether they would prefer to receive communication about the study in French or English. Wave 2 email invitations were sent in English or French according to the language preference expressed at Wave 1. Overall, 9.3% of respondents (n=95) were sent the Wave 2 email invitation in French.

After clicking the survey link in the email, all respondents were, by default, shown the survey in English, but they could click a button at the top of the screen to change the language to French. Overall, 3.6% of Wave 2 respondents (n=37) completed the survey in French. Less than half (39%) of the respondents who initially indicated they would prefer to receive French communication actually changed the survey language to French.

PARTICIPANT COMPENSATION

Monetary incentives have been shown to increase response rates and to decrease response bias among sub-groups commonly under-represented in surveys, including disadvantaged subgroups. Upon completion of both surveys, all respondents were offered a $20 Interac e-transfer, or alternatively, a $20 e-giftcard to either Amazon.ca, Chapters/Indigo, Cineplex, or Starbucks.

ETHICS CLEARANCE

The study was reviewed by and received ethics clearance through a University of Waterloo Research Ethics Committee (ORE# 21631).

STUDY CONTENT

Participants were asked to complete two online surveys: a main survey on dietary patterns, and two Automated Self-Administered 24-hour (ASA24) dietary assessments.

MAIN SURVEY

Email invitations with personalized links to the main survey were sent over a seven-day period, with respondents evenly distributed across the seven days using a random number sequence. The randomized number sequence of 1-7 (days) was generated from www.random.org, and assigned repeatedly to a list of eligible respondents from Wave 1 (with the list sorted ascending by the date/time the main survey was first accessed during Wave 1). Participants were also sent a maximum of four email reminders (sent 2, 4, 7, and 10 days after the initial invitation).

The main survey included questions about dietary behaviours, including food shopping patterns, eating outside of the home, meal planning and preparation, weight loss and diet monitoring behaviours, and food security. The survey also included measures of nutrition knowledge, perceived health, perceived diet quality, perceived availability and use of nutrition information in restaurants, and attitudes and knowledge related to food preparation skills, as well as exposure to or participation in specific interventions or policies (e.g., use of nutrition facts tables). Socio-demographic variables (e.g., age, weight, education) and other health behaviours were also assessed, including sleep patterns, smoking and alcohol use.

ASA24 DIETARY RECALL

At the end of the main survey, participants were redirected to a US National Institutes of Health website to complete a 24-hour dietary recall. The dietary recall data were collected and analyzed using the Automated Self-Administered 24-hour Recall (ASA24®) system, version ASA24-Canada-2016, developed by the National Cancer Institute[2]. The intake frame was from midnight to midnight of the previous day. Respondents could complete reporting in multiple sessions, but were to finish within 32 hours. Modules for 'location', 'ate with' and 'supplements' were turned on in the ASA24 system.

Participants were sent a link to a second ASA24 dietary recall 4 to 10 days later, according to random assignment. A randomized number sequence of 4-10 was generated from www.random.org (7, 9, 10, 8, 4, 6, 5), and then assigned repeatedly as a block down the list of eligible respondents (with list sorted by the date/time the first ASA24 dietary recall was submitted). Participants were also sent a maximum of four email reminders to complete the second ASA24 dietary recall (sent 2, 4, 7, and 10 days after the initial invitation).

FOLLOW-UP SURVEY

Immediately after the second ASA24 dietary recall was submitted, participants were redirected back to a very brief follow-up survey that asked whether they would like to receive their $20 remuneration as an Interac e-

---

[2] National Cancer Institute. Automated Self-Administered 24-Hour (ASA24®) Dietary Assessment Tool. Available at: https://epi.grants.cancer.gov/asa24/

transfer; if they had concerns about receiving an e-transfer, they were given the alternative to receive an e-giftcard to either Amazon.ca, Chapters/Indigo, Cineplex, or Starbucks. The participants were asked for back-up contact information that could be used to re-contact participants for the next survey wave, and a few questions to determine whether they would be eligible and interested in being contacted about a related study about food and travel patterns.

QUESTIONNAIRE DEVELOPMENT

The majority of questionnaire items were drawn or adapted from national surveys or selected based on previous research. Cognitive interviewing was conducted prior to Wave 1 with 50 young adults in small groups to evaluate and improve several new items, including the food source and beverage frequency measures. The questionnaire was translated to French by Communications Parisella, etc. Inc (Montreal, QC). The content of the survey was revised for Wave 2 survey—please see survey documents.

SAMPLE INFORMATION

SAMPLE CHARACTERISTICS

As noted above, the final main survey sample included 1,022 respondents. **Table 2a and 2b** show the proportion of respondents by city.

Table 2a: Proportion of Respondents by City of Recruitment (Wave 1)

City	Unweighted % (n)	Weighted % (n)
Edmonton	17.2% (176)	16.2% (166)
Halifax	21.4% (219)	19.2% (196)
Montreal	13.0% (133)	14.2% (145)
Toronto	28.3% (289)	28.0% (286)
Vancouver	20.1% (205)	22.3% (228)
Total (n)	1,022	1,022

Table 2b: Proportion of Respondents by Current City (Wave 2)

City	Unweighted % (n)	Weighted % (n)
Edmonton	15.2% (155)	14.4% (147)
Halifax	17.7% (181)	15.7% (160)
Montreal	12.2% (125)	13.3% (136)
Toronto	26.5% (271)	25.8% (263)
Vancouver	17.6% (180)	19.8% (202)
Other	8.4% (86)	8.5% (87)
Not Stated	2.4% (24)	2.5% (26)
Total (n)	1,022	1,022

The demographic characteristics of the sample are shown in **Table 3**. An analysis was conducted to compare the sample at Wave 1 and Wave 2. Details of the analysis are provided in **Appendix A**. Briefly, the Wave 2 sample was more highly educated (more than high school, W1=82.2% vs. W2=89.1%), and included fewer current smokers (W1=17.0% vs W2=11.8%). As noted below, the age and sex distribution for the sample was weighted according to national distributions.

SURVEY WEIGHTS

Post-stratification sample weights were constructed based on 2017 population estimates from Statistics Canada's postcensal CANSIM tables.[3] For each age by sex group, weights were calculated as the population proportion divided by the sample proportion ensuring the weighted sample aligns with known population proportions (note: participants aged 16 and 32 years were grouped with those aged 17 and 31 years, respectively, due to small (<5) cell sizes). Weights were applied to the full dataset of 1,022 participants.

Table 3. Sample Demographics n=1,022

Characteristic	Unweighted % (n)	Weighted % (n)
Device for Survey Completion		
Smartphone/mobile device	11.4% (116)	10.3% (105)
Other device (laptop, desktop, tablet)	88.6% (906)	89.7% (917)
Sex		
Male	30.7% (314)	50.9% (520)
Female	69.3% (708)	49.1% (502)
Gender		
Man	30.3% (310)	50.3% (514)
Woman	68.3% (698)	48.4% (494)
Trans male / trans man	0.2% (2)	0.2% (2)
Trans female / trans woman	0.0% (0)	0.0% (0)
Gender queer / gender non-conforming	0.9% (9)	0.9% (10)
Different identity	0.1% (1)	0.1 % (1)
Not stated	0.2% (2)	0.2% (2)
Age (mean; SD)	22.6 years (SD=3.8)	24.2 years (SD=4.3)
Age Group		
16 to 18	12.9% (132)	11.3% (116)
19 to 21	33.1% (338)	19.2% (196)
22 to 25	29.9% (306)	27.7% (283)
26 to 32	24.1% (246)	41.8% (427)
Current Province		
Alberta	16.6% (170)	15.5% (159)
British Columbia	19.0% (194)	21.2% (216)
Nova Scotia	18.4% (188)	16.4% (168)
Ontario	29.7% (304)	29.5% (301)
Quebec	12.9% (132)	13.9% (142)
Other	0.9% (9)	0.9% (9)
Not stated	2.5% (25)	2.6% (27)
Race/Ethnicity (6 categories)*		
White only	47.3% (483)	48.4% (494)

---

[3] Statistics Canada. Table 051-0001 - Estimates of population, by age group and sex for July 1, Canada, provinces and territories, annual (persons unless otherwise noted), 2017. CANSIM (database). Accessed January 24, 2018. Available at: http://www5.statcan.gc.ca/cansim/a26?lang=eng&id=0510001&p2=17

Chinese only	10.4% (106)	11.3% (115)
South Asian only	7.3% (75)	8.3% (85)
Black only	5.3% (54)	5.3% (54)
Aboriginal (inclusive)	3.7% (38)	3.1% (31)
Mixed/other/not stated/missing	26.0% (266)	23.7% (242)
Data based on responses in Wave 1 (linked data)		
Student Status		
No	37.0% (378)	47.5% (486)
Yes, full-time	56.8% (580)	45.4% (464)
Yes, part-time	6.2% (63)	7.0% (72)
Not stated	0.1% (1)	0.1% (1)
Current Education (among enrolled, n=643)		
High school	7.8% (50)	10.9% (59)
CEGEP	5.9% (38)	5.1% (28)
College or trade school	16.8% (108)	17.7% (95)
University	69.4% (446)	66.2% (354)
Not stated	0.2% (1)	0.1% (0)
Educational Attainment		
High school or less	9.9% (101)	10.9% (111)
CEGEP/trade school/college (partial or complete)	20.7% (212)	20.7% (212)
University (partial or complete)	68.4% (699)	67.6% (691)
Not stated/missing	1.0% (10)	0.9% (9)
Children (incl. step-children or adopted)		
Yes	3.4% (35)	5.8% (60)
No	96.6% (987)	94.2% (962)
Don't know	0.0% (0)	0.0% (0)
Children in Household (incl. step-children or adopted)		
Yes	91.4% (32)	91.1% (54)
No	8.6% (3)	8.9% (5)
Not stated	0.0% (0)	0.0% (0)
BMI category		
Underweight	6.0% (61)	5.8% (59)
Healthy weight	59.5% (608)	58.6% (599)
Overweight	15.9% (162)	17.5% (179)
Obese	7.2% (74)	7.1% (73)
Not stated	11.4% (117)	11.0% (112)

USE OF SMARTPHONES TO COMPLETE THE SURVEY

Completion of the survey on a smartphone or other small mobile device may have implications for how respondents interact with the survey due to the device screen size. Sample characteristics by the type of device used for survey completion are shown in **Table 4**.

Table 4: Sample Demographics by Type of Device for Survey Completion (weighted)

Characteristic	Total Sample (n=1022) % (n)	Smartphone/mobile device (n=105) % (n)	Other device (laptop, desktop, tablet) (n=917) % (n)
Sex			
Male	50.9% (520)	42.3% (44)	51.8% (476)
Female	49.1% (502)	57.7% (60)	48.2% (442)
Age Group			
16 to 18	11.3% (116)	19.3% (20)	10.4% (95)
19 to 21	19.2% (196)	18.7% (20)	19.3% (177)
22 to 25	27.7% (283)	24.2% (25)	28.1% (258)
26 to 32	41.8% (427)	37.8% (40)	42.2% (387)

Race/Ethnicity			
White only	48.4% (494)	37.6% (39)	49.6% (455)
Chinese only	11.3% (115)	16.7% (18)	10.7% (98)
South Asian only	8.3% (85)	10.5% (11)	8.0% (74)
Black only	5.3% (54)	6.6% (7)	5.1% (47)
Aboriginal (inclusive)	3.1% (31)	2.2% (2)	3.2% (29)
Mixed/other/not stated/missing	23.7% (242)	26.4% (28)	23.4% (215)
BMI category			
Underweight	5.8% (59)	7.7% (8)	5.5% (51)
Healthy weight	58.6% (599)	53.8% (56)	59.2% (543)
Overweight	17.5% (179)	21.2% (22)	17.0% (156)
Obese	7.1% (73)	9.4% (10)	6.9% (63)
Not stated	11.0% (112)	7.8% (8)	11.4% (104)

ASA24 DIETARY RECALL SAMPLE

[To be updated after ASA24 data cleaning complete].

APPENDIX A: SAMPLE COMPARISON

The Wave 1 and Wave 2 samples were compared in terms of socio-demographic characteristics.

Measure	Wave 1 (weighted)	Wave 2 (weighted)
Highest level of education *(S1A_educ_level_DV)*	High school or less: 17.8% CEGEP/Trade/college/university (partial or complete): 82.2% *(excludes not stated)*	High school or less: 11.0% CEGEP/Trade/college/university (partial or complete): 89.1% *(excludes not stated)*
Current student *Are you currently a student? (S1A_student)*	Yes: 59.8 No: 40.2% *(excludes not stated)*	Yes: 52.5% No: 47.6% *(excludes not stated)*
BMI category *(S1A_BMI_class_DV)*	Underweight: 7.1% Normal weight: 62.0% Overweight: 21.2% Obese: 9.8% Percent with Missing: Underweight: 5.8% Normal weight: 50.8% Overweight: 17.3% Obese: 8.0% Missing: 18.1%	Underweight: 6.5% Normal weight: 65.8% Overweight: 19.7% Obese: 8.0% Percent with Missing: Underweight: 5.8% Normal weight: 58.6% Overweight: 17.5% Obese: 7.1% Missing: 11.0%
Perceived weight status *Do you consider yourself… (S1A_wt_perceive)*	Overweight: 26.0% Underweight: 9.6% Just about right: 64.5% *(excludes not stated)*	Overweight: 25.8% Underweight: 9.4% Just about right: 64.9% *(excludes not stated)*
Household food security status *(S1A_secure_hhldstatus_DV)*	Food Secure: 70.9% Moderately Food Insecure: 19.5% Severely Food Insecure: 9.6% Percent with Missing: Food Secure: 65.4% Moderately Food Insecure: 18.0% Severely Food Insecure: 8.9% Missing: 7.8%	Food Secure: 74.2% Moderately Food Insecure: 16.4% Severely Food Insecure: 9.4% Percent with Missing: Food Secure: 70.1% Moderately Food Insecure: 15.5% Severely Food Insecure: 8.9% Missing: 5.6%
Smoking status *(S1A_smk_status_DV)*	Current smokers (last 30 days, >=100 cigs): 17.0% Former smokers (not last 30 days, >=100 cigs): 8.6% Experimental (last 30 days, <100 cig): 4.6% Never smoked (includes past experimental): 69.8% *(excludes not stated)*	Current smokers (last 30 days, >=100 cigs): 11.8% Former smokers (not last 30 days, >=100 cigs): 8.1% Experimental (last 30 days, <100 cig): 4.2% Never smoked (includes past experimental): 75.9% *(excludes not stated)*
Cannabis use *In the last 12 months, how often did you use marijuana or cannabis (a joint, pot, weed, hash)? (S1A_mj_use)*	Never used: 44.8% Former user (not in past 12 months): 18.1% Current user (used in past 12 months): 37.0% *(excludes not stated)*	Never used: 43.0% Former user (not in past 12 months): 21.0% Current user (used in past 12 months): 38.1% *(excludes not stated)*