Health Canada / Santé Canada

Motivators and barriers to participation in government-led participatory research/citizen science

Final Report

Prepared for Health Canada

Supplier Name: Nanos Research
Contract Number: CW2269369
Contract Value: $119,560.67 (including HST)
Award Date: 2022-12-15
Delivery Date: 2023-08-11

Registration Number: POR 117-22

For more information on this report, please contact Health Canada at: HC.cpab.por-rop.dgcap.SC@canada.ca.

Ce rapport est aussi disponible en français.

Canada

Motivators and barriers to participation in government-led participatory research/citizen science Final Report

Prepared for Health Canada by Nanos Research

August 2023

Health Canada commissioned Nanos Research to conduct a public opinion survey to support the use of citizen science to address government and departmental science and research priorities, as well as Open Science initiatives. A total of 4,702 Canadians were surveyed using an online panel to reflect the Canadian population. The online survey was conducted between March 16th and March 30th, 2023. Four focus groups were also conducted on March 21st and 23rd, 2023. This publication reports the findings of this research.

Table of Contents

Executive summary

A. Background and objectives

Health Canada has a mandate to help Canadians maintain and improve their health, supported by science and research. There is increasing interest in better engaging the public in these research initiatives; public volunteers who may or may not have any background in science. These volunteers might be involved in data collection (e.g., collecting or contributing samples, recording observations, installing environmental sensors on their property or home), supporting the analysis of data, or sharing their expertise or lived experience to help with the research project design or with the interpretation of the results. This collaborative approach to research between the general public and federal scientists is called participatory research or citizen science.

Researchers with Health Canada investigate and study complex issues, which often requires a large amount of timely data to address the issues adequately. This is often logistically challenging and costly to attain due to Canada's immense size and diversity in environments and people. However, there is evidence to suggest that participatory research/citizen science could prove the ideal solution to these challenges for the government. Participatory Research/citizen science can not only help meet Health Canada's data needs, but also support Open Science objectives by directly involving the public, improving scientific literacy and garnering buy-in and trust from the public. This multitude of benefits has led governments and organizations around the world to find great success in adopting participatory research/citizen science. However, Health Canada is lagging behind with relatively few formal participatory research/citizen science projects having been undertaken, and those that have, being conducted without formal guidance, consistency or infrastructure.

The success of participatory research/citizen science in the context of Health Canada will rely on participation from a wide and diverse range of Canadians to ensure that the data that is collected and the resulting decisions or policies, reflect the diversity of the Canadian population. However, international research has shown that, typically, participation in citizen science/participatory research projects does not reflect the demographics of the population. Other forms of public engagement have also seen challenges related to reaching Canadians, especially those in groups that are traditionally underrepresented in research (including rural Canadians, visible minorities and low-income Canadians). This results in data and research outcomes that may not be relevant especially within the context of health, to those not reflected among the participants.

To that end, Health Canada was interested in conducting public opinion research to understand if, how, and why Canadians would be willing to participate in government-led citizen science/participatory research projects. Understanding the motivators and barriers to reaching and engaging traditionally underrepresented groups (and Canadians as a whole) will enable Health Canada to increase participation from a more diverse sample of the population and create a formal strategy and structure to engage these individuals in participatory research/participatory research projects. Specifically, Health Canada is looking to explore what is needed to increase adoption of the participatory research/citizen science approach and to help develop the required guidance and infrastructure to better ensure diverse representation among participants.

Purpose and objectives

The research will inform efforts to support the use of citizen science to address government and departmental science and research priorities, as well as Open Science initiatives. The findings will also be used to support a number of future initiatives to include and collaborate with different communities, and to actively seek out and incorporate the views of Canadians, including helping Health Canada researchers to recruit and attract collaborators and respondents from the public.

The specific research objectives were as follows:

- Determine the awareness, familiarity and experience of Canadians with regards to participatory research/citizen science;

- Understand the willingness of Canadians to participate in government-led participatory research/citizen science projects on topics related to health;

- Identify drivers of engagement for traditionally underrepresented demographics, including visible minorities, rural and low-income populations; and,

- Determine engagement practices to reach underrepresented demographics.

B. Methodology

Please see Appendix A for a detailed description of the methodology for the research.

Qualitative phase

Nanos conducted four online focus groups among 36 Canadians, 18 years of age and older, randomly recruited, who self-identified as low-income (household income of less than $40K), a visible minority and/or from a rural community as defined by Health Canada. The groups were conducted on March 21st and 23rd, 2023. Three (3) focus groups were conducted in English (with participants from British Columbia, Ontario, and the Prairies) and one (1) in French (with participants from Quebec).

Readers should note that focus group research is qualitative and directional in nature and must not be used to estimate the numeric proportion or number of individuals in the population who hold a particular opinion. The focus group research allowed Health Canada to gauge the views and gather in-depth insights from their specific communities and profiles of interest.

The research was commissioned by Health Canada and was conducted by Nanos Research.

Quantitative phase

The survey is comprised of 4,703 Canadians, 18 years of age and older, including sub-populations of low-income individuals (household income of less than $40K), individuals residing in rural areas and visible minority populations. The survey was conducted across Canada in each province and territory between March 16th and 30th, 2023. The results were weighted by province, age and gender, using 2021 Census data.

The survey sample was drawn from two sources:

1) The Nanos Probability Panel, which contains about 50,000 Canadians who were randomly recruited to join the panel by land- and cell-lines with live agents.
2) Random recruitment by land-and cell-lines and administered the survey online.

The resulting sample contains Canadians who were all randomly recruited by telephone; thus it is a probability sample and allows a margin of error to be associated with the research. The margin of error for a random survey of 4,703 Canadians is plus or minus 1.4 percentage points, nineteen times out of twenty (a confidence interval of 95 per cent). All respondents self-administered the survey online.

C. Contract value

The contract value was $119,560.67 (including HST)

Supplier name: Nanos Research
PWGSC contract number: CW2269369
Original contract date: 2022-12-15
For more information, contact Department at HC.cpab.por-rop.dgcap.SC@canada.ca.

D. Political neutrality statement and contact information

This certification is to be submitted with the final report submitted to the Project Authority.

I hereby certify, as a Representative of Nanos Research, that the deliverables fully comply with the Government of Canada political neutrality requirements outlined in the Government of Canada's Policy on Communications and Federal Identity and Directive on the Management of Communications. Specifically, the deliverables do not include information on electoral voting intentions, political party preferences, party standings with the electorate, or ratings of the performance of a political party or its leaders.

Nik Nanos
Chief Data Scientist and President
Nanos Research
nik@nanos.co
(613) 234-4666 x237

E. Key findings

Awareness, familiarity and experience of Canadians with regards to participatory research/citizen science

Familiarity and awareness of participatory research or citizen science among Canadians is low. Few survey respondents have heard of the terms on their own (18% unprompted). When the methodology is explained, a small percentage more are familiar (22%), but the majority are unfamiliar (54%). Participation experience is similarly low (11%) even when prompted with examples illustrating what these projects may entail.

Highly engaged community members (defined as those who did four or more community/civic engagement activities in the past year) are more likely to report being aware of participatory research/citizen science prior (30%) than low/moderately engaged Canadians (1-3 community/civic engagement activities in the past year)(16%) or non-engaged Canadians (did not do any of the listed community/civic engagement activities in the past year)(7%).

Focus group participants felt the terms 'participatory research' and 'citizen science' accurately describe the concept, and a majority preferred the term 'citizen science' over 'participatory research', noting it was clearer what the term represents and that they felt the term was more inclusive.

Specific project examples seem to be more familiar to focus group participants than the general category of this research methodology alone. There may be a need to provide substantial detail about what the projects entail and the level of participation expected in order to garner interest.

There is also a need to promote participatory research to the public, especially to those who are not as engaged in their communities, who for the most part is not familiar with this type of research. It will be key to demonstrate examples of what this methodology entails, as well as how they can get involved.

Willingness to participate in participatory research/citizen science projects

A majority of surveyed Canadians are at least moderately interested in participating in a future government-led participatory research or citizen science project (81%). When asked why they indicated they were interested in participating:
- Those who are interested in participating (score of 7-10) most often mentioned that they want to make a difference and help their community (17%), and that science is important, and they want to support and advance science (11%).
- Those moderately interested (score of 4-6) most often said they were too busy and did not have time (21%) and that it would depend on whether the subject interested them (17%).
- Those not interested (score of 0-3) most often mentioned being too busy and not having time (23%), that they do not trust the government and believe it would be biased (15%), that they are just not interested and/or no topics interest them (14%) and that they do not have the physical capabilities to volunteer currently (10%).

When asked what kinds of topics they would be interested in, surveyed Canadians most often mentioned wanting to participate in anything where they can learn or contribute their perspective (16%), biology/ecology (12%), climate change (8%), and environmental health (6%). Among health-related topics, respondents are most interested in projects related to well-being (64%), the healthcare system (62%), food and nutrition (58%), environmental health (56%) and climate change (52%). In the focus groups, topics of interest frequently mentioned were the environment, health, education, public services, quality of life, financial literacy, and sports.

Respondents with an interest in science (those who agree that they would like to know more about science) are more likely to be at least moderately interested in participating in a future government-led participatory research/citizen science project (83% score 4-10) than those who would not like to learn more about science (54%). The same observation can be noted for survey respondents who are comfortable with science (those who agree that they are reasonably confident they could contribute to science research) (88%; 70% of those who are not reasonably confident in their ability to contribute) and those who agree that they generally understand science concepts when they are explained to the general public (82%; 64% of those who do not generally understand science concepts).

It appears as though there is a high degree of interest in government-led participatory research/citizen science projects on health-related topics, but participation may be limited to those most interested in the specific subject-area of the study or those who have some interest in or comfort level with science in general.

Motivator and barriers to participation in participatory research/citizen science

The biggest unprompted motivators for surveyed Canadians to participate in government-led participatory research or citizen science project were being able to contribute, help society, science and their community (22%), an interesting subject or an interest in the outcome (17%) and a reward or financial incentive (gift card, honorarium, etc)(14%). After prompting with a list of potential motivators, survey respondents were most likely to be encouraged to participate by contributing to a topic of importance or interest to them (70%), having the ability to gain insights or learn more about their health, and receiving follow up communications on the results of the project (55% each). Close to four in ten say receiving a monetary incentive (42%) or learning more about the topic (38%) would very much encourage them to participate. Advertising and promoting the projects and the provision of incentives were top suggestions to encourage others to participate.

In terms of motivators, non-engaged surveyed Canadians are more likely to mention a reward or incentive unprompted (19%; 10% of highly engaged Canadians). When prompted with a list of potential motivators, Canadians who are highly civically engaged are more likely to say that contributing to a topic of interest or importance to them would very much motivate them (80%) than those with no engagement (59%). They are also more likely to be very motivated by connecting with other participants (33; non-engaged: 20%), providing support to the organization leading the project (32%; non-engaged 22%), learning more about the project topic (45%; non-engaged: 28%), a hands-on workshop (38%; non-engaged: 28%), having an opportunity to connect with science experts (40%; non-engaged: 30%) and follow-up communications about the results of the project (64%; non-engaged: 45%).

Survey respondents who are reasonably confident they could contribute to science research are more likely to be motivated to participate by the opportunity to provide support to the organization leading the organisation (30%) and the opportunity to connect with science experts (40%), than those who are not confident (20% and 21% respectively).

Learning more about the project topic (39%), having an opportunity to connect with science experts (35%), the ability to gain insights and learn more about their own health (57%), follow-up communications on the results of the project (57%), and regular support from the project organizers (31%) were key motivators for surveyed Canadians who are interested in knowing more about science. Those not interested in learning more about science were less motivated to participate across most measures but were more interested in gaining insights and learning about their own health (33%) and receiving follow-up communications (34%) than learning about a topic (19%), getting support from project organizers (16%) or connecting with science experts (12%).

Asked what the biggest motivators for them would be to participate in a participatory research or citizen science project, focus group participants often mentioned their level of interest in the topic or purpose of the project, whether there is a financial incentive, and the social aspect, such as the potential to participate with their family.

Having the project focus on a topic of interest is a big motivator for the majority of Canadians. Among civically minded Canadians, the altruistic contribution to their community or science was noted. Financial incentives seemed to also be important especially for certain demographic groups. These findings also indicate that those already engaged civically are more likely to participate and be interested in participating in citizen science projects. While less motivated, those un-engaged may be motivated by a subject matter of interest to them or an opportunity to receive the results.

Those who are interested in science are more motivated to participate overall than those uninterested in science. Among the interested group, the opportunity to learn and connect with others is much more important and they are willing to put more effort into the projects. Those less interested in science or less confident with science concepts and participation are more likely to be motivated by getting insights or learning about their <u>own</u> health.

In terms of unprompted barriers to participation, Canadians most frequently mentioned: the time commitment and their availability (53%); accessibility issues including mobility issues or age (9%); distance, transportation needs and location of the project (8%); and if the project was not enjoyable or too difficult (8%). Once prompted with a list of potential barriers, not having enough detail about what is expected from participants at the start of a project (41%), not having enough detail about how the results will be used (36%), privacy concerns (33%) and a lack of spare time (32%) were most often rated as very much preventing them from participating in a future project.

Regarding barriers to participation, substantial reading of training being required is seen as a bigger barrier to participation by non-civically engaged surveyed Canadians (28%) than those who are highly engaged (18%), as well as having to interact with other participants and/or science experts (12%; highly engaged: 2%). Surveyed Canadians who disagree that they would like to know more about science are more likely to say substantial reading or training required for participation would be very much a barrier to them (40%) than those who agree (23%), as well as having to interact with other participants and/or science experts (16%; 6%). Canadians who generally do not understand science concepts when they are explained to the general public (25%) are more likely than those who do understand (9%) to say that having to learn to use new instruments, tools and /or technology would very much prevent them from participating.

In the focus groups, barriers to participating in a participatory research or citizen science project were noted as time and availability, including the time commitment required for a project, the location of the project and if transportation was needed, as well as required access to or knowledge using any required technology. The level of difficulty related to participating, their own perceptions of science and their qualifications, and privacy concerns or concerns related to their anonymity were also noted as barriers.

Prompted specifically on what their concerns would be related to a participatory research or citizen science project, focus group participants most often mentioned privacy and anonymity concerns, including knowing how their information will be used, who will have access to it and how it may be analyzed or shared. Other concerns mentioned were the integrity of the data and ensuring the project is legitimate, as well as meeting the time commitments.

All focus group participants agreed that anonymity is important, especially for potentially sensitive topics such as mental health. They noted that if their anonymity could be assured and the purpose of the project was

important, then generally they would feel comfortable sharing almost anything, with the exception of a few participants who said they would still not feel comfortable sharing information related to their finances or their personal medical information.

Providing flexibility for when, how frequently, and/or how long a participant must commit to a project, may lessen the barrier for many potential participants. However, while the biggest barriers for most topics might be the time availability of participants, the project details, knowing what information will be collected and privacy considerations appear to be equally important. As aforementioned, this information, with adequate detail, should be provided in the project invitation and promotion. Those less interested in science or less confident with science concepts and participation are more likely to be dissuaded from participating if it had substantial requirements either in training and reading or in using new technologies.

The type of participatory research or citizen science project may also influence interest in participation. Survey respondents were most interested in participating in a project where they respond to a survey or enter data in one-time only (80% were interested; score of 7-10 out of 10). Interest was lower for projects that required longer time commitments or more involvement from participants, such as leaving their home to collect and share samples at a regular interval (45%), logging into an online platform to add data daily over the course of a few weeks (48%) or logging something they encounter into an online app over several months or years (47%). Just over four in ten were interested in participating in a project involving passive data collection where information is collected via an app with their consent for a set period of time (41%).

Overall, survey respondents who are highly engaged in their communities have a higher level of interest in participating overall (70% vs 56% for those who are moderately engaged and 47% of those who are not engaged), as well as in participating in specific types of projects, including projects where they will be asked to log into an online platform daily to add data in order to track a change over time for a few weeks (57%; non-engaged: 39%), where they encounter something an log into an online app over a period of months of years (56%; non-engaged: 39%), or a project where they help provide context about what data already collected might mean to their community (71%; non-engaged: 42%).

In the focus groups, participants were prompted with various examples of potential projects. They were generally interested and saw little to no barriers to participating in a project that requires passive participation, such as installing an air quality sensor in their home, or one that would require more involvement such as submitting a photo of their cleaning products. A majority of participants were also interested in projects that would support the interpretation of data or results with their own experiences or local knowledge, but some added that it would depend on the topic or time commitment required. There was less interest in a project with more regular or ongoing involvement. Those who were not interested or said that it would depend, mentioned the project sounded invasive, privacy was a concern, or they would need to know more about the duration, methodology and end use of their data.

Focus group participants stressed the importance of clarity and honesty when the government communicates with the public about participatory research/citizen science, including being clear on the purpose and expectations, and for the target demographic/participant group. They also suggested highlighting the importance of the project and why their participation is key, and to target their messaging so it is relevant to the demographic(s) they are targeting.

Low commitment projects were preferred to those with longer time commitments or more in-depth effort on the part of the participant, which aligns with earlier findings that a large time commitment may be a barrier to participation unless the topic is of interest or importance to participants. Passive participation had a mixed

response, and it may require more documentation and precise messaging to engage participants in this type of participatory research or citizen science project.

Engaging traditionally underrepresented demographics

A key component of the research was to examine ways to engage with, as well as motivators and barriers to participation for traditionally hard to reach and underrepresented audiences.

These audiences include:
- Visible minorities;
- Indigenous peoples;
- Low-income individuals; and,
- Rural-residing individuals

Overall, there is no significant gap in awareness or familiarity between these underrepresented audiences and the rest of Canadians, with over four in ten having at least moderate familiarity with the methodology (45%).

This means that to reach them and engage them, while there is a need to increase awareness, a lack of awareness is likely not a significant driver of their lack of participation in these projects.

Barriers

Of note, for low-income individuals the time commitment and their availability were less of a barrier than for high-income individuals, but it was still the main barrier to their participation. It will also be key to consider the activity required from participants, as potential accessibility or mobility issues are seen as a barrier to those with a low household income.

For rural individuals where internet broadband connection is a barrier to participation, it will be key to detail to participants whether this is necessary for their participation or to consider providing them with all alternative methods of sharing their results that do not require the same level of access to the internet. Of note, although they were more likely to identify this as a barrier, nearly all surveyed rural residents do report that they have access to high-speed internet at least some of the time (93%) or access to some form of technology (either a computer, tablet or smart phone) (100%). Technology in general is not a significant barrier to these audiences; while there are slight differences in the level of comfort they feel, a majority feel at least moderately comfortable using a tablet or smartphone, downloading or using apps, communicating via email, using a computer, using social media or navigating the internet.

A lack of spare time was especially key as a barrier to visible minorities, so ensuring participation can be short-term or relatively unobtrusive to their lives may be key to engage these individuals. However, focus group participants said that while they are less interested in a project with ongoing or regular involvement, those who did express interest said they would participate due to their interest in the sample topic mentioned (mental health).

Focus group participants also said that the more interested in the topic they were, the more involved they would want to be, even up to a few hours per week. This demonstrates that an interest in or personal importance given to the topic and results could overcome perceived barriers related to time commitment.

Motivators and engagement

Similar to Canadians overall, these underrepresented audiences are motivated by being able to contribute and make a difference in their community, but there is a larger than average proportion who would be motivated by a reward of financial incentive (especially in the case of visible minorities, low-income individuals and Indigenous

individuals). However, as noted earlier, just as important a consideration as a reward would be the impact of the research on their community and whether the topic is of interest or importance to them.

In terms of engaging these audiences in specific project types, the most interest is observed for projects with less of a time commitment (one time data entry or providing context to already collected data), but across nearly all potential types of projects respondents are more likely to be interested rather than not interested (with the exception of passive data collection through an app or device). Focus group participants did note that a passive commitment is easier for them, so this could be an effective method to engage these individuals as long as there is transparency around how the app or device would work and what data was collected as they did note concerns around this.

It will be key to provide a lot of detail about the project to potential participants if they wish to reach these underrepresented audiences and engage them in the research, especially since not having enough detail on what is expected of them or how the results will be used were the top-rated barriers. Providing this information from the outset can help assuage some of the key barriers to participation for these audiences, including outlining clear expectations for participants and their role, any requirements (reading, training or technical knowledge), the time commitment expected from them, privacy concerns (by being transparent about what data or information is collected and what it will be used for), how the results will help their community or society, and if accommodations can be made in the case of a slower internet connection or a physical disability.

Project communications should also be very clear about the level of knowledge required for participants, so they are not self-selecting themselves out of consideration because of assumptions that they do not have the required knowledge or skills.

When engaging these individuals, projects with less of a time commitment (either in frequency of contribution or overall length of project) will potentially be more successful in engaging all Canadians, including these key audiences. However, as projects will inevitably range in terms of the commitment required, it will be important to clearly communicate what is required of participants, how results will be used and how the project will help society and/or their community.

Reaching underrepresented audiences

In order to reach these audiences, consideration should be given to increasing advertising of these opportunities on social media, as well as locations such as public libraries, medical centres, community centres, religious centers and newspapers to reach a wider range of Canadians. Since they are already underrepresented in participatory research, they are unlikely to be tuned into more active methods of recruiting such as an email newsletter or posts on a webpage.

As visible minorities are more likely to be motivated to participate if they know someone else who participated, consideration should be given to recruiting by referral or snowball sample, where participants are asked to refer other individuals to participate and could be provided with a reward for each person, they refer who then participates in a project. Some individuals in the focus groups also mentioned being able to participate with their family and friends, so this could enable them to recruit their family members and/or friends to participate as well. This could be a key opportunity to utilize word of mouth among these audiences, especially among visible minority communities, and help sow trust in the project and its organizers and thereby lead to repeat participation from these audiences.

Messaging should be tailored to these audiences and address their motivators and barriers at the outset in addition the project specific information being communicated, for example targeting rural audiences through more offline methods such as advertising in public libraries, medical centres, community centres, religious centers and newspapers and clearly stating requirements related to technology or needing to travel to a larger city. For visible minorities, low-income Canadians and Indigenous individuals, messaging should be sure to clearly state what incentive or reward is being offered.

Communicating about participatory research/citizen science projects

Whether being notified of opportunities to participate in upcoming projects or updates or reminders related to projects they were already involved in, survey respondents most often say their preferred notification method is by email (87% for upcoming; 90% for ongoing). This method was of communication followed in preference by smart phone notifications and texts (32% upcoming; 39% ongoing), a newsletter (28% upcoming; 26% ongoing), updates on a web page (28% upcoming; 26% ongoing), social media (20% upcoming; 12% ongoing) and community meetings (11% upcoming; 9% ongoing).

Surveyed Canadians say they are most comfortable (score of 7-10) communicating by email (93%), using a desktop or laptop computer and navigating the internet (89% each), as well as using a tablet or smart phone (84%). About three in four say they would be comfortable downloading and using a mobile application (76%) and under six in ten would be comfortable using social media (59%). Differences are noted by age, with individuals between 18 and 44 years of age generally being more comfortable using technology than the national average and individuals 55 and older generally less comfortable, especially in terms of using social media.

Technology access does not pose a significant barrier to Canadians with nearly all of those surveyed reporting having some access to technology, whether via a smartphone, laptop, tablet or desktop computer. The same is true for internet access, with more than nine in ten Canadians surveyed reporting they have access to stable high-speed internet all or most of the time (93%), while six per cent report having it some of the time and one per cent report not having access to stable high-speed internet.

During the focus groups a potential platform to support these projects was discussed and participants were asked to provide recommendations for their design. Participants emphasized that if created, privacy of participant data is essential and should be top of mind in the design and implementation of such a platform, as well as the ease of use of the platform. A forum or chat function to connect participants and to ensure the platform is accessible was also suggested.

A mobile application may be well positioned to maintain communication with future participatory research/citizen science participants given comfort and preference of smart phone notifications for communication.

Comfort and interest in science

In terms of statements meant to gauge their comfort and interest in science, surveyed Canadians have the strongest intensity of agreement that they like to thoroughly research their options when making a decision (97% strongly or somewhat agree) and that they generally understand science concepts when they are explained to the public (96% strongly or somewhat agree).

Misinformation and the spread of inaccurate scientific information is a concern for surveyed Canadians with more than nine in ten who strongly or somewhat agree that they are concerned with the spread of inaccurate scientific information (94%) and over eight in ten strongly or somewhat agree they are interested in taking action against inaccurate scientific information (82%). A majority also strongly or somewhat agree that they are confident in their own ability to assess the accuracy of scientific information shared in the media (88%). A strong majority strongly or somewhat agree that they would like to know more about science and how it affects our world (93%) and just over six in ten Canadians strongly or somewhat agree that they are reasonably confident they could contribute to science research (63%).

About this report

This report begins with an executive summary outlining key findings and conclusions, followed by a detailed analysis of the qualitative and quantitative results. A detailed set of "banner tables" is provided under separate cover; this presents results for all survey questions by key segments such as region, age, gender and other targeted demographic groups.

The quantitative results are expressed as percentages unless otherwise noted. Base size is the total sample of n=4,703 unless otherwise specified.

Detailed findings are presented in the sections that follow. Overall results are presented in the main portion of the narrative and are typically supported by graphic or tabular presentation of results. Results for the proportion of respondents in the sample who either said "don't know" or did not provide a response may not be indicated in the graphic representation of the results in all cases, particularly where they are not sizable (e.g., 10% or less). Net results cited in the text may not exactly match individual results shown in the charts due to rounding.

Key demographic patterns of interest are described throughout the report, in the following order: gender, age, province/territory, income, ethnicity, and community population size (rural versus urban communities). Only demographic differences that are significantly different based on the margin of error of plus or minus 2.4 percentage points (95% confidence interval) and Chi Square tests are presented.

Details of the methodology and sample characteristics can be found in Appendix A. The final survey instrument can be found in Appendix B.

Readers should note that focus group research is qualitative and directional in nature and must not be used to estimate the numeric proportion or number of individuals in the population who hold a particular opinion.

Detailed findings – Qualitative

A. Awareness and interest

Awareness of Participatory Research and Citizen Science

Out of the 36 focus group participants, only one mentioned having heard the terms participatory research or citizen science prior to the discussion. The participant had heard of the term in their previous workplace, which participated in similar types of research/projects.

Participants were presented with the definition of participatory research or citizen science with select examples. After hearing the definition of citizen science, participants were asked whether they had ever participated in these types of projects. Four out of the 36 participants said they had participated in a citizen science project, while two others said they knew someone that had or had conducted similar activities/observations for their own interest. Projects that participants had participated in included user testing a website in development, providing information on invasive species, which was collected while hunting and fishing, counting species of frogs at a swamp, observing and counting bird species, and counting the number of people experiencing homelessness in their community.

Participants largely believe that the terms 'participatory research' and 'citizen science' accurately represent the concept of professional scientists working together to conduct research with volunteers from the public, who may or may not have any background in science. A majority preferred the term citizen science, with a few participants mentioning participatory research made them think of public opinion research (i.e., participating in surveys). Some participants mentioned preferring the term participatory research over citizen science as they felt it sounded more professional or science based.

When asked whether they had a positive or negative impression of the term 'citizen science', participants most often mentioned having a positive impression of the term. Positive elements that came to mind when thinking of this term included the term being inclusive and implying that everyone's voice matters, followed by citizen science being a clear term as it involves citizens and science, which was mentioned by a few participants. Other positive elements mentioned by participants included one participant who said they liked the term but preferred "citizens helping science," another who said the term could imply the potential for extra income from paid participation and a participant who thought that the term promoted a social aspect to research. A few participants mentioned that the term is easier to pronounce or understand than 'participatory research.'

Participants also mentioned some negatives that came to mind, with a few each mentioning that the average person should not be involved in science because they aren't qualified, that it could be misinterpreted as wanting to do science ON citizens or that 'participatory research' is a better term as it implies a more managed project, while 'citizen science' implies people going out with no training. One participant also said that it implies they want to find out more about us (citizens), while another thought that it would be beneficial to replace 'citizens' with 'Canadians.'

B. Motivators and barriers to participation

Most participants said they would be interested in participating in some type of citizen science project. Top motivators mentioned were their level of interest in the topic and/or purpose of the project, followed by financial incentives for participation, and benefitting from the social aspect of participating either with

family/friends or meeting new people. When asked what topics participants would be interested in participating in, the following topics were mentioned:

- the environment (mentions included flora and fauna);
- health (mentions included pregnancy, diabetes, mental health, ADHD in women, People With Disabilities (PWD), discrimination in healthcare, early childhood development);
- education;
- public services and/or infrastructure;
- lifestyle and/or quality of life;
- financial literacy; and,
- sports (mentions included skateboarding).

The top barrier mentioned by participants for participation in citizen science projects was time and/or availability, with some participants adding that they have limited free time or availability to participate and others saying that passive commitment is easier to participate in than something more involved.

Other barriers included access to transportation or having to commute from a rural community, access and knowledge of technology such as not owning a computer or not knowing how to upload a picture through an application, accessibility of the platform for participation and ease of use, and not feeling like they have the required qualifications to participate in science projects or a specific topic. Anonymity was also mentioned as a barrier with some participants mentioning they would want to ensure that the information they share is anonymous and that they have all the details necessary to feel comfortable providing that information to the project.

Review of Different Project Types and Requirements

The purpose of this activity was to explore participants' preferred participation methods and modes. Four sample projects were used to outline possible ways of engaging in citizen science.

PROJECT A – Passive Data Collection

One type of project is more passive. For example, a project where you set up an air quality sensor near the entrance of your home where live data is collected and shared automatically with scientists.

Most participants saw no barriers to participating in a project that requires passive participation such as installing an air quality sensor near the entrance of their home. A few mentioned that a potential barrier could be the device being noisy or too big and getting in the way. One participant mentioned that if the device had a camera and/or microphone, this could lead to an invasion of privacy.

PROJECT B – Personal Involvement

A second type of project would have more involvement from you. For example, taking and submitting a photo of all your bathroom cleaning products to help scientists understand the use of household chemicals.

Participants anticipated few barriers to participating in a project that would require more involvement from them such as submitting a photo of their household cleaning products. One participant mentioned that they

didn't have a laptop to submit the photos with, while another mentioned that the more effort is required of them, the more they want details about the purpose and outcomes of the project.

PROJECT C – Ongoing Involvement

Another type of project might mean more regular or ongoing involvement. For example, answering a weekly survey anonymously which asks five questions about your mental health.

Participants were less likely to be interested in participating in a project with more regular or ongoing involvement. For those who said they were interested, they largely said so because the topic of mental health (as cited in the example given of Project C) appealed to them and was important. Those who were not interested or said that it would depend, mentioned the project sounded invasive, privacy was a concern, or they would need to know more about the duration, methodology and end use of their data.

PROJECT D – Interpreting Results

PROJECT D: Lastly, some types of projects would support interpretation of data or results. For example, providing your own local knowledge to help scientists understand why results of a research project might be different from one part of the neighbourhood to another.

A project that would support the interpretation of data or results such as providing local knowledge to help scientists understand why results of a research project might be different from one part of the neighbourhood to another interested a majority of participants. Participants felt that knowing that their own knowledge could add context and value to results was important to them and a motivator for them to participate. A few participants mentioned that it would depend on the topic or time commitment required but were open to participating in this type of way.

Privacy and Data Concerns with Participation

Privacy and anonymity were the most often mentioned concerns by participants related to taking part in citizen science projects was including needing to know how their information will be used, who will have access to that information, and how their data will be analysed and shared. When specifically prompted on anonymity, participants unanimously agreed that it was important, especially for more sensitive or personal topics such as mental health. Other concerns mentioned by some participants included integrity of the data and wanting to ensure that the project is legitimate and can hold up under scrutiny. A few others also mentioned staying engaged and meeting the required time commitment.

If it was anonymous or for an important purpose, most participants said there wouldn't be much information they wouldn't feel comfortable sharing. Some participants mentioned they would not feel comfortable sharing information on their finances or revenue, as well as personal details about themselves (i.e., their reproductive cycle).

C. Methods for participating

Time Commitment

Thinking about how much time they would be willing to commit to participating in one of these projects, participants most often mentioned a preference for flexibility and smaller commitments even if over a longer period of time. Some participants mentioned that the more interested in the topic they were, the more involved they would want to be, which could be up to a few hours per week. One participant mentioned preferring bigger commitments over shorter periods of time specifically when it comes to research design and analysis, adding that this might be more productive.

Communicating with the Public

Participants mentioned the following types of messages and/or methods the government should use to communicate with the public to find people interested in participation in these types of projects:

- be clear on what they want, who they are looking for, and their expectations/motivations;

- highlight the importance of the project and the public's involvement in it;

- make the messaging and project fun, accessible and relevant to the demographic they are targeting;

- tailor messaging to populations they are trying to reach (i.e., rural communities might have limited access to internet, younger audiences could be reached by social media, while older audiences by phone); and,

- allow people to sign up to volunteer for a project and/or opt out if no longer interested.

When asked to visualize the platform process, user experience and/or system features for the development of a platform to support these types of projects by Health Canada, many participants emphasized that privacy of the data shared should be top of mind. Also mentioned was a chat or community forum to interact with others interested in the project, a review page so that other participants can share their experiences and/or concerns, a website to compile all of the information in one place and the creation of an easy-to-use app. One participant mentioned that it would be important to include a highlight of the end results (e.g. heat map of Canada, visual graphs and charts) in the platform so others can see the purpose and value of participating in these types of projects. Many also mentioned that Health Canada should ensure that the platform was user-friendly and accessible, with one participant including an example of being blocked from a site because of their VPN and not being able to access support easily.

Detailed findings - Quantitative

A. Community/ civic engagement

Community engagement within the past year

Examining activities related to community engagement, Canadians most often report reading a newspaper, magazine or other publication about issues of importance to their community (76%), followed by speaking up against the sharing of mis/disinformation (32%), contacting an elected official (28%), discussing a community issue on social media (26%) and participating in cultural events specific to their community (26%).

Table 1 - Community Engagement

Type of engagement	Total (n=4,703)*
Read a newspaper, magazine or other publication about issues of importance to your community	76%
Spoken up against the sharing of information you knew to be false (mis/disinformation)	32%
Contacted an elected official	28%
Discussed a community issue on social media	26%
Participated in cultural events specific to your community	26%
Volunteered (e.g., handed out brochures, campaigned) with a community organization or non-profit	22%
Participated in a public meeting	16%
Spoken at a public meeting	9%
Written a letter to an editor (newspaper, magazine, etc)	6%
Other	3%
None of the above	14%

Base: All respondents, n=4703, based on multiple mentions.

Q1 – Have you done any of the following within the past year?

Survey respondents have been categorized by their level of engagement in their community per their response to this question. The categories are as follows:

- Highly engaged community members (report participating in four or more community/civic engagement activities in the past year)
- Low/moderately engaged Canadians (report participating in 1-3 community/civic engagement activities in the past year)
- Non-engaged Canadians (report they did not participate in any of the listed community/civic engagement activities in the past year)

A majority of responding Canadians fall into the low or moderately engaged community member category (61%), while one in four (25%) are defined as highly engaged and just 14% are categorized as non-engaged.

Table 2 - Community Engagement Profiles

Category – Community Engagement	Total (n=4,703)*
Highly engaged community members	25%
Low/moderately engaged Canadians	61%
Non-engaged Canadians	14%

B. Attitudes towards Science

Canadians have the strongest intensity of agreement that they like to thoroughly research their options when making a decision (97%) and that they generally understand science concepts when they are explained to the public (96%). This was followed by more than nine in ten who strongly or somewhat agree that they are concerned with the spread of inaccurate scientific information (94%) and that they would like to know more about science and how it affects our world (93%) and more than eight in ten who strongly or somewhat agree they are confident in their ability to assess the accuracy of scientific information shared in the media (88%) and they are interested in taking action against inaccurate scientific information (82%).

Just over six in ten Canadians strongly or somewhat agree that they are reasonably confident they could contribute to science research (63%). The lowest intensity of agreement was given to the statement "Science was never my best subject in school" (34%).

Table 3 - Agreement with Statements Related to Comfort and Interest in Science

Statement	Strongly/Somewhat Agree	Strongly/Somewhat disagree	Don't Know
When making a decision, I like to thoroughly research my options	97%	2%	Less than 1%
I generally understand science concepts when they are explained for the general public	96%	3%	1%
I am concerned with the spread of inaccurate scientific information (i.e., mis and dis information) from sources such as social media and news outlets	94%	5%	1%
I would like to know more about science and how it affects our world	93%	5%	2%
I am confident in my ability to assess the accuracy or truthfulness of scientific information that is shared in the media (social media, news, magazine, etc.)	88%	9%	3%
I am interested in taking action against inaccurate scientific information that is shared with the public	82%	12%	6%
I am reasonably confident I could contribute to science research	63%	26%	11%
Science was never my best subject in school	34%	65%	1%

Base: All respondents, n=4703
Q2-9 – To what extent do you agree or disagree with the following statements? [RANDOMIZE]

Gender

• Men are more likely to strongly or somewhat agree that they are reasonably confident they could contribute to science research (68%) than women (58%).

Age

- Individuals in the 65 plus age cohort are less likely to strongly or somewhat agree that they are reasonably confident they could contribute to science research (58%) than those in the 18 to 24 (67%), 24 to 34 (68%) and 35 to 44 (66%) age cohorts.

- Younger Canadians (18-24) are more likely to strongly or somewhat disagree (71%) that science was never their strongest subject in school than individuals 55 to 64 (62%) or 65 plus (59%).

Province/territories

- Individuals in Saskatchewan are slightly more likely to strongly disagree or somewhat disagree (75%) that science was never their strongest subject in school than individuals in Quebec (63%) or Ontario (62%).

Income

- Canadians with a household income of under $40K are less likely to strongly disagree or somewhat disagree (57%) that science was never their best subject in school than Canadians with a high household income (over $80,000) (67%).

- Low-income Canadians are less likely to strongly or somewhat agree that they generally understand science concepts when they are explained for the general public (90%; 98% of high-income individuals) and that they are reasonably confident they could contribute to science research (57%; 66% of high-income individuals).

C. Awareness, familiarity and experience with participatory research

Awareness of participatory research/citizen science

Just over four in five Canadians report they had not heard of participatory research or citizen science prior to taking the survey (82%), while just under two in ten report they had (18%). Canadians with a high level of civic engagement are more likely to report they have heard of this (30%) than those with low/moderate civic engagement (16%) or non-engaged Canadians (7%). Individuals who strongly or somewhat agree that that they would likely to know more about science are more likely to report awareness (19%) than those who somewhat or strongly disagree (7%), as are those who strongly or somewhat agree that they are reasonably confident they could contribute to science research (22%; 12% of those who strongly or somewhat disagree).

Table 4 - Prior Awareness of Participatory Research/Citizen Science

Awareness	Total (n=4703)
Heard	18%
Not Heard	82%

Base: All respondents, n=4703

Q10 – Prior to today, have you heard or not heard of participatory research /citizen science?

Familiarity with participatory research/citizen science

When prompted with a description of participatory research/citizen science projects (see questionnaire in Appendix B), around one in four Canadians each say they are very familiar (score of 7-10 out of 10)(22%) or moderately familiar (score of 4-6 out of 10)(23%) with the concept and just over half say they are not familiar with it (score of 0-3 out of 10)(54%). Highly civically engaged Canadians are more likely to say they are familiar with the concept (33%) than low or moderately engaged Canadians (20%) or non-engaged Canadians (13%). Canadians who strongly or somewhat agree that they would likely to know more about science have a higher level of familiarity with the concept (23%) than those who somewhat or strongly disagree with that (9%). Higher levels of familiarity with the concept was also found with those who strongly or somewhat agree that they are reasonably confident they could contribute to science research (27%; 14% of those who strongly or somewhat disagree).

Table 5 - Familiarity with Participatory Research/Citizen Science

Level of familiarity (Score out of 10)	Total (n=4703)
Very familiar (7-10)	22%
Moderately familiar (4-6)	23%
Not familiar (0-3)	54%
Unsure	1%

Base: All respondents, n=4703

Q11 – Now that you have read the definition, please rate your familiarity with participatory research/citizen science on a scale from 0 to 10, where 0 is not familiar at all and 10 is very familiar?

Previous participation in participatory research/citizen science projects

About one in ten Canadians self-report that they have previously participated in a participatory research/citizen science project (11%), while 84 per cent report they have not and five per cent are unsure. Those who are highly civically engaged are more likely to report having previously participated (19%) than those with low or moderate civic engagement (8%) or no civic engagement (4%).

Table 6 - Previous Participation in Participatory Research/Citizen Science

Participation	Total (n=4703)
Yes	11%
No	84%
Unsure	5%

Base: All respondents, n=4703

Q12 – Have you ever participated in or contributed to a participatory research/citizen science project?

D. Interest, motivators and barriers for future participation

Interest level for future participation

Overall, Canadians are interested in participating in a future government-led participatory research/citizen science project, with just under six in ten who would be very interested (score of 7-10)(59%) and just under one in four who would be moderately interested (score of 4-6)(23%). Sixteen per cent of Canadians say they would not be interested in participating (score of 0-3)(16%) and three per cent are unsure.

Individuals in the 65 plus age cohort are less interested in contributing to a future participatory research/citizen science project (50%)(score of 7-10) than those 18 to 24 (64%), 25 to 34 (62%), 35 to 44 (62%) and 45 to 54 (61%). Canadians with a high level of civic engagement express a higher level of interest in participating (70%) than those with low/moderate civic engagement (56%) or no civic engagement (47%). In terms of comfort and interest in science, those who strongly or somewhat agree that they would likely to know more about science are more likely to be interested in participating (61%) than those who somewhat or strongly disagree (30%), as are those who strongly or somewhat agree that they are reasonably confident they could contribute to science research (67%; 43% of those who strongly or somewhat disagree) or those who strongly or somewhat agree that they generally understand science concepts when they are explained to the general public (60%; 37% of those who strongly or somewhat disagree).

When asked to explain their level of interest, Canadians who said they would be interested in participating (score of 7-10), most often mentioned wanting to make a difference and help their community (17%), and that science is important and they want to support and advance science (11%) as motivators for their interest. They also mentioned being interested in participating in research on topics such as anything where they can learn or contribute their perspective (23%), biology/ecology (15%), climate change (11%), and environmental health (8%).

Those who said they are not interested in participating (score of 0-3), most often mentioned being too busy and not having time (23%), that they do not trust the government and believe it would be biased (15%), that they are just not interested and no topics interest them (14%) and that they do not have the physical capabilities to volunteer currently (10%).

Table 7 – Interest in Participating in Participatory Research/Citizen Science

Level of interest (Score from 0 to 10)	Total (n=4703)
Mean	6.6
Very interested (7-10)	59%
Moderate interest (4-6)	23%
Not interested (0-3)	16%
Unsure	3%

Base: All respondents, n=4703

Q13 – On a scale from 0 to 10, where 0 is not interested at all and 10 is very interested, how interested would you be in participating in a future government-led participatory research/citizen science project?

Table 8 – Reason for Interest Level (Top of mind written responses – coded)

Reason – Top Mentions	Total (n=4392)	Interested in Participating (7-10) (n=2651)	Moderately Interested in Participating (4-6) (n=974)	Not Interested in Participating (0-3) (n=653)
Motivators/Barriers for Interest				
I am too busy/do not have time	13%	6%	21%	23%
Any project that needs my help/I can make a difference/help my community	11%	17%	5%	1%
It depends if subject is of interest to me	9%	6%	17%	7%
Curious in learning more about these types of projects	9%	10%	10%	3%
Science is important/support and advance science and research/general interest in science	8%	11%	4%	2%
Don't trust the government/their projects/biased	5%	2%	5%	15%
It depends on the method of data collection/of participation required/time required	5%	4%	7%	5%
Most topics are of interest to me/interested in the concept generally	4%	7%	1%	1%
Do not have the physical capabilities to volunteer right now/ limited in physical capabilities	4%	2%	6%	10%
Work against the spread of disinformation/misinformation/provide accurate data	3%	4%	2%	1%
I don't think I have the knowledge required to participate	3%	1%	6%	7%
Not interested/no topics of interest	3%	<1%	2%	14%
Already participate/participated in these types of projects	2%	2%	1%	<1%
If it is a paid research project	1%	1%	1%	1%
I don't feel the public should be involved in research/not sure they are reliable	1%	<1%	<1%	4%
Topics of Interest				
Anything where I can learn/contribute my perspective	16%	23%	8%	2%
Biology/ecology (i.e., wildlife management, environmental protection, flora and fauna)	12%	15%	10%	5%
Climate change	8%	11%	6%	2%
Environmental health (e.g., air quality, water quality)	6%	8%	6%	2%
Health	4%	5%	3%	1%
Astronomy	2%	2%	2%	1%
Policy/politics	1%	2%	1%	1%
Philosophy/theology/sociology	1%	1%	1%	1%
Sustainable/renewable energy and resource development	1%	1%	2%	<1%

Base: All respondents, n=4392, based on up to three mentions.

Q14 – You rated your interest in participating in a future government-led participatory research/citizen science project as [ANSWER FROM ABOVE QUESTION] out of 10 where 0 is not at all interested and 10 is very interested. Why? What interests you? What does not interest you? [OPEN]

Top themes - Quotes

I am too busy/do not have time

"I'd be concerned about the time commitment and also being competent and/or interested in the task given to me." – Respondent, moderate interest in participating, 45 to 54 years old

"It's not an issue of interest, it's an issue of time." – Respondent, not interested in participating, 25 to 34 years old

"Would depend on the amount of time commitment required to participate and how intrusive the project would be in my and others lives." – Respondent, moderate interest in participating, 45 to 54 years old

"It sounds interesting but I'm just way too busy to take on anything additional; I have little free time. Maybe once I retire!" – Respondent, not interested in participating, 35 to 44 years old

"C'est plus le manque de temps que ce qui m'intéresse ou ne m'intéresse pas." – Respondent, moderate interest, 55 to 64 years old

Any project that needs my help/I can make a difference/help my community

"Contributing what I can to science, even if it's a tiny contribution, is important for us all, to learn how to live better lives on this planet. Any positive contribution I can make to this world is important, to help balance the negative contributions from us all." – Respondent, interested in participating, 35 to 44 years old

"J'aimerais contribuer et rendre service à la société et à ma communauté en menant des recherches sur le changement climatique ou tout ce qui est lié à l'aide à l'environnement." – Respondent, interested in participating, 45 to 54 years old

"I'd like to make a difference and believe my participation is important, valid and could help influence others." – Respondent, interested in participating, 55 to 64 years old

"I would like to contribute to the community wherever I could, but the only thing is I may need more information or guidance to do research as I have never done this before." – Respondent, moderate interest in participating, 25 to 34 years old

"I love feeling like I'm contributing to knowledge building. Any opportunity to contribute is great." – Respondent, interested in participating, 18 to 24 years old

"I like helping my community and improving people's lives. If it is a simple thing, I can do to help out I will do it." – Respondent, interested in participating, 18 to 24 years old

Anything where I can learn/contribute my perspective

"I am very interested in being involved since I do believe I have much to offer, and I also feel that I can contribute to a project or research study positively." – Respondent, interested in participating, 65 years old or older

"I enjoy learning and if I am able to help in some safe and simple way, I am excited. I am not interested in risking my health or wellbeing." – Respondent, moderate interest in participating, 45 to 54 years old

"I am interested in providing feedback that is consistent with my Canadian values. I am interested in providing my perspective." – Respondent, interested in participating, 18 to 24 years old

"J'aime approfondir mes connaissances surtout en accomplissant des gestes concrets." – Respondent, interested in participating, 55 to 64 years old

"I love being able to provide feedback/input from my little corner of the world. I believe it is people like me who, if we come together as one voice, can and do make a difference. I believe in being vocal and having my voice heard so that I feel like I'm making a difference even if it's only a small difference." – Respondent, interested in participating, 45 to 54 years old

"Je suis quelqu'un qui aime beaucoup contribuer comme je peux. De plus, très souvent, le point de vue des minorités visible est très peu étudiées et entendu. J'aime faire ma part!" – Respondent, interested in participating, 25 to 34 years old

Topics of interest

Canadians indicate interest in contributing to future participatory research/citizen science projects on various health-related topics including well-being (64%), the healthcare system (62%), food and nutrition (58%), environmental health (56%) and climate change (52%).

Table 9 – Health-related topics of Interest for participatory research/citizen science

Topic	Total (n=4701)
Well-being (e.g., physical activity, sleep, sedentary behaviour)	64%
Healthcare system	62%
Food and nutrition	58%
Environmental health (e.g., air quality, water quality)	56%
Climate change	52%
Mental health	51%
Health products (e.g., pharmaceuticals, natural health products, vaccines, medical devices)	47%
Consumer products (e.g., household products, toys)	47%
Traffic and built environment (e.g., traffic patterns, active transportation, greenspace usage)	43%
Substance use (e.g., opioids, alcohol, tobacco, stimulants, cannabis)	28%
Pesticides and chemicals (use and exposure)	28%
Other	5%
None, not interested	5%

Base: All respondents, n=4701, based on multiple mentions.

Q15 – What health-related topics would you be interested in contributing to for future participatory research/citizen science projects? Please select all that apply: [RANDOMIZE]

Interest in various types of participatory research/citizen science projects

In terms of their interest in various types of participatory research/citizen science projects, Canadians indicate the highest intensity of interest (score of 7-10) in a project where they respond to a survey or enter data online one time only (80%), followed by a project where they help provide context about what data already collected might mean to their and their community (57%). The lowest intensity of interest is for a project that collects data from a device or app passively with their consent over a specific period of time (41%). Highly civically engaged Canadians are more likely to be interested in participating in all types of projects than non-engaged individuals.

Table 10 – Interest in Types of Projects (Score from 0-10)

Type of project	Very interested (7-10)	Moderate interest (4-6)	Not interested (0-3)	Unsure	Mean
A project where you respond to a survey or enter data online one-time only.	80%	13%	6%	1%	7.9
A project where you help provide context about what data already collected might mean to you and your community.	57%	24%	17%	3%	6.4
A project where you will be asked to log into an online platform daily to add data in order to track a change over time for a few weeks	48%	23%	27%	2%	5.6
A project where you encounter something and you log it into an online app over the period of several months/years.	47%	23%	28%	3%	5.6
A project where you will go out of your home to collect samples (such as water from a nearby river, or photos of products at a local retailer) and share them with the research team at regular intervals	45%	21%	33%	2%	5.2
A project that collects data from a device or app passively with your consent for a set period of time	41%	19%	37%	3%	4.9

Base: All respondents, n=4703

Q16-21 – On a scale from 0 to 10, where 0 is not interested at all and 10 is very interested, how interested would you be in participating in the following types of participatory research/citizen science projects? [RANDOMIZE]

Age

- Older Canadians (in the 65 plus cohort) have a lower level of interest than individuals in the 18-24 and 25-34 age cohorts in projects where they will leave their home to collect samples (34% interested; 18-24: 48%; 25-34: 49%), where they encounter something and log it into an online app over a period of several months or years (37%; 18-24: 53%; 25-34: 53%) or where they help provide context about what data already collected might mean to their community (51%; 18-24: 64%; 25-34: 60%).

Community Size

- Canadians who live in a rural community (population of less than 1,000) are less likely to be interested in a project that collects data from a device or app passively with their consent for a set period of time (30%) than Canadians in a large urban population centre (population of 100,000 or more)(42%).

Income

- Individuals with a household income of less than $40K are less likely to be interested in a project where they help provide context about what data already collected might mean to their community (52%) than those with a high household income (over $80K)(61%).

Visible Minority groups

- Individuals who self-identify as Chinese are more likely to be interested in a project that collects data from a device or app passively with their consent for a set period of time (57%) than the national average (41%).

Civic Engagement

- Highly civically engaged Canadians have a higher level of interest than non-engaged Canadians in projects where they help provide context about what data already collected might mean to their community (71%; non-engaged: 42%), as well as where they will respond to a survey or enter data one time only (86%; non-engaged: 69%), where they will be asked to log into an online platform daily to add data in order to track a change over time for a few weeks (57%; non-engaged: 39%), where they encounter something an log into an online app over a period of months of years (56%; non-engaged: 39%), or where they go out of their home to collect samples and share them with a research team regularly (55%; non-engaged: 33%). Civically engaged and non-engaged Canadians shared a similar level of interest in a project that collects data from a device or app passively (44% engaged; 36% non-engaged).

Comfort and Interest in Science

- Canadians who strongly or somewhat agree that they would like to know more about science are more likely to be interested in participating in all of the sample project types than those who strongly or somewhat disagree, especially projects where they are asked to log into an online platform daily to add data over a few weeks (50%; 22%), where they will leave their home to collect samples and share them with a research team regularly (46%; 21%) or where they will help provide context about what data already collected might mean to their community (59%; 32%).

- A similar observation can be made for those who strongly or somewhat agree that they are reasonably confident they could contribute to science research versus those who strongly or somewhat disagree, with the biggest gap in interest observed for projects where they will help provide context about what

data already collected might mean to their community (64%; 44%) or where they encounter something and log into an online app over a period of months or years (53%; 35%).

- Interest is higher for a project where they help provide context about what data already collected means for their community among those who strongly or somewhat agree that they generally understand science concepts when they are explained to the general public (58%) compared to those who strongly or somewhat disagree with this (29%).

Biggest Motivators to participating in participatory research/citizen science project

Unprompted, Canadians most often mention being able to contribute or help (society, science or their community) (23%) as one of the biggest motivators for them participating in a participatory research/citizen science project. This is followed by it being an interesting subject or them having an interest in the outcome (17%) and a reward or incentive (14%).

Table 11 – Biggest Motivators (Unprompted)

Motivator – Top Mentions	Total (n=4703)
Being able to contribute/help society/my community/science	22%
An interesting subject/an interest in the outcome of the project	17%
A reward or incentive (money, discount, gift card)	14%
I like to learn/I like research and science/curious/personal growth	9%
If I felt it would actually make a difference	9%
If I felt it was important/impacted me or my family or community	8%
Time commitment (having the time/research not requiring too much time/flexibility)	5%
Research related to climate change/the environment/sustainability	4%
Ease of the process (do it from home, simple, convenient)	4%
Understanding/transparency of the purpose/benefits/outcomes	4%
Being provided with updates and feedback during the process/given the results	4%
Trust and confidence in the process/outcomes/organizer/researchers/accuracy	3%
Work against misinformation/bias	3%
Nothing/none/not interested	2%
Other	3%
Unsure	2%

Base: All respondents, n=4703, based on multiple mentions

Q22 – What would be the biggest motivators for you to participate in a participatory research/citizen science project? [CAPTURE UP TO THREE MENTIONS] [OPEN]

Visible Minority groups
- Individuals who self-identify as a visible minority are more likely to mention a reward or incentive as something that would motivate them (24%) compared to non-visible minorities (13%).

Civic Engagement
- Canadians who are not civically engaged are more likely to mention a reward or incentive as a motivator for them (19%) than those who are highly engaged (10%).

Biggest barriers to participating in participatory research/citizen science project

The time commitment and their own availability (53%) was the most mentioned unprompted barrier to participating in a participatory research/citizen science project. This was followed distantly by accessibility (including mobility issues, health issues, age)(9%), distance and transportation required, and if the project was not enjoyably or required a lot of effort/was difficult (both 8%).

Table 12 – Biggest Barriers (Unprompted)

Barrier – Top Mentions	Total (n=4684)
Time/availability/length of project/daily commitment	53%
Accessibility (Mobility issues/disabled/health issues/age)	9%
Distance/transportation/location	8%
If the project was not enjoyable/too difficult (required a lot of effort/involved complex tasks/repetitive tasks)	8%
Lack of resources/knowledge/skills/equipment/using technology	6%
Lack of interest/motivation	6%
Study being partisan/biased/political/by the government/corporate/against values	6%
No barrier/can't think of any	5%
Privacy concerns	4%
Potential costs	3%
Poor communication/not knowing goals/not getting the results/bad management/no feedback	2%
Unsure	2%

Base: All respondents, n=4684, based on multiple mentions

Q23 – What would be the biggest barriers to you participating in a participatory research/citizen science project? [CAPTURE UP TO THREE MENTIONS] [OPEN]

Income

- Canadians with a household income of less than $40K are less likely to mention time commitment and availability as a barrier to their participation (33%) compared to those with a high household income (over $80K) (60%).
- Those with a low household income are more likely to mention accessibility, including mobility issues, a disability or health issues and age (19%) as an unprompted barrier to participation than those with a high household income (6%).

Comfort and Interest in Science

- Canadians who strongly or somewhat agree that they would likely to know more about science are more likely to mention time and availability (54%) than those who strongly or somewhat disagree (39%).

Rating importance of motivators to participating in participatory research/citizen science

In terms of potential motivators to participating in a future project, Canadians are most likely to say contributing to a topic of importance or interest to them would very much encourage them (70%), followed by the ability to gain insights or learn more about their health and follow up communications on the results of the project (55% each). Around four in ten say receiving a monetary incentive (42%) or learning more about the topic (38%) would very much encourage them to participate, while around one in three say the same for having an opportunity to connect with science experts (33%), a hands-on workshop to learn skills related to sample or data collection (32%) and regular support from project organizers (30%). Only 15 per cent say that knowing someone who participated would very much encourage them to participate in a project.

Table 13 – Rating Importance of Motivators

Motivator	1 –Not at all	2	3	4 – Very much	Unsure/Not Applicable	Total Impact (Score of 3-4)
Contributing to a topic of interest or importance to me	4%	4%	20%	70%	2%	90%
Ability to gain insights and learn more about my health	5%	10%	27%	55%	3%	82%
Follow-up communications on the results of the project	7%	9%	27%	55%	3%	82%
Learning more about the project topic (e.g., option for additional reading or tutorials)	9%	15%	35%	38%	4%	73%
Having an opportunity to connect with science experts	12%	17%	33%	33%	5%	66%
Regular support from project organizers	10%	18%	36%	30%	6%	66%
Receiving a monetary incentive for participation	19%	15%	20%	42%	5%	62%
Providing support to the organization leading the project	12%	18%	36%	26%	9%	62%
A hands-on workshop to learn skills related to sample or data collection	18%	18%	28%	32%	5%	59%
Connecting with other participants and being a part of a community	17%	22%	31%	24%	5%	55%
Knowing someone else who has participated	31%	24%	24%	15%	6%	39%

Base: All respondents, n=4703

Q24-34 – Next, we will present a list of motivators and barriers to participating in government-led participatory research/citizen science that have been identified by others. Please indicate the extent to which you feel they are important to your interest in participating in participatory research/citizen science.

How much, if at all, would the following factors encourage you to participate in a government-led participatory research/citizen science project?

Gender

- Women are more likely to say they would be very much encouraged to participate in a government-led participatory research/citizen science project if they had the ability to gain insights and learn more about their health (59%) than men (51%).

Age

- Younger Canadians are significantly more likely to say they would be very much encouraged to participate in a government-led participatory research/citizen science project if they received a monetary incentive (18-24: 76%; 25-34: 61%) than those 55 to 64 (28%) or 65 plus (22%).
- Canadians in the 18 to 24 age cohort are more likely to say knowing someone who participated would very much encourage them (25%) than Canadians 35 to 44 (11%), 45 to 54 (14%) or 55 to 65 (13%).

Province/territories

- Quebec (59%) and Ontario (56%) residents are more likely to say they would be very much encouraged to participate if they received follow-up communications on the results than Saskatchewan residents (43%).

Community size

- Residents of rural areas (population of less than 1,000) are less likely to say they would be very much motivated to participate by receiving a monetary incentive (37%) compared to those from a medium population centre (population of 30,000 to 99,999)(47%).

Income

- Canadians with a household income of less than $40K are more likely to say they would be very much motivated to participate by receiving a monetary incentive (50%) compared to those with a high household income (over $80K)(41%).

Visible Minority groups

- Individuals who self-identify as a visible minority are more likely to say knowing someone else who has participated would very much motivate them to participate (21%) than non-visible minorities (15%), as well as connecting with other participants and being part of a community (31%; 24% of non-visible minorities), having the ability to gain insights and learn more about their health (64%; 55% of non-visible minorities), and receiving a monetary incentive (62%; 40% of non-visible minorities).
- Self-identified Asian (Korean, Japanese, Southeast Asian) (59%), Chinese (67%) and Black (77%) individuals are more likely to be very much encouraged to participate by receiving a monetary incentive than the national average (42%).
- Those who self-identify as Asian are also more likely to say they would be very much encouraged by connecting with other participants and being a part of a community (34%) and gaining insights about their health (67%).

Indigenous identity

- Those who self-identify as Indigenous are slightly more likely to say they would be very much encouraged by receiving a monetary incentive for participation (53%) than non-Indigenous individuals (42%).

Civic Engagement

- Canadians who are highly civically engaged are more likely to say that contributing to a topic of interest or importance to them would very much motivate them (80%) than those with low or moderate engagement (68%) or no engagement (59%). They are also more likely to be very motivated by follow-up communications about the results of the project (64%; non-engaged: 45%), connecting with other participants (33%; non-engaged: 20%), learning more about the project topic (45%; non-engaged: 28%), a hands-on workshop (38%; non-engaged: 28%) and having an opportunity to connect with science experts (40%; non-engaged: 30%).

Comfort and Interest in Science

- Canadians who want to know more about science (71%; are more likely to say contributing to a topic of interest or importance to them is very much a motivator to participating than those not interested in learning more about science (50%). This is also more of a motivator for respondents who are reasonably confident they could contribute to science research (75%; 62% of those who are not confident in their ability to contribute) or respondents who say they generally understand science concepts (71%; 48% of those who do not feel they understand science concepts).

- Those who say they want to know more about science are more likely to say learning more about the project topic is a big motivator for them (39%) than those who are not interested in knowing more about science (19%). Those with an interest in learning more about science are also more likely to be motivated by having an opportunity to connect with science experts (35%; 12% of those not interested in science), the ability to gain insights and learn more about their health (57%; 33% of those not interested in science), follow-up communications on the results of the project (57%; 34% of those not interested in science), and regular support from the project organizers (31%; 16% of those not interested in science).

- Individuals who are reasonably confident they could contribute to science research are more likely to say providing support to the organization leading the project is very much a motivator for their participation (30%) than those who strongly or somewhat disagree (20%), and are more likely to say having an opportunity to connect with science experts would very much motivate them (40% of those who strongly/somewhat agree vs 21% of those who strongly or somewhat disagree).

Rating importance of barriers to participating in participatory research/citizen science

Not having enough detail about what is expected from participants at the start of a project was most often rated by Canadians as very much preventing them from participating in a participatory research/citizen science project (41%), followed by not having enough detail about how the results will be used (36%), privacy concerns (33%) and a lack of spare time (32%). Under one in ten Canadians say insufficient internet connection (nine per cent), having to interact with other participants and/or science experts (7%), or material only being available in English and French (4%) would very much prevent them from participating. Three in twenty (14%) indicated a personal physical limitation or disability would very much prevent them from participating.

Individuals with a high level of interest in participating (score of 7-10) are less likely to say that a lack of spare time would be very much a barrier to them (25%) than those who are moderately interested (score of 4-6)(42%) or not interested (score of 0-3)(47%). Highly interested respondents are also less likely to say privacy concerns would be a barrier to their participation (28% of those highly interested; 42% of those not interested), having to interact with other participants and/or science experts (3% of those highly interested; 18% of those not interested), as well as having to learn to use new instruments, tools and/or technology (5% of those highly interested; 21% of those not interested) and substantial reading or training required for participation (16% of those highly interested; 41% of those not interested).

The top barrier for individuals with a high level of interest in participating is not being provided enough detail about what is expected from participants at the start of a project (38%).

Table 14 – Rating Importance of Barriers

Barrier	1 –Not at all	2	3	4 – Very much	Unsure/Not Applicable	Total Impact (Score of 3-4)
Not enough detail about what is expected from participants at the start of a project	7%	17%	30%	41%	5%	72%
Not enough detail about how the results of the project will be used	10%	20%	29%	36%	6%	64%
Lack of spare time	17%	22%	25%	32%	4%	58%
Privacy concerns (e.g., sharing of personal data, how the data will be used)	19%	22%	22%	33%	5%	55%
Substantial reading or training required for participation	19%	27%	26%	24%	5%	50%
Personal physical limitation or disability (e.g., physically unable to collect data, material not compatible with voice to text technology)	50%	17%	11%	14%	4%	25%
Having to learn to use new instruments, tools and/or technology	44 %	27%	15%	10%	5%	24%

Barrier	1 –Not at all	2	3	4 – Very much	Unsure/Not Applicable	Total Impact (Score of 3-4)
Having to interact with other participants and/or science experts	44%	27%	16%	7%	5%	23%
Insufficient internet broadband connection	61%	13%	9%	9%	8%	17%
Material only available in English and French	83%	5%	3%	4%	5%	6%

Base: All respondents, n=4703

Q35-44 – Next, we will present a list of motivators and barriers to participating in government-led participatory research/citizen science that have been identified by others. Please indicate the extent to which you feel they are important to your interest in participating in participatory research/citizen science.

How much, if at all, would the following factors prevent you from participating in a government-led participatory research/citizen science project? [RANDOMIZE]

Gender

• Women (46%) are more likely than men (36%) to say that not having enough detail about what is expected from participants at the start of a project would very much prevent them from participating.

Age

• Individuals in the 18 to 24 (34%) and 25 to 34 age cohorts (31%) are less likely to say not having enough detail about what is expected from participants at the start of a project would very much prevent them from participating compared to older Canadians (55-64: 47%; 65 plus: 47%).

• Older Canadians (65 plus) are more likely than younger Canadians (18 to 24) to say having to learn to use new instruments, tools and/or technology (16%; 18-24: 6%) or a personal physical limitation or disability (24%; 18-24: 7%) would very much prevent their participation.

• Canadians in the younger age cohorts are more likely to say a lack of spare time would very much prevent them from participating (18-24: 50%; 25-34: 49%) compared to older Canadians (55-64: 21%; 65 plus: 19%).

Province/territories

• Manitoba residents (50%) are slightly more likely than Canadians on average (41%) to say not having enough detail about what is expected from participants at the start of a project would very much prevent them from participating in a project.

Income

• Canadians with a household income of less than $40K are more likely to say a personal physical limitation or disability would very much prevent them from participating in a project (27%) compared to Canadians with a high household income (over $80K) (10%) and are less likely to say a lack of spare time would very much prevent their participation (25%; 36% of high-income Canadians).

Community Size

- Individuals from a rural community (population of less than 1,000) are more likely to say insufficient internet broadband connection would very much prevent their participation in a project (19%) compared to individuals from a large urban population centre (population of 100,000 or more)(7%).

Visible Minority groups

- Canadians surveyed who self-identify as a visible minority are more likely to say a lack of spare time would very much prevent them from participating (44%) compared to non-visible minorities (31%), as are those who specifically self-identify as Asian (Korean, Japanese, Southeast Asian) or Chinese (51% each).
- Self-identified visible minorities are also more likely to say privacy concerns would very much prevent their participation (40%; 31% of non-visible minorities).
- Individuals who self-identify as Chinese are more likely to say substantial reading or training required for participation would very much prevent them from participating (39%) than Canadians overall (24%).

Indigenous Identity

- Individuals who self-identify as Indigenous are less likely to say substantial reading or training required for participation would very much prevent them from participating (11%) than non-Indigenous individuals (25%).

Civic Engagement

- Substantial reading of training being required is seen as a bigger barrier to participation by non-civically engaged Canadians (28%) than those who are highly engaged (18%), as is having to interact with other participants and/or science experts (12%; highly engaged: 2%).

Comfort and Interest in Science

- Canadians who strongly or somewhat disagree that they would like to know more about science are more likely to say substantial reading or training required for participation would be very much a barrier to them (40%) than those who strongly or somewhat agree (23%), as well as having to interact with other participants and/or science experts (16%; 6%).
- Those who strongly or somewhat disagree that they generally understand science concepts when they are explained to the general public are more likely to say that having to learn to use new instruments, tools and /or technology would very much prevent them from participating (25%) than those who strongly or somewhat agree with the statement (9%).

Other suggestions to encourage participation in participatory research/citizen science

Just over one in ten Canadians each mentioned advertising and making people aware of participatory research/citizen science projects (12%) or offering individual or community incentives (11%) to encourage people to participate, followed by being transparent, having clear objectives and benefits (9%). More than one in three said they did not have any other suggestions (35%).

Table 15 – Other Suggestions to Encourage Participation

Suggestion – Top Mentions	Total (n=3142)
Advertise/make people aware of it	14%
Individual or community incentives/Reward/ tax benefit	13%
Transparent/ clear objectives/ clear benefits	11%
Demonstrate the importance/need/ community impact	5%
Ensure they are non-partisan/not biased	5%
Projects that are interesting and relatable/good learning experiences	5%
Less time commitment/easy to participate	3%
Access to the results from the projects	3%
Social value/target social groups/ group participation	3%
School involvement/make it a required course	3%
Personal contact/keep in contact with participants/ good leadership	2%
None/No	40%

Base: All respondents, n=3142, based on multiple mentions

Q45 – Do you have any other suggestions for how people could be encouraged to participate in government-led participatory research/citizen science projects? [OPEN]

Visible Minority groups

- Those who self-identify as a visible minority were more likely to mention offering individual or community incentives (23%) compared to non-visible minorities (12%).

E. Communicating Research Opportunities

Preferred notification methods for participatory research/citizen science Projects

There was not much difference between how Canadians would like to be invited to upcoming projects and updates or reminders related to projects they were involved in. Canadians most often say their preferred method to be notified about participatory research or citizen science projects is by email (87% upcoming; 90% ongoing), followed by smart phone notifications and texts (32%; 39%), a newsletter (28%; 26%), updates on a web page (28%; 26%) and social media (20%; 12%). Eleven per cent would want to be notified about upcoming projects via community meetings (9% for ongoing projects).

Table 16 – Preferred Notification Methods for Participatory Research/Citizen Science Projects

Method	Upcoming Projects	Ongoing Projects
Emails (active notification)	87%	90%
Smart phone notifications and/or text messages (active notification)	32%	39%
Newsletter (active notification)	28%	26%
Updates on webpage/Participatory research/citizen science platform when I choose to visit (passive notification)	28%	26%
Social media feeds	20%	12%
Community meetings	11%	9%
Other	1%	<1%
None	2%	2%

Base: All respondents, n=4703

Q46 – How would you prefer to be informed of upcoming participatory research/citizen science projects you could participate in? [SELECT ALL THAT APPLY] [RANDOMIZE]

Q47 – If you were involved in a participatory research/citizen science project, how would you prefer to get updates, notifications or reminders related to the project? [SELECT ALL THAT APPLY][RANDOMIZE]

Current access to computer, tablet or smartphone

Nearly all Canadians (99%) report having some access to technology, whether via a smartphone (84%), laptop (70%), tablet (49%) or desktop computer (46%). Less than one per cent report they do not have access to any of these technologies on a regular basis.

Table 17 – Access to Technology

Device	Total (n=4703)
Smartphone	84%
Laptop computer	70%
Tablet (i.e., iPad or tablet)	49%
Desktop computer	46%
I do not have access to any of the above on a regular basis	Less than 1%

Base: All respondents, n=4703

Q48 – Do you currently have access to a computer, tablet or Smartphone on a regular basis? (select all that apply)

Current access to internet

More than nine in ten Canadians report they have access to stable high-speed internet all or most of the time (93%), while six per cent report having it some of the time and one per cent report not having access to stable high-speed internet. Less than one per cent report they do not have access to internet at all.

Canadians from a rural community (population of less than 1,000) are less likely to report having access to stable high-speed internet all or most of the time (74%) compared to those from a large urban population centre (population of 100,000 or more)(97%).

Table 18 - Access to Internet

Level of access	Total (n=4703)	Population of less than 1,000 (n=369)	Population of 1,000 to 29,999 (n=985)	Population of 30,000 to 99,999 (n=716)	Population of 100,000 or greater (n=2590)
I have access to stable high-speed internet all or most of the time	93%	74%	89%	94%	97%
I have access to stable high-speed internet some of the time	6%	20%	9%	5%	3%
I do not have access to stable high-speed internet	1%	7%	2%	1%	Less than 1%
I do not have access to internet at all	Less than 1%	-	Less than 1%	Less than 1%	-

Base: All respondents, n=4703

Q49 – How would you describe your internet access during an average month? (select one)

Comfort level using technology and the Internet

Canadians indicate the highest level of comfort (score of 7-10) communicating by email (93%), using a desktop or laptop computer and navigating the internet (89% each), as well as using a tablet or smart phone (84%). About three in four say they would be comfortable downloading and using a mobile application (76%) and under six in ten would be comfortable using social media (59%).

Table 19 – Comfort Level Using Technology and the Internet

Level of comfort (Score from 0-10)	Comfortable (7-10)	Moderate comfort (4-6)	Not comfortable (0-3)	Unsure	Mean
Communicating by email	93%	4%	3%	<1%	9.2
Navigating the Internet	89%	7%	3%	<1%	8.9
Using a desktop or laptop computer	89%	6%	4%	1%	8.9
Using a tablet or smartphone	84%	8%	8%	1%	8.4
Downloading and using a mobile application	76%	10%	13%	2%	7.8
Using social media	59%	18%	22%	1%	6.6

Base: All respondents, n=4703

Q50-55 – How would you rate your level of comfort doing the following, on a scale from 0 to 10 where 0 is very uncomfortable and 10 is very comfortable: [RANDOMIZE]

Age

- Individuals in the youngest age cohort (18-24) are more likely than those 65 plus to say they are comfortable using a tablet or smartphone (18-24: 96%; 65 plus: 69%), downloading and using a mobile application (18-24: 93%; 65 plus: 58%), navigating the internet (18-24: 96%; 65 plus: 80%) and using social media (18-24: 82%; 65 plus: 40%).

Income

- Canadians with a household income of less than $40K are less likely to say they are comfortable using a tablet or smartphone (71%) compared to high-income Canadians (over $80K)(90%), as well as downloading and using a mobile application (61%; 84% of high-income Canadians).

Community Size

- Individuals from a rural community (population of less than 1,000) are less likely to feel comfortable using a smartphone (75%) compared to individuals from a large urban population centre (population of 100,000 or more)(85%), downloading and using a mobile application (63%; 78% of urban Canadians) and using social media (50%; 60% of urban Canadian).

Visible Minority groups

- Those who self-identify as a visible minority are more likely to say they are comfortable using social media (70%) than non-visible minorities (58%).

Civic Engagement

- Canadians who are highly civically engaged are more likely to say they are comfortable navigating the Internet (94%) than those with no engagement (85%), as well as using social media (68%; non-engaged: 56%).

Comfort and Interest in Science

- Those who strongly or somewhat agree that they generally understand science concepts when they are explained to the general public are more likely to say they are comfortable downloading and using a mobile application (76%) than those who strongly or somewhat disagree with the statement (57%).

F. Findings by Key Underrepresented Community

The following section includes an analysis of the findings by key underrepresented communities. Where the national average is not noted, it should be assumed that it is comparable with the findings from the community.

Visible Minorities

Key differences compared to national average

- A monetary incentive is a bigger motivator for visible minorities (62% say very much a motivator) compared to Canadians overall (42%), and visible minorities were more likely to mention this as something to encourage others to participate (23%; 12% of all Canadians).
- Individuals who self-identify as a visible minority are also more likely to say knowing someone else who has participated would very much motivate them to participate (21%; 15% of all Canadians), as well as connecting with other participants and being part of a community (31%; 24% of Canadians overall).
- A lack of spare time is more likely to be rated as very much preventing them from participating for those who self-identify as a visible minority (44%) than Canadians on the whole (32%).
- Comfort level using social media is also higher among surveyed visible minorities (70% comfortable) than Canadians on average (59%).

Detailed key findings

Most Canadians who identify as a member of a visible minority are at least moderately interested in participating in a future government-led participatory research/citizen science project, with six in ten who would be very interested (score of 7-10 out of 10)(60%) and just under one in four who would be moderately interested (score of 4-6 out of 10)(23%), consistent with the national average (59% very interested; 23% moderately interested).

In line with the national average, those who self-identify as a visible minority were much more interested in participating in a project with a one-time requirement such as taking a survey or entering data (81%; 80% of Canadians overall) rather than projects that required longer time commitments or more involvement from participants (52% of visible minorities were interested in a project requiring daily data entry for a few weeks or a project requiring periodic data entry for months years; 45% interested in a project requiring participants to collect sample outside their homes).

When looking at motivators to participate, the top unprompted motivator for this group to participate in a government-led participatory research/citizen science project is being able to contribute, help society, science and their community (25% of visible minorities) – in line with the national average (22%). When prompted with potential motivators, contributing to a topic of importance or interest to them was the top motivator (69%). Visible minorities are more likely to say receiving a monetary incentive for participation would very much encourage them to participate (62%) compared to the national average (42%).

Regarding unprompted barriers to participation, time commitment and their own availability was most frequently mentioned (57%), followed by distance, transportation needs and location of the project (8%), a lack of resources, knowledge, skills, equipment, or not knowing how to use technology (8%). When prompted with a list of potential barriers, not having enough detail about what is expected from participants at the start of a project was most often rated as very much preventing them from participating in a future project (39%).

Low-income populations

Key differences compared to national average

- Low-income Canadians are more likely to say receiving a monetary incentive would very much encourage them to participate in a participatory research/citizen science project (50%; 42% of Canadians on average).

- They are less likely to mention the time commitment and their availability unprompted as a barrier to their participation (33%; 53% of all Canadians).

- Accessibility issues was mentioned unprompted as a barrier to participation more often by low-income Canadians (19%; 9% of all Canadians) and they were also more likely to say that their personal physical limitation or disability would very much prevent them from participating (27%; 14% of all Canadians).

- When prompted, low-income Canadians were less likely to identify a lack of spare time as a factor that would very much prevent their participation (25%; 32% of Canadians overall).

- Comfort level with using a tablet or smart phone (71%; 84% of all Canadians) or downloading and using a mobile application (61%; 76% of all Canadians) is lower among surveyed low-income Canadians.

Detailed key findings

Nearly six in ten low-income Canadians are very interested (score of 7-10 out of 10)(59%; 59% of Canadians overall) in participating in a future government-led participatory research/citizen science project, with just under one in five who would be moderately interested (score of 4-6 out of 10)(17%; 23% of Canadians overall). Eighteen per cent of low-income Canadians say they would not be interested in participating (score of 0-3 out of 10)(16% of Canadians overall) and five per cent are unsure.

Consistent with findings for Canadians overall, low-income Canadians were more interested in participating in a project where they respond to a survey or enter data in one-time only (78% were interested; score of 7-10 out of 10)(80% of Canadians overall) compared to projects that required longer time commitments or more involvement from participants (45% of low-income Canadians were interested in a project requiring daily data entry for a few weeks, 44% were interested in a project requiring periodic data entry for months/years; 42% were interested in a project requiring participants to collect samples outside their homes).

The biggest unprompted motivators for low-income Canadians to participate in a government-led participatory research and citizen science project were a reward or incentive (19%), being able to contribute, help society, science and their community (7%), and an interesting subject or an interest in the outcome (11%). The prompted motivators that low-income Canadians were most likely to say would very much encourage them to participate were contributing to a topic of importance or interest to them (66%), having the ability to gain insights or learn more about their health (52%) and receiving follow up communications on the results of the project (51%). One in two say receiving a monetary incentive (50%) would very much encourage them to participate, which is higher than Canadians overall (42%).

Regarding unprompted barriers to participation, low-income Canadians most frequently mentioned the time commitment and their availability (33%; 53% of Canadians overall), followed by accessibility issues, including mobility issues or age (19%; 9% of Canadians overall) and distance, transportation needs and location of the project (15%). Once prompted with a list of potential barriers, not having enough detail about what is expected from participants at the start of a project (42%), not having enough detail about how the results will be used (36%), and privacy concerns (34%) were most often rated as very much preventing them from participating in a future project. Personal physical limitation or disability (27%; 14% for Canadians overall) was more frequently

identified as very much a barrier by low-income Canadians, while lack of spare time was less frequently identified as something that would very much prevent their participation (25%, compared to 32% of Canadians overall).

Low-income Canadians say they are most comfortable (score of 7-10) communicating by email (89%), using a desktop or laptop computer (85%) and navigating the internet (84%). They are less likely than the national average to say they are comfortable using a tablet or smart phone (71%, compared to 84% of Canadians overall) or downloading and using a mobile application (61%, compared to 76% of Canadians overall). Under six in ten would be comfortable using social media (55%).

Rural populations

Key differences compared to national average

- Rural residing Canadians (19%) are more likely to say an insufficient internet broadband connection would very much prevent them from participating in a future project (9% of all Canadians).

- These individuals are less likely to be interested in a project that collects data from a device or app passively with their consent for a set period of time (30%; 41% of all Canadians).

- Their comfort level using a smartphone or tablet (75%; 84% of all Canadians), downloading and using a mobile application (63%; 76% of all Canadians) and using social media (50%; 59% of all Canadians) is also lower than the national average.

Detailed key findings

Consistent with the national average, a majority of Canadians that live in a rural area are at least moderately interested in participating in a future government-led participatory research/citizen science project, with just under six in ten who would be very interested (score of 7-10 out of 10)(58%; 59% of Canadians overall) and just under one in four who would be moderately interested (score of 4-6 out of 10)(23%; 23% of Canadians overall). Fifteen per cent of rural Canadians say they would not be interested in participating (score of 0-3 out of 10)(16% of Canadians overall).

Similar to the rest of Canada, Canadians that live in a rural area were significantly more interested in participating in a project where they respond to a survey or enter data in one-time only (77% were interested; score of 7-10 out of 10; 80% of Canadians on average) rather than a project that required more involvement or a longer time commitment.

The top unprompted motivators for Canadians living in a rural area to participate in a government-led participatory research and citizen science project were an interesting subject or an interest in the outcome (16%), being able to contribute, help society, science and their community (15%), and a reward or incentive (14%). After they were prompted with a list of potential motivators, Canadians in a rural area were most likely to say contributing to a topic of importance or interest to them would very much encourage them to participate (65%) and receiving follow up communications on the results of the project (51%).

When it comes to the main unprompted barriers to participation, Canadians in a rural area often mentioned the time commitment and their availability (46%), accessibility issues, including mobility issues or age (13%) as well as distance, transportation needs and location of the project (10%). Prompted with a list of potential barriers, they most often rated not having enough detail about what is expected from participants at the start of a project (40%), not having enough detail about how the results will be used (35%) and privacy concerns (35%) as

very much preventing them from participating in a future project. Canadians in a rural area were over two times more likely to select insufficient internet broadband connection (19%) as very much preventing them from participating in a future project compared to Canadians overall (9%).

Indigenous individuals

Key differences compared to national average

- Individuals who self-identify as Indigenous are less likely than the national average to say substantial reading or training required for participation would very much prevent them from participating (11%; 24% of Canadians overall).

- Indigenous individuals are slightly more likely to say receiving a monetary incentive for participation would very much encourage them to participate (53%) compared to the national average (42%).

Detailed key findings

The majority of respondents who identify as Indigenous are moderately or very interested in participating in a future government-led participatory research/citizen science project, with six in ten who would be very interested (score of 7-10 out of 10)(60%) and just under one in four who would be moderately interested (score of 4-6 out of 10)(21%), consistent with the national average (23% moderately interested; 59% very interested).

Consistent with the national average, those who self-identify as Indigenous were significantly more interested in participating in a project with a one-time requirement such as taking a survey or entering data (76%; 80% of Canadians overall) compared to projects that required longer time commitments or more involvement from participants.

Examining motivators to participate, the top unprompted motivator to participate in a government-led participatory research/citizen science project was being able to contribute, help society, science and their community (19%) – in line with the national average (22%). After prompting with specific potential motivators, contributing to a topic of importance or interest to them was their top motivator (69% who say it would very much encourage them to participate; compared to 70% of Canadians overall). Indigenous individuals were slightly more likely to say receiving a monetary incentive for participation would very much encourage them to participate (53%) compared to the national average (42%).

In terms of unprompted barriers to participation, the time commitment and their availability was most frequently mentioned (48%), consistent with Canadians overall (53%). Indigenous peoples also frequently mentioned accessibility issues, including mobility issues or age (12%) as well as potential costs (11%). After being prompted with a list of potential barriers, not having enough detail about what is expected from participants at the start of a project was most often rated as very much preventing them from participating in a future project (40%).

Appendix A: Methodology

Qualitative phase

Nanos conducted four online focus groups among Canadians, 18 years of age and older, who were considered low-income (household income of less than $40K), a visible minority and/or from a rural community as defined by Health Canada, on March 21st and 23rd, 2023. Three focus groups were conducted in English and one in French, with a total of 36 participants.

The sessions were distributed as follows:

Table 20 – Focus Group Composition

Date and time	Group Composition
March 21st at 5:15PM EST	National - English
March 21st at 7:00PM EST	National - English
March 23rd at 6:15PM EST	Quebec - French
March 23rd at 8:00PM EST	National - English

Each group lasted approximately 90 minutes and consisted of between seven (7) and ten (10) participants (out of the ten (10) people recruited for each group).

Recruitment

Nanos Research developed the recruitment screener and provided it to Health Canada for review prior to finalizing. Participants were screened to ensure they met the target profile (low-income (under $40K), a visible minority and/or from a rural community as defined by Health Canada). Participants were also screened to ensure the groups included a mix of gender, education, age, and that they would be comfortable voicing their opinions in front of others. Normal focus group exclusions were in place (marketing research, media, and employment in the federal government, and recent related focus group attendance). All participants were offered a $100 honorarium to encourage participation and thank them for their time.

Participants were randomly recruited from an online panel and were administered the recruiting screener online (See Appendix B). Only those who qualified were invited to participate in the group discussions. Across all groups, 40 participants were recruited and 36 attended.

All groups were video and audio recorded for use in subsequent analysis by the research team. During the recruitment process, participants provided consent to such recording and were given assurances of anonymity.

Moderation

Alexandra Apavaloae, Senior Researcher/Moderator, moderated all four of the focus group sessions.

All qualitative research work was conducted in accordance with professional standards and applicable government legislation (e.g., PIPEDA).

Participant Profile

<div align="center">

Table 21 – Participant Profile

</div>

Profile	Number of Participants
Gender	**Count**
Men	13 participants
Women	23 participants
Age	**Count**
18 to 34 years	11 participants
35 to 54 years	18 participants
55 years and over	7 participants
Income	**Count**
Less than $20K	4 participants
$20K to just under $40K	16 participants
$40K and above	16 participants
Community Size	**Count**
Rural (Less than 1,000 people)	8 participants
Small (1,000 to 29,999 people)	2 participants
Medium (30,000 to 99,999 people)	4 participants
Large (100,000 or more people)	22 participants
Ethnicity	**Count**
White	23 participants
BIPOC/Visible Minority	13 participants
Indigenous	3 participants
Total	**36 participants**

Quantitative phase

The sample was drawn from two sources:
1) the Nanos RDD Online Probability Panel and,
2) random digit dialled (RDD) land- and cell-lines and administered online.

Nanos conducted a mixed-sample RDD dual frame (land- and cell-lines) hybrid random telephone and online survey of 4,703 Canadians, 18 years of age and older, between March 16th and 30th, 2023. Participants were randomly recruited by telephone using live agents and administered a survey online. The results were statistically checked and weighted by age and gender using the latest Census information and the sample is geographically stratified to be representative of Canada.

With over 50,000 panelists, the Nanos Online Probability Panel consists of individuals randomly recruited by land-and cell-lines using live agents. As panelists are randomly recruited, this ensures the panel is representative of Canadians. Due to the parameters of the Nanos Online Probability Panel individuals in the Territories and some in Atlantic Canada were recruited by random telephone sample to take the online survey which ensured coverage this area, while the rest of the interviews were recruited directly from the Nanos Online Probability Panel. In total, 4,480 interviews were recruited directly from the Nanos Online Probability Panel and 223 were recruited by telephone.

Sample design, weighting and respondent profile

The sampling method was designed to complete interviews with 4,500 Canadians 18 years of age and older. Soft quotas were set by age, gender, and region.

The survey obtained the following distribution:

Region	% of population	Target (quota)	% of sample	Actual Unweighted	Actual Weighted*	Margin of Error
Atlantic	5%	450	10%	479	306	±4.5%
Newfoundland and Labrador	1%	-	-	-	-	-
Nova Scotia	2%	-	-	-	-	-
Prince Edward Island	<1%	-	-	-	-	-
New Brunswick	2%	-	-	-	-	-
Quebec	19%	1,125	25%	1,072	1,040	±3.0
Ontario	31%	1,325	29%	1,376	1,747	±2.7
Manitoba	3%	225	5%	257	159	±6.2
Saskatchewan	2%	225	5%	234	135	±6.5
Alberta	9%	425	9%	500	504	±4.4
British Columbia	11%	650	14%	700	633	±3.7
Territories	<1%	75	2%	85	18	±10.8
CANADA	100%	4,500	100%	4,703	4,542	±1.4
Age	**% of population**	**Target (quota)**	**% of sample**	**Actual Unweighted**	**Actual Weighted***	**Margin of Error**
18-34	23%	1,185	26%	972	1,221	±3.2
35-54	41%	1,800	40%	1,965	1,465	±2.2
55+	36%	1,515	34%	1,766	1,856	±2.3
Sex	**% of population**	**Target (quota)**	**% of sample**	**Actual Unweighted**	**Actual Weighted***	**Margin of Error**
Male	49%	2,250	50%	2,556	2,195	±1.9
Female	51%	2,250	50%	2,105	2,305	±2.1

*Results are weighted by region, gender and age to 2021 Census data.

The following table presents the weighted distribution of survey participants by several key variables.

Community Population Size	% of Sample (n=4703)	Actual Weighted
Population centre size group (100,000 and over)	55%	2590
Population centre size group (30,000 to 99,999)	15%	716
Population centre size group (1,000 to 29,999)	21%	863
Population centre size group (less than 1,000)	8%	310
Prefer not to answer	1%	46
Total household income	% of Sample (n=4703)	Actual Weighted
Under $40,000	10%	498
Between $40,000 and $80,000	22%	1010
$80,000 or above	56%	2489
Prefer not to answer	12%	546
Visible minority groups*	% of Sample (n=4703)	Actual Weighted
Other Asian (Korean, Japanese, Southeast Asian)	3%	369
Chinese	2%	219
Black	1%	183
Filipino	<1%	41
Arab/West Asian	1%	125
Latin American	1%	80
Indigenous	3%	297
Other	<1%	15
Not a visible minority	85%	9,915
Prefer not to answer	4%	514

Based on multiple mentions

As part of the sampling methodology, Nanos also included a dual frame RDD (Random Digit Dialed) sample of land- and cell-line numbers to recruit participants. With this approach a separate sampling frame was created for the land-line portion of the sample and for the cell-line portion of the sample. This approach ensured sample coverage for not only landlines but households with land and cell line and households which are cell-line only residences. The overlap resulted in a greater level of granularity.

Once invited, participants were administered a set of screening questions to filter out anyone who was not eligible to participate in the study. For the purposes of this study the following screening criteria were applied:

- The first set of screening criteria that were applied are industry standard screening criteria. This involves several components, the first of which is age – in this case, all respondents confirmed they are 18 years of age or older at the time they are taking the survey. Any respondent who indicated they are under 18 years of age or refused to answer the question was not allowed to proceed through the survey.
- Respondents were also screened on their employment situation and the employment situation of their immediate family members/household members. The industry standards required that any respondents who indicated they are employed, or have family members employed, in the market research, advertising and/or media sectors were not allowed to proceed through the survey.

As noted, respondents who fell into any of the above categories were immediately terminated from the research/prevented from proceeding any further and they were no longer eligible to participate in the study.

Readers should note that panel members have already been pre-screened for the industry specific criteria; however, as part of industry best practices, respondents are always screened on this question in case either their or an immediate family members' employment situation has changed, and they are now employed in an ineligible field. In that case the email is scrubbed from the panel and placed on a 'never contact' database.

As a best practice a screening question was added to ensure respondents had not participated in Government of Canada surveys in the last 30 days before being contacted.

Fieldwork Dates

Fieldwork was conducted between March 16th to 30th, 2023.

Questionnaire design

Health Canada provided Nanos with desired topic areas and draft questions in line with the research objectives. Nanos Research then designed a questionnaire and advised on best practices in question design. Upon approval of the English questionnaire, Nanos Research translated the questionnaire into French which was then reviewed by Health Canada.

Nanos programmed the questionnaire, then thoroughly tested the programming in English and French to ensure accuracy. The programming was then provided to Health Canada for testing and feedback provided was implemented. This procedure ensured that the survey logic accurately reflected the questionnaire and data was collected properly. The final survey questionnaire is included in Appendix B.

Interview Duration

The average interview length was 17.6 minutes and ranged from 12 to 30 minutes.

Incentives/Methods to Encourage Participation

An incentive of $5 (either via e-transfer or to a donation to a registered charity) was offered to all panelists who participated in the research. A minimum of two reminder emails were sent to invitees to encourage their participation.

Weighting Procedures

Our sampling methodology stratified the population along three key variables which allowed triangulation of the weighting approach and yielded robust, geographic and demographic representation across the country.

The sample was stratified along three axes – by region/province, by sex and by age. Fixed completion quotas were assigned to each province, regionally in the Territories due to their relative size, which were anchored by their population distribution relative to the national total.

In order to ensure balanced representation within each province/region, the sample was further stratified by sub-regions. This prevented over/under-sampling of geographies (ex. City of Toronto), within the provincial total.

Within each province soft gender/sex quotas were then set which approximate that area's sex distribution. The data collection allowed for a variance of +/- 5% for sex within each region, again preventing over representation

by either men or women. The third stratification axis was by age category. The age categories were used to group respondents and for weighting purposes.

Each of the age categories were weighted, within their sex <u>and</u> their province/region, the outcome of which yielded a dataset which accurately reflects the demographic composition of the population at large.

Quality Controls

Prior to launching the survey, a pre-test was conducted online with 29 individuals (19 English, 10 French). The purpose of the pre-test was to ensure that the content of the questionnaire was understandable, that the duration of the interview fit the target, to ensure comparability between the French and the English, and to ensure that the logic of the survey flowed smoothly. The pre-test was completed between March 14th and 15th, 2023.

Upon completion of the pre-test, Nanos and Health Canada reviewed the findings and determined no modifications were needed and the survey was deployed to the full sample.

For our online surveys from our panel, we have a minimum field period of one week to give people a chance to complete the survey and for Nanos to send reminders to those who did not complete the survey (this limits the bias of only taking people who respond to the first invitation because they are free and/or have immediate access to a computer for online surveys).

The data file was checked on a number of elements to ensure accuracy and validity, both during and after the data collection as follows:

- Average time taken – surveys which fall outside the acceptable range of variation for the average survey response time are subjected to extra checks for accuracy. For example, the survey duration is checked for 'speed-racers' – those who complete the survey in an inordinately short period of time so they can be entered into a prize draw offered. These surveys are deleted. By the same token surveys which take far in excess of the average time are double checked in case the respondent may have been conducting external research on the subject matter while completing the survey.

- Page loading – our software platform tracks the page order viewed by respondents. This allows us to identify respondents who may have continually moved back and forth through a survey.

- Single use – survey invitations are tied to a unique code embedded in the invitation link. This only allows the respondent to access/complete the survey once.

Nanos Research monitors ten percent of all fieldwork for quality control and assurance in accordance with the standards of CRIC, ESOMAR and AAPOR.

Machine Learning Analysis

As part of the validation process for the coding of open-ended responses, Nanos utilized machine learning algorithms. When dealing with an array of responses in large respondent sets the algorithm allows us to group like responses automatically. Nanos Research used the Latent Dirilecht Allocation modelling method for natural language processing, which is an efficient way of providing an unbiased and quantitative approach to the sorting of datasets (words) into groups (topics).

Nanos ran an unsupervised model MLA on the data which codes all responses into categories. Each category has six words associated to it with probabilities that each word is properly assigned to the category. Additionally, the coding of the responses also has a probability score for each response coded. This process enabled Nanos to compare the topics and categories generated by the MLA to the categories created by Analysts as an extra

validation. As the generated topics aligned with the categories created during the manual coding, Nanos did not make any changes to the coding keys for the open-ended questions.

The MLA results in 2 forms of output, which were used to validate the coding.

1) **Frequency Output** – The frequency output is a simple way of calculating which words were used the most often and displays the words in order of decreasing frequency, as well as their number of utterances.

2) **Topic Output** – the topic output includes topics that are inferred by using proprietary machine learning algorithms. Nanos used the Latent Dirilecht Allocation modelling method for natural language processing, which provides an unbiased and quantitative approach to the sorting of datasets (words) into groups (topics). The output is the top 6 words associated within a set of topics, with each column being a distinct topic. These columns can be used to infer the tone and meaning of respondents while minimizing subjective bias. The words are placed in each column based on the relative number of times they are mentioned together and are displayed with their likelihood of falling into that topic (probability of 0% to 100%).

Panel Maintenance

Individuals cannot self-select to join the panel or to complete surveys once they are panelists. For each project the sample is randomly selected from the randomly recruited panel.

Individuals are randomly recruited for the panel by land- and cell-lines across Canada. They provide their consent on the call and voluntarily provide their email address to Nanos to be contacted for future online research. We recruit for the panel every week as we do a weekly national survey which is representative of Canada and includes recruitment for the panel. Panelists usually drop out of the panel after a few months.

Call Dispositions

The following table outlines the contact disposition for the fieldwork.

Online Survey Contact Disposition	
Total Invitations (a)	32751
Total Completes (b)	4703
Qualified Break-offs (c)	174
Disqualified (d)	33
No response (e)	27841
Contact Rate (b+c+d)/a	15.0%
Participation Rate (b+d)/a	14.5%

Telephone Survey Contact Disposition	
Total Numbers Attempted	37682
Out of scope - invalid	22232
NIS, Business, etc	22232
Unresolved (U)	10174
No answer/machine/etc	10138
Busy	36
In-score Non-responding (IS)	4838
Language barrier	18
Callback	187
Refusal	4633
Termination	0
In scope responding (R)	438
Complete	438
Partials	0
Response Rate	2.8%

Response Rate

The response rate for this survey was 2.8%. This was calculated using the Canadian Research Insights Council (CRIC) formula, which has been approved by the Government of Canada (Response Rate/Participation Rate = R/(U + IS + R).

Non-Response Bias

First, there is potential non-response bias based on the profile of the responding sample. Based on our experience, using the RDD dual frame land and cell-line sample represents the optimal and most reliable form of research that requires the least amount of post fieldwork statistical weighting (both for the telephone sample and the online, as participants were recruited by land- and cell-lines). From a research perspective, the less weighting the better since the data remains random and in its raw form as shared with Nanos.

There was potential for under-coverage among individuals who may not even have access to a land or cell-line to be included in the sample. Nanos managed the non-response bias by statistically checking the demographics of the participating sample group with the Canadian population. Where a valid variance occurred, the dataset was weighted to be consistent with the profile of all Canadians, including those, for example, of a lower socio-economic status. The estimated proportion of Canadians without access to internet to complete the survey is 6%[1].

Second, there is the potential non-response bias based on the answers themselves. Although the demographic profile of the sample reflects the Canadian population, hypothetically, the non-responding participants may have different opinions. Although this is a hypothetical possibility, the Nanos track record with respect to both economic and political sentiment which very accurately captures opinion and closely correlates to a number of external measures intended to be examined, suggests that there is little non-response bias in the Nanos methodology.

---

[1] https://www150.statcan.gc.ca/n1/en/daily-quotidien/210531/dq210531d-eng.pdf?st=A1Uw2f80

Appendix B: Research instruments

B.1 Qualitative Discussion Guide

Discussion	Moderator Notes & Objectives	Time
Introduction Moderator introduces self and defines his/her role, the discussion timeframe (90 minutes), encourages all participants to speak up. Audio/video recording announcement (and the presence of observers). The meeting will be recorded for research purposes only and all your feedback will remain anonymous. There are no right or wrong answers. I'm interested in your ideas as individuals.	To make participants feel at ease by clearly explaining the process.	2 min
Quick self-introduction – Let's go around the group and introduce ourselves with our first name and our favourite pass-time. Participants introduce themselves to the group (e.g. first name and favourite personal hobby). Go through software functionality ("Raise hand" button) which can be found at the bottom of the screen under reactions. I recommend using the "raise hand" function so that everyone has their turn to share their views. I want to be respectful of your time and ensure the group is no longer than 90 minutes, so you might see me move things forward and ask a question to only one or two of you before moving on to the next question.	Respondent warm-up and group bonding.	2 min
Outline the purpose of the session. Tonight we are going to get your impressions on aspects related to Participatory Research also known as Citizen Science. *The research today is sponsored by Health Canada, which is part of the Government of Canada*	To explain the broad subject topic.	1 min

Discussion	Moderator Notes & Objectives	Time
MODULE A: AWARENESS AND INTEREST • Let's start by talking about Participatory Research or Citizen Science. Had you heard or not heard about Participatory Research or Citizen Science prior to the survey you recently participated in? [IF HEARD] What did you know about Participatory Research OR Citizen Science? Where did you hear about it? [SHOW VISUAL (SLIDE 2)] This is how we're defining Participatory Research or Citizen Science: When professional scientists work alongside volunteers from the public, who may or may not have any background in science, to conduct research together. Here are three examples of projects… This collaborative type of research recognizes the wealth of knowledge that citizens across Canada possess. This approach where volunteers and professional scientists can work together to fill data gaps and solve real-world problems is gaining in popularity and used across the world with huge success. Even without an education in science, volunteers can help collect data, or share their unique knowledge or experience to help scientists where they need help. Given this definition, do you feel these terms, participatory research or citizen science, accurately represent the concept of professional scientists working together to conduct research with volunteers from the public, who may or may not have any background in science? Why or why not? Do you have a positive or negative impression of the term Citizen Science? Why do you have that impression? [USE SLIDE 3 TO JOT DOWN POSITIVE AND NEGATIVE RESPONSES][NOTE: THIS PROMPT WAS ASKED SECOND IN THE FIRST TWO GROUPS] For the rest of our discussion, we will just use the term [Participatory Research OR Citizen Science – use term preferred by participants when referring to Participatory Research/Citizen Science. Have you ever participated in a Participatory Research OR Citizen Science project?	To gauge understanding and interest in Participatory Research/Citizen Science.	20 min

Discussion	Moderator Notes & Objectives	Time
MODULE B: MOTIVATORS AND BARRIERS TO PARTICIPATION We will now talk about factors related to participation in Participatory Research OR Citizen Science. Would you be interested or not interested in participating in a future government-led Participatory Research OR Citizen Science project? Why or why not? [USE SLIDE 4 TO JOT DOWN POSITIVE AND NEGATIVE RESPONSES] [PROBE] What would be the biggest motivators, if any, for you to participate in a Participatory Research OR Citizen Science project? [PROBE] What would be the biggest barriers, if any, to you participating in a Participatory Research OR Citizen Science project? Which topics or subjects would you be most interested in when participating in a Participatory Research OR Citizen Science project? Let's take a moment to talk about your interest in a variety of different types of projects. [SHARE VISUALS OF DIFFERENT PROJECTS – PROVIDED ARE *EXAMPLES* OF THE *TYPES* OF PROJECTS WE'RE ASKING ABOUT, NOT JUST ON THE SPECIFIC TOPIC ILLUSTRATED IN THE EXAMPLE] [VISUAL SLIDE 5] PROJECT A: One type of project is more passive. For example, would you be interested or not interested in participating in a project where you set up an air quality sensor near the entrance of your home where live data is collected and shared automatically with scientists, who would share summary findings back to you? Why or why not? [VISUAL SLIDE 6] PROJECT B: A second type of project would have more involvement from you. For example, would you be interested or not interested in taking and submitting a photo of all your bathroom cleaning products to help scientists understand the use of household chemicals? Why or why not? [VISUAL SLIDE 7] PROJECT C: Another type of project might mean more regular or ongoing involvement. For example, would you be interested or not interested in answering a weekly survey anonymously which asks five questions about your mental health? Why or why not? [VISUAL SLIDE 8] PROJECT D: Lastly, some types of projects would support interpretation of data or results. For example, would you be interested or not interested in providing your own local	To explore motivators and barriers to participating in Participatory Research/Citizen Science projects.	40 min

knowledge to help scientists understand why results of a research project might be different from one part of the neighbourhood to another. [IF NEEDED] For example, you could provide your own local knowledge of green spaces or asphalted areas in your neighbourhood to help scientists understand why results might show higher air temperatures in one part of your neighbourhood than another. Why or why not?

What concerns, if any, do you have related to taking part in a Participatory Research OR Citizen Science project? What supports would you need to address these concerns?

[IF PRIVACY IS NOT MENTIONED ABOVE] *How important are privacy considerations to you when you think of contributing to a Participatory Research OR Citizen Science project? Why do you have that opinion?*

[IF THEY MENTION ANONYMITY] *What does "anonymity" or "anonymous" mean to you? No names / birthdates / emails or something else? Cannot be identified? [ADDED FOR GROUPS 3 & 4]*

What kind of information would you not be comfortable contributing to a Participatory Research OR Citizen Science project? Why do you say that?

Discussion	Moderator Notes & Objectives	Time
MODULE C: METHODS FOR PARTICIPATING Now let's think about the ways in which one can participate in a project. [SHARE VISUAL (SLIDE 9)] Thinking of possible ways to participate in a Participatory Research OR Citizen Science project, what would be your preferred way of contributing to the research/project? How much time would you be willing to commit to participating in one of these projects? What kind of timeframes would you prefer for a project (i.e. small weekly commitments spread over the course of months or larger commitments in a short period time)? [PROMPT: If participants say it depends, ask them what it depends on] What types of messages/messaging should the government use to communicate with the public to find people interested in participating in these types of projects? Why did you suggest that? What types of methods/means should the government use to communicate these messages with the public? Why did you suggest that?	To explore methods and modes of participation preferred by participants.	20 min

Health Canada is thinking of developing a platform to support these types of projects. How do you visualize the platform process, user experience and/or system features? What would be useful?

- [PROBE] What about :
    - Push notification reminders to add data or respond to questions?
    - A login/profile feature to have all projects you're involved in, in one place?
    - A community forum to chat with other participants about projects?

Do you have any other suggestions for how people could be encouraged to participate in government-led Participatory Research OR Citizen Science projects?

[IF TIME ALLOWS]
Would you use the platform or would you prefer to interact just via email (e.g. email reminders, emailed submissions of data)? Why?

How would you like to access data/results of projects?

Discussion	Moderator Notes & Objectives	Time
MODULE D: WRAP UP ***Check in with observers to see if there are any follow-up items or clarification needed.*** Follow up questions for participants, if needed. Thank you everyone for your engagement in the discussion. In appreciation of your time, you will receive $100 sent to you via e-transfer. We will follow up with you in the next couple of days with details on your incentive.	To establish that objectives have been reached.	5 min

B.2 Quantitative Survey Questionnaire

INTRODUCTION

Thank you for your interest in participating in this 15 minute research survey for the Government of Canada. All the views and information you share with Nanos Research will be confidential and protected in accordance with Canada's privacy laws, including the Privacy Act, the Access to Information act, and any other pertinent legislation. Click to view our privacy policy. Thank you, in advance, for sharing your time.

Si vous préférez répondre au sondage en français, veuillez cliquer sur français [WILL ADD LINK TO FR SURVEY].

Please contact jhenwood@nanosresearch.com if you require alternative means of accessing the survey.

This research project is registered with the CRIC Research Verification Service that allows you to verify its legitimacy and share your feedback. If you have feedback on this research, you can share it by going to https://canadianresearchinsightscouncil.ca/rvs and using the RVS code: XYZ.

Your decision to participate or not is yours alone and there will be no consequences if you decide not to participate.

Why are we collecting your personal information?

The aim of this survey is to gain knowledge about opinions, attitudes, and experiences related to science.

We will not ask you to provide us with any information that could directly identify who you are, such as your name, or full date of birth. However, we highly encourage you to not provide identifying details in your responses (e.g., names of people you know, city name, activities you are involved in) to further protect your identity. The protection of your personal information is very important to the success of this project, and we will make every effort to safeguard it and reduce the risk that you are identified.

Will we use or share your personal information for any other reason?

The survey firm, Nanos Research, will be responsible for collecting survey data from all participants. Once data collection is complete, Nanos Research will provide Health Canada with a dataset that will not include any directly-identifying information responses to reduce the risk that you could be identified. All the responses received will be presented in grouped form. The dataset will also be available to federal and provincial governments, organizations, and researchers across Canada, if requested. Any reports or publications produced based on this research will use grouped data and will not identify you or link you to these survey results.

What are your rights? You have a right to complain to the Privacy Commissioner of Canada if you feel your personal information has been handled improperly. For more information about these rights, or about how we handle your personal information, please contact the [insert program contact information.].

A. Are you 18 years of age or older?

    ☐ Yes   ☐ No (*Terminate – not qualified*)

B. Do you or does anyone in your immediate family, work in any of the following occupations?

    ☐ Market research firm (*Terminate – not qualified*)

    ☐ TV, radio or news media (*Terminate – not qualified*)

    ☐ Advertising company (*Terminate – not qualified*)

C. Have you participated in any Government of Canada surveys in the last 30 days?
    Yes (Terminate – not qualified)
    No

D. What province or territory do you reside in?

Alberta (AB) 1
British Columbia (BC).......................2
Manitoba (MB) 3
New Brunswick (NB) 4
Newfoundland and Labrador (NL) ...5
Northwest Territories (NT) 6
Nova Scotia (NS) 7
Nunavut (NU)...................................8
Ontario (ON).....................................9
Prince Edward Island (PE)...............10
Quebec (QC) 11
Saskatchewan (SK)..........................12
Yukon (YT).......................................13
Outside of Canada …………………………14 [Terminate]

E. What is your gender?

Male...1
Female 2
Other 20
Prefer not to answer 99

F. In what year were you born? [OPEN]
Prefer not to answer 99

G. [IF PREFER NOT TO ANSWER F] Please indicate in which of the following age categories you belong.

18 to 24...1
25 to 34...2
35 to 44...3
45 to 54...4
55 to 64...5
65 or older 6
Prefer not to answer ....99 [THANK AND TERMINATE]

Community/civic engagement

1. Have you done any of the following within the past year? [RANDOMIZE]Select all that apply.
    Participated in a public meeting... 1
    Spoken at a public meeting 2
    Written a letter to an editor (newspaper, magazine, etc) 3
    Contacted an elected official 4
    Discussed a community issue on social media 5
    Volunteered (e.g. handed out brochures, campaigned) with a community organization or non-profit ... 6
    Read a newspaper, magazine or other publication about issues of importance to your community 7
    Participated in cultural events specific to your community 8
    Spoken up against the sharing of information you knew to be false (mis/disinformation) 9
    I have taken other actions to help my community: [OPEN]
    None of the above.. 10
    [EXCLUSIVE][ANCHOR]

Science Literacy

To what extent do you agree or disagree with the following statements? [RANDOMIZE]
2. I would like to know more about science and how it affects our world.
3. Science was never my best subject in school.
4. When making a decision, I like to thoroughly research my options.
5. I generally understand science concepts when they are explained for the general public.
6. I am reasonably confident I could contribute to science research.
7. I am interested in taking action against inaccurate scientific information that is shared with the public.
8. I am concerned with the spread of inaccurate scientific information (i.e. mis and dis information) from sources such as social media and news outlets
9. I am confident in my ability to assess the accuracy or truthfulness of scientific information that is shared in the media (social media, news, magazine, etc.)
   Strongly agree...................................1
   Somewhat agree..............................2
   Somewhat disagree 3
   Strongly disagree 4
   Don't know 77

Awareness, familiarity and experience with Participatory Research

Our next few questions are about Participatory Research, also known as Citizen Science.

10. [ASK ALL] Prior to today, have you heard or not heard of Participatory Research/Citizen Science? [UNPROMPTED AWARENESS OF TERM]
    Heard 1
    Not heard 2

Participatory Research projects, also called Citizen Science projects, are when professional scientists work together to conduct research with volunteers from the public, who may or may not have any background in science. This may include things like collecting environmental samples, contributing data, recording observations, taking photographs or even contributing to project design and analysis, and benefit from access to the results. There are thousands of different Citizen Science or Participatory Research projects happening around the world where volunteers can help contribute to science! Some popular examples of Participatory Research/Citizen Science include:
- "iNaturalist" –participants took photos of flora and fauna, contributing to an international database of the natural world, while learning about species identification.
- "Galaxy Zoo" – participants reviewed photos taken by telescopes to help astronomers identify and classify galaxies.
- Parks Canada's Coastie Initiative: participants captured the impact and erosion to Prince Edward Island's coastline following Hurricane Fiona.

11. [ASK ALL] Now that you have read the definition, please rate your familiarity with Participatory Research/Citizen Science on a scale from 0 to 10, where 0 is not familiar at all and 10 is very familiar.
    0 (not familiar at all) 0
    1...1
    2...2
    3...3
    4...4
    5...5
    6...6
    7...7
    8...8
    9...9
    10 (very familiar) 10

Unsure 77

12. [ASK ALL] Have you ever participated in or contributed to a Participatory Research/Citizen Science project? [PROVIDE EXAMPLES AGAIN]
Yes 1
No 2
Unsure 77

Interest, motivators and barriers for future participation

13. [ASK ALL] On a scale from 0 to 10, where 0 is not interested at all and 10 is very interested, how interested would you be in participating in a future government-led Participatory Research/Citizen Science project?
0 (not interested at all)....................0
1..1
2..2
3..3
4..4
5..5
6..6
7..7
8..8
9..9
10 (very interested) 10

14. You rated your interest in participating in a future government-led Participatory Research/Citizen Science project as [ANSWER FROM ABOVE QUESTION] out of 10 where 0 is not at all interested and 10 is very interested. Why? What interests you? What does not interest you? [UNPROMPTED MOTIVATORS/BARRIERS]

    Please refrain from including any personally identifiable information in your response.

    [OPEN]

15. What health-related topics would you be interested in contributing to for future Participatory Research/Citizen Science projects? Please select all that apply: [RANDOMIZE]
Environmental health (e.g., air quality, water quality)..3
Mental health 4
Well-being (e.g., physical activity, sleep, sedentary behaviour) 5
Traffic and built environment (e.g., traffic patterns, active transportation, greenspace usage) 6
Food and nutrition..7
Health products (e.g., pharmaceuticals, natural health products, vaccines, medical devices).............8
Substance use (e.g., opioids, alcohol, tobacco, stimulants, cannabis)....................................9
Consumer products (e.g., household products, toys) 10
Pesticides and chemicals (use and exposure) 11
Climate change 12
Healthcare system 13
Other, please specify: __ 20
None, not interested 99

[ASK ALL] On a scale from 0 to 10, where 0 is not interested at all and 10 is very interested, how interested would you be in participating in the following types of Participatory Research/Citizen Science projects? [RANDOMIZE]

16. A project where you respond to a survey or enter data online one-time only.

17. A project where you will be asked to log into an online platform daily to add data in order to track a change over time for a few weeks.
18. A project where you encounter something and you log it into an online app over the period of several months/years.
19. A project that collects data from a device or app passively with your consent for a set period of time.
20. A project where you will go out of your home to collect samples (such as water from a nearby river, or photos of products at a local retailer) and share them with the research team at regular intervals.
21. A project where you help provide context about what data already collected might mean to you and your community.

```
0 (not interested at all)...................0
1......................................................1
2......................................................2
3......................................................3
4......................................................4
5......................................................5
6......................................................6
7......................................................7
8......................................................8
9......................................................9
10 (very interested) ........................10
```

22. What would be the biggest motivators for you to participate in a Participatory Research/Citizen Science project? [CAPTURE UP TO THREE MENTIONS] [OPEN]

23. What would be the biggest barriers to you participating in a Participatory Research/Citizen Science project? [CAPTURE UP TO THREE MENTIONS][OPEN]

Next we will present a list of motivators and barriers to participating in government-led Participatory Research/Citizen Science that have been identified by others. Please indicate the extent to which you feel they are important to **your** interest in participating in Participatory Research/Citizen Science. How much, if at all, would the following factors **encourage** you to participate in a government-led Participatory Research/Citizen Science project? [RANDOMIZE]
24. Contributing to a topic of interest or importance to me
25. Knowing someone else who has participated
26. Providing support to the organization leading the project
27. Connecting with other participants and being a part of a community
28. Receiving a monetary incentive for participation
29. Learning more about the project topic (e.g. option for additional reading or tutorials)
30. A hands-on workshop to learn skills related to sample or data collection
31. Having an opportunity to connect with science experts
32. Ability to gain insights and learn more about my health
33. Follow-up communications on the results of the project
34. Regular support from project organizers

```
1 - Not at all .....................................1
2......................................................2
3......................................................3
4 - Very much ..................................4
Unsure .............................................77
Not applicable ................................99
```

How much, if at all, would the following factors **prevent** you from participating in a government-led Participatory Research/Citizen Science project? [RANDOMIZE]
35. Not enough detail about how the results of the project will be used

36. Not enough detail about what is expected from participants at the start of a project
37. Substantial reading or training required for participation
38. Having to learn to use new instruments, tools and/or technology
39. Having to interact with other participants and/or science experts
40. Material only available in English and French
41. Personal physical limitation or disability (e.g., ~~language barrier~~ physically unable to collect data, material not compatible with voice to text technology)
42. Lack of spare time
43. Privacy concerns (e.g., sharing of personal data, how the data will be used)
44. Insufficient internet broadband connection

1 - Not at all 1
2..2
3..3
4 - Very much 4
Unsure 77
Not applicable 99

45. Do you have any other suggestions for how people could be encouraged to participate in government-led Participatory Research/Citizen Science projects? [OPEN]

   Please refrain from including any personally identifiable information in your response.

Communicating Research Opportunities

46. [ASK ALL] How would you prefer to be informed of **upcoming** Participatory Research/Citizen Science projects you could participate in? [SELECT ALL THAT APPLY][RANDOMIZE]
Emails (active notification) 1
Smart phone notifications and/or text messages (active notification) 2
Social media feeds...3
Community meetings 4
Newsletter (active notification)...5
Updates on webpage/Participatory Research/Citizen Science platform when I
choose to visit (passive notification) 6
Other, please specify: __ 20

47. [ASK ALL] If you were involved in a Participatory Research/Citizen Science project, how would you prefer to **get updates, notifications or reminders** related to the project? [SELECT ALL THAT APPLY][RANDOMIZE]
Emails (active notification) 1
Smart phone notifications and/or text messages (active notification) 2
Social media feeds...3
Community meetings 4
Newsletter (active notification)...5
Updates on webpage/Participatory Research/Citizen Science platform when I
choose to visit (passive notification) 6
Other, please specify: __ 20

48. [ASK ALL] Do you currently have access to a computer, tablet or Smartphone on a regular basis? (select all that apply)
Desktop computer... 1
Laptop computer 2
Tablet (i.e. iPad or tablet).. 3
Smartphone 4

I do not have access to any of the above on a regular basis .... 5 [EXCLUSIVE]

49. [ASK ALL] How would you describe your internet access during an average month? (select one)
    I have access to stable high-speed internet all or most of the time 1
    I have access to stable high-speed internet some of the time.................3
    I do not have access to stable high-speed internet..................................4
    I do not have access to internet at all 5

[ASK ALL] How would you rate your level of comfort doing the following, on a scale from 0 to 10 where 0 is very uncomfortable and 10 is very comfortable: [RANDOMIZE]
50. Using a desktop or laptop computer
51. Using a tablet or smartphone
52. Downloading and using a mobile application
53. Navigating the Internet
54. Using social media
55. Communicating by email
    0 (very uncomfortable)....................0
    1..1
    2..2
    3..3
    4..4
    5..5
    6..6
    7..7
    8..8
    9..9
    10 (very comfortable)......................10
    Unsure 77

Demographic Questions

[ASK ALL] We are striving to ensure we receive perspectives that reflect the diversity of Canada's population during the project design. These questions are optional and will just be used to help us group responses.

56. For geographic verification purposes and to help us understand characteristics of your community (province, rural, proximity to census metropolitan areas, etc) and to, please enter the first three digits of your postal code: ___[NEW]

    Prefer not to answer...........99

57. Which what is the size of the community where you currently live? [NEW]
    Population of less than 1,000 (rural area) 1
    Population of 1,000 to 29,999 (small population centre) 2
    Population of 30,000 to 99,999 (medium population centre) 3
    Population of 100,000 or greater (large urban population centre) 4
    Prefer not to answer 99

How many children do you have in the following age groups, if applicable?
58. Under 2 years
59. 2-5 years
60. 6-11 years
61. 12-17 years
    Enter number ....__
    None/not applicable........................99

62. With which of the following do you best identify yourself? [NEW][Select all that apply]

White ....1 [SKIP TO Q65]
South Asian (e.g., East Indian, Pakistani, Sri Lankan, etc.) ....2 [SKIP TO Q65]
Chinese ....3 [SKIP TO Q65]
Black ....4 [SKIP TO Q65]
Filipino ....5 [SKIP TO Q65]
Latin American...6 [SKIP TO Q65]
Arab ....7 [SKIP TO Q65]
Southeast Asian (e.g., Vietnamese, Cambodian, Laotian, Thai, etc.) ....8 [SKIP TO Q65]
West Asian (e.g., Iranian, Afghan, etc.) ....9 [SKIP TO Q65]
Korean ....10 [SKIP TO Q65]
Japanese ....11 [SKIP TO Q65]
Indigenous in Canada ....12 [Go to Q64]
Indigenous ancestry from outside of Canada...13 [SKIP TO Q65]
Other — specify ....20 [SKIP TO Q65]
Prefer not to answer ....99 [SKIP TO Q65]

63. [IF Indigenous in Canada], which of the following do you best identify yourself?

First Nations...1
Metis 2
Inuk 3
Mixed Indigenous ancestry 4
Other-specify 20
Prefer not to answer 99

64. Do you identify as a person with a disability?

A person with a disability is a person who has a long-term or recurring impairment (such as vision, hearing, mobility, flexibility, dexterity, pain, learning, developmental, memory or mental health-related) which limits their daily activities inside or outside the home (such as at school, work, or in the community in general).

Yes 1
No 2
Don't know …………………………………95
Prefer not to answer 99

65. What is the highest level of formal education you have completed?

Less than a High School diploma or equivalent.. 1
High School diploma or equivalent.. 2
Registered Apprenticeship or other trades certificate or diploma 3
College, CEGEP or other non-university certificate or diploma...................... 4
University certificate or diploma below bachelor's level 5
Bachelor's degree 6
Post graduate degree above bachelor's level.. 7
Prefer not to answer 99

66. [IF COLLEGE OR HIGHER] What was your field(s) of study? [SELECT ALL THAT APPLY]

Science, technology, engineering or math (STEM)... 1
Social sciences (such as anthropology, economics, political science, psychology) 2
Journalism/Communications... 3
Education... 4
Business... 5
Arts 6

Other (Specify)..20
Prefer not to answer 99

67. Which of the following best describes your total household income last year, before taxes, from all sources for all household members? [NEW]
Under $20,000...1
$20,000 to just under $40,000 2
$40,000 to just under $60,000 3
$60,000 to just under $80,000 4
$80,000 to just under $100,000 5
$100,000 to just under $120,000 6
$120,000 to just under $150,000 7
$150,000 and above 8
Prefer not to answer 99

68. Which of the following categories best describes your current employment status? Are you… [Accept one answer only]
Working full-time, that is, 35 or more hours per week 1
Working part-time, that is, less than 35 hours per week 2
Self-employed...3
Unemployed, but looking for work 4
A student attending school full-time..5
Retired 6
Not in the workforce [Full-time homemaker, unemployed, not looking for work] 7
Other—[Do not specify] 20
Prefer not to answer 99

What is your language profile in English [FR IN FRENCH VERSION] based on the following descriptions? [SELECT ONE]
69. Reading
70. Writing
71. Oral Interaction
Rely on translation tools/technology 1
Get by with basic phrases...2
Communicate about familiar topics, opinions and descriptions 3
Discuss more complex topics with fluency..4
Near native or native ability 5
Prefer not to answer 99

72. [IF Q70, Q71 AND/OR Q72 IS NOT 4 or 5] In which language(s) are you **most** comfortable communicating? [OPEN]

Thank you very much for your time.