



Research article

Learning about financial health in Canada

Adam Metzler^{1,*}, Yuhao Zhou¹ and Chuck Grace²

¹ Department of Mathematics, Wilfrid Laurier University, Waterloo, ON, Canada

² Ivey Business School, Western University, London, ON, Canada

* **Correspondence:** Email: ametzler@wlu.ca.

Supplementary

Core questions

This appendix describes our approach to striking a balance between (i) maximizing the amount of information that the algorithm considers in each individual year and (ii) ensuring that we can make comparisons through time, as described in Section 2.2.

Of the 98 distinct questions that were asked at any point over the 11 years, 14 of them were asked in every single year. Unfortunately that list is not ideally suited to our purposes (described in Section 2.2), because (i) it includes one question whose responses are not amenable to processing by the clustering algorithm¹, (ii) it does not include the question that asks respondents about their household income (this question was not asked in 2009, but was asked in every subsequent year) and (iii) it does not contain any questions from the debt category (no question in that category was asked in more than 8 different years). In order to address these issues, we create a list of so-called “core questions” and, when applying the clustering algorithm to a given year’s responses, we consider the responses to all of the core questions that were asked in that year. This approach strikes an appropriate balance between the two extremes described in the previous paragraph.

¹ The question asked respondents what they would do if they won a specific amount of money in the lottery. From a list of 12 potential uses for the windfall (e.g. contribute to a savings plan, go on vacation) they were asked to rank their top 5 choices. It was not clear to use that responses could be converted into a data type that could be processed by the clustering algorithm (i.e. a low-dimensional vector of categorical, ordinal and/or numerical variables), and response patterns among respondents tended to be inconsistent (e.g. many respondents selected at least one, but fewer than five, items).

The core list is described in the following table. In order to construct it, we began with the 14 questions that were asked in every year, removed the one whose responses led to non-standard data types, and added both the household income question and one question from the debt category (that question that was asked most frequently, had the lowest correlation with other core questions, and had responses that led to standard data types).

It is important to note that the available responses for some of the questions vary through time. For example, both the age brackets and income brackets that were available to respondents changed at some point during the 11-year period. Because we are treating responses to both questions as ordinal variables, and because the brackets are broadly similar in both cases, we do not believe that changing brackets is an issue for our analysis. Indeed, regardless of the exact age or income brackets used in a given year, the fact remains that in every year we have an ordinal variable that can distinguish older respondents from younger respondents, and one that can distinguish lower-income respondents from higher-income respondents.

Table 1. List of core questions and responses.

Questions	
Q1	<p>If your pay cheque (i.e. payment of salary or wages) was delayed for a week, how difficult would it be to meet your current financial obligations?</p> <ul style="list-style-type: none"> • Seven-point scale from “very manageable” to “very difficult”.
Q2	<p>What is the most important to you?</p> <ul style="list-style-type: none"> • Select one of several options. In 2009 the 3 available options were “health benefits”, “education funding” or “higher wages”. By 2019 the list had expanded to also include “better retirement funding”, “more time off”, “work/life balance” and “healthy work environment”.
Q3	<p>On average, what percentage of your paycheque do you put toward savings?</p> <ul style="list-style-type: none"> • Select one of six options: 0%, 1–5%, 6–10%, 11–15%, 16–20%, more than 20%.
Q4	<p>How soon do you think that you will be completely debt free?</p> <ul style="list-style-type: none"> • Select one of six options: less than 1 year, between 2–5 years, between 5–10 years, between 10–20 years, never.
Q5	<p>Are you trying to save more now than a year ago?</p> <ul style="list-style-type: none"> • Select one of two options: yes or no.
Q6	<p>Over the next year, do you think the economy in your town or city will:</p> <ul style="list-style-type: none"> • 7-point scale from “strongly worsen” to “strongly improve”.
Q7	<p>How confident are you that your pay and the applicable deductions and benefits are accurate each payday?</p> <ul style="list-style-type: none"> • 7-point scale from “strongly confident” to “strongly unconfident”.
Q8	<p>How much money do you think you will need to save in order to retire comfortably?</p> <ul style="list-style-type: none"> • Select one of several options. In 2009, the available 7 options were: \$250,000 or less, \$250,001 to \$500,000, \$500,001 to \$750,000, \$750,001 to \$1,000,000, \$1,000,001 and \$3,000,000, \$3,000,001 to \$5,000,000, More than \$5,000,000. • In 2012, the 7 options were: None, \$1 to \$500,000, \$500,001 to \$1,000,000, \$1,000,001 to \$1,500,000, \$1,500,001 to \$2,000,000, \$2,000,001 to \$3,000,000, More than \$3,000,000. • In 2017, the 15 options were: None, \$1 to \$500,000, \$500,001 to \$600,000, \$600,001 to \$700,000, \$700,001 to \$800,000, \$800,001 to \$900,000, \$900,001 to \$1,000,000, \$1,000,001 to \$1,100,000, \$1,100,001 to \$1,200,000, \$1,200,001 to \$1,300,000, \$1,300,001 to \$1,400,000, \$1,400,001 to \$1,500,000, \$1,500,001 to \$2,000,000, \$2,000,001 to \$3,000,000, More than \$3,000,000.
Q9	<p>Please indicate your age.</p> <ul style="list-style-type: none"> • Select one of several options. Prior to 2012 the five options were under 18, 18–34, 35–54, 55–65, over 65; since then the seven options have been under 18, 18–29, 30–39, 40–49, 50–59, 60–65, over 65.

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 Questions

- Q10 How many employees work at your organization in Canada?
- Select one of several options: None, 1–19 employees, 20–49 employees, 50–99 employees, 100–199 employees, 200–499 employees, 500–999 employees, 1,000–1,999 employees, 2,000–9,000 employees, 10,000 employees or more.
 - In 2012 and onward, the option “2,000–9,000 employees” was split into two answers: 2,000–4,999 employees and 5,000–9,999 employees.
- Q11 Please indicate your gender.
- Select one of two² options: male or female.
- Q12 Please indicate your total household income.
- In 2011 the 18 options were: Under \$5,000, \$5,000 to \$9,999, \$10,000 to \$14,999, \$15,000 to \$19,999, \$20,000 to \$24,999, \$25,000 to \$29,999, \$30,000 to \$34,999, \$35,000 to \$39,999, \$40,000 to \$44,999, \$45,000 to \$49,999, \$50,000 to \$59,999, \$60,000 to \$69,999, \$70,000 to \$79,999, \$80,000 to \$89,999, \$90,000 to \$99,999, \$100,000 to \$124,999, \$125,000 to \$149,999, \$150,000 and over.
 - In 2012, the intervals changed and the options were Zero, \$1 to \$24,999, \$25,000 to \$36,999, \$37,000 to \$49,999, \$50,000 to \$59,999, \$60,000 to \$69,999, \$70,000 to \$79,999, \$80,000 to \$99,999, \$100,000 to \$124,999, \$125,000 to \$149,999, \$150,000 to \$199,999, \$200,000 to \$249,999, \$250,000 and over.
 - In 2019, the intervals were changed again to: None, \$1 to \$24,000, \$25,000 to 37,000, 37,000 to 50,000, 50,000 to 59,000, \$60,000 to 70,000, \$70,000 to \$80,000, \$80,000 to \$100,000, \$100,000 to \$110,000, \$110,000 to \$120,000, \$120,000 to \$130,000, \$130,000 to \$140,000, \$140,000 to \$150,000, \$150,000 to \$160,000, \$160,000 to \$170,000, \$170,000 to \$180,000, \$190,000 to \$200,000, \$200,000 to \$250,000, \$250,000 to \$500,000, >\$500,000.
- Q13 Please indicate which province or territory you live in.
- Select one of 13 options: 10 provinces plus 3 territories.
- Q14 Please indicate your family status.
- Select one of 4 options: married with children, married without children, single with children, single without children.
- Q15 Please tell us your employment status.
- (2009–2010) Select one of 4 options: Employed full-time, Employed part-time, Contract worker, Self-employed.
 - (2011–2013) Select one of 3 options: Employed full-time, Employed part-time, Contract worker.
 - (2014–2017) Select one of 6 options: Full-time employee, Part-time employee, Contract worker, Retired, Student, Not currently employed.
 - (2018–2019) Select one of 7 options: Select one of 6 options: Full-time employee, Part-time employee, Contract worker, Self-employed, Retired, Student, Not Currently employed.
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² Beginning in 2020 the survey contains a third option “non-binary”.